Response to Comments
on
Draft Permit Modification and Statement of Basis
for EPA's Proposed Remedial Action for the Housatonic River "Rest of River"
GE-Pittsfield/Housatonic River Site

SDMS: 593922

U.S. Environmental Protection Agency
Region 1 (EPA New England)

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management, there is a substantial body of knowledge concerning dredging of sediments to deepen water bodies and/or remove pollutants. Also, undesirable plant species can be more easily removed with aquatic harvesters compared to emergent, shrub, or forested sites (see National Research Council 1992 for a review of methods).

Comment C16: GE asserts that sediment removal and capping in the backwaters would cause changes in surface substrate type from silts or mucky organic material to sand, which would last until enough silt and organic material have been deposited through flood events to approximate current conditions - which could take a decade or longer. There would be changes in vegetative characteristics corresponding to the change in substrate type and elevation. With these changes in substrate and hydrology, there would be a proliferation of invasive exotic plant species.

There would be a change in the wildlife communities using the backwaters until such time as the substrate, hydrologic, and vegetative conditions of the backwaters return to conditions comparable to pre-remediation conditions - which is uncertain. There is high potential for the loss of certain sensitive (e.g., state-listed) species, such as the American bittern and common moorhen.

The potential for restoration of backwaters is better than for most other aquatic habitat types. Backwaters, having direct connections to the river, will readily receive propagules of plant species and mobile animals can move into these areas rapidly. The techniques for their restoration are most like those used for lakes and reservoirs, and thus there is abundant information available on how to proceed. Although comparable habitats can probably be constructed, there remains a major question about whether the desired plant and animal species can be attracted to and flourish within the restored backwaters. The specter of overwhelming colonization by invasive exotic plants remains present.

EPA Response 597, C2, C3, C14, C15, C16: EPA disagrees with the statement that "SED 9/FP 4 MOD would destroy 126 acres of aquatic riverine habitat." On the contrary, the remediation will restore approximately126 acres of currently contaminated aquatic riverine habitat. As discussed in the HHRA and ERA, benthic invertebrate populations in the Rest of River are demonstrably compromised by the high concentrations of PCBs in riverine sediments, particularly in depositional areas, and fish tissue is highly contaminated. Removal and capping of these contaminated sediments will allow benthic invertebrates to re-colonize the area and establish robust populations uncontaminated by PCBs, and will result in decreases in fish tissue concentrations, thus decreasing risks to human health and the environment.

The proposed remedy would remediate the entire river bed in Reaches 5A and 5C and would impact limited river banks in Reach 5A, or approximately 35% of the 10 linear miles of bank in that most upstream subreach, as well as selected areas of Reach 5B, the Backwaters and Impoundments. After sediment removal (sufficient to construct the appropriate Engineered Cap), the river bed will be returned to its former grade by placing the Engineered Cap to contain any residual PCB contamination. EPA recognizes that removal of the sediment in these reaches of the Housatonic River will create a short-term disruption to the ecosystem (e.g., to benthic invertebrates, fish populations, substrate composition, and colonization by invasive species), however, sediment removal and capping is necessary to mitigate the significant threat to human health and environment caused by GE's PCBs.

In recognition of these short-term impacts, EPA included measures in the proposed remedy to mitigate them to the extent possible. First, the remediation will be conducted using a phased approach, thus an entire reach will not be affected at any single time or place. Phasing the remediation (and restoration) will provide many species with areas not subject to remediation adjacent to the construction for refugia. The Restoration Performance Standards and Corrective Measures also include provisions for the management of impacts to state-listed species as necessary.

Second, the proposed remedy requires that the Engineered Cap include in its design a habitat layer approximating the natural sediment characteristics. Therefore, there should be minimal long-term effects on substrate composition. Furthermore, as shown following the remediation of the Upper 2-Mile Reaches, there will be significant redeposition of sediment from upstream sources and reworking of surficial sediment, which will further assist in returning the natural characteristic of the riverbed. Restoration techniques may include the planting of aquatic vegetation to accelerate the recovery process.

Third, the extent and timing of recovery of benthic invertebrates and fish populations in these reaches following remediation would be considerably more rapid than asserted by GE. There is an excellent example of the recovery that can be expected which was documented in the studies conducted upstream in the East Branch of the Housatonic River following the extensive remediation in the ½-Mile and 1 ½-Mile Removal Reaches (these actions included remediation of the river bed, all banks, and much of the floodplain immediately adjacent to the river). In 2007, approximately one year following completion of remediation of these two miles of river, EPA conducted a quantitative survey of benthic invertebrate populations and a semi-quantitative survey of fish populations at three transects in the 1 ½-Mile Removal Reach. The results of the investigation showed that benthic invertebrate populations had recolonized the sediment bed as measured by species richness, density, and diversity, and that the benthic community had higher diversity, increased abundance, and increased presence of pollution-intolerant taxa than before the remediation occurred. The fish species composition and numbers also were observed to meet expected conditions. In addition, tissue PCB concentrations in the invertebrates, which form the base of the aquatic food chain, were reduced by over 99% as compared with pre-remediation levels. Using similar field and laboratory methods, GE conducted surveys at the same three locations in 2012 and obtained substantially the same results, with even further reductions in tissue PCB concentrations observed (GE, 2012). There is no reason to believe that recovery in Reaches 5A and 5C, following sediment remediation, will be any less rapid or complete, particularly considering that recovery will be enhanced by placement of a habitat layer as part of the Engineered Cap.

Fourth, in these surveys, there was no indication of colonization by either invasive aquatic plant or animal species documented by EPA or GE. The development of an invasive species control plan is required by the Final Permit Modification, which EPA anticipates will include management strategies to control any invasive aquatic vegetation.

Similarly, there is no indication from these surveys that the removal of contaminated sediment and subsequent placement of an Engineered Cap have caused any meaningful change in groundwater flow and/or the presence of a hyporheic zone in the riverbed. GE cites a publication by Hester and Gooseff (2010) which is claimed to argue that "Disturbance of

[groundwater flows in the riverbed] by dredging, capping, and bank remediation will adversely affect groundwater-dependent habitats and flow patterns, and also destabilize the base of riverbanks, resulting in bank slumping and further erosion (e.g., Hester and Gooseff 2010)." EPA has reviewed the Hester and Gooseff paper and disagrees with GE's interpretation of the paper with regard to the adverse effects caused by dredging, capping, or bank remediation. On the contrary, the Hester and Gooseff publication is a discussion of the importance of consideration of the hyporheic zone as part of stream restoration projects, and provides an argument for the inclusion of restoration of the hyporheic zone as part of stream restoration, which the authors clearly accept as a legitimate and valuable method for improving the overall ecological quality of rivers and streams. EPA agrees with this recommendation. Using another citation (Kasahara and Hill, 2006), GE notes that restoration of the hyporheic zone is possible but not at the scale of riverbed remediation included as part of SED 9/FP 4 MOD. The Kasahara and Hill publication does in fact support the first part of this comment, but the latter part, i.e., that restoration of the hyporheic zone on a scale of miles is unlikely, is not supported by this citation.

Fifth, in the case of the banks in Reach 5A that will be remediated, extensive ecological restoration using the well-established principles of bioengineering and natural channel design are expected to lead to a recovery similar to that observed in the 1 ½-Mile Removal Reach.

With regard to the position of the Commonwealth quoted in the comment, EPA notes that these remarks were part of the Commonwealth's 2011 response to GE's Revised CMS, not to the 2014 proposed remedy or the 2015 Intended Final Decision. The current position of the Commonwealth is stated in its October 27, 2014 comment letter, as follows: "we support . . . the more specific approach to remediating the Reach 5 river banks set forth in the Proposed Cleanup Plan, which is . . . responsive to the Commonwealth's concern about ensuring that the fundamental, dynamic character of the river remains intact following the necessary remediation of eroding banks." With regard to the effect of remediation in the Backwaters on state-listed species, the Commonwealth of Massachusetts worked with EPA to develop the SED9/FP4 MOD preferred alternative and identified Core 1 areas that have high-quality habitat for state-listed species. The Backwaters in these Core 1 areas will not be subject to excavation unless PCB concentrations exceed 50 mg/kg, a significantly elevated concentration that results in substantial risk to the environment. The Commonwealth has responsibility for ensuring the long-term protection of state-listed species and is fully supportive of EPA's Final Permit Modification.

Also see Responses 147 *et al.*, and 604, C19 in this Section.

Comment 598: GE asserts that the proposed riverbank stabilization/excavation work, even if Natural Channel Design or "bioengineering" techniques are used, would cause an enduring negative change in the character of those banks, because it would: (a) prevent significant bank erosion and lateral channel movement, thus eliminating the vertical and/or undercut banks that provide critical habitat for certain birds and other animals, and reducing adjacent wetland habitats; (b) require the removal and permanent elimination of mature trees overhanging the River, thus changing the character of the banks from their current wooded condition to a more open condition; (c) produce a long-term reduction in slides and burrows of certain mammals and reduce access routes for reptiles, amphibians, and smaller mammals between the River and the floodplain; and (d) increase the potential for colonization by invasive exotic species.

EPA Response 452: EPA agrees that the requirement for the submission of the Baseline/Construction and Long-term Monitoring Plans was included in Section II.B.11.v of the Draft Permit Modification. These requirements were retained, but slightly modified and relocated into Sections II.H.1.c. (Baseline Monitoring Plan), II.H.18.a. (Construction Monitoring Plan) and b. (Inspection, Monitoring and Maintenance Plan) and II.H.23. (Operation and Maintenance Plan) of the Final Permit Modification. The Performance Standards and Corrective Measures for these programs are described in Section II.B.4. and II.C. of the Final Permit Modification.

The appropriate level of detail and Connecticut's role in reviewing Work Plans is discussed above in Response 111 *et al*. in this Section and in Section VIII of this Response to Comments.

Comment 464: The permit should specify analytical requirements for measuring PCBs. Connecticut recommends that, in addition to measurements of PCBs as individual and total Aroclors, that all samples also be analyzed for individual and total PCBs using either homologs or congeners. As PCBs weather, they undergo chemical changes which may render the Aroclor method insufficient to provide an accurate accounting of the amount of PCBs in the environment. Measuring PCBs via homologs or congeners will allow for measurement of all forms of PCBs and will not under-represent the actual concentrations of PCBs in the environment as might happen with reliance solely on methods deigned to analyze for Aroclors.

EPA Response 464: As discussed above, EPA believes that the details of the monitoring plans, including analytical methods and detection levels, should be proposed by GE in its Work Plans to be submitted to EPA for review and approval. In addition, because analytical methods and detection limits will likely change during the monitoring period, it would be inappropriate to specify analytical methods and detection limits in the Final Permit Modification as they may become obsolete. Lastly, in part in response to this comment, the definition of PCBs was revised to include the word "total" so that regardless of the analytical method used, the amount of PCBs should be the sum of the detected PCB aroclors, congeners, or homologues.

Comment 478: Connecticut concurs with EPA that the final footprint of remediation will need to be informed by updated data on environmental concentrations and erosion potential.

Response 478: EPA acknowledges Connecticut's concurrence.

III.F Treatment/Disposition

III.F.1 General Comments on Treatment/Disposition

Comments 56, 373, 430, 485, 493, 495, 530: EPA received one set of comments objecting to EPA's proposal for off-site disposal of excavated material, and many other comments which were supportive of EPA's proposal. GE stated EPA's proposed requirement that all excavated soils and sediments must be transported to and disposed of at an off-site, out-of-state disposal facility, rather than being disposed of in a secure upland facility, as GE has proposed, abuses the Permit's remedy selection criteria and would be arbitrary, capricious and unlawful. In addition, GE believes EPA incorrectly selected off-site disposal and that an objective application of the Permit Criteria clearly favors the selection of on-site disposal. This is because: (a) both off-site and secure on-

site disposal would meet the Permit's General Standards; (b) the Selection Decision Factors other than cost either favor on-site disposal or favor neither alternative; and (c) the cost factor strongly favors on-site disposal.

Alternatively, many commenters, including all of the affected Massachusetts municipalities and the Commonwealth of Massachusetts, supported EPA's proposed alternative of off-site disposal and opposed on-site disposal. However, some non-governmental commenters noted discomfort with any type of landfilling. In addition, several commenters supported the use of rail for off-site disposal. Specifically, the Commonwealth supports the Proposed Cleanup Plan requirement that GE maximize the use of rail to transport contaminated material to off-site licensed facilities. The Commonwealth further states the current freight rail system owned by Housatonic Railroad Company, Inc. runs adjacent to the portions of the Housatonic River subject to removal actions, including Woods Pond, and should be used to the extent feasible to transport contaminated media from the site. Maximizing the use of rail would reduce the impacts of the remedy on the surrounding communities, particularly with respect to truck traffic.

EPA Response 56, 373, 430, 485, 493, 495, 530: EPA notes the support for off-site disposal and the use of rail transport. EPA disagrees with the assertions, the characterization of EPA's analyses, and the conclusions of GE favoring on-site upland disposal of excavated material. Based in part on GE's evaluation in the Revised CMS, EPA performed a thorough comparative analysis of the alternatives with respect to the criteria specified in the Permit, analyzing the key tradeoffs among different treatment/disposal alternatives. That comparative analysis supports EPA's determination of the selected treatment/disposal alternative as best suited to meet the Permit's General Standards in consideration of the Permit's Selection Decision Factors, including a balancing of those factors against one another. See Comparative Analysis, pages 59-77. Contrary to GE's assertions, as the Comparative Analysis demonstrates, there are distinctions between GE's favored approach and the selected remedy with respect to the Permit's General Standards; additionally, the Permit's Selection Decision Factors other than cost include criteria and sub-criteria clearly favoring off-site disposal, and thus the difference in the cost criterion is by itself not the sole factor to consider. More detailed responses to comments on the individual criteria and sub-criteria are in Section III.F.2 below.

Comment 92: Where is the rail depot large enough to handle 10,000 truckloads per year of material going in and out? Where in Reach 5A could it be located? And how does the material get from the River and Floodplains to that depot and back?

EPA Response 92: A location for the rail facility has not been selected as part of the Final Permit Modification. The Final Permit Modification requires GE to maximize the transport of material to off-site facilities via rail, to the extent practical and requires GE to submit to EPA, for review and approval, a Work Plan for the Siting of the Temporary Centralized Contaminated Materials Processing/Transfer Location(s). It is in this Work Plan that GE is required to propose the rail transfer location. In this Work Plan, the Final Permit Modification requires GE to describe the criteria to be used in proposing the siting of the temporary material processing/transfer location(s), the process to coordinate with affected communities regarding the operation of the temporary location(s), and an evaluation of the potential location(s) using the criteria. GE will also propose in this or other Work Plans the methods to transport the material to this facility(s). Depending on the location of the facility(s) and the type and location of the

material to be transported, the method of transportation to the facility could include trucks, slurries pumped through piping, and/or a combination of these and other methods.

Comment 237: In the discussion of T/D Alternative 2 on p. 25 of the Statement of Basis, it is noted that "material that exceeds the capacity of the CDFs (in the river or backwater, two proposed sites) would be disposed of in existing off-site licensed landfills." What is the potential for exceeding CDF capacity?

EPA Response 237: In its Revised CMS, GE assumed that all sediment dredging from Reaches 5C and 6 and could be placed in CDFs located in Woods Pond and in the Backwaters. Based on the largest sediment removal remedy for these reaches, GE estimated that the CDFs could be constructed to hold up to 800,000 cubic yards of material. Any material generated outside of Reaches 5C and 6 would need to be dealt with separately. For reference, EPA estimated that the remedy selected in the Final Permit Modification would generate approximately 990,000 cubic yards of material that would require treatment and/or disposal. Finally, note that EPA has not selected CDFs as part of the Final Permit Modification.

Comment 238: Is there any calculation of the total capacity for the three potential upland (on-site) disposal facilities?

EPA Response 238: The capacities of the three upland disposal facilities evaluated by GE in its Revised CMS range from 191,000 to 2,000,000 cubic yards for the Woods Pond facility, 191,000 to 1,000,000 for the Forest Street facility and 191,000 to 2,900,000 for the Rising Pond facility. For reference, EPA estimated that remedy for the Final Permit Modification would generate approximately 990,000 cubic yards of material that would require treatment and/or disposal.

Comments 238, 307, 373: Several commenters support EPA's requirement that disposal of hazardous waste take place at a licensed landfill, and note that there are no such facilities currently licensed in Massachusetts. However, the wording of the Permit could be interpreted to allow the establishment of such a facility in state, or even within Berkshire County, at a future date. We oppose any plan from EPA or GE that would result in disposal of contaminated material at any site in Massachusetts. The Permit should be worded to explicitly prohibit such disposal.

EPA Response 238, 307, 373: The Final Permit Modification requires disposal of all contaminated sediment and soil, as well as other waste material, off-site at existing licensed facilities that are approved to receive such waste material and are in compliance with EPA's off-site rule. The Final Permit Modification does not specify that this facility be out-of-state. If an off-site facility was proposed to accept such waste, a facility would have to go through the proper State and federal siting requirements and regulations and be in compliance with EPA's off-site rule prior to being an acceptable disposal facility pursuant to this Final Permit Modification. This process would take place outside of the Final Permit Modification.

Comment 266: The comparative analysis of treatment/disposal alternatives should give more consideration to the potential re-use of soil after treatment.

EPA Response 266: The Comparative Analysis discusses potential reuse after treatment by both TD 4 (chemical extraction) and TD 5 (thermal desorption). Specifically, it states:

> The results of a bench-scale test of a representative chemical extraction process indicate that PCB concentrations in the treated sediment and soil would not be sufficiently low to allow reuse on-site; therefore, the treated sediment and soil resulting from TD 4 would have to be transported to a landfill for disposal. For TD 5, it is assumed that the thermal desorption process would reduce the concentrations of PCBs in the treated solid materials to levels (around 1 to 2 mg/kg) that could allow reuse in the floodplain and that it would not increase the leachability of metals from those materials so as to preclude such use. For reuse as backfill in the floodplain, only 50% of the volume is assumed to be the treated material because following thermal treatment the material would be sterile, requiring amendments to be suitable for floodplain restoration. However, due to uncertainties regarding the ultimate effectiveness of the treatment process (as well as issues relating to the reuse of the treated soil), TD 5 has also been evaluated based on the additional alternate assumption that all the treated material would be transported to an off-site landfill for disposal.

Comparative Analysis, Section 3.1, at 60.

Given the conclusions reached in the Comparative Analysis regarding the low potential for re-use of soil after treatment, no further discussion of this issue in the Comparative Analysis was necessary.

Comment 267: Need a further discussion of types of chemical desorption being considered to better evaluate their use on these contaminants.

EPA Response 267: Chemical desorption was not evaluated. Chemical extraction was evaluated as option TD 4. Section 9.4 of GE's Revised CMS provides a full description of the method evaluated.

Comment 485: The Commonwealth and the affected communities are seeking EPA's affirmation that off-site disposal will remain a legally binding requirement in the Final Cleanup Plan for Rest of River, as well as a more detailed explanation as to how it will be implemented in a manner that is most protective of our interests and concerns.

EPA Response 485: The Final Permit Modification requires off-site disposal at existing licensed facilities that are approved to receive such waste material and are in compliance with EPA's off-site rule. The details of how the remedy will be implemented will be determined as part of the remedial design process under the Final Permit Modification. Also note that the State and municipalities will have an opportunity to provide input during the design and implementation process, as discussed in Section VIII of this Response to Comments.

III.F.2 Comparative Analysis for Treatment/Disposition Remedy

GE provided comments regarding each of the nine remedy selection criteria in the Permit. Those comments and EPA's responses are immediately below, in Comments and EPA Responses 546-576. In addition, there were several non-GE comments that are directly related to the remedy selection criteria and they are also addressed immediately below. See also Section II.A of this Response to Comments for a discussion of the Permit criteria used for evaluation of alternatives.

III.F.2.a Overall Protection of Human Health and the Environment

Comment 546: GE asserts the following: EPA acknowledges that both TD 1 [Off-site Disposal] and TD 3 [On-site Disposal] would provide "high levels of protection to human health and the environment" (Stmt. Basis, p. 35). It explains that TD 1 and TD 1 RR would provide such protection by "providing for permanent disposal of PCB- contaminated sediment and soil in permitted off-site landfills," and that TD 3 would provide such protection by "permanently isolating the PCB-contaminated sediment and soil in an upland disposal facility, which would be constructed with an appropriate double liner, cover, and double leachate collection system" (Comp. Analysis, pp. 60-61). As shown in Table 1, EPA has long recognized that on-site disposal facilities are protective, particularly for sediment and soil containing PCBs, in selecting on-site disposal of such materials as a component of the remedy for numerous PCB sites throughout the country, including in Massachusetts.[30] Indeed, the EPA Region has already approved the use of on-site disposal facilities (the On-Plant Consolidation Areas [OPCAs]) at this very Site, based on determinations that such facilities are appropriate for PCB-containing sediment and soil and would not pose an unreasonable risk of injury to health or the environment. There is no justification for a different conclusion for the Rest of the River.

In an apparent attempt to distance itself from its own prior conclusions, the Region has inserted some qualifications into its discussion of the application of the overall protectiveness criterion in an effort to suggest that TD 3 would be less protective than TD 1 or TD 1 RR. Those qualifications do not withstand scrutiny and do not support the Region's conclusion.

EPA Response 546: EPA disagrees with GE's assertions, the characterization of EPA's analyses, and the conclusions of GE favoring on-site upland disposal of excavated material. Based in part on GE's evaluation in the Revised CMS, EPA performed a thorough comparative analysis of the alternatives with respect to Overall Protectiveness of Human Health and the Environment, analyzing the key tradeoffs among different treatment/disposal alternatives. EPA's analysis is demonstrated in Section 3.2 of EPA's Comparative Analysis. In addition, EPA's analysis of the Overall Protectiveness of Human Health and the Environment is only part of EPA's overall evaluation of the Permit criteria, on which EPA based its determination of the selected remedy as best suited to meet the Permit's General Standards in consideration of the Permit's Selection Decision Factors, including a balancing of those factors against one another. See Comparative Analysis, pages 60-62. Moreover, except as otherwise specified in the Responses to Comments, the comments, upon EPA evaluation, do not make a significant difference to the Comparative Analysis or EPA's determination.

GE's comment also include two specific assertions, which are addressed immediately below.

1. Protectiveness of on-site versus off-site permanent disposal: Pursuant to the Permit, EPA considered several factors in analyzing on-site vs. off-site permanent disposal. For example,

[30] [footnote from GE's comment] As noted in Table 1, for example, the EPA New England Region has approved the use of an on-site Confined Aquatic Disposal (CAD) cell for disposition of PCB-contaminated sediment in New Bedford Harbor (EPA, 2011). It is inconsistent for the Region to conclude that disposition of such material within that waterbody is acceptable, but that disposition of similar materials in a secure on-site upland disposal facility outside the floodplain in Berkshire County is not.

on-site disposal facilities may be less effective at containing waste than an off-site disposal facility because the locations identified in the Revised CMS do not meet TSCA's siting requirements for PCB landfills. See 40 C.F.R. § 761.75(b)(1). (Although it is possible for TSCA siting requirements to be waived, doing so would have to be based upon a determination by EPA that it is appropriate to do so, and EPA believes that it is not appropriate to do so here). GE's Revised CMS acknowledges that none of the three proposed landfill sites meet TSCA's requirements for soil characteristics including permeability. In addition, Woods Pond is located near a drinking water source and is located above a medium yield aquifer. The Revised CMS also notes that none of the three sites meet all of TSCA's requirements for a landfill site's hydrological characteristics and all three sites are located within close proximity to the Housatonic River. By contrast TSCA requires that the bottom of the landfill liner be more than 50 feet above the historical high water table, that groundwater recharge areas be avoided, and that there is no hydraulic connection between the site and a surface waterbody. See 40 C.F.R. § 761.75(b)(3). Similarly, as stated in the Revised CMS, the Forest Street Site would not meet the TSCA requirement that a landfill be located in a relatively flat area to minimize erosion or landslides.

These TSCA criteria are meant to be protective of human health and the environment in the event of leaks or failure in the landfill technology. As explained in EPA's Statement of Basis, "there is the potential for PCB releases to the Housatonic watershed if the landfills are not properly operated, monitored and maintained." Statement of Basis at 36. Moreover, the potential extended duration of the operation of the proposed on-site landfills, given the range of sediment and soil volumes at issue here and the length of remedy implementation, likely necessitates that the proposed on-site facilities operate for an extended period of time. Comparative Analysis at page 64. These factors increase the risks of potential future releases to the Housatonic watershed, compounded by the poor suitability of the proposed locations given such factors as soil permeability, proximity to the Housatonic watershed, and/or drinking water sources. Accordingly, use of on-site landfills would "rel[y] heavily on proper long-term operation, maintenance, and monitoring activities." Comparative Analysis at page 65.

In addition, GE's proposed on-site disposal sites are located within areas zoned for residential and/or conservation purposes and/or are within a designated Area of Critical Environmental Concern. By contrast, suitability and protectiveness of off-site facilities are not affected by such contrary zoning regulations or the ACEC designation, both of which call into question the protectiveness and suitability of on-site disposal locations. Indeed, an off-site disposal facility would pose no risk of release to the Housatonic watershed, and would be fully licensed and regulated under TSCA and/or other applicable federal and state requirements. Such facilities are generally constructed in the area best suited to that use considering the hydrology and soil characteristics. Here, no on-site locations have been identified that would meet the TSCA PCB landfill siting requirements. In addition, an off-site disposal landfill will already contain hazardous substances whereas none of the proposed locations identified in the Revised CMS are known to be contaminated, making them a less suitable alternative. These types of considerations are important when considering siting of a new land disposal facility (as opposed to the decision to consolidate or cap wastes in an already contaminated area).

2. EPA's past practice regarding on-site and off-site disposal: GE cites a Table (Table 1) with 24 sites where it asserts that PCB-contaminated sediments and soil were disposed on-site or at local landfills. More complete and accurate information for each of the sites listed in GE's table is provided in EPA's Table 1 to this Response to Comments. While it is true that EPA has successfully implemented on-site disposal of dredged sediments at several sites around the country, GE's table is misleading because it lumps local landfills together with true on-site disposal. For instance, GE's Table 1 cites 250,000 cubic yards of non-TSCA sediment locally disposed at the Ottawa River Site. These non-TSCA sediments were actually disposed at an off-site landfill owned and operated by the City of Toledo, while the TSCA-regulated sediments from that site were disposed out of state at a hazardous waste landfill. This "local disposal" at a fully-regulated municipal landfill is not comparable to on-site disposal, where regulations may be waived. GE's table also does not differentiate where wastes were consolidated in areas already impacted by contamination (much like the On-Plant Consolidation Areas at the Pittsfield facility, for which limited disposal was allowed under the Decree), versus construction of a new facilities in previously uncontaminated areas, as is contemplated by alternative TD-1.

   GE's Table 1 also stretches the term "on-site disposal" beyond its logical limits. For instance, Table 1 calls the disposal of roughly 100,000 cubic yards of less-contaminated sediment at the River Raisin Site "on-site disposal," but this sediment was actually disposed at an off-site pre-existing confined disposal facility two miles away operated by the US Army Corps of Engineers for disposal of contaminated sediments unearthed during navigational dredging. This disposal in a pre-existing federally-managed facility outside site borders cannot be considered "on-site disposal," and is not comparable to building a new upland disposal facility outside the area of contamination, adjacent to the Housatonic River site, where GE has argued that EPA should waive relevant and applicable regulatory requirements.

   For nearly half of the Sites listed in GE's Table 1, only a portion of the wastes was disposed on-site while the remainder was shipped off-site to a licensed and regulated landfill. For instance, at Lower Fox River more than 95% of the contaminated sediment and soils were disposed off-site at TSCA and municipal landfills, but Table 1 mentions only the small amount disposed at an off-site landfill owned by a PRP. Similarly, at the Fields Brook Site, the vast majority of contaminated sediment and soil was disposed off-site: roughly 700,000 cubic yards out of a total of roughly 750,000. But Table 1 mentions only the first Operable Unit, where 14,000 cubic yards of contaminated sediment and soils were treated on-site or disposed on-site.

   GE also cites the on-site disposal (On-Plant Consolidation Areas) of contaminated soil and sediment in the prior non-Rest of River Decree removal actions as its principal example of on-site disposal. The Decree allowed GE to dispose of dredged contaminated soil and sediment in two consolidation areas: the first on top of an existing landfill, the "Hill 78", and the second adjacent to the existing landfill, in an area called "Building 71." GE fails to mention that Hill 78 was a pre-existing landfill, not an area with no known contamination as contemplated in TD-3 (on-site disposal). Moreover, the Decree limited the footprint and height restriction for Hill 78 and Building 71 and required off-site disposal of remaining wastes. As a result, GE could only dispose approximately 245,000 cubic yards of soil,

sediment and building debris at these facilities, far less than the volume anticipated for Rest of River. GE and EPA have to date transported approximately 100,000 cubic yards of material from non-Rest of River areas off-site for disposal. Any additional material generated by GE in completing the non-Rest of River cleanups will also be transported off-site for disposal.

Comment 67: A citizen commented that there is a precedent [for] EPA allowing a landfill next to Allendale School [as part of the Consent Decree] (Hill 78 and Building 71). I think GE could go to before a judge and use this precedent to say on-site landfills were used before, so you should allow us to do it again. Furthermore, there are rumors that GE is purchasing land in the County and that indicates that GE does in fact plan to create landfills in Berkshire County for materials excavated from the river and floodplain.

EPA Response 67: See Response 546 above.

i. Potential Habitat Impacts

Comment 547, 562, 564, GE Attachment A: GE asserts the following: The Region notes that TD 3 (on-site disposal) would cause a long-term or permanent habitat change in the footprint of the upland disposal facility, although it recognizes that the capped disposal area would be replanted with grass and that the support areas would be restored (Comp. Analysis, p. 61). In addition, EPA claims that TD 3 would cause a permanent alteration of the existing habitat in the Woods Pond disposal facility, which is located within an ACEC. Contrary to the EPA's claims, any habitat impacts of TD-3 do not undermine the protectiveness because two of the potential on-site disposal facility locations are primarily forested and there would be no permanent impacts on wetlands, rare species, habitat, or other valuable or protected types of habitat and the third is currently a sand and gravel operation (the Woods Pond Site). Although the Woods Pond Site identified for a disposal facility is located within the boundaries of the ACEC, the facility would be located predominantly (over 90%) within disturbed land used for quarry operations and would not affect any outstanding resources of the ACEC. The landfills, if constructed, could be planted with native grasses to create grassland/open field habitats. This would be a habitat improvement for the Woods Pond Site. In addition, in its evaluation, EPA did not consider the habitat impacts of the rail loading facility necessary under Alternative TD 1.

EPA Response 547, 562, 564, GE Attachment A: EPA concurs that the footprint for two of the areas considered for on-site disposal (the Forest Street Site and the Rising Pond Site) are primarily forested. EPA also concurs that if these sites were to be used for disposal facilities, the habitat would change from forested to native grasslands. Note that these two facilities currently contain prime forest land as designated by the State. After tree removal and prior to final capping, which may take 15 years, the habitat value at these two locations, which are otherwise unimpacted by the site contamination, would be significantly decreased. EPA concurs that if the Woods Pond Site was selected for a disposal facility the habitat would be improved for a majority of the area after final capping was completed if the area is restored with a grassland community. However, note there is a small portion of the footprint located in prime forest habitat.

Furthermore, there are other potential adverse effects to habitat at these potential landfill locations. The Forest Street Site requires an access road that would have to be constructed over Goose Pond Brook. As stated in the Revised CMS, the access road would also be located within the 100-foot buffer zone of the brook and in addition, portions of the operational footprint would be within the 200-foot riverfront area of Goose Pond Brook (a jurisdictional resource area under the Massachusetts Wetland Protection Act). For the location referred to as the Rising Pond site, the proposed landfill operational area directly abuts 25 acres of Priority Habitat for the state-listed Wood Turtle. As a result, further confirmation would be needed to conclude if there are any effects on priority habitat of rare species in the operational area of the landfill, and depending on the significance of such effects, compliance with, or a waiver of, the Massachusetts Endangered Species Act would be required. In addition, the Woods Pond site would require a waiver of the ARAR related to permanent disposal locations within an ACEC. (See Section IV of this Response to Comments for additional responses on compliance with ARARs.)

The location of a potential rail transfer facility not been proposed or selected, so a delineation of specific habitat impacts necessarily has not been done. The Final Permit Modification requires that GE propose criteria and evaluate potential rail transfer locations using that criteria and submit this evaluation to EPA for review and approval. Final Permit Modification at II.H.1.d. (Work Plan for Siting of Temporary Centralized Contaminated Materials Processing/Transfer Locations). This process will be used to evaluate any potential effects on habitat. Based, in part, on this comment, EPA clarified Section II.H.1.d. to note that this plan covers a rail transfer facility as well.

Comment 269: One commenter asserts that each of the on-site T/D alternatives will result in a loss of habitat.

EPA Response 269: EPA concurs that some of the alternatives impact the habitat more than others. The response above, the Statement of Basis (page 37) and the Comparative Analysis (page 68) discuss the effects on habitat for various alternatives. In addition, see Response 547 *et al.* above.

ii. Risk of Leaks, GHGs

Comment 548: GE asserts as follows: EPA claims that Alternative TD 3 will have greater short-term impacts than Alternatives TD 1 and TD 1 RR due to the potential leaks during transport of leachate over public roads to GE's water treatment facility in Pittsfield. Yet EPA made no effort to quantify such risks. EPA states that, alternatively, GE would have to construct and operate a treatment facility at the upland disposal facility, and that if that facility was not operated properly, there could be releases of PCBs into the environment. EPA acknowledges that leaks during transport would occur only in the case of "malfunctioning equipment or an accident" (*id*., p. 69) and that leaks from an on-site treatment plant would occur only if the plant "were not operated properly." Any trucks used to transport leachate would be water-tight and the total mass of PCBs transported over the life of the project would only be approximately 2 lbs. TD 1 RR would involve similar, if not greater, potential for the release of PCB-contaminated materials.

EPA Response 548: EPA's statement that there is the potential for spills of leachate (which is a liquid) during transport is accurate, even if one concludes the likelihood and environmental impact is low. Also, spills of liquid-contaminated material spread more quickly and may cause more environmental harm than spills of PCB solids that would be transported off-site via truck or rail. Similarly, if GE were to construct a water treatment facility at the location of the landfill, there is the possibility, despite best efforts to properly operate the treatment facility, to have releases of PCBs to the river.

Comments 549, 565: GE asserts as follows: TD 1 and TD 1 RR would each result in considerably more greenhouse gas (GHG) emissions than TD 3 and would have a larger carbon footprint. EPA compares the range of GHG emissions resulting from TD 1 to those resulting from TD 3, correctly noting that TD 3 would result in much lower emissions. EPA does not estimate the GHG emissions resulting from TD 1 RR, although it notes that those emissions would be "significantly lower" than under TD 1 due to the use of rail instead of truck transport. GE has estimated the total GHG emissions from each of these three TD alternatives for the removal volume represented by the proposed sediment/floodplain remedy. TD 1 would result in the greatest amount of emissions (approximately 165,000 tonnes), but TD 1 RR would result in a considerably greater amount of emissions (approximately 70,000 tonnes) than TD 3 (6,600 to 36,000 tonnes, depending on the disposal facility site used). Thus, TD 3 is much more compliant than either TD 1 or TD 1 RR with EPA's general and EPA's specific "green remediation" policies to minimize GHG generation.

EPA Response 549, 565: In the Comparative Analysis, the total GHG emissions estimated for the treatment/disposition alternatives were provided as ranges based on the potential volumes of sediment and soil that would require disposal or treatment. For TD 1 (off-site disposal to a licensed facility by truck) the GHG emission estimates ranged from 19,000 to 290,000 tonnes. GHG estimates for TD 1 RR (off-site disposal to a licensed facility by rail) were not presented in the Comparative Analysis.

GE's estimate of GHGs for TD 1 is within the ranges estimated by EPA in its Comparative Analysis. These GHG calculations are largely based on estimated roundtrip miles from the site to the off-site disposal facilities multiplied by vehicle and fuel emission factors, fuel economy values and other factors. Estimates of GHG emissions can vary extensively based on the assumptions (e.g., the assumed disposal facilities and associated roundtrip distance) used in the calculations.

EPA assumed different disposal facilities in its Comparative Analysis for off-site disposal via truck and via rail. In response to this and other comments (See Response 7, Section IX.E of this Response to Comments), EPA used GE's methods with EPA's assumed disposal facilities and conducted an additional analysis to refine the estimate of GHGs, including an estimate for GHGs for off-site disposal using rail. Based on EPA's assumptions and the estimated volume of the remedy, EPA calculates the GHGs for off-site disposal via trucks to be approximately 100,000 tonnes and for off-site disposal via rail to be 50,000 tonnes, both of which are below GE's estimates. For additional details, see Response 7. Although these estimates are greater than those for on-site disposal, they are less than estimated by GE, and are within the range of GHGs used in EPA's Comparative Analysis. Since both EPA's and GE's estimates are within the range

cited in the Comparative Analysis, neither of these estimates would change the overall evaluation of remedy selection criteria.

III.F.2.b Control Sources of Releases

Comment 550: GE asserts the following: The EPA Region recognizes that both off-site disposal and on-site disposal would control the potential for releases of PCB-containing materials into the environment through placement of those materials into engineered disposal facilities, but it then asserts that TD 1 and TD 1 RR would better meet this criterion than TD 3 (Comp. Analysis, p. 62). To support this claim, the Region states that while TD 3 would "most likely" isolate the removed material from being released into the environment, "the potential remains for releases to occur to the Housatonic River watershed both during operations and in the long term if the facility, including potentially a water treatment plant, was not properly operated and maintained."

This is not a supportable distinction. Given that all aspects of this remedial action, including the construction and operation of any on-site disposal facility, would be subject to EPA approval and under close EPA oversight, EPA could and would ensure that an on-site disposal facility is properly designed, operated, maintained, and monitored. As such, the facility would provide the same control of releases as an off-site disposal facility. The Region has provided no data on releases from either on-site or off-site disposal facilities, even though it admits that on-site disposal of PCB-containing material "has been used as part of a final remedy at a number of sites and is an effective and reliable means for permanently isolating such materials" (*id*., p. 64). The fact that any potential releases from an on-site disposal facility, in the unlikely event that they should occur, would be within the Housatonic River watershed, whereas any potential releases from an out-of-state disposal facility would take place within the area of that facility, does not affect the ability of the facility to meet the standard of control of sources of releases. The fact that the Region raises the potential for improper operation and maintenance as a shortcoming of an on-site but not off-site disposal facility reveals its bias against on-site disposal.

EPA Response 550: EPA disagrees with GE's assertions, the characterization of EPA's analyses, and the conclusions of GE favoring on-site upland disposal of excavated material. Based in part on GE's evaluation in the Revised CMS, EPA performed a thorough comparative analysis of the alternatives with respect to Overall Protectiveness of Human Health and the Environment, analyzing the key tradeoffs among different treatment/disposal alternatives. EPA's analysis is demonstrated in Section 3.3 of EPA's Comparative Analysis. In addition, EPA's analysis of the Control of Sources of Releases is only part of EPA's overall evaluation of the Permit criteria, on which EPA based its determination of the selected remedy as best suited to meet the Permit's General Standards in consideration of the Permit's Selection Decision Factors, including a balancing of those factors against one another. See Comparative Analysis, pages 62-63. Moreover, except as otherwise specified in the Response to Comments, the comments, upon EPA evaluation, do not make a significant difference to the Comparative Analysis or EPA's determination.

In a comparison of Rest of River cleanup alternatives, it is fair to distinguish, as EPA did, the disposal of PCBs at a landfill in close proximity to the Housatonic River and its watershed from the disposal off-site far from the Housatonic River watershed. Even with close EPA oversight of GE's design, construction and operation of a landfill, there remains a non-zero potential for

issues in the ability long-term for a landfill next to the River to control the sources of PCBs. This concern is accentuated by the fact that the locations proposed by GE would not meet the substantive standards for a TSCA landfill, the proximity of the proposed Wood Pond and Rising Pond facilities to the Housatonic River, and the proposed location of the Woods Pond site within the ACEC. In addition, EPA provides a more detailed response at Response 546 above.

Comment 265.a: One commenter asserts the following: The Comparative Analysis of treatment/disposal should acknowledge the possibility of releases from CDFs, upland (on-site) disposal and even landfills (off-site disposal).

EPA Response 265.a: The Comparative Analysis evaluated these concerns. See Sections 3.3 and 3.5 of the Comparative Analysis, and the Response 546.

III.F.2.c Compliance with Federal and State ARARs (or Waivers of ARARs)

General Comments

Comment 551.a: GE asserts the following: With respect to the criterion of compliance with federal and state applicable or relevant and appropriate requirements (ARARs) (or the basis for a waiver of such ARARs), the Region asserts the following: (a) TD 1 and TD 1 RR have fewer ARARs and are the only TD alternatives that would attain all of them (The Region's Statement of Basis asserts in one place (p. 25) that the state requirements regarding disposal of removed sediment and soil would not constitute ARARs for TD 1 because ARARs apply only to on-site activities and, under TD 1, those materials would be disposed of off-site. However, as the Region acknowledges elsewhere, TD 1 and TD 1 RR would involve on-site staging of the removal materials and, for TD 1 RR, transfer of the materials to an on-site rail loading station, dewatering them there, and loading them into rail cars. Thus, as discussed further below, those alternatives would be subject to some of the same state requirements regarding the handling of waste as on site-disposal); (b) TD 3 "has ARARs associated with being a hazardous waste and solid waste disposal site, and possibly impacts on wetland areas"; (c) two of the three identified sites for an on-site upland disposal facility "are in, or in close proximity to, a state-designated Area of Critical Environmental Concern (ACEC)" and thus would not meet the requirements of the Massachusetts site assignment regulations for solid waste facilities (310 CMR 16.40(3)&(4)) or the Massachusetts hazardous waste regulations (310 CMR 30.708), which (the Region says) prohibit a solid waste facility and a hazardous waste facility within or adjacent to or in close proximity to an ACEC; and (d) certain of those sites would not meet the Massachusetts hazardous waste facility site safety council regulations (990 CMR 5.04), which provide criteria for evaluating such a facility, including that it is not within an ACEC. See Comp. Analysis, p. 63; Stmt. Basis, p. 36. These erroneous assertions are insufficient to support the Region's position.

Comment 493: The Commonwealth of Massachusetts asserts the following: On-site or near-site PCB disposal facility would not meet the requirements of several of the Commonwealth's regulations including, without limitation, the Massachusetts Water Quality Certification regulations (314 CMR 9.06), the Massachusetts Wetlands Protection Act regulations (310 CMR 10.59), the Massachusetts Hazardous Waste regulations (310 CMR 30.700), and the Massachusetts Site Assignment regulations (310 CMR 16.40).

EPA Response 551.a, 493: Except as discussed specifically below**,** EPA disagrees with GE's assertions, the characterization of EPA's analyses, and the conclusions of GE's favoring on-site upland disposal of excavated material. Based in part on GE's evaluation in the Revised CMS, EPA performed a thorough comparative analysis of the alternatives with respect to Compliance with ARARs, analyzing the key tradeoffs among different treatment/disposal alternatives. EPA's analysis is demonstrated in Section 3.4 of EPA's Comparative Analysis. In addition, EPA's analysis of the Compliance with ARARs is only part of EPA's overall evaluation of the Permit criteria, on which EPA based its determination of the selected remedy as best suited to meet the Permit's General Standards in consideration of the Permit's Selection Decision Factors, including a balancing of those factors against one another. See Comparative Analysis, page 63 and Attachment 13. Moreover, except as otherwise specified in the Response to Comments, the comments, upon EPA evaluation, do not make a significant difference to the Comparative Analysis or EPA's determination. See response to individual ARAR comments below and responses in Section IV of this Response to Comments. Specifically, with respect to any on-site temporary stockpiling of hazardous or solid waste, EPA has modified the discussion of the ARAR and the remedy's ability to attain the ARAR. See EPA Responses 727-728, 474-476, 497, 498, 499; 729-731, 500. With respect to TD 3 having ARARs associated with being a hazardous and solid waste disposal site, and possibly having impacts on wetland areas, that EPA statement remains accurate.

i. Massachusetts Solid Waste Facility Site Assignment Regulations

Comments 551, 552, 553, 554: GE asserts the following:

1. The Massachusetts solid waste facility site assignment regulations should not be considered as an ARAR for this site. These regulations do not apply to facilities that manage hazardous waste; therefore, EPA cannot rely on both the solid waste regulations and the hazardous waste regulations. If one set applies, the other does not.

2. In addition, EPA has not identified the solid waste regulations as an ARAR at this and other sites in Massachusetts where an on-site disposal facility was part of the remedy, and the State has not consistently applied them to such on-site disposal facilities. CERCLA and the National Contingency Plan (NCP) provide that a state ARAR should be waived where the State "has not consistently applied (or demonstrated the intention to consistently apply)" that requirement in similar circumstances at other sites.

3. The prohibition in the solid waste regulations on siting a solid waste management facility in an ACEC, even if applicable, would not bar the implementation of TD 3. Two of the three sites identified for an on-site upland disposal facility are not within or adjacent to the ACEC and thus they would not be affected by this prohibition even if it was applicable. Although the Woods Pond Site is located within the boundaries of the ACEC, the ACEC prohibition should not be applied because, as shown above, the disposal facility at that site would be located predominantly (over 90%) within previously disturbed land that has been used for long-term sand and gravel quarry operations and thus is of no environmental value.

4. Other state regulations contain ACEC prohibitions which EPA has ignored. Specifically, the Massachusetts Waterways Law regulations prohibit dredging in an ACEC (except for the sole purpose of fisheries or wildlife enhancement or as part of an Ecological Restoration

Project, neither of which is the case here); and regulations under the Massachusetts Wetlands Protection Act prohibit alteration of Bordering Vegetated Wetland in an ACEC. EPA has not cited any of these ACEC-based prohibitions as ARARs for the proposed remedy, let alone addressed whether they are properly waived. This selective memory about the Commonwealth's ACEC-based prohibitions is further evidence that EPA's reliance on such prohibitions to reject on-site disposal is arbitrary and capricious.

5. To the extent that the solid waste assignment regulations, including the ACEC prohibition, are applicable, they would likewise apply under TD 1 to the sediment/soil staging areas and under TD 1 RR to those staging areas and the rail loading facility. EPA does not mention these prohibitions, which further demonstrates its selective and arbitrary consideration of these regulations.

EPA Response 551, 552, 553, 554:

1. The Massachusetts solid waste facility regulations and the Massachusetts hazardous waste facility regulations are properly potential ARARs for the Site. See the Summary of ARARs table, which is Attachment C of the Final Permit Modification. The PCB-contaminated sediment and soil to be excavated as part of the remedy may be regulated under 40 C.F.R. Part 761, under the Massachusetts Hazardous Waste regulations at 310 CMR 30, or, if the remedy involves sediments and soils with PCB concentrations below 50 mg/kg, and such sediments and soils are not commingled with sediments and soils with PCB concentrations at or above 50 mg/kg or other hazardous wastes, the standards at 310 CMR 16 are potentially applicable (based on the conditions listed in the Summary of ARARs table). Conversely, if the sediments and soils have PCB concentrations at or above 50 mg/kg, or include commingling of sediments and soils with PCB concentrations below 50 mg/kg, and are not otherwise regulated under 40 C.F.R. 761, the Massachusetts Hazardous Waste regulations at 310 CMR 30 are potentially applicable (based on the conditions listed in the Summary of ARARs table).

2. The state solid waste landfill regulations are potentially applicable to the remedy, as described immediately above and in the Summary of ARARs table. Moreover, one provision of those regulations is the prohibition of permanent solid waste disposal within an ACEC. With respect to identification of the solid waste regulations as ARAR at other sites, EPA is unaware of other sites in which the permanent disposal will take place within an ACEC. Thus, EPA is unaware of any inconsistencies.

3. EPA agrees with GE that two of the three sites identified for an on-site upland disposal facility are not within or adjacent to the ACEC and thus they would not be affected by the 310 CMR 16 prohibition on permanent disposal facilities. However, the Woods Pond Site is located within the boundaries of the ACEC. The provision at 310 CMR 16.40(4) provides that no site is suitable where it would be located in an ACEC, or would fail to protect the outstanding resources of the ACEC if the solid waste management facility is to be located outside, but adjacent to the ACEC. Based on that provisions, the Woods Pond site is prohibited for permanent disposal under 310 CMR 16.

4. In response to this and other comments, EPA has revised its Summary of ARARs table to reflect the ACEC limitations on the selected remedy. See, for example, Response 721

regarding the Massachusetts Waterways Law regulations, and Response 722 *et al.* regarding the Massachusetts Wetlands Protection Act regulations, in Section IV of this Response to Comments.

5. In response to this comment and others, EPA has made clear in its Summary of ARARs table that to the extent that the solid waste regulations at 310 CMR 16 do potentially apply to the temporary stockpiling or storage of excavated PCB-contaminated sediment and soils, EPA is considering as waived the prohibition on temporary storage or stockpiling of material in an ACEC. See Summary of ARARs table.

ii. Federal and State Hazardous Waste Management regulations

Comments 555, 556, 557: GE asserts the following:

1. The Federal and state hazardous waste management regulations should not be considered as an ARAR. Based on prior experience at other portions of this Site, it is not anticipated that the excavated sediment or soil would constitute hazardous waste under RCRA, and thus would not be subject to the federal hazardous waste regulations. Further, in the unlikely event that future testing showed that some of those materials did constitute such hazardous waste, the upland disposal facility would be designed and operated to meet the substantive technical requirements for a RCRA hazardous waste landfill. In the further unlikely event that that facility were determined not to meet any requirements of the RCRA hazardous waste regulations, GE could arrange to transport those wastes off-site to a RCRA hazardous waste landfill for disposal.

   These same considerations would apply to the Massachusetts hazardous waste regulations insofar as those regulations apply to materials that would constitute hazardous waste under the RCRA criteria. In addition to using the RCRA criteria, the Massachusetts hazardous waste regulations also identify wastes with PCB concentrations at or above 50 ppm as hazardous waste. However, those regulations provide that, with the exception of the prohibition discussed in the next paragraph (and one other exception not pertinent here), their requirements do not apply to facilities that manage such wastes in compliance with EPA's regulations under TSCA, which the on-site upland disposal facility would do. See 310 CMR 30.501(3)(a).

2. One recently adopted provision of the state hazardous waste regulations was specifically developed to apply to waste with PCB concentrations at or above 50 ppm, and prohibits siting of a hazardous waste management facility within or in proximity to an ACEC if it would "fail to protect the outstanding resources" of the ACEC." This ACEC prohibition would clearly not apply to two of the three sites identified for an on-site disposal facility because neither is within or in proximity to the ACEC. With respect to the Woods Pond Site, this prohibition should not be identified as an ARAR or should be waived, because the facility would only affect previously disturbed quarry land and two small wooded areas that are not subject to any special protections.

3. The timing and context of the adoption of this provision, coupled with its vigorous opposition to on-site disposal for the Rest of River, indicate that MassDEP's adoption of this

provision was calculated to bolster its opposition to an on-site disposal facility at this site and to provide additional ammunition to assist EPA in rejecting that option. As such, waiver of this provision is warranted on the ground that the State has not "demonstrated the intention to consistently apply" this prohibition at other sites – which is a basis for waiver of a state ARAR under CERCLA and the NCP. Furthermore, EPA disregards and does not even mention the fact that this prohibition would also apply under TD 1 or TD 1 RR.

EPA Response 555, 556, 557:

1. The federal RCRA regulations and the Massachusetts hazardous waste facility regulations are properly potential ARARs for the Site. See the Summary of ARARs table at pages C-6, C-12 to C-13, C-20 to C-22. The PCB-contaminated sediment and soil to be excavated as part of the remedy, if the sediments and soils have PCB concentrations at or above 50 mg/kg, or include commingling of sediments and soils with PCB concentrations below 50 mg/kg, and are not otherwise regulated under 40 C.F.R. 761, the RCRA regulations and the Massachusetts Hazardous Waste regulations at 310 CMR 30 are potential ARARs (based on the conditions listed in the Summary of ARARs table). See also Section IV of the Response to Comments.

2. EPA agrees with GE that two of the three sites identified for an on-site upland disposal facility are not within or adjacent to the ACEC and thus they would not be affected by the 310 CMR 30 prohibition on permanent disposal facilities. However, the Woods Pond Site is located within the boundaries of the ACEC. The provision at 310 CMR 30.708 clearly prohibits permanent disposal within the boundary of an ACEC. 30.708: Areas of Critical Environmental Concern. Notwithstanding any other provision of 310 CMR 30.000, no facility shall be located where such location or any portion thereof:

    a. Would be within an Area of Critical Environmental Concern (ACEC), as designated by the Secretary of the Executive Office of Energy and Environmental Affairs; or
    b. Would fail to protect the outstanding resources of an ACEC as identified in the Secretary's designation if the facility is to be located outside, but adjacent to or in close proximity to, an ACEC.

3. EPA is unaware of any situation with a potential permanent facility for Massachusetts hazardous waste that is also in an ACEC where, subsequent to the promulgation of 30.708, Massachusetts has not identified the provision as an ARAR. That being the case, EPA sees no basis for determining that the State has not consistently applied the regulation.

iii. Massachusetts Hazardous Waste Facility Site Safety Council Regulations

Comment 558: GE asserts the following: These regulations set forth criteria for the Hazardous Waste Facility Site Safety Council to consider in determining whether a proposed project is feasible and eligible for certain state assistance and special permitting procedures for hazardous waste siting and licensing (990 CMR 5.04). These regulations do not establish substantive requirements or restrictions on disposal facilities, and GE would not seek the Commonwealth's assistance and special permitting procedures under these regulations. As such, these regulations are totally irrelevant to this project and thus to the ARARs evaluation here.

EPA Response 558: Based on this comment, EPA has deleted reference to 990 CMR 5.04 as a basis for an ARAR. Also, see EPA Response 727 *et al.*, Section IV of this Response to Comments.

iv. "Possible" Wetlands ARARs

Comment 559: GE asserts the following: EPA asserts that TD 3 has ARARs "possibly" associated with wetland impacts, but provides no further details as to what such ARARs might be. The operational footprints of the upland disposal facilities at the Woods Pond and Rising Pond Sites would not impact any wetlands, and thus would not be subject to ARARs associated with wetlands impacts.

At the Forest Street Site, shown on Figure 3, the operational footprint of the disposal facility would require construction of an access road that would involve the crossing of a small stream in the southern portion of the site; and the facility would be located, in part, within the 100-foot buffer zone and the 200-foot Riverfront Area of that stream, which are subject to the Massachusetts Wetlands Protection Act regulations. However, given the limited nature of this work, the Region could readily find, as it did in the discussion of these regulations in the ARARs tables relating to the proposed sediment/floodplain remedy (Draft Permit, Attachment C), that the work would be conducted in accordance with the substantive requirements of these regulations.

EPA Response 559: EPA concurs there are no currently identified wetland ARAR issues for the Woods Pond Site. For the Rising Pond Site, see Response 547 *et al.* above in this Section. For the Forest Street Site, the proposed landfill location is within a regulated wetland area and a waiver may also be required of regulations or requirements designed to protect such areas including: EPA's and the Corps of Engineers' regulations under Section 404 of the Clean Water Act (40 C.F.R. Part 230, 33 C.F.R. Parts 320-323); the federal Executive Order for Wetlands Protection (E.O. 11990); the Massachusetts water quality certification regulations for discharges of dredged or fill material into waters of the U.S. (314 CMR 9.06); and the Massachusetts Wetlands Protection Act regulations (310 CMR 10.53(3)(q)). EPA can only waive ARARs under specific circumstances, including where compliance is technically impracticable. Since there is a technically practicable alternative to constructing a landfill at the Forest Street Site, namely off-site disposal, there is no justification to granting a waiver to these ARARs. For the Rising Pond Site, and for further information on the Forest Street Site, see Response 547 *et al.* above in this Section.

III.F.2.d Long-Term Reliability and Effectiveness

Comments 560, 561: GE asserts the following: EPA states that both an off-site disposal facility and an on-site disposal facility would isolate the PCB-containing materials from direct contact with human and ecological receptors but claims, without providing any support or basis, that TD 3 would have "a greater potential" for exposure to such material and thus pose a greater "residual risk" than TD 1 and TD 1 RR. TD 3 involves no greater potential for exposure to the PCB-containing material than TD 1 and TD 1 RR.

The Region also claims that off-site disposal is more reliable than on-site disposal because "it does not rely on operation, monitoring, and maintenance requirements (except at the receiving

facility)" (Stmt. Basis, p. 36). This claim is disingenuous. Both an on-site disposal facility and an off-site disposal facility require long-term operation, maintenance, and monitoring. EPA has long recognized the reliability of on-site disposal facilities by including such facilities as the component of the remedies at numerous sites, as discussed above and shown in Table 1.

EPA Response 560, 561: In evaluating long-term reliability and effectiveness, it is entirely reasonable for EPA to draw a distinction between on-site landfilling along the Housatonic River, under the potential landfill facility conditions present, as opposed to disposal in an off-site disposal facility designed and sited for disposal of PCBs. For more detail, see Response 546. Similarly, in evaluating long-term reliability and effectiveness, EPA appropriately can draw a distinction with respect to operation, monitoring and maintenance. While the objective with any on-site facility would be to minimize any issues arising with long-term operation, monitoring and maintenance, if such issues arise with off-site disposal, the Housatonic watershed is unaffected. Conversely, if during long-term operation, monitoring and maintenance at a riverfront permanent disposal facility abutting the Housatonic River, the watershed will bear any negative impacts of any adverse circumstances in long-term operation, monitoring and maintenance. For more details, see EPA Responses 546 and 550 above.

III.F.2.e Reduction of Toxicity, Mobility, or Volume of Waste

Comment 563: GE asserts the following: EPA does not draw a distinction between the off-site and on-site disposal alternatives in terms of reduction of toxicity, mobility, or volume of waste; however, EPA does state in the Statement of Basis that off-site disposal "would reduce the volume of material that remains at the Site." That statement is disingenuous and not pertinent to this criterion. Neither off-site nor on-site disposal would reduce the volume of waste material, but would just affect where it is placed.

EPA Response 563: The language in the Statement of Basis is correct. However, even if the term "reduction of … volume" in the Permit criterion were not meant to include the reduction of volume of waste on-site due to disposal offsite, it would not be significant enough to alter the conclusions EPA reached in it Comparative Analysis evaluation of T/D alternatives.

III.F.2.f Short-Term Effectiveness

Comment 268: In its comparative evaluation of the Short-Term Effectiveness, of the T/D alternative, EPA acknowledges that each of the alternatives has the potential for short-term impacts to the community. Given that be the case, long-term effectiveness should be the primary consideration.

EPA Response 268: EPA disagrees. The Permit states that Short-term Effectiveness and Long-term Reliability are both Selection Decision Factors. The Permit does not establish weighting factors to distinguish between these factors. See Section II.A of this Response to Comments for a further description the remedy selection process.

i. Habitat Impacts

Comment 564: GE asserts the following: EPA states that TD 1 would have the fewest habitat impacts, requiring only access roads and staging areas; that TD 1 RR would also require construction of a rail loading facility; and that TD 3 would cause a short-term loss of habitat and

loss or displacement of wildlife at the upland disposal facility and adjacent areas during construction and operation (Comparative Analysis, p. 68). In fact, both TD 1 RR and TD 3 would cause a loss of habitat and loss or displacement of the associated wildlife at the location of the facility involved – the rail loading facility for TD 1 RR and the disposal facility for TD 3. In both cases, the habitat impacts would be limited to the operational footprint of the facility.

EPA Response 564: As EPA stated, TD-1 RR would have habitat impacts at staging areas. Within that term EPA included any rail loading facility, which could have temporary habitat impacts during the temporary period the rail loading facility was used. The habitat impacts at a permanent landfill operation would include the temporary habitat impacts during implementation, and any impacts permanently from the use of that property for permanent disposal of contaminants. EPA discusses the habitat impacts of GE's different TD-3 locations in EPA Response 547 *et al.* above.

ii. Greenhouse Gas Emissions

Comment 565: GE asserts the following: EPA compares the range of GHG emissions resulting from TD 1 to those resulting from TD 3, correctly noting that TD 3 would result in much lower emissions. EPA does not estimate the GHG emissions resulting from TD 1 RR, although it notes that those emissions would be "significantly lower" than under TD 1 due to the use of rail instead of truck transport. GE has estimated the total GHG emissions from each of these three TD alternatives for the removal volume represented by the proposed sediment/floodplain remedy. TD 1 would result in the greatest amount of emissions (approximately 165,000 tonnes), but TD 1 RR would result in a considerably greater amount of emissions (approximately 70,000 tonnes) than TD 3 (6,600 to 36,000 tonnes, depending on the disposal facility site used). Thus, TD 3 is much more compliant than either TD 1 or TD 1 RR with EPA's general and EPA's specific "green remediation" policies to minimize GHG generation.

EPA Response 565: See Response 549, 565 above.

iii. Local Community Impacts

Comment 566: GE asserts the following: EPA erroneously concludes that ["d]epending on the location of the upland disposal facility under TD 3, TD 3 may have truck traffic comparable to TD-1" and that this truck traffic "may be greatly reduced by reliance on rail transportation" (Stmt. Basis, p 37).

The region correctly notes that TD-3 would involve far fewer off-site truck trips that TD-1; but it then states that TD 1 RR would greatly reduce the amount of off-site truck traffic associated with off-site disposal, erroneously claiming that that alternative would involve ***no*** off-site truck trips (Comp. Analysis, pp. 69-70). Similar to TD 3, TD 1 RR ***would*** involve off-site truck trips for importation of construction materials and equipment for construction and closure of the on-site facility (the rail loading facility for TD 1 RR and the upland disposal facility for TD 3). GE has estimated the number of off-site truck trips that would be required for TD 1, TD 1 RR, and TD 3 for the volume of materials required for disposal under the proposed remedy. Those estimates are summarized in Table 4. They show that TD 1 would require a total of approximately 83,000 off-site truck trips to transport excavated materials to the out-of-state disposal facilities, while TD 1

RR would require approximately 1,200 off-site truck trips to import materials and equipment for construction/closure of the rail loading facility and TD 3 would require approximately 2,400-2,600 off-site truck trips to import materials and equipment for construction/closure of the on-site disposal facility (except at the Forest Street Site, where, due to constructability issues, 68,000 trips would be necessary).

In addition, TD 1 RR would require ***on-site*** truck trips to transport the removed materials from their excavation location to the rail loading facility, just as TD 3 would require on-site truck trips to transport such materials to the upland disposal facility. Estimates of these on-site truck trips are provided in Table 5. As shown in that table, assuming the use of trucks for such transport, the number of such truck trips under these alternatives would be the same – approximately 103,000 (~ 8,000 per year).

EPA Response 566: EPA disagrees with GE's assertions and conclusions. First, GE ignores the term "impacts to nearby communities" taken directly from the Permit's description of the Short-Term Effectiveness criterion. That being the case, EPA's Comparative Analysis used as an appropriate metric the amount of truck miles travelled (both on-site and off-site) that affects the community, which would exclude truck traffic once vehicles are on major limited access highways such as the Massachusetts Turnpike. Using this metric, as summarized in the tables below, total truck traffic impacts for TD-1 are approximately 16% greater than for TD-3 (Woods Pond), whereas, truck traffic impacts from TD-3 (Forest Street) are almost 5 times greater than for TD-1, and truck traffic impacts from TD-3 (Rising Pond) are more than 3 times greater than for TD-1. (See table below). Clearly TD-3 has community impacts from trucking that are comparable to, and in fact in 2 of 3 scenarios, are significantly greater than, the impacts of TD-1.

Second, with respect to on-site truck trips required by TD 1 RR, EPA's Comparative Analysis in fact pointed out that it would require truck trips to transport materials to the rail loading facility. The complete sentence referenced by GE from the Comparative Analysis is: "The alternative with off-site disposal (TD 1/TD 1 RR) will have short term impacts during transport of the waste material; however the impacts of truck traffic may be greatly reduced by reliance on rail." Statement of Basis, at page 37. The comparison is between transport of waste to off-site facilities via rail or via truck. As shown in the tables below, transport of waste by rail would result in approximately 53% (72% using EPA estimates) of the truck miles needed to transport the waste by truck to the Massachusetts Turnpike. (See table below). Even accounting for the construction of a rail facility, transport by rail would be 58% (78% using EPA estimates) of the truck miles as opposed to that by truck. (See table below). Clearly, the truck traffic impact to the community for the transport of waste is reduced by using rail compared to the transport of waste to on-site facilities.

GE states correctly that EPA did not factor in the truck miles needed to construct the rail facility. Given the lack of detail supporting GE's estimate of the miles of truck traffic needed to construct the rail facility, EPA cannot comment on the accuracy of GE's estimates. However, accepting GE's assumptions for the number of truck miles needed to construct the rail facility and the three Upland Disposal Facilities, the amounts of truck traffic are considerably less for the rail facility than for any of the upland disposal facilities.

Estimated Vehicle Miles on Local Roads Required for Construction of Rail and Upland Disposal Facilities.

	TD 3- Upland Disposal Facility			TD -1 Off-site	TD-1RR
	Woods Pond	**Forest Street**	**Rising Pond**	**N/A**	**Rail loading Facility**
GE Estimate	118,100	3,399,200	131,200	0	61,700

From GE Table 4.

For an appropriate comparison of the traffic impact, EPA derived the estimated truck mileage that affect the community for the on-site and off-site transportation of waste material:

For TD 1 GE has estimated 82,599,200 vehicle miles would be required to transport materials to licensed disposal facilities (GE 2014, Table 4).[31] EPA estimates less than 1.5% or approximately 1,100,000 vehicle miles of the total TD 1 vehicle miles would be on local roads[32]. In Table 5 of its 2014 comments, GE provided estimates of vehicle miles required for TD 1 RR, and the three proposed TD 3 Upland Disposal Facilities. For the removal volume associated with SED 9/FP 4 MOD, GE has estimated a total of 835,000 vehicle miles, 1,584,800 miles, and 3,100,100 miles would be required to transport removed material on local roads to Woods Pond, Forest Street, and Rising Pond, respectively. In addition, EPA performed an independent calculation of GE's mileage calculations for the three Upland Disposal Facilities to ensure that EPA's calculations for truck mileage to the Massachusetts Turnpike were performed consistently with the calculations for estimates to the Upland Disposal Facilities. The following table provides the estimated vehicle miles on local roads required for transportation of soil and sediment removed for SED 9/FP 4 MOD. As is shown in the Table, EPA and GE's estimates are similar.

[31] These mileage estimates are for disposition of excavated sediment and soils only and do not include import of materials for backfill, capping, access roads and staging material and dispositions of staging area and access road material. For TD 1, GE has assumed non-TSCA material would be transported to Kersey, PA (roundtrip distance of 832 miles) and TSCA material would be transported to Belleville, MI (roundtrip distance of 1,362 miles).

[32] Assumes material is transported in 20-ton trucks from approximate midpoint of each Reach to the closest Massachusetts Turnpike entrance. Vehicle miles on local roads assume a round trip.

Estimated Vehicle Miles on Local Roads Required for SED 9/FP 4 MOD for Transport to Upland Disposal Facility, Rail Loading Facility or Entrance to Massachusetts Turnpike.

	TD 3- Upland Disposal Facility			TD -1 Off-site	TD-1RR[33]
	Woods Pond	Forest Street	Rising Pond	Massachusetts Turnpike	Rail loading Facility
EPA Estimate	837,250	1,469,500	3,016,600	1,110,200	799,250
GE estimate –Table 5	835,200	1,584,800	3,100,100	N/A	581,900

Notes:

Cubic yards removed is based on volumes from Table 1 of Attachment 6 to the Comparative Analysis with an assumed density factor of 1.62 tons per cubic yard.

Assume approximate midpoint of each Reach.

Assumes 16-ton trucks for transportation to TD 1 RR and TD 3 Upland Disposal Facilities and 20-ton trucks for disposal to TD 1 off-site facilities.

Combining the two tables above gives the following overall truck miles in the community associated with different disposal options.

Estimated Vehicle Miles on Local Roads Required for SED 9/FP 4 MOD for Construction of Facilities and Transport of Waste.

	TD 3- Upland Disposal Facility			TD -1 Off-site	TD-1RR
	Woods Pond	Forest Street	Rising Pond	Massachusetts Turnpike	Rail loading Facility
EPA Estimate	955,350	4,868,700	3,147,800	1,110,200	860,950
GE estimate – Table 5	953,300	4,984,000	3,231,300	N/A	643,600

Therefore, using these truck miles as a metric for the effect on the community of truck traffic related to disposal options, the option with the least impact is TD-1RR, followed by TD-3 (Woods Pond) and TD-1. TD-3 (Forest Street) and TD-3 Rising Pond have significantly greater impacts than the other options. Thus EPA's conclusions in the Statement of Basis are correct.

Comment 567: GE asserts the following: Moreover, if the Woods Pond Site were used for the on-site disposal facility, the number of such on-site truck trips could be reduced due to the capability for pumping of sediments from nearby areas (i.e., Reach 5C, Woods Pond, the nearby backwaters) to a disposal facility at that location, thus avoiding the need to truck those

[33] GE assumed a location immediately upstream of Woods Pond (GE 2014, Table 5). Although EPA does not know the exact location used in GE's estimate, to be comparable to GE's estimate, EPA also assumed a location immediately upstream of Woods Pond on the West side of the channel for this analysis. EPA mileage estimates for TD-1 RR do not consider temporary new construction roads, bridges, or river crossings, which may provide for reduced mileage estimates to the loading facility.

sediments. As shown in Table 5, the use of such a pumping approach would reduce the on-site truck trips for TD 3 by more than half – to approximately 40,000 trips (~ 3,000 per year).

EPA Response 567: EPA recognizes that pumping from Woods Pond would reduce truck traffic for TD 3. The same method could also be used for TD 1 RR, for which GE has assumed that the rail facility would be close to Woods Pond. Similarly, a reduction in off-site truck mileage for TD-1 could also be achieved by this method, since the pumping of sediment would move material closer to the Massachusetts Turnpike entrance prior to the placement into trucks.

EPA has estimated the use of a pumping approach for dredged materials removed from Reach 5C, Woods Pond and nearby Backwaters to the TD-1RR loading facility would reduce the on-site truck trips for TD-1 RR by more than half – to approximately 43,000 trips (~ 3,300 per year).

Comment 568: GE asserts the following: Overall, considering both off-site and on-site truck trips, TD 1 would involve the most truck traffic, and TD 1 RR would involve comparable truck traffic to TD 3 (or much more truck traffic if the Woods Pond Site were used for TD 3 and sediments were pumped to the Site from nearby areas). Thus, the Region's assertions in the Statement of Basis that "TD 3 may have truck traffic comparable to TD 1" and that this truck traffic "may be greatly reduced by reliance on rail transportation" are without foundation and another example of its bias against TD 3.

EPA Response 568: EPA disagrees with GE's conclusions. As described above in Response 566, EPA used an appropriate metric for evaluation of impact to local communities, and the comparisons in the Comparative Analysis are appropriate. In addition, EPA has responded to the comment on pumping from Woods Pond in Response 567.

Comment 569: GE has estimated the incidence of accident-related injuries and fatalities due to off-site truck traffic or, for TD 1 RR, off-site rail transport. These estimates indicate that a total of approximately 39 (truck) and 34 (rail) non-fatal injuries and 1.8 (truck) and 6.5 (rail) fatalities associated with off-site transport, while TD 3 would result in approximately 0.06 to 1.6 non-fatal injuries and 0.003 to 0.075 fatalities associated with such transport (depending on the disposal facility site) – more than 20 times lower.

EPA Response 569: EPA considered the estimated injuries/fatalities of different alternatives in EPA's Comparative Analysis (Section 3.8.3, Table 25, page 71). The Comparative Analysis provides a quantitative estimate of the range of injuries/fatalities for off-site disposal via trucks and for on-site disposal. With respect to off-site disposal via rail, the Comparative Analysis does not include a similar level of quantification, but EPA explains "no injuries or fatalities are associated with the alternative because it was assumed for purpose of this analysis that there would be zero off-site truck trips; however, it may be necessary to use trucks instead of rail under certain conditions." Comparative Analysis, Section 3.8.3, page 71.

EPA has not independently verified GE's estimates, but even assuming GE's estimates to be accurate, GE's estimates generally fall into the ranges of the EPA Comparative Analysis for TD 1 and TD 3.

	EPA Comparative Analysis	GE's estimates
TD 1 (Off-site disposal via truck)	4.34 - 67.03 non-fatal injuries and .2 - 3.14 fatal injuries	39 non-fatal injuries and 1.8 fatal injuries
TD 3 (On-site disposal)	0.03 – 1.6 non-fatal injuries and 0.002 - 0.07 fatal injuries	0.06 to 1.6 non-fatal injuries and 0.003 to 0.075 fatal injuries

iv. Risk to Remediation Workers

Comment 570: GE asserts the following: For TD 1 and TD 1 RR, EPA did not quantify risks to truck drivers and (for TD 1 RR) railroad employees and to the employees of the off-site disposal facilities, but did provide an estimate of risks to on-site remediation workers for TD 3. Even excluding risks to off-site workers, TD 1 RR would have risks to on-site remediation workers, just as TD 3 would, due to the need under TD 1 RR for local truck trips to the rail loading facility and for material processing and rail car loading operations at that facility. Moreover, the risks to off-site truck, railroad, and disposal facility workers under TD 1 and TD 1 RR cannot be ignored just because they occur outside of this Site (or outside Massachusetts). GE estimates the risk to on-site truck transport would be approximately 3 non-fatal injuries and 0.02 fatalities for off-site disposal via rail and approximately 4.8/0.04 for on-site disposal. As a result, worker risks do not provide a basis for selecting off-site disposal over on-site disposal.

EPA Response 570: EPA's Comparative Analysis is clear that EPA considered health and safety risks for all alternatives, including the off-site disposal alternatives (TD 1, and TD 1 RR):

> There would also be health and safety risks to site workers implementing each of these alternatives. For TD 1 and TD 1 RR, these risks would consist of risks to the truck drivers and, in the case of TD 1 RR, railroad employees, and to the employees of the off-site disposal facilities, rather than to on-site remediation workers, and thus, were not quantified. Comparative Analysis at 3.8.5.

While not quantified for all aspects of the remedy, EPA plainly did consider the risks to remediation workers from the selected remedy.

Additionally, GE's conclusion about worker risks not providing a remedy selection basis misses the point of the Permit's remedy selection process. Pursuant to the Permit, EPA performed a thorough comparative analysis that included each sub-criterion of a Permit criterion, and of each Permit criterion itself. Based on that and other information in the Administrative Record, EPA based its determination of the selected remedy as best suited to meet the Permit's General Standards in consideration of the Permit's Selection Decision Factors, including a balancing of those factors against one another. EPA's determination was not based on any individual sub-criterion such as worker risks, but by an analysis of all nine criteria (and their sub-criteria) pursuant to the Permit.

v. Summary of Short-Term Effectiveness

Comment 571: GE asserts the following: Overall, the short-term negative impacts from transport and disposal activities would be, depending on the types of impacts, either comparable among TD 1, TD 1 RR, and TD 3, or less for on-site disposal than for off-site disposal.

EPA Response 571: EPA has, through the 2014 Comparative Analysis and the Responses above, identified the short-term impacts from the relevant alternatives, and would not necessarily agree with GE's conclusion to the extent it differs with EPA's Comparative Analysis or the Responses above. In general, both TD 3 and TD 1 RR are preferable for certain components of this criterion, while less preferable for other components. TD 1 and TD 1 RR are have similar results except for, most notably, the truck-related impacts of TD 1. Overall, EPA's analysis of the Short-term Effectiveness is only one part of EPA's overall evaluation of the Permit criteria, on which EPA based its determination of the selected remedy as best suited to meet the Permit's General Standards in consideration of the Permit's Selection Decision Factors, including a balancing of those factors against one another. Any clarifications or information presented in the comments on Short-term Effectiveness has not altered EPA's overall determination.

III.F.2.g Implementability

Comments 572, 573: GE asserts the following: The EPA Region concludes that TD 1 and TD 1 RR are more readily implementable than TD 3. This conclusion is based on several indefensible assertions.

First, the Region claims that on-site upland disposal would be "difficult, and potentially not feasible, to implement" (Stmt. Basis, p. 38; Comp. Analysis, p. 75) – or, in another place, "very difficult, if not impossible, to implement" (Comp. Analysis, p. 76). The basis for this claim is that TD 3 would require "extensive coordination with state and local officials," as well as with "the public," and would encounter substantial local and state opposition, which could render that alternative infeasible (Stmt. Basis, p. 38; Comp. Analysis, p. 75). These claims are unsupportable. Given the CERCLA and CD exemption from state and local permit requirements for on-site remedial work (CERCLA § 121(e)(1); CD ¶ 9.a), construction and operation of such a facility would not require any state or local permits or other approvals, including those relating to siting of the facility. As a result, there would be no need to seek approvals from the state or local governments, and there would be no need to "coordinate" with "the public." Thus, despite the opposition of some state and local officials and members of the public, TD 3 is plainly administratively implementable.

The Region is clearly attempting to use implementability as a surrogate for state and community acceptance, which are "modifying criteria" in the remedy selection process under the NCP (40 CFR § 300.430(f)(1)(i)(C)), but are *not* remedy selection criteria under the Permit. Since the Region cannot rely on these factors directly, it has attempted to incorporate those factors into the implementability criterion in an attempt to find support in the Permit criteria for its bias against on-site disposal. Even under the NCP, the state and local community acceptance factors are only "modifying criteria" to be considered, not criteria that should drive the decision or justify EPA's deference to the state. By contrast, the other criteria are either "threshold criteria" or "primary balancing criteria" (which include costs) (40 CFR § 300.430(f)(1)(i)), and are to be given greater weight than state and community acceptance.

EPA Response 572, 573: GE questions the support for EPA's analysis that TD 3 is difficult and potentially not feasible to implement. GE's own support for its assertion consists of the permit exemption from the Decree and CERCLA, and from that, its speculation that EPA's Implementability analysis places too much weight on State acceptance or community acceptance.

For the reasons cited below, EPA disagrees with GE's assertions, the characterization of EPA's analyses, and the conclusions of GE favoring on-site upland disposal of excavated material. Based in part on GE's evaluation in the Revised CMS, EPA performed a thorough comparative analysis of the alternatives with respect to Implementability, analyzing the key tradeoffs among different treatment/disposal alternatives. EPA's analysis is demonstrated in Section 3.9 of EPA's Comparative Analysis. In addition, EPA's analysis of Implementability is only part of EPA's overall evaluation of the Permit criteria, on which EPA based its determination of the selected remedy as best suited to meet the Permit's General Standards in consideration of the Permit's Selection Decision Factors, including a balancing of those factors against one another. See Comparative Analysis, pages 73-76. Moreover, except as otherwise specified in the Response to Comments, the comments, upon EPA evaluation, do not make a significant difference to the Comparative Analysis or EPA's determination.

First, EPA's analysis regarding the implementability of TD 3 has multiple lines of support taken directly from the Permit language on the Implementability criterion. The multiple sub-criteria of the Implementability criterion demonstrate the reasonableness of EPA's analysis of the implementability of TD 3. And while the statutory permit exemption has been and is relevant to EPA's analysis, the exemption does not negate the obligation under the Decree and Permit to evaluate all the Implementability sub-criteria set forth in the Permit. For example, if the statutory permit exemption negated consideration of zoning restrictions, zoning restrictions would not be listed for consideration as one of the Implementability sub-criteria. Indeed, this sub-criterion is consistent with EPA's 1988 Guidance, which provides that in addition to ARARs, "other federal and state criteria, advisories, and local ordinances should also be considered, as appropriate, in the development of remedial action alternatives." *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA.* Overall, the Comparative Analysis clearly shows that EPA has not imported new criteria into the nine criteria analyzed.

Second, GE's desire to minimize the significance of Implementability among the Permit criteria is clearly inconsistent with the Permit and with EPA guidance. In fact, the 1994 EPA RCRA Corrective Action Plan guidance highlights the potential significance of the Implementability criterion as follows:

> Implementability will often be a determining variable in shaping remedies. Some technologies may require state or local approvals prior to construction, which may increase the time necessary to implement the remedy. In some cases, state or local restrictions or concerns may necessitate eliminating or deferring certain technologies or remedial approaches from consideration in remedy selection.

EPA, Final RCRA Corrective Action Plan, OSWER Directive 9902.3-2A, Office of Waste Programs Enforcement, Office of Solid Waste, May 1994.

Third, while not necessary for this analysis in light of the multiple lines of support, as described in Section II.A of this Response to Comments, EPA's decision-making process under the Permit includes "any other relevant information in the administrative record." For example, the Decree requires EPA to examine the views of the State and community by providing multiple opportunities for public comment and input.

A. Multiple Lines of Support for EPA's Implementability Determination are Squarely Within the Permit Criteria:

The Permit criterion of Implementability includes eight sub-criteria, including, relevant to this comment, the following:

- Coordination with other agencies,
- Regulatory and zoning restrictions; and
- Availability of suitable on-site and off-site treatment, storage and disposal facilities and specialists

1. Coordination with other agencies: This Permit provision requires an analysis of different alternatives on such coordination. It is eminently reasonable for EPA to consider the views of other state and local agencies in comparing off-site disposal and on-site disposal. The other agencies have very substantial support for off-site disposal and opposition for on-site disposal. For example, as discussed in more detail in Response 546, GE has stated that its proposed locations do not meet specific technical requirements for a TSCA landfill, including permeability and hydrogeology. Clearly GE would need to coordinate with state and local entities on the prospect of placing in their community a permanent PCB disposal facility at a location that would not meet the relevant PCB landfilling requirements. In fact, GE in its Revised CMS under the heading "Coordination with Agencies", states that "both prior to and during implementation of TD 3 at any of the three potential locations, GE would need to coordinate with EPA, as well as state and local agencies to provide support with public/community outreach programs."

   Additionally, given the proposed locations' potential deviations from local zoning (discussed below), and the Commonwealth's statutory prohibition on permanent disposal facilities in an ACEC, an evaluation of the "coordination with other agencies" sub-criterion can reasonably be seen to strongly favor off-site landfilling over on-site landfilling.

2. Regulatory and zoning restrictions: Similarly, an analysis of "regulatory and zoning restrictions" could easily yield a negative comparison for on-site disposal. For example, multiple TSCA landfilling requirements will not be satisfied, nor will local zoning restrictions, or Massachusetts' ACEC prohibition. All of these are regulatory and zoning restrictions to be considered under the Permit. As noted above, the statutory exemption set forth in CERCLA for obtaining permits does not override the Decree's and Permit's specific requirement that EPA consider "regulatory and zoning restrictions" in selecting a remedy for the Rest of River. Indeed, this sub-criterion is consistent with EPA's 1988 Guidance, which provides that in addition to ARARs, "other federal and state criteria, advisories, and local

ordinances should also be considered, as appropriate, in the development of remedial action alternatives." EPA, Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA, OSWER Directive 9355.3-01, 1988.

The multiple TSCA requirements that would not be met, and that would require waiver for the onsite disposal locations, are discussed above at Response 546. In addition, it is very hard to interpret the ACEC prohibition in any way other than to eliminate permanent landfilling in areas of critical environmental concern. Moreover, the Massachusetts Executive Office of Energy and Environmental Affairs' designation of the ACEC, which triggers the prohibition on permanent disposal of hazardous or solid waste in the ACEC, makes that alternative infeasible to implement.

Similarly, the current zoning for the three on-site disposal locations reinforces the difficulty in implementing on-site disposal, which results in greater favorability of off-site disposal for implementability purposes. For example, the Forest Street Area of Lee is zoned primarily as Conservation – Residential, with a small part of the footprint zoned as industrial. Permitted zoning uses for Conservation – Residential are limited to one or two family houses, agriculture, horticulture, or floriculture and uses associated with these. Special permits from the Board of Selectman or Board of Appeals are required to use property in this area as a resort, private club, hospital, farm, livery. The town zoning requirements provide no indication that property in a Conservation – Residential zone can be used for permanent disposal of any waste material. Similarly, according to the May 2015 Zoning By-Laws of the Town of Great Barrington, the area between Van Deusenville Road and Rising Pond, where GE has proposed the Rising Pond landfill location, is zoned by Great Barrington as R-2 meaning residential property with land size of at least 1 acre. That zoning prohibits explicitly a number of less intrusive and likely less permanent uses than a permanent landfill, such as the following: Fuel storage and sales, Public Garage, Large Scale Commercial Development, Lumberyard, Motor Vehicle fuel station, Commercial parking lots, Freight terminals, truck or rail, Contractor's and Landscaper's yards, Light Manufacturing. For the Woods Pond location, a significant portion of the proposed operational area is currently zoned by the Town of Lenox as Conservation-Residential.

3. Availability of suitable on-site and off-site treatment, storage and disposal facilities and specialists. The "suitability" of a disposal facility includes consideration of a number of factors. For example, whether a disposal facility is "suitable" includes consideration of zoning and regulatory restrictions. After all, zoning and regulatory restrictions are often developed to protect public health and/or the environment. Therefore, in evaluating whether to locate a landfill within an area designated as an ACEC, for residential use, or for conservation purposes, EPA necessarily undertook an evaluation as to whether other locations off-site were more appropriate or suitable for disposal. These issues do arise at off-site disposal facilities and on-site locations where material was consolidated with existing waste. Similarly, Woods Pond may be unsuitable due to its location in a medium yield aquifer and proximity to a non-community groundwater source. All three proposed facilities may be considered unsuitable because they would be located in areas with no known contamination (unlike off-site disposal and the Decree's prior use of limited on-site disposal in the OPCAs). Moreover, as discussed in Response 547 above, there are engineering and topography issues at the Forest Street location. Furthermore, the Rising Pond and Woods

> Pond facilities are located directly adjacent to the Housatonic River, thus any inadvertent releases would directly affect the remediate river. All of these factors make the proposed upland disposal facilities unsuitable compared to off-site disposal facilities. See also Response 546 for a discussion of TSCA site suitability criteria. Finally, as discussed further immediately below, the suitability of a disposal facility also depends to an extent on the likelihood of the facility eventually being constructed and operated, and that likelihood is greatly compromised by State, municipality and community members' resistance.

These three sub-criteria discussed above fit into the overall Implementability criterion and support consideration of factors that could affect the ability to carry out the remedy. GE argues that EPA is using implementability as a surrogate for state and community acceptance. But to implement means to "put into effect," or "to carry out." The public and legal opposition to on-site disposal is squarely within the plain meaning of the term "implementability" because it will jeopardize EPA and GE's ability to carry out the entire remedy.

For example, those who oppose on-site disposal have several mechanisms to severely delay or block implementation of the remedy. As discussed in more detail below in this Response, the opposition to on-site disposal at Rest of River has been persistent and vigorous. The Decree itself recognizes the Commonwealth's right to appeal the remedy pursuant to 40 C.F.R. § 124.19 before the EAB and Section 7006(b) of RCRA before the 1st Circuit. But the Commonwealth is not the only party with this right. In fact, any party that commented on the draft permit or participated in a public hearing on the draft permit may petition for review of the permit before the EAB. 40 C.F.R. § 124.19. Similarly, under Section 7006(b) of RCRA, "any interested person" may seek review of a permit modification under the Administrative Procedures Act in the relevant Circuit Court of Appeals.

With respect to GE's assertions on the CERCLA and Decree permit exemption, EPA has considered the exemption in the analysis, but the exemption does not negate the need to perform those Permit sub-criteria analyses. The parties to the Decree agreed to the Permit exemption provision (Decree, Paragraph 9.a.) at the same time as the parties agreed to the Permit provision that requires the analysis of those three sub-criteria within the Implementability criterion, including an analysis of regulatory and zoning restrictions.

Furthermore, the permit exemption outlined in the Decree and the NCP, 40 C.F.R. Part 300, while exempting the project from administrative approvals, does not eliminate the need to comply with substantive requirements. Implementation of an on-site disposal alternative clearly would require compliance with substantive requirements.

The off-site disposal alternatives (TD 1 and TD 1 RR) do not have these implementability issues, so on that basis alone, TD 1 and TD 1 RR are more readily implementable than TD 3.

Finally, with respect to GE's assertions as to the weight placed on state or community concerns, EPA had no cause to use anything as a surrogate for those concerns. EPA did a fair and reasonable analysis of the nine criteria, and within the analysis of the Permit criteria, the Implementability criterion included multiple specific sub-criteria that dictated EPA's consideration of State and community concerns. To do so was very appropriate on EPA's part and required by the Decree comment procedures.

EPA's interpretation of the nine permit criteria takes into account its CERCLA and RCRA guidance documents. These guidance documents call for EPA to consider state and local acceptance in remedy selection. The National Contingency Plan, which is the set of regulations governing Superfund cleanups, includes "state and community acceptance" as "modifying criteria that shall be considered in remedy selection." In accordance with this regulation, EPA's Superfund Community Involvement Handbook notes "The agency may alter the preferred alternative or shift from the preferred alternative to another if public comments or additional data indicate that these modifications are warranted."

As in CERCLA, EPA's regulations for issuing RCRA permits (along with other types of permits) require public comment and public hearing opportunities on draft permits, allowing EPA to alter the Final Permit Modification in response to public views. EPA's March 30, 2012 RCRA Public Participation Manual states, "Public participation plays an integral role in the RCRA permitting process." As this Response to Comments evidences, 40 C.F.R. Part 124 requires the solicitation of public comment on proposed decision and the Agency's response to those comments.

B. GE Overstates Potential Limit on Consideration of Community and State Concerns

As shown above, the Implementability criterion and its sub-criteria explicitly support the consideration of public and State views. EPA very reasonably included those within EPA's overall evaluation, and reached reasonable conclusions based on that evaluation. Therefore, one does not need to look further to conclude that EPA's evaluation is supportable and reasonable.

However, even if the Permit criteria did not do so, the Permit does not limit EPA to these criteria in selecting its remedy. When EPA is selecting the Corrective Measures and Performance Standards for the Rest of River, the Permit directs EPA to consider the submissions from GE, such as the nine criteria analysis in the Corrective Measures Study report, along with "any other relevant information in the Administrative Record for the modification of this Permit." Permit, Section II.J.

Public and governmental comments, minutes of the Citizens Coordinating Council, and other information relating to the many public engagement sessions sponsored by EPA are within the Administrative Record for the modification of the Permit. The Administrative Record also includes EPA regulations and guidance documents, including guidance documents for selection of CERCLA remedies and RCRA corrective actions. As explained below, these guidance documents call for consideration of community and state acceptance in remedy selection.

The Decree envisions active public and state participation in the remedy selection process. This public participation would be empty if, as GE asserts, EPA cannot consider the wishes of the community in remedy selection. For instance, Decree Paragraph 22.n calls for EPA to propose the Draft Permit Modification pursuant to EPA's RCRA regulations, "including the provisions requiring public notice and an opportunity for public comment . . ." Similarly, Paragraphs 22.j and 22.k require GE to submit a CMS Proposal and CMS Report to Massachusetts and Connecticut. Comment periods and opportunities for coordination with the states would be meaningless if public and state opinions were irrelevant to remedy selection. EPA's consideration of public or governmental comment is required by the Decree and Permit and the

procedures outlined within those documents encompass consideration of community, local government and state views.

Additional support for the need for state and community concerns to be considered comes from EPA's 1996 RCRA Advanced Notice of Preliminary Rulemaking ("Notice"). At that time, EPA's national RCRA corrective action program championed strong public participation at the same time as proposing use nationally of Corrective Action Permit criteria similar to those being used in the Rest of River permit. The 1996 Notice stated that "EPA is committed to providing meaningful public participation in all aspects of the RCRA program, including RCRA corrective action" and that among EPA's key goals and implementation strategies for corrective action was to "Continue to involve the public in all stages of the corrective action process." In that same Notice, EPA proposed to implement RCRA corrective action remedy selection through use of ten remedy selection criteria, none of which were Community Acceptance or State Acceptance.

Admittedly, the Permit does not explicitly list public and state acceptance as individual stand-alone remedy selection criteria. Nonetheless, the Permit's detailed description of the Implementability criterion, such as its specific subsections on coordination with other agencies, regulatory and zoning restrictions, and availability of suitable on-site or off-site treatment, storage, and disposal facilities and specialists, clearly is meant to accommodate public and State views. Moreover, to interpret the nine criteria otherwise leads to a result totally inconsistent with EPA guidance, the clear direction of the Decree, and RCRA and CERCLA desire for public participation. Moreover, it cannot be considered arbitrary for EPA to follow its own RCRA and CERCLA guidance in interpreting the permit criteria, and to follow the Permit direction to factor in any relevant information in the Administrative Record, in selecting the remedy. If GE intended for EPA to depart from this longstanding EPA practice codified in EPA's RCRA and CERCLA regulations, GE should have negotiated for an explicit prohibition in the Decree or Permit, but there is no prohibition in these documents. In short, far from being "arbitrary," EPA's decision to consider public and state views on the disposal alternatives was authorized by the text of the Decree, CERCLA's regulations, RCRA guidance, and overall EPA policy.

C. Persistent and Vigorous Opposition to a New Local PCB Landfill Affects Potential Implementability

GE stands alone in its advocacy of on-site disposal. Local communities and governments strongly oppose on-site disposal of PCB-contaminated material in Berkshire County. EPA has encountered this opposition from numerous Berkshire County residents, community groups, municipalities along the Housatonic, and from Massachusetts government agencies. Many residents worry about the risks posed by a PCB landfill in Berkshire County, and public opposition only intensified after GE's disposal of PCBs at the "Hill 78" landfill near a Pittsfield elementary school. Community groups have historically taken legal action to contest EPA's choices related to the cleanup. Citizens nominated, and the Commonwealth designated, the Upper Housatonic as a protected area, which activated a state prohibition on permanent landfills. Berkshire County residents have expressed their objections to siting a new PCB landfill in their community in hundreds of public comments, protests at public meetings, and letters to newspaper editors over the last decade. For example, residents submitted comments to EPA identifying this widespread sentiment, saying that creating a landfill in Berkshire County "is unacceptable to the people of this county," and "will not be tolerated by its populace."

A common theme among commenters has been a concern about the ongoing negative environmental effect of a dump or landfill in Berkshire County, which has already endured decades of impacts from GE's contamination.

Massachusetts has also declared vigorous disapproval of a new local landfill in public comments and meetings with EPA officials. From 2007 through 2014, EPA received comments from seven offices within the Commonwealth of Massachusetts, including the Departments of Fish and Game, Environmental Protection, Conservation and Recreation, and Public Health, advocating against disposal within Massachusetts. For example, the Commissioners of three Commonwealth offices wrote that "[t]he Commonwealth vigorously opposes two disposal options outlined in the Revised CMS that call for disposal of removed material to be sited within Berkshire County" because:

> Installation of a disposal facility in Berkshire County would also have extremely negative impacts to the communities surrounding the facility including economic aesthetic, recreational, and potential health impacts should the facility fail. Further, construction of yet another such facility just expands the number of locations that would be affected by PCB-contamination, requiring additional long-term monitoring, operation and management beyond what is already a long-term burden on the community, and which runs counter to the concept of the anti-degradation provisions incorporated into the Massachusetts site cleanup regulations.

MA EEA letter to EPA, January 31, 2011.

In addition, every Berkshire County city or town government along the Housatonic (Pittsfield, Lee, Lenox, Stockbridge, Great Barrington, and Sheffield) submitted at least one comment against any additional landfills. For instance, the chair of the Lenox Board of Selectmen wrote: "We find it unacceptable that there could be a new, permanent hazardous waste landfill constructed in our community. We wish to state in very clear terms that such a facility will be vigorously opposed." In 2008, Pittsfield's city council unanimously passed a resolution stating its opposition to any upland disposal facility for dredged sediments in the city of Pittsfield or Berkshire County.

In addition to voicing disapproval, the Commonwealth and public have taken action to protect the unique ecosystem of the Upper Housatonic. For example, 43 community members, including several members of the Massachusetts legislature, nominated the Upper Housatonic for designation as an ACEC, in 2008. Nearly 1000 area residents signed petitions supporting this nomination. In response, the Secretary of the Executive Office of Energy and Environmental Affairs designated the Upper Housatonic River as an ACEC in March 2009. This designation automatically activated State-wide environmental protections provided for ACECs to the 13-mile corridor of riverbed, riverbank, floodplain and riverfront land running from Pittsfield to Lee, including the prohibition of siting permanent Solid Waste facilities within or adjacent to ACECs. The Commonwealth later amended its statewide Hazardous Waste Facility Location Standards to prohibit permanent hazardous waste facilities in or adjacent to any ACEC in the Commonwealth.

Several advocacy groups have sought to shape the Housatonic River remedy, and have opposed on-site disposal. A Citizens Coordinating Council has been meeting since 1998, with

participation from groups including Mass Audubon, and the Berkshire Natural Resources Council. A community group called the Housatonic River Initiative has sponsored "No More Dumps" conferences and meetings for more than five years. Several of the groups have used legal action to oppose EPA's work at the Site. When EPA moved to enter the Decree in 2000, Housatonic River Initiative and Housatonic Environmental Action League, among other entities, moved to intervene to overturn the Decree, in part because they opposed the Hill 78 landfill.

EPA's experience at other sites lends credence to its fear that opposition to on-site disposal at the Housatonic will bar completion or timely completion of the remedy. In Bloomington, Indiana, a 1985 consent decree called for the construction of an incinerator to treat the PCB wastes from six area Superfund sites, all contaminated by Westinghouse industrial activities. The public opposed the consent decree but it was entered despite this opposition in 1985. At that point, the public successfully lobbied the Indiana legislature to pass laws that delayed construction of the incinerator, in part by forbidding local disposal of the incinerator ash. In 1994 the parties to the decree began to explore alternative remedies. Consent Decree amendments memorializing agreements for alternative remedies were entered in 1997, 1998, 1999, and 2008. In the end, cleanup was delayed for over a decade.

Similarly, in New Bedford, Massachusetts, a 1990 Record of Decision selected dredging, on-site incineration, and on-site disposal of incinerator ash for the PCB hotspot in New Bedford Harbor. In response to strong local opposition including a letter-writing campaign and other community activism, in 1993 New Bedford passed a city ordinance banning transportation of the incinerator within city limits in an attempt to prevent the cleanup. Congressional involvement from Representative Barney Frank, Senator John Kerry, and Senator Ted Kennedy, as well as the Massachusetts Department of Environmental Protection convinced EPA Region 1 to plan a new remedy with community support. The new remedy, selected in a 1999 ROD amendment, included dredging and off-site disposal of hot spot sediments without incineration. In the end, cleanup of this most contaminated area of New Bedford Harbor was delayed for nine years.

Having learned from these experiences, EPA takes community opposition seriously in its remedy selection process. In part due to strong public opposition, EPA has chosen off-site disposal at some of the nation's largest PCB-contaminated sediment sites, such as the Hudson River site. There, more than 2.7 million cubic yards of contaminated sediment have already been disposed off-site. EPA has proposed off-site disposal for the anticipated 4.3 million cubic yards of contaminated soil and sediment at the Passaic River Diamond Alkali Site after the public and state of New Jersey expressed opposition to on-site confined aquatic disposal. And at the Lower Fox River site, more than 3.6 million cubic yards of dredged sediments were disposed at off-site licensed and regulated landfills. Taken together, the volume of sediments disposed off-site at these three sites alone exceed the volume of sediments disposed on-site at other sites around the country.

Comment 574: GE asserts that EPA suggests that if additional remediation beyond the currently proposed remedy should be required later, the capacity of the on-site disposal facility would represent a constraint. This hypothetical constraint does not affect the implementability of TD 3. Off-site landfill capacity is also an issue for TD 1 and TD 1 RR. In any case, under TD 3, if additional removal were required later, that additional material could be transported to an off-site disposal facility at that time (assuming there is sufficient capacity). This possibility provides no

basis for not selecting an on-site disposal facility for the volume of the currently proposed remedy.

EPA Response 574: The language in the Comparative Analysis is correct in that the capacity of the on-site disposal facility would represent a constraint on the future placement of additional waste, beyond site capacity, if it is required later. While EPA understands GE's point that in both situations the future disposal location could be off-site disposal, it still is accurate that on-site landfilling would be subject to the capacity of that facility alone, where a choice of off-site disposal without specification of a particular individual facility could conceivably be limited only by the capacity of all appropriate locations.

Comment 494: The Commonwealth concurs with EPA's assessment in the Statement of Basis that the likely significant local and state opposition to the on-site disposal alternatives would render these alternative more difficult, and potentially not feasible to implement.

EPA Response 494: EPA acknowledges this comment.

III.F.2.h Cost

Comment 575: GE asserts that they developed cost estimates for TD 1, TD 1 RR, and TD 3 (for each site) for the volume of materials that would require disposal under EPA's proposed sediment/floodplain remedy – approximately 1 million cubic yards – using cost estimating methodologies that were previously discussed with EPA without its objection. These estimates confirm that on-site upland disposal (TD 3) would be far less costly than off-site disposal – by up to approximately $305 million compared to TD 1 and up to approximately $250 million compared to TD 1 RR.

GE's estimated costs are: $368 million for off-site disposal with trucking; $314 million for off-site disposal via rail; and $63 million to $127 million for on-site disposal (depending on the selected disposal site).

EPA Response 575: In the Comparative Analysis, EPA included one cost for on-site landfilling of $100 million, regardless of the landfill location. This estimate is within the range provided by GE. For disposal by rail, the primary difference between EPA's estimate of $287 million and GE's $314 million estimate appears to be the construction of the rail transfer facility, which GE estimates at between $20 and $30 million. EPA's estimate for a rail facility is approximately $300,000. All other costs appear to be in the same range. For off-site disposal via truck, EPA's estimate of $308 million was based on unit pricing provided in the 2008 CMS and 2010 Revised CMS developed by GE. GE apparently did not use that pricing to prepare its comments. However, disposal pricing via trucking is highly dependent on current fuel prices, and the availability and pricing from disposal facilities. As has been demonstrated in the last three years, the price of fuel has extremely large fluctuations. Thus, if one were to obtain overall disposal pricing today, they would likely be less than GE estimated. Also, it is not practical to continually revise cost estimates after a corrective measures study is conducted, and then continually conduct analysis comparisons. Therefore, EPA believes its cost estimates of $287 million for rail and $308 million for disposal via trucking is appropriate for comparison purposes. Thus, EPA estimates the difference in cost for off-site and on-site disposal ranges from $160 to $245 million, whereas GE's range is $250 to $305 million.

Regardless of the method used to estimate disposal costs, EPA acknowledges that the cost difference between on-site and off-site disposal is significant. Based in part on GE's evaluation in the Revised CMS, EPA performed a thorough comparative analysis of the alternatives with respect to Cost, analyzing the key tradeoffs among different treatment/disposal alternatives. EPA's analysis is demonstrated in Section 3.10 of EPA's Comparative Analysis. In addition, EPA's analysis of Cost is only part of EPA's overall evaluation of the Permit criteria, on which EPA based its determination of the selected remedy as best suited to meet the Permit's General Standards in consideration of the Permit's Selection Decision Factors, including a balancing of those factors against one another. See Comparative Analysis, pages 76-77. Moreover, except as otherwise specified in the Response to Comments, the comments, upon EPA evaluation, do not make a significant difference to the Comparative Analysis or EPA's determination. Any clarifications or information presented in the comments on Cost has not altered EPA's overall determination.

III.F.2.i Conclusion

Comment 576: GE asserts the following: As shown in the preceding sections, TD 1, TD 1 RR, and TD 3 would all meet the General Standards of the Permit, and the Selection Decision Factors clearly favor TD 3 since that alternative is at least comparable to, if not better than, TD 1 and TD 1 RR in terms of the Permit criteria other than cost and is much less costly. Accordingly, TD 3 best meets the General Standards of the Permit in consideration of the Selection Decision Factors. This conclusion is supported by EPA guidance on RCRA corrective action, which states:

> EPA believes that many potential remedies will meet all the threshold criteria. In that situation, cost becomes an important consideration in choosing the remedy which most appropriately addresses the circumstances at the facility and provides the most efficient use of Agency and facility owner/operator resources (emphases added).[34]

That is the situation here. Given the overall comparability of off-site disposal and on-site upland disposal in terms of the General Standards and the other Permit criteria, cost becomes a key factor; and given the substantially lower costs of on-site upland disposal, application of the Permit criteria compels selection of that alternative. The above quotation reflects a concept of cost-effectiveness similar to that in the NCP, which requires that a remedy be "cost-effective" and provides that a remedy "shall be cost-effective if its costs are proportional to its overall effectiveness" (40 CFR § 300.430(f)(1)(ii)(D)). The preamble to the NCP explained: "In comparing alternatives to one another, the decision-maker should examine incremental cost differences in relation to incremental differences in effectiveness. Thus, for example, if the difference in effectiveness is small but the difference in cost is very large, a proportional relationship does not exist" (55 Fed. Reg. 8666, 8728 (1990), emphasis added). In such a situation, the more costly alternative would not be cost-effective. Since on-site upland disposal

[34] Advance Notice of Proposed Rulemaking on Corrective Action, 61 Fed. Reg. 19432, 19449 (May 1, 1996), which EPA has stated is to be used as guidance for activities under RCRA corrective action permits (64 Fed. Reg., 54604, 54607, Oct, 7, 1999).

here satisfies the threshold criteria, is as effective as off-site disposal, and would cost much less, off-site disposal would not be cost-effective.

For the reasons given above, the Region's selection of out-of-state disposal over secure on-site upland disposal would be arbitrary and capricious and inconsistent with the Permit criteria.

EPA Response 576: EPA disagrees. EPA was well within its discretion to choose off-site disposal from the range of alternatives. EPA disagrees with GE's contention that the alternatives were comparable but for the cost criterion. EPA's Comparative Analysis and Statement of Basis, as further informed by the comments and responses herein, demonstrate clear distinctions between GE's favored approach and the selected remedy with respect to each of the Permit's threshold General Standards – Overall Protection of Human Health and the Environment, Control of Sources of Releases, and Compliance with ARARs. Moreover, as required by the Permit, EPA also evaluated all six of the Permit's Selection Decision Factors, including balancing of those factors against each other. Based on that evaluation, EPA has selected the alternative best suited to meet the Permit's General Standards, in consideration of the decision factors, including a balancing of those factors against each other. EPA's decision-making process under the Permit also includes consideration of "any other relevant information in the administrative record." In doing so, EPA follows the Decree, including the Permit criteria, and fulfills its duty to protect the public, and furthers the objectives of CERCLA and RCRA.

Comment 736: GE asserts that EPA's proposal includes, as Attachment D to the Draft Permit, a proposed determination by EPA under § 761.61(c) of the Agency's TSCA regulations that the sampling, storage, cleanup, and disposal of PCB-containing materials in accordance with the proposed requirements would meet the requirements for risk-based approval under TSCA – i.e., that they will not result in an unreasonable risk of injury to human health or the environment. That determination, however, would be based on the condition that "[a]ll contaminated sediment and floodplain soil that is removed will be disposed of off-site" at an existing approved disposal facility."

The TSCA risk-based determination should not be dependent on off-site disposal. As demonstrated in Section II of these comments [see comments above in this section], even with on-site upland disposal, the PCB handling and disposal activities would not result in an unreasonable risk of injury to human health or the environment. For the reasons given in Section II [see comments above in this section], GE submits that the Region is required to change its proposed disposal method to disposition in an on-site upland disposal facility; and it should issue a TSCA risk-based approval determination for that approach. Indeed, at both this Site and numerous other sites, EPA has issued risk-based determinations under the TSCA regulations that on-site disposal facilities will not result in an unreasonable risk of injury to human health or the environment or has otherwise waived specific TSCA requirements as not necessary to protect against an unreasonable risk of injury to human health or the environment.[35] The same should be done here.

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[35] [footnote from GE comment] See, e.g., the TSCA risk-based determinations for the OPCAs at this Site (Decree Appendix D, pp. 41-43) and for the Confined Aquatic Disposal cell at the New Bedford Harbor Site (EPA, 2011) and the TSCA risk-based determinations or waivers issued by EPA for the on-site disposal facilities at the Norwood PCBs Site (EPA, 1996), the Sullivan's Ledge Site (EPA, 1989, 1991a), the Silresim Chemical Corporation Site (EPA, 1991b), the Allied Paper/Portage Creek/Kalamazoo River Site (EPA 1998, 2001b), and the Fields Brook Site (EPA, 1997c, 1997d).

EPA Response 736: EPA disagrees. Neither the Permit nor the Decree require EPA to make a risk-based determination pursuant to TSCA Section 761.61(c) for all the alternatives evaluated. That being the case, EPA appropriately has not made a risk-based determination for any of the alternatives not proposed or selected, which includes GE's favored approach for disposal.

III.F.3 New and Innovative Technologies

Comments 60, 75, 100, 155, 200, 201, 202, 203, 204, 210, 214, 222, 264, 267, 271, 362, 385, 414, 431, 514, 527: Several commenters encouraged the use of new and innovative technologies as part of the Rest of River remediation. Some recommended pilot programs to test new technologies that could then be incorporated into the cleanup. Some of the innovative technologies mentioned included bioremediation (including the vendor, Biotech), soil washing by Biogenesis, phytoremediation, ozonation, the use of fungi and activated carbon as a sediment amendment. One commenter mentioned that it was unlikely that any in situ treatment alternative will become viable during the life of the project and another stated that the river should not be remediated until a less invasive technology is found.

EPA Response 60, 75, 100, 155, 200, 201, 202, 203, 204, 210, 214, 222, 264, 267, 271, 362, 385, 414, 431, 514, 527:

i. Delay Cleanup until a Viable Less Invasive Technology is Found.

Due to the unacceptable threats to human health and environment posed by the PCBs and the need to control the sources of releases of PCBs, EPA believes that the cleanup cannot be indefinitely delayed until a less invasive technology is found that is appropriate for all components of the cleanup. Where appropriate, innovative and/or less invasive technologies have been incorporated into the Final Permit Modification. Specifically, the Final Permit Modification requires the use of an amendment such as activated carbon and/or other comparable amendment in lieu of excavation/dredging in Reach 5B sediment in certain Backwaters, and as an initial remediation measure in Vernal Pools.[36]

ii. Evaluation of New and Innovative Treatment Technologies

Prior to proposing the Draft Permit Modification, EPA required GE to investigate technologies to treat the PCB contaminated soil and sediment.

In GE's 2007 CMS Proposal, several alternative methods/innovative technologies were evaluated for further consideration in the CMS. In place, or *in-situ*, methods evaluated included

[36] In the Draft Permit Modification, the use of sediment amendments was required as the remediation method for sediment in Reach 5B and in certain Backwaters, and as one of three potential remediation methods for Vernal Pools. In the Final Permit Modification, as discussed in Section III.C., the approach to Vernal Pools was revised to require the use of sediment amendments as the preferred remedy, with excavation in the event the sediment amendment method was not effective.