

DETERMINATION ON REMAND
AND
SUPPLEMENTAL COMPARATIVE ANALYSES OF REMEDIAL ALTERNATIVES
FOR THE GENERAL ELECTRIC (GE)-PITTSFIELD/HOUSATONIC RIVER SITE
REST OF RIVER

EPA REGION 1

JULY 2020

TABLE OF CONTENTS

- I. DETERMINATION ON REMAND 1
 - A. INTRODUCTION 1
 - B. PROCEDURAL BACKGROUND..... 1
 - C. PUBLIC COMMENT PERIOD 4
 - D. LEGALLY PERMISSIBLE FUTURE PROJECT OR WORK PROVISIONS..... 5
 - E. DISPOSAL PROVISIONS..... 5
- II. SUPPLEMENTAL COMPARATIVE ANALYSES..... 7
 - A. BACKGROUND AND SCOPE OF ANALYSIS 7
 - B. DESCRIPTION OF PROPOSED CHANGES TO THE SEDIMENT/
FLOODPLAIN ALTERNATIVE..... 8
 - 1. Reach 5A and Reach 5C Floodplain Remediation 8
 - 2. Reaches 5A and 5B Banks 9
 - 3. Reach 5C Sediment..... 9
 - 4. Columbia Mill Dam, Eagle Mill Dam, Willow Mill Impoundment, and
Glendale Dam (Reach 7 Impoundments)..... 9
 - 5. Rising Pond (Reach 8) 10
 - 6. Vernal Pools..... 10
 - 7. Hydraulic Dredging and Pumping if Feasible 10
 - 8. Quality of Life Compliance Plan 11
 - 9. Enhancement of Recreational Activities..... 11
 - 10. GE Coordination with Landowners and Municipal Officials 12
 - C. 2000 PERMIT NINE-CRITERIA ANALYSIS FOR 2020 SEDIMENT/
FLOODPLAIN ALTERNATIVE..... 12
 - 1. Overall Protection of Human Health and the Environment..... 12
 - 2. Control of Sources of Releases 12
 - 3. Compliance with Federal and State Applicable or Relevant and
Appropriate Requirements (“ARARs”) 13
 - 4. Long-Term Reliability and Effectiveness..... 13
 - 5. Attainment of Interim Media Protection Goals (“IMPGs”)..... 13
 - 6. Reduction of Toxicity, Mobility or Volume 13
 - 7. Short-Term Effectiveness 13
 - 8. Implementability 14
 - 9. Cost 14
 - D. SUPPLEMENTAL COMPARATIVE ANALYSIS OF SEDIMENT/
FLOODPLAIN ALTERNATIVES 14
 - 1. Overall Protection of Human Health and the Environment..... 14
 - 2. Control of Sources of Releases 15
 - 3. Compliance with Federal and State ARARs..... 16
 - 4. Long-Term Reliability and Effectiveness 17

TABLE OF CONTENTS (CONTINUED)

- 5. Attainment of IMPGs.....19
- 6. Reduction of Toxicity, Mobility, or Volume of Wastes20
- 7. Short-Term Effectiveness21
- 8. Implementability22
- 9. Cost24
- 10. Overall Conclusion for Sediment/Floodplain Alternatives.....24
- E. DESCRIPTION OF TREATMENT/DISPOSITION ALTERNATIVES24
- F. 2000 PERMIT NINE-CRITERIA ANALYSIS FOR THE HYBRID DISPOSAL ALTERNATIVE (TD 6).....27
 - 1. Overall Protection of Human Health and the Environment.....27
 - 2. Control of Sources of Releases27
 - 3. Compliance with Federal and State ARARs.....28
 - 4. Long-Term Reliability and Effectiveness28
 - 5. Attainment of IMPGs.....28
 - 6. Reduction of Toxicity, Mobility or Volume28
 - 7. Short-Term Effectiveness29
 - 8. Implementability30
 - 9. Cost31
- G. SUPPLEMENTAL COMPARATIVE ANALYSIS OF TREATMENT/DISPOSITION ALTERNATIVES.....31
 - 1. Overall Protection of Human Health and the Environment.....31
 - 2. Control of Sources of Releases32
 - 3. Compliance with Federal and State ARARs.....33
 - 4. Long-Term Reliability and Effectiveness33
 - 5. Attainment of IMPGs.....35
 - 6. Reduction of Toxicity, Mobility, or Volume35
 - 7. Short-Term Effectiveness36
 - 8. Implementability37
 - 9. Cost39
 - 10. Overall Conclusion for Treatment/Disposition Alternatives39
- III. CONCLUSION.....39

LIST OF TABLES

- Table 1: Alternatives Summary and Comparison
- Table 2: Comparison of Quantities for Alternatives
- Table 3: Cost Summary for Remediation & Treatment/Disposition Alternatives
- Table 4a: Evaluation of IMPG Attainment for Human Consumption of Fish (Bass Fillets) Deterministic RME for Combined SED/FP Scenarios
- Table 4b: Evaluation of IMPG Attainment for Human Consumption of Fish (Bass Fillets) Probabilistic RME (5th percentile) for Combined SED/FP Scenarios
- Table 4c: Evaluation of IMPG Attainment for Human Consumption of Fish (Bass Fillets) Deterministic CTE for Combined SED/FP Scenarios
- Table 4d: Evaluation of IMPG Attainment for Human Consumption of Fish (Bass Fillets) Probabilistic CTE (50th percentile) for Combined SED/FP Scenarios
- Table 5: Summary of Percent of Floodplain and Sediment Exposure Areas Achieving IMPGs for Direct Human Contact
- Table 6: Summary of Percent Averaging Areas Achieving IMPGs for Benthic Invertebrates
- Table 7: Summary of Percent Averaging Areas Achieving Warmwater and Coldwater Fish Protection IMPGs
- Table 8: Summary of Percent Averaging Areas Achieving Piscivorous Birds IMPG
- Table 9: Percent Reduction in Annual PCB Mass Passing Woods Pond and Rising Pond Dams and Transported to the Reach 5/6 Floodplain for Alternatives (relative to current conditions) and Solids Trapping Efficiency for Woods Pond
- Table 10: Modeled Subreach Average Fish (Fillet) PCB Concentrations and Percent Reductions in Fish PCB Concentrations at End of Project Modeling Period for Alternatives
- Table 11: Habitat Areas in Primary Study Area Affected by Alternatives
- Table 12: Estimated Greenhouse Gas Emissions Anticipated to Result from Alternatives
- Table 13a: Estimated Truck Trips Anticipated to Result from Transport of Excavated Materials and Import of Capping/Backfill Materials
- Table 13b: Estimated Truck Trips Anticipated to Result from Construction of Transportation or Disposal Facility
- Table 13c: Estimated Total Truck Trips
- Table 14: Estimated Non-Fatal Injuries and Fatalities Anticipated to Result from Alternatives
- Table 15: Estimated Required Import Material Volumes Anticipated for Alternatives

LIST OF FIGURES

Figure 1: Housatonic River, Reaches 5 through 17

Figure 2: Housatonic River, Primary Study Area (Reaches 5 and 6) and Reaches 7 and 8

ATTACHMENTS

Attachment A: Settlement Agreement – February 2020

Attachment B: Applicable or Relevant and Appropriate Requirements – Significant Changes For
Draft Revised 2020 Permit

Attachment C: Revised Clean Water Act Section 404 Wetlands and Floodplain Analysis

I. DETERMINATION ON REMAND

A. INTRODUCTION

This determination, and the information underlying it, represents U.S. Environmental Protection Agency (“EPA”) Region 1’s (“the Region”, or “Region 1”) response to *In re General Electric Company* Resource Conservation and Recovery Act (“RCRA”) Appeal Nos. 16-01 to 16-05, *Order Remanding In Part and Denying Review in Part* (“Order”)¹ from EPA’s Environmental Appeals Board (“the Board” or “EAB”) regarding the Region’s October 2016 decision for cleanup of the Housatonic River. The Order upheld the Region’s decision not to require treatment of the excavated sediment and soil prior to disposal and upheld the Region’s decisions on the extent of the cleanup remedy in all but two respects. First, the Board remanded the Permit provisions addressing additional response actions for future projects conducted by third parties. Second, the Board remanded for further consideration by the Region the selection of off-site disposal at existing licensed facilities.² The Region addresses those two areas herein.

Section I.B. below provides the procedural background for this Determination on Remand, and Section I.C. provides the upcoming public comment opportunity on the Draft Permit Modification under RCRA. Section I.D. below, in response to the Board’s opinion, addresses the obligations of the General Electric Company (“GE”) to perform additional work related to future projects or work conducted by third parties. Section I.E. below addresses concerns and observations in the EAB Order regarding the Region’s selection of off-site disposal of excavated polychlorinated biphenyl (“PCB”)-contaminated material.

B. PROCEDURAL BACKGROUND

In October 2016, the Region issued a modification of a RCRA Corrective Action Permit which provides the Region’s selection of Performance Standards and Corrective Measures to address PCB contamination in the “Rest of River” portion of the Housatonic River (the “2016 Permit”). The 2016 Permit arises out of the Consent Decree (“the Decree” or “CD”) that resolved claims under, among other statutes, RCRA and the Comprehensive Environmental Response, Compensation and Liability Act (“CERCLA”). The Consent Decree establishes a process for modifying the then-existing RCRA Permit, attached as Appendix G to the CD (the “2000 Permit”), to

¹ The Order can be located on the Environmental Appeals Board’s website at www.epa.gov/eab.

² “Held: In brief, the Environmental Appeals Board (1) upholds, with one exception, the Region’s decisions on the scope of the cleanup against both the claims that it goes too far and the claims that it does not go far enough; (2) remands for further consideration the Permit requirements on additional response actions required for future work projects in the River by third parties; (3) upholds the Region’s decision not to require treatment of the excavated sediment and soil prior to disposal; and (4) remands for further consideration the Permit condition requiring GE to dispose of the excavated material off-site rather than on-site.” 17 E.A.D. at 436.

select a remedy for the PCB contamination in the Housatonic River that GE will implement.

For over a decade, prior to the Region issuing the 2016 Permit, GE and the Region conducted numerous technical studies, and the Region sought community input on multiple occasions, regarding potential cleanup options for the “Rest of River” segment of the Housatonic River.^{3,4} In May 2011, the Region submitted its recommended remedy before EPA’s National Remedy Review Board (“NRRB”) and Contaminated Sediments Technical Advisory Group (“CSTAG”). In June 2011, the NRRB and CSTAG held a meeting to discuss the proposed remedy, and received written comments from multiple entities, including from the Region, GE, and the Commonwealth of Massachusetts. From September 2011 to May 2012, the Region, Massachusetts and Connecticut jointly engaged in remedy discussions.⁵ At GE’s request, the Region and GE engaged in technical discussions from August 2012 through December 2013 regarding the proposed remedy.

On June 2, 2014, pursuant to the applicable RCRA procedures at 40 Code of Federal Regulations (“C.F.R.”) Part 124, the Region, in consultation with Massachusetts and Connecticut, issued for public comment a Draft Modification to the RCRA Permit (“2014 Draft Permit Modification”). The 2014 Draft Permit Modification was accompanied by two documents, a Statement of Basis⁶ and a Comparative Analysis,⁷ explaining the Region’s rationale for selecting the remedy set forth in the 2014 Draft Permit Modification. The public comment period, which included a formal public hearing, continued until October 27, 2014. The Region received over 2,100 pages of comments from 141 commenters.

After consideration of all the public comments, the Region notified GE in September 2015 of its intended final decision as required by the Consent Decree. CD ¶22.o. In January 2016, GE invoked administrative dispute resolution under the Decree, and submitted its objections to the Region’s intended final decision in a Statement of

³ The segment of the Housatonic River at issue is termed the “Rest of River”. Two earlier/upstream segments of the River have been remediated pursuant to the Consent Decree. The Rest of River refers to the PCB-contaminated areas of the River and associated areas downstream of the confluence of the East and West Branches of the Housatonic River in Pittsfield, for over 125 miles to Long Island Sound.

⁴ U.S. EPA, Statement of Position of the U.S. Environmental Protection Agency in Support of Intended Final Decision on the Modification to the Reissued RCRA Permit and the Selection of the CERCLA Response Action, Rest of River Remedy, GE-Pittsfield/Housatonic River Site, February 29, 2016 (“EPA SOP”), Attachment A.

⁵ U.S. EPA, Status Report of Preliminary Discussions of Potential Remediation Approaches to the GE-Housatonic River Site ‘Rest of River’ PCB Contamination, May 2012.

⁶ U.S. EPA, 2014. Statement of Basis for EPA’s Proposed Remedial Action for the Housatonic River “Rest of River,” General Electric (GE)-Pittsfield Housatonic River Project. SEMS # 558621. June, 2014 (“Statement of Basis”)

⁷ U.S. EPA, 2014. Comparative Analysis of Remedial Alternatives for the General Electric (GE)-Pittsfield Housatonic River Project, Rest of River. May 2014 (“Comparative Analysis”)

Position.⁸ CD ¶135. The Region responded with its own Statement of Position,⁹ to which GE replied.¹⁰ In resolving this administrative dispute under the Decree, the Regional Counsel affirmed the Region’s position in a formal decision on October 13, 2016.¹¹

The Region issued the 2016 Permit together with a 463-page Response to Comments (“RTC”).¹² The 2016 Permit provides the Region’s selected cleanup, including Performance Standards and Corrective Measures, for the Rest of River soils and sediments. The 2016 Permit also includes the selection of an approach for disposal of the excavated soils and sediments. The RTC addressed comments from 141 entities, including GE, Massachusetts, Connecticut, the U.S. Fish and Wildlife Service, several local municipalities and non-governmental organizations and many citizens.

In November 2016, five parties filed petitions for review of the 2016 Permit with the Board, including GE, the Housatonic River Initiative, Mr. C. Jeffrey Cook, the Housatonic Rest of River Municipal Committee, and the Berkshire Environmental Action Team. Massachusetts and Connecticut filed pleadings supporting the Region’s permitting decision, and various municipal or non-profit organizations filed amicus curiae briefs expressing support or opposition to various aspects of the permitting decision.¹³

In January 2018, the Board upheld the 2016 Permit against all challenges, with two exceptions. 17 E.A.D. at 434-585. First, the Board remanded the 2016 Permit provisions addressing additional response actions for Legally Permissible Future Projects or Work and directed the Region to correct an apparent inconsistency with the Consent Decree. Id. at 520-523. Second, the Board remanded the selection of off-site disposal for contaminated sediment and soil excavated during the cleanup. Id. at 558-569. The Board directed the Region to reexamine the issue and provide an adequate written explanation of its decision.

In response to the Board’s Order, the Region proceeded on two tracks. First, the Region gathered and evaluated information responsive to the Board’s Order. Second, the Region explored whether the EAB petitioners, and other stakeholders, would agree to mediated negotiations to see if there was one remedy proposal that all parties could agree to, that would make for more protective and faster cleanup, and would be

⁸ General Electric Company, Statement of Position of General Electric Company in Support of Dispute of EPA’s Notification of Intended Final Decision on Rest of River Remedy, January 19, 2016) (“GE SOP”)

⁹ EPA SOP

¹⁰ General Electric Company, General Electric Company’s Reply to EPA’s Statement of Position in Dispute of EPA’s Notification of Intended Final Decision on Rest of River Remedy, March 15, 2016 (“GE SOP Reply”)

¹¹ U.S. EPA, Final Administrative Decision, In Re: GE’s Dispute of EPA’s Intended Final Decision on Rest of Housatonic River Remedy, October 13, 2016

¹² U.S. EPA Response to Comments of 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, October 2016 (“Response to Comments”, or “RTC”)

¹³ https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Closed+Dockets?OpenView

consistent with the Consent Decree. Nine parties joined the mediated negotiations. In February 2020, EPA and seven other mediation parties concluded negotiations with a signed Settlement Agreement (Attachment A).

Among other things, the Settlement Agreement includes specific provisions on speeding up the initiation of Rest of River response actions, enhancements to the cleanup, a hybrid disposal approach, economic development and other community benefits, and coordination and consultation regarding the cleanup. The Settlement Agreement includes, to help expedite the cleanup, an agreement by all the setting parties not to challenge an EPA Revised Permit unless the Draft or Final Revised Permit is inconsistent with the terms of the Settlement Agreement. The Region's 2020 Draft Revised Modification to the 2016 Permit ("Draft Revised 2020 Permit") is not inconsistent with the terms of the Settlement Agreement.

The Draft Revised 2020 Permit addresses the two remanded issues as follows: first, as described in Section I.D. below, the Draft Revised 2020 Permit includes proposed provisions about Legally Permissible Future Projects and Work that address the Board's concerns in that regard; second, as described in Section I.E. below, the Draft Revised 2020 Permit includes a hybrid disposal approach to the disposal of excavated PCB-contaminated sediment and soil.

Based on the provisions in the Draft Revised 2020 Permit, some concerns and observations by the Board with respect to disposal are now moot. For example, the hybrid disposal approach in the Draft Revised 2020 Permit does not include any disposal at the GE-proposed landfills at Forest Street in Lee or Rising Pond in Great Barrington. That being the case, in this Determination on Remand, the Board's observations related to the Forest Street and Rising Pond sites are moot and therefore are not discussed herein.

Additionally, the hybrid disposal approach, agreed to by GE in the Settlement Agreement, requires that materials that would require disposal in a Toxic Substances Control Act ("TSCA") PCB chemical waste landfill under 40 C.F.R. 765.75 ("TSCA landfill regulation" or "TSCA chemical waste landfill") or a federal RCRA Subtitle C landfill will be taken off-site by GE for disposal, and that no material equal to or exceeding an average of 50 parts per million ("ppm")¹⁴ PCBs will be disposed of on-site. That being the case, in this Determination on Remand, the concerns and observations related to on-site disposal at a TSCA chemical waste landfill are moot and therefore are not discussed herein.

C. PUBLIC COMMENT PERIOD

The Region will hold a formal comment period for at least 45 days on the specific changes made in the Draft Revised 2020 Permit and the supporting Administrative

¹⁴ Parts per million ("ppm") and milligrams per kilogram ("mg/kg") are often used interchangeably. However, mg/kg is technically the correct unit of measure.

Record. After evaluating the public comments, the Region will then issue a Final Revised Permit Modification accompanied by a response to comments.

D. LEGALLY PERMISSIBLE FUTURE PROJECT OR WORK PROVISIONS

On remand, the Board asked the Region to clarify that the extent of the additional work provisions related to Legally Permissible Future Projects or Work are consistent with the Consent Decree. 17 E.A.D. at 520-523. The 2016 Permit contains several provisions that concern GE's obligations to perform additional work in the event that third parties undertake certain projects or work in the future.¹⁵ GE argued, and the Board was concerned, that these provisions regarding Legally Permissible Future Projects or Work represent potentially open-ended requirements in conflict with the Consent Decree and 2000 Permit.

In this response to the remand, the Region clarifies and confirms it has always intended that the scope of any additional work required under the Legally Permissible Future Project or Work obligations must be consistent with the Consent Decree and the 2000 Permit. In the Settlement Agreement, and in response to the Board's remand, the Region agreed to the following requirements for the Legally Permissible Future Projects and Work:

All Legally Permissible Future Project or Work provisions in the 2016 Permit will be retained, but the related Corrective Measures provision of the Revised Permit will be modified to require that the specified "further response actions" will be (i) in accordance with and pursuant to the Consent Decree; (ii) consistent with the scope of the response actions selected in the Revised Permit; and (iii) that Permittee's responsibility for the costs of said further response actions will be limited to those costs solely related to the presence of PCBs.

The Settlement Agreement provision is designed to address the concerns of the Board, to clarify that any additional response actions required under the Legally Permissible Future Project or Work provisions must be in accordance with the Consent Decree and, otherwise consistent with the scope of the response action. Additionally, the Settlement Agreement language makes clear the scope of responsibility of the Permittee for such future response actions. Accordingly, the references regarding Legally Permissible Future Projects and Work in the 2016 Permit have been revised in the Draft Revised 2020 Permit to make this clarification.

E. DISPOSAL PROVISIONS

In its Order regarding the disposal component of the 2016 Permit, the Board remanded for further consideration by the Region the selection of off-site disposal at existing licensed facilities, including the application and potential waiver of the TSCA landfill

¹⁵ 2016 Permit, Sections II.B.2.j. through II.B.2.l; II.B.7.b.(2)(b)i; II.B.2.b.(2)(b)ii.E; II.B.7.b.(2)(b)iii.; II.B.7.b.(2)(c); and II.B.7.c.(2)(c).

regulations regarding GE's proposed disposal sites. The Board also provided the Region with a series of observations on other issues relevant to the disposal decision.

As described above, cognizant of the specific observations and concerns in the Board's remand, the Region is proposing a revised disposal approach as part of the Draft Revised 2020 Permit. As Sections II.B.5 and II.B.6. of the Draft Revised 2020 Permit demonstrate, the hybrid approach includes disposal of the most highly contaminated excavated material – including all federal RCRA hazardous waste and PCB-contaminated materials averaging equal to or greater than 50 ppm – at off-site licensed facilities, while providing for protective disposal of lower-level excavated material at an on-site Upland Disposal Facility at GE's previously proposed Woods Pond location (the "Upland Disposal Facility"). The Upland Disposal Facility is described more fully below in Section II.E. The overall approach of using off-site disposal in conjunction with the Upland Disposal Facility is hereinafter referred to as the "Hybrid Disposal" approach. The provisions and prohibitions of the Hybrid Disposal approach (and the Settlement Agreement as a whole) have been agreed to by all but one of the challengers to the 2016 Permit – GE, the Rest of River Municipal Committee made up of the towns of Lee, Lenox, Stockbridge, Great Barrington, and Sheffield, C. Jeffrey Cook, and Berkshire Environmental Action Team – as well as other participants in the EAB proceedings, namely the State of Connecticut, the City of Pittsfield, and the Massachusetts Audubon Society.¹⁶ The responsiveness of the Settlement Agreement to the EAB parties' concerns about on-site disposal of the most highly contaminated excavated PCB material is evidenced by the fact that each of the parties to the Settlement Agreement (including GE, the only petitioner that sought disposal of all excavated material on-site) have agreed¹⁷ that so long as the Final Revised 2020 Permit is consistent with the Settlement Agreement, the parties will not challenge the Final Revised 2020 Permit before the EAB or otherwise.

In conclusion, the Region considered the concerns and observations in the Board's remand on disposal of excavated material. Based on that consideration, the Region reached agreement with virtually all challengers to the 2016 Permit on a Hybrid Disposal approach that is responsive to the Board's remand. The Hybrid Disposal approach addresses satisfactorily the parties' primary concerns on disposal. The Region has commemorated that agreement, along with substantial cleanup improvements, in the Draft Revised 2020 Permit, which the Region is now issuing for public comment.

¹⁶ One of the EAB challengers, the Housatonic River Initiative, participated in the mediated negotiations with the other eight parties, but chose not to settle.

¹⁷ Settlement Agreement, page 3.

II. SUPPLEMENTAL COMPARATIVE ANALYSES

A. BACKGROUND AND SCOPE OF ANALYSIS

In May 2014, EPA performed an evaluation of nine Sediment/Floodplain Combination Alternatives, and five treatment/disposition alternatives in a May 2014, Comparative Analysis of Remedial Alternatives for the General Electric (GE) – Pittsfield/Housatonic River Project, Rest of River (“2014 Comparative Analysis”). The 2014 Comparative Analysis and other information provided support for EPA’s 2016 Permit.

The scope of analysis in this Supplemental Comparative Analysis is consistent with RCRA and CERCLA. Many of the provisions from the 2016 Permit have not changed. Accordingly, the scope of review of this supplemental analysis is limited to new or modified components for sediment/floodplain and treatment/disposition. Under RCRA, only those conditions to be modified in the Draft Revised 2020 Permit are reopened for comment.^{18,19}

This Supplemental Comparative Analysis documents the rationale for the Draft Revised 2020 Permit as it pertains to both the sediment/floodplain and treatment/disposition (also referred to in this document as disposal) portions of the remedy and provides assurances that the proposed remedy satisfies the relevant requirements. This is being accomplished through an evaluation, utilizing the nine criteria from the 2000 Permit and other relevant information, of the portions of the remedy being changed from the 2016 Permit, and refers where relevant to the 2014 Comparative Analysis that preceded the 2016 Permit. See Table 1 for a summary of the proposed changes to the remedy.

Section II.B. provides a description of the differences between the sediment and floodplain alternatives. The alternative in the Draft Revised 2020 Permit is denoted as the 2020 Sediment/Floodplain Alternative (or “2020 Alternative”) and the alternative from the 2014 Comparative Analysis and the 2016 Permit is denoted as the 2014 Sediment/Floodplain Alternative (or “2014 Alternative”). Section II.C. provides a review of the 2020 Alternative’s approach under the nine decision-making criteria in

¹⁸ 17 E.A.D. at 585; 40 C.F.R. 124.14.

¹⁹ The analogous CERCLA guidance outlines procedures for documenting changes to remedies made after the initial decision document. The level of documentation (and required public participation) varies based on whether a change is considered non-significant, a significant difference, or a fundamental change in the scope, performance, and cost. The changes being proposed here for the sediment/floodplain remedy fall somewhere between non-significant and significant differences; and, for the disposal alternative, between a significant difference and a fundamental change. For example, highlight 7-1 in the guidance identifies a change in disposal location (in our case, a change from off-site to a hybrid of on-site and off-site disposal) as a significant, but not fundamental, change. Portions of the analysis in the original Record of Decision (“ROD”) can be cross-referenced, where appropriate. A change that constitutes “significant differences” does not generally reopen consideration of applicable or relevant and appropriate requirements (“ARARs”) for the remedy since it does not fundamentally change the remedy.

the 2000 Permit. Section II.D. provides a Supplemental Comparative Analysis of the 2020 Alternative and 2014 Alternative.

Section II.E. provides a description of the proposed Hybrid Disposal approach in the Draft Revised 2020 Permit. Section II.F. provides a review of the Hybrid Disposal approach under the nine decision-making criteria in the 2000 Permit. Section II.G. provides a comparative analysis of three treatment/disposition alternatives: the proposed Hybrid Disposal approach in the Draft Revised 2020 Permit (TD 6); the off-site disposal approach selected by EPA in the 2016 Permit (TD 1/ TD 1RR); and a proposal offered by GE in its challenge to the 2016 Permit before the Board (TD 3, Woods Pond).

B. DESCRIPTION OF PROPOSED CHANGES TO THE SEDIMENT/ FLOODPLAIN ALTERNATIVE

In the Settlement Agreement, the settling parties agreed on enhanced cleanup measures for many of the 2016 Permit's Performance Standards and Corrective Measures.

The Settlement Agreement's enhanced cleanup actions and a comparison to the 2016 Permit are described immediately below. The reaches of the River discussed below are shown on Figures 1 and 2.

1. Reach 5A and Reach 5C Floodplain Remediation

In the 2016 Permit, the floodplain remediation for Reaches 5A and 5C consisted of the following: to remove and replace sufficient soils to meet the Performance Standards in Tables 1 and 2 by following the process described in Section II.B.3.a of the 2016 Permit. In the Settlement Agreement, the parties agreed on the following changes for Reaches 5A and 5C Floodplains:

- a) In Pittsfield, GE will remove soil from twenty-two (22) floodplain properties specified in Attachment A of the Settlement Agreement to meet the residential Performance Standards in the 2016 Permit.
- b) To the extent the Town of Lenox determines that any of the owners of the six properties identified in Attachment B of the Settlement Agreement consent to such removal, GE will remove additional floodplain soil from any such properties to achieve the residential Performance Standards in the 2016 Permit. Allocation of costs for such additional work in Lenox is governed by Section V.A.4. of the Settlement Agreement.
- c) For the Mass Audubon Canoe Meadows Property, GE will expand the Exposure Area ("EA") 10 boundary to the east so that the EA incorporates the area with PCBs greater than 1 ppm in the top foot of soil and include an additional subarea, beyond that included in the 2016 Permit, as shown in Figure 6 of the Settlement Agreement.

In the Draft Revised 2020 Permit, the additional cleanup activities at the Canoe Meadows property are incorporated in Section II.B.3. and Table 1, and are shown in attached Figure 3A - Exposure Area 10. The revised requirements for the Reaches 5A and 5C Floodplain are incorporated into the Draft Revised 2020 Permit at Section II.B.3.a.

2. Reaches 5A and 5B Banks

In the 2016 Permit, EPA required that GE perform limited removal of PCB contaminated soil from the banks in Reaches 5A and 5B based on location, concentration, and erodibility criteria laid out in the 2016 Permit. In the Settlement Agreement, GE is required to, for Reaches 5A and 5B banks that do not otherwise require remediation pursuant to the 2016 Permit, evaluate the PCB data, erosion potential, the adjacent floodplain removal (if any), constructability issues, and the potential impact to PCB downstream transport should such banks erode and, based on these factors, consider supplemental bank removal. The revised requirements for the Reaches 5A and 5B banks are incorporated into the Draft Revised 2020 Permit at Sections II.B.2.a. and II.B.2.b.

3. Reach 5C Sediment

For Reach 5C sediment, the 2016 Permit required removal of riverbed sediment and an Engineered Cap placed over the entire riverbed, with removal being done by wet excavation or dredging techniques. Under the Settlement Agreement, GE must excavate sediment to achieve an average PCB concentration of 1 milligram per kilogram (“mg/kg”) or less followed by the placement of 6 inches of suitable backfill across the Reach. This will eliminate approximately 57 acres of capping otherwise required by the 2016 Permit. The revised requirements for the Reach 5C are incorporated into the Draft Revised 2020 Permit at Section II.B.2.c.

4. Columbia Mill Dam, Eagle Mill Dam, Willow Mill Impoundment, and Glendale Dam (Reach 7 Impoundments)

For sediment removal for the Reach 7 Impoundments, the 2016 Permit required generally that GE complete one of the following: that GE remove sufficient sediment and replace with a contiguous Engineered Cap to achieve an average concentration of 1 mg/kg total PCBs, surface and subsurface; or that GE may propose to excavate sediments to achieve an average of 1 mg/kg PCBs in sediment without use of an Engineered Cap. In the Settlement Agreement, GE is required to remove the sediments behind the Columbia Mill Dam and Eagle Mill Dams to achieve an average PCB level of 1 mg/kg or less, followed by the placement of a minimum of six inches of suitable backfill and additional material as necessary to maintain channel stability, and GE is required to remove the Columbia Mill and Eagle Mill Dams, upon access being obtained to the property. For Columbia Mill and Eagle Mill Dams, the 2016 Permit will be revised to eliminate the option for any capping behind the dams, which will eliminate up to 18 acres of capping otherwise required by the 2016 Permit. Additionally, the Settlement Agreement

requires GE to remove sufficient sediment to allow for a maximum of 3 acres of capping in the Willow Mill impoundment and 6.5 acres of capping in the Glendale impoundment, thus eliminating up to 10.5 acres of capping otherwise required by the 2016 Permit. The revised requirements for the Columbia Mill, Eagle Mill, Willow Mill, and Glendale Dam Impoundments are incorporated into the Draft Revised 2020 Permit at Section II.B.2.f.

5. Rising Pond (Reach 8)

For Rising Pond, the 2016 Permit required generally that GE complete one of the following: that GE remove sufficient sediment and replace with a contiguous Engineered Cap to achieve an average concentration of 1 mg/kg total PCBs, surface and subsurface; or that GE may propose to excavate sediments to achieve an average of 1 mg/kg PCBs in sediment without use of Engineered Cap. In the Settlement Agreement, GE is required to remove sufficient sediment to allow for a maximum of 31 acres of capping, thus eliminating up to 10 acres of capping otherwise required by the 2016 Permit. The revised requirements for the Rising Pond are incorporated into the Draft Revised 2020 Permit at Section II.B.2.g.

6. Vernal Pools

In the 2016 Permit, EPA required generally that GE place an amendment such as activated carbon in Vernal Pools to reduce the bioavailability of PCBs, and if remediation with an amendment such as activated carbon was unsuccessful, required that GE excavate soil and backfill the Vernal Pools. In the Settlement Agreement, for Vernal Pools, GE is required to conduct a pilot study on not more than ten (10) Vernal Pools (none in Core Area 1 habitat) using either traditional excavation and restoration techniques, or amendments such as activated carbon. GE must collect baseline data including water and soil chemistry and a range of taxa and submit a plan that proposes criteria for success. Following an appropriate monitoring period determined by EPA, GE will implement the appropriate remediation, as determined by EPA, on the remainder of Vernal Pools as necessary to meet the Performance Standards in the 2016 Permit. The revised requirements for the Vernal Pools are incorporated into the Draft Revised 2020 Permit at Section II.B.3.b.

7. Hydraulic Dredging and Pumping if Feasible

The 2016 Permit did not require use of hydraulic dredging and/or pumping. In the Settlement Agreement, for the remediation of Reach 5C, Woods Pond and potentially in Backwaters adjacent to Reach 5C and Woods Pond, GE is required to implement, if feasible, a hydraulic dredging and/or hydraulic pumping approach, so that material from these areas is pumped directly to the Upland Disposal Facility. To the extent that the hydraulic dredging and/or hydraulic pumping approach is not feasible, GE is required to transport material from Reach 5C and Woods Pond to the Upland Disposal Facility via trucks while avoiding driving on public roads to the maximum extent practical. The Settlement Agreement includes

a figure with a depiction of the potential pipeline location from these remediation areas to the Upland Disposal Facility and of potential truck routes. Although PCBs from Reach 5C, Woods Pond and potentially in Backwaters adjacent to Reach 5C and Woods Pond at any concentration may be pumped or trucked to the Upland Disposal Facility for temporary processing, all material permanently disposed of at the Upland Disposal Facility shall meet the standard described in Section III.A. of the Settlement Agreement. The Upland Disposal Facility Performance Standards and Corrective Measures have been incorporated into the Draft Revised 2020 Permit at Section II.B.5. The revised requirements for hydraulic dredging and pumping of excavated material are included in the Draft Revised 2020 Permit at Sections II.B.2.c. through II.B.2.e.

8. Quality of Life Compliance Plan

In the 2016 Permit, EPA required that GE submit a Rest of River Statement of Work (“SOW”; Section II.H.). Among the submittals of the Rest of River SOW is a Quality of Life Compliance Plan that addresses these particular areas: noise, air, odor, light standards; recreational activities; road use and transport-related impacts; coordination with impacted residents/landowners; and community health and safety. The Settlement Agreement requires GE to submit for review and approval a Quality of Life Compliance Plan, and EPA will solicit input on it from local governments, impacted residents/landowners, neighborhoods in the vicinity of the cleanup, and other interested stakeholders. Section C of the Quality of Life Compliance Plan will include, among other requirements, consideration of methods to reduce residential impacts where practical, including remediation techniques that further restrict transport of waste material through residential areas. Examples of roads that would warrant such further restrictions include: Brunswick, Kenilworth, Warwick, and Chester Streets, Noblehurst Avenue, and Revilla Terrace; Shetland, Clydesdale, Pinto, and Palomino Drives; and Anita, Lucia, Quirco, Joseph, and Eric Drives. GE will work with the City of Pittsfield, the Towns and the landowners to take reasonable steps to minimize the adverse impact of the work activities by, among others, coordinating work activities, scheduling and traffic routing. The revised requirements for the Quality of Life Compliance Plan are incorporated into the Draft Revised 2020 Permit at Section II.H.

9. Enhancement of Recreational Activities

In the 2016 Permit, the Quality of Life Compliance Plan referenced immediately above includes a section on continued recreational activities. In the Settlement Agreement, GE is required to work cooperatively with the City of Pittsfield, the Towns of Great Barrington, Lee, Lenox and Stockbridge, and the State of Massachusetts to facilitate their enhancement of recreational activities, such as canoeing and other water activities, hiking, and bike trails in the Rest of River corridor. Such opportunities are possible on properties where remediation will occur and/or where temporary access roads are constructed. The Draft Revised

2020 Permit includes provisions on enhancement of recreational activities in Section II.H.

10. GE Coordination with Landowners and Municipal Officials

In the 2016 Permit, GE was required to coordinate with affected communities, residents or landowners at or near areas impacted by remediation, for example in Section II.H.1.d.(3), and Sections II.H.11.(d) and II.H.11.(e). In the Settlement Agreement, GE is required to coordinate as soon as practicable with municipal officials and affected landowners regarding work activities, schedules, and traffic routes. GE's coordination with officials and landowners will be described in the relevant work plans submitted to EPA. The Draft Revised 2020 Permit includes the Settlement Agreement provision in Section II.H.

Table 2 shows a comparison of several quantities, areas and other metrics between the 2014 and 2020 Alternatives.

C. 2000 PERMIT NINE-CRITERIA ANALYSIS FOR 2020 SEDIMENT/FLOODPLAIN ALTERNATIVE

The 2000 Permit provides for sediment/floodplain alternatives to be evaluated pursuant to nine criteria in the 2000 Permit, along with any other relevant information in the Administrative Record for the modification of the 2000 Permit. In its Revised Corrective Measures Study ("CMS"), GE submitted its analysis of the nine criteria in the 2000 Permit for eight combination alternatives. EPA's 2014 Comparative Analysis included evaluation of the 2014 Alternative, referred to as SED 9/FP 4 MOD. As described above, the proposed 2020 Alternative includes modifications and enhancements from the 2014 Alternative. Immediately below is an evaluation of the 2020 Alternative for sediments and floodplains pursuant to the nine criteria from the 2000 Permit. Following that, Section II.D sets forth the Supplemental Comparative Analysis of the 2014 Alternative and the 2020 Alternative relating to sediments and floodplains.

For each of the following nine criteria, see Section II.D. below for additional detail.

1. Overall Protection of Human Health and the Environment

The 2020 Alternative would provide high levels of protection. It requires excavation of over 1,100,000 cubic yards of PCB-contaminated material from the sediment, banks and floodplain and will reduce the unacceptable risks to human health and the environment posed by the PCBs.

2. Control of Sources of Releases

The 2020 Alternative would sufficiently address the potential for PCB-contaminated sediment and soil to be released and transported within the river or onto the floodplain. It requires excavation of an estimated 1.1 million cubic yards of PCB-contaminated material, thus reducing that volume of material from

potentially further downstream release. Additionally, it retains the Downstream Transport Performance Standards (2016 Permit, Section II.B.1.a), and other methods to reduce mobility of contaminants.

3. Compliance with Federal and State Applicable or Relevant and Appropriate Requirements (“ARARs”)

The new or modified ARARs identified for the 2020 Alternative are discussed in more detail in Attachment B to this Supplemental Comparative Analysis.

4. Long-Term Reliability and Effectiveness

The 2020 Alternative results in significant reductions in residual risk. An estimated 1.1 million cubic yards of PCB-contaminated material will be excavated from the river system, increasing the permanence of the removal.

For adequacy and reliability, the 2020 Alternative relies on proven technologies, with adequate labor and materials, for the sediment/floodplain response. The 2020 Alternative is not expected to have long-term adverse impacts on human health.

5. Attainment of Interim Media Protection Goals (“IMPGs”)

The 2014 Comparative Analysis provides detail on how the nine combination alternatives satisfied different IMPGs. For purposes of this supplemental analysis, the 2020 Alternative is at least as successful as 2014 Alternative on the IMPGs and achieves additional human health risk reductions by expanding certain areas to be remediated.

6. Reduction of Toxicity, Mobility or Volume

The 2020 Alternative reduces the volume of the PCB-contaminated material by removing over 1.1 million cubic yards of material from the sediment and floodplain. Additionally, the 2020 Alternative includes an Engineered Capping component that reduces the mobility of certain remaining PCB-contaminated material.

7. Short-Term Effectiveness

Like all active remediation alternatives, the 2020 Alternative has the potential for short-term impacts to the community. There will be impacts to the areas and community adjacent to the specific areas being addressed at a certain time. The project is estimated to last 13 years, but the effects of the excavation and capping on any particular neighborhood will be more limited. As described below in Section II.G. below, the impacts of truck traffic can be reduced greatly by reliance on rail transportation, and by use of hydraulic dredging and pumping to the Upland Disposal Facility. EPA has coordinated extensively with the Massachusetts Department of Fish and Game on any potential effects of the cleanup on wildlife and habitat.

8. Implementability

The implementability of the 2020 Alternative includes the following considerations, as provided in more detail in Section II.D.:

- a) The excavation and engineered capping components are reliable technologies.
- b) Regulatory and zoning requirements have been taken into consideration.
- c) EPA will coordinate with state and local agencies. The agreement by the local governments in the Settlement Agreement is evidence of this coordination and their anticipated continued cooperation including concerning local zoning issues.
- d) The availability of licensed off-site and on-site facilities is addressed below in Sections II.E. through II.G.
- e) For undertaking additional corrective measures, the 2020 Alternative retains the Adaptive Management requirements of the 2016 Permit (Section II.F.), and the Consent Decree includes provisions for requiring additional work in certain circumstances. CD, Para. 39 and Section XXVI.
- f) The 2020 Alternative can be monitored effectively.

9. Cost

The estimated cost ranges for the 2020 Alternative, including total capital cost, estimated annual maintenance and monitoring cost, and total estimated present worth are summarized in Table 3.

D. SUPPLEMENTAL COMPARATIVE ANALYSIS OF SEDIMENT/ FLOODPLAIN ALTERNATIVES

This Supplemental Comparative Analysis compares a new alternative, the 2020 Alternative, with the 2014 Alternative. The information in the 2014 Comparative Analysis is not meant to be superseded by this current analysis other than with respect to the specific analysis between the 2014 and 2020 Alternatives. Please refer to the 2014 Comparative Analysis for additional details.

1. Overall Protection of Human Health and the Environment

The evaluation of whether a particular remedial alternative would provide overall human health and environmental protection relies heavily on the evaluations under several other Permit criteria, including but not limited to the following: (1) attainment of IMPGs, (2) compliance with ARARs, (3) long-term reliability and effectiveness, and (4) short-term effectiveness. In the 2014 Comparative Analysis, the 2014 Alternative was judged to provide the best overall protection of human

health and the environment because it achieved the important balance between short- and long-term risks and long-term benefits.

The 2020 Alternative attains the same IMPGs as the 2014 Alternative. See Tables 4 through 8.

Compliance with ARARs is essentially the same for both the 2014 and 2020 Alternatives. The ARARs related to sediment/floodplain remediation are described more fully below.

With respect to long-term effectiveness and permanence, as discussed more fully below, the replacement in the 2020 Alternative of containment/capping of PCBs with PCB removal and potential additional bank soil removal make the 2020 Alternative better.

Regarding short-term effectiveness, the 2020 Alternative includes several upgrades from the 2014 Alternative, including the commitments toward implementation of the Quality of Life Compliance Plan, the enhancement of recreational activities, and coordination regarding work activities, schedules and traffic routes. These upgrades will benefit the communities significantly in comparison to the 2014 Alternative.

2. Control of Sources of Releases

The extent to which the two alternatives reduce or minimize further PCB releases was evaluated. As described in the 2014 Comparative Analysis, the sediment and riverbank components of the two alternatives are most relevant to this evaluation.

a) Mass of PCBs Transported Downstream

The 2014 and 2020 Alternatives perform similarly with respect to downstream transport of PCBs. See Table 9.

b) Releases due to Extreme Flood Events

As described in the 2014 Comparative Analysis, the 2014 Alternative was expected to provide adequate protection from extreme flood events in all reaches except Reach 5B (but the remaining PCB concentrations in Reach 5B were low enough that the flooding impacts were not expected to be unacceptable). The 2020 Alternative has two elements that would lead to greater resilience to extreme flood events: first, as described above, supplemental bank removal is to be considered for the Reaches 5A and 5B banks, which, if implemented, would likely result in reduced bank erosion and associated reduction in the release of PCBs into the river during an extreme storm event; second, with respect to the uncertainty in simulating high-flow events, the 2020 Alternative's increased reliance on removal instead of capping would reduce that uncertainty. Based on those differences, the 2020 Alternative would likely have a better response to an extreme flood event.

c) Releases due to River Channel Meandering

The 2014 Alternative and the 2020 Alternative are very similar regarding bank stabilization and operation, maintenance and monitoring, which can reduce the potential for large amounts of PCBs in soils eroding from the banks and floodplain. The potential additional bank removal per Section II.B. above in the 2020 Alternative could reduce the amount of PCB-contaminated banks in Reaches 5A and 5B. GE will consider the supplemental bank removal in the context of erosion potential and the potential impact to PCB downstream transport, among other factors.

d) Releases during Implementation

The 2014 Comparative Analysis stated that the potential for short-term releases during implementation would be a function of the duration of the remedy and the overall extent of open excavation/dredging areas. The 2014 and 2020 Alternatives would function similarly for the most part, as the remedy duration estimate has not changed. However, engineering controls and best management practices will be necessary for the additional cleanup work under the 2020 Alternative. Overall, the net result of increased remediation on releases during implementation is expected to be minimal.

3. Compliance with Federal and State ARARs

A description of the new or modified ARARs for the Draft Revised 2020 Permit is provided in Attachment B to this Supplemental Comparative Analysis. Attachment C to the 2016 Permit provides all the ARARs related to the 2014 Alternative. Below is a summary of some of the more significant ARARs for the two alternatives currently being evaluated.

Neither of the alternatives would achieve the federal and state water quality standards and criteria for consumption of organisms in any of the Massachusetts reaches, and the model indicates that the alternatives may not meet the criteria in all Connecticut reaches. However, both alternatives would likely improve water quality in significant segments of the river (greater than 50% of the impoundments) in Connecticut. Achievement of the water quality standards and criteria were waived for Massachusetts as part of the 2016 Permit decision.

In the 2014 Comparative Analysis, the 2014 Alternative was the least damaging practicable alternative with respect to temporary disturbance of wetlands and a discharge of dredged or fill material into waters of the state and/or the United States. The 2020 Alternative is an even less damaging practicable alternative given its significantly reduced reliance on permanent capping, thus allowing for an increase in habitat restoration in Reaches 5C, 7 and 8. In addition, the removal of two dams will greatly increase long-term habitat quality by restoring the river to its natural state before these impoundments were built, providing unimpeded fish passage within these subreaches. The 2020 Alternative does call for increased

remediation in the floodplains of Reach 5A and potentially more remediation of the banks in Reaches 5A and 5B, but the increase in acreage of floodplains remediated (45 to 47 acres, a 4% increase; see Table 2) and potentially banks, will be minimal compared to the 2014 Alternative. Also see Revised Clean Water Act Section 404 Wetlands and Floodplains Analysis (Attachment C).

The 2020 Alternative will also comply with Massachusetts Office of Dam Safety regulations for the removal of the Columbia Mill Dam and the Eagle Mill Dam remnant.

4. Long-Term Reliability and Effectiveness

This assessment of the two alternatives includes an evaluation of the magnitude of residual risk, the adequacy and reliability of the alternatives, and the potential long-term impacts on human health and the environment.

a) Magnitude of Residual Risk

The 2014 and 2020 Alternatives perform similarly with respect to modeled subreach average fish PCB concentrations. See Table 10. Three differences present in the 2020 Alternative include: (1) the more stringent floodplain cleanups; (2) the shift to increased PCB removal rather than capping/containment in sediment in Reaches 5C, 7 and 8; and (3) the potential for additional bank removal in Reaches 5A and 5B. (One factor of residual risk is the time required to meet a particular Interim Media Protection Goal, as noted in the 2014 Comparative Analysis. EPA's estimate for completion of the 2020 Alternative is the same (13 years) as for the 2014 Alternative. Accordingly, the timeframe until completion is not a factor in this analysis.)

The 2020 Alternative, through more PCB-contaminated sediment removal, is favored over the 2014 Alternative on the magnitude of residual risk. The amount of PCB residuals remaining in the sediment is significantly reduced due to the replacement of 96 acres of capping with additional excavation of PCB material; consequently, the risks posed by remaining PCBs, in the event of the cap not working as designed, would be less. Similarly, if the potential additional removal in the Reach 5 banks occurs, that also would reduce the amount of residuals, and the possible risk posed thereby.

With respect to the potential residual risks associated with floodplain soil, the evaluation would be similar to that in the 2014 Comparative Analysis except that a minimum of 22 floodplain properties would receive additional cleanup in the 2020 Alternative, as well as the Canoe Meadows property. Based on those enhancements, the 2020 Alternative would be more protective against residual floodplain risks than the 2014 Alternative.

b) Adequacy and Reliability

- (1) *Use of Technologies under Similar Conditions* – The 2014 Comparative Analysis provides an analysis of the use of technologies under similar conditions. There is no difference between the alternatives relative to this sub-criterion; the 2020 Alternative’s addition of, if feasible, hydraulic dredging and pumping has been used effectively at numerous other sites.
- (2) *General Reliability and Effectiveness* – There is no significant difference between the alternatives on this measure.
- (3) *Reliability of Operation, Maintenance and Monitoring Requirements and Technical Component Replacement Requirements* – Both alternatives would incorporate reliable long-term maintenance and/or monitoring following remediation, with the extent of such maintenance and/or monitoring generally increasing as the extent of capping and bank stabilization increases. The added PCB removal in the 2020 Alternative would lead to less Operation, Maintenance and Monitoring (“OM&M”) due to the nearly 100-acre reduction in capping.

For the floodplain, the type of monitoring would be similar for the two alternatives. The 2020 Alternative has floodplain remediation in a marginally larger area with the expanded area of floodplain remediation at Canoe Meadows, resulting in the 2020 Alternative having potentially more OM&M. However, remediating a minimum of 22 properties in Reaches 5A and 5C to residential (i.e., unrestricted use) standards precludes the need for institutional controls and OM&M requirements on these properties.

Based on these enhancements, the 2020 Alternative would be more protective against residual floodplain risks than the 2014 Alternative.

c) Potential Long-Term Impacts on Human Health and the Environment

- (1) *Potentially Affected Habitat and Species* – The 2014 Alternative and the 2020 Alternative have similar impacts on floodplain habitats over similarly estimated timeframes.
- (2) *Long-Term Impacts on Habitats and Biota* – The 2014 Comparative Analysis provides specificity on the 2014 Alternative’s impact on Aquatic Riverine Habitat, Riverbank Habitat, Impoundment Habitat, Backwater Habitat, Floodplain Wetland Forest Habitat, Shrub and Shallow Emergent Wetlands in Deep Marshes, Vernal Pools and Surrounding Habitat, and Upland Habitat. The 2020 Alternative’s impacts would be similar to those of the 2014 Alternative, with a few differences:
 - i. Riverbank Habitat: The 2020 Alternative requires GE to consider supplemental bank removal as outlined in Section II.B.2. above. If such supplemental bank removal occurs, that could lead to temporary

disturbance of more than the 0.2 linear mile of Reach 5B riverbank disturbed by the 2014 Alternative.

ii. Vernal Pools and Surrounding Habitat: The 2020 Alternative allows more flexibility for EPA to consider the most appropriate approach for Vernal Pool remediation, as outlined in Section II.B.6. above. Whether that will make for greater or lesser impacts on the habitat will depend on the specific technique(s) evaluated and used.

(3) *Long-Term Impacts on Habitats and State-Listed Species* – The analysis in the 2014 Comparative Analysis of the impacts of the 2014 Alternative applies also to the 2020 Alternative. The 2020 Alternative has additional floodplain remediation in Reach 5A at a minimum of 22 residential properties and at Canoe Meadows. That additional remediation will increase the acreage of floodplain remediated from 45 acres to 47 acres (Table 11), but is not expected to impact any Core Area 1 priority habitat of state-listed species and is estimated to impact only an additional 1.7 and 0.4 acres of Core Area 2 and 3 habitat, respectively.²⁰

(4) *Long-Term Impacts on Aesthetics and Recreational Use* – The analysis of the 2014 Comparative Analysis for the 2014 Alternative applies as well to the 2020 Alternative. Additionally, the 2020 Alternative includes a provision in which GE is required to work cooperatively with local entities as described in Section II.B.9. above.

(5) *Long-Term Impacts on Fluvial Geomorphic Processes* – The 2014 Comparative Analysis applies also to the 2020 Alternative.

(6) *Potential Measures to Mitigate Long-Term Impacts* – The 2014 Comparative Analysis applies also to the 2020 Alternative.

5. Attainment of IMPGs

As part of the CMS process, human health IMPGs were developed to address the cancer risk and non-cancer risk for the following three major routes of human health exposure: direct contact with sediment and floodplain soil, consumption of fish and waterfowl, and consumption of agricultural products. The CMS also evaluated several IMPGs for ecological receptors. The 2014 Comparative Analysis provided a detailed review of how the eight alternatives, including the 2014 Alternative, fared with respect to attaining the IMPGs. Comparing the 2014 Alternative with the 2020 Alternative, the 2020 Alternative attains the same IMPGs as the 2014 Alternative. For all the IMPGs, the values are unchanged between the 2016 Permit and the 2020 Alternative. This is because, although the modifications made to the remedy generally result in a greater depth of removal (and

²⁰ See page 14 of GE's June 2020 Summary and Evaluation of Settlement Agreement Remedy

larger mass removal of PCBs), the spatial footprint of remediation (which determines the various metrics described in this section) is generally unchanged. See Tables 4 through 8.²¹ From a human health perspective, the 2020 Alternative achieves additional risk reductions by expanding certain areas to be remediated. Specifically, certain residential floodplain properties as well as the floodplain property EA 10 at Canoe Meadows will receive a more stringent cleanup in the 2020 Alternative and will get closer to the 10⁻⁶ cancer risk human health IMPG in these exposure areas. The estimated timeframe to achieve the IMPGs is the same for the 2020 Alternative as is for the 2014 Alternative.

6. Reduction of Toxicity, Mobility, or Volume of Wastes

As with the alternatives in the 2014 Comparative Analysis, treatment is not part of any of the major components of the 2020 Alternative. But both the 2014 and 2020 Alternatives include treatment to reduce the toxicity of PCBs with the addition of an amendment such as activated carbon or another approach in certain components of the remedy, including Vernal Pools, Reach 5B sediment, and Backwaters. The use of an amendment is expected to be irreversible; if another treatment approach is used, the irreversibility of that treatment will depend on what approach is selected.

a) Reduction of Toxicity

Both the 2014 and 2020 Alternatives include treatment to reduce the toxicity of PCBs with the addition of an amendment in certain areas, as stated immediately above. There is no difference in the reduction of toxicity between these two alternatives.

b) Reduction of Mobility

Both the 2014 and 2020 Alternatives reduce mobility to similar extents. The additional floodplain removal and possible bank removal in the 2020 Alternative could both provide a slight edge on the amount of reduction of mobility.

c) Reduction of Volume

The 2020 Alternative reduces the volume of PCBs remaining in the river system more than the 2014 Alternative by the shift from the option for capping in the 2014 Alternative to removal and additional floodplain removal. As Table 2 illustrates, the 2020 Alternative removes an additional 143,000 cubic yards (14% increase) and additional 3,530 lbs of PCBs (7.5% increase) beyond the

²¹ For the same reason, it is also anticipated that there will be no change in IMPG attainment for four other ecological receptors-amphibians, insectivorous birds, piscivorous mammals, and omnivorous/carnivorous mammals.

2014 Alternative. With respect to the type and quantity of residuals remaining after treatment, there is no substantive difference between the two alternatives.

7. Short-Term Effectiveness

The 2014 Comparative Analysis contained an analysis of the short-term effectiveness of the 2014 Alternative and seven other combination alternatives. The 2020 Alternative is very similar to the 2014 Alternative in many respects related to short-term effectiveness, but with more slightly more areas of removal, it will have slightly more short-term effects due to remediation. Regarding short-term environmental impacts, the two alternatives are very similar. While major differences are few, variations are discussed below.

a) Impacts to the Environment

For the types of environmental impacts discussed in the 2014 Comparative Analysis, the two alternatives are very similar. While major differences are few, particular variations include:

- (1) *Riverbank Habitat* – As noted in the 2014 Comparative Analysis, the approach to bank remediation in the 2014 Alternative considers both the erosion potential and the PCB concentrations in bank soil, which reduces the amount of bank remediation by focusing only on banks that have both high erosion potential and high PCB concentrations, and even less remediation in Reach 5B. The 2020 Alternative has the potential for additional bank remediation after considering a number of factors, and if that remediation occurs, that alternative will have more impact than the 2014 Alternative.
- (2) *Floodplain Habitat* – The two alternatives have similar levels of removal; however, the 2020 Alternative has additional removal at a minimum of 22 specific properties as well as at Canoe Meadows, which will marginally increase the short-term impacts above the 2014 Alternative. There will be an increase in the acreage of floodplain removal by about 4% (47 acres compared to 45 acres). See Table 2. With respect to impacts on Vernal Pools, the 2014 Comparative Analysis describes how the 2014 Alternative is favorable to the other alternatives evaluated at that time. The 2020 Alternative retains the iterative pilot-study-based approach to Vernal Pools from the 2014 Alternative, so both alternatives have that positive approach.

b) Carbon Footprint – Greenhouse Gas (“GHG”) Emissions

Due to the increase in soil/sediment removal, the 2020 Sediment/Floodplain Alternative component would increase the estimated GHG emissions from 171,000 to 196,000 metric tons (“tonnes”). See Table 12. This 14% increase is proportional to the 14% increase in soil/sediment to be removed. This increase does not take into account any decrease related to the revised disposal alternative (TD 6) discussed below, which leads to an overall decrease in the impact. Combining the floodplain/sediment remediation with the Hybrid

Disposal approach, the total estimated GHG emissions for the 2020 remedy is 227,000 tonnes compared to 335,800 tonnes for the 2014 Alternative using trucking or 241,000 tonnes using rail. Thus, the overall impact from GHG emissions is approximately 6% to 32% less for the 2020 Proposed Revised Remedial Action compared to the 2016 Permit Remedy.

c) Impacts on Local Communities and Communities along Truck Transport Routes

With regard to impacts on local communities and communities along truck transport routes, the differences between the 2020 and 2014 Alternatives, for the Sediment/Floodplain Alternatives only, the 2020 Alternative has 52,800 truck trips compared to 68,800 for the 2014 Alternative. See Table 13a. This does not take into account any decrease in trucking related to the revised disposal alternative (TD 6) discussed below in Sections II.E through II.G. Combining the floodplain/sediment remediation with the hybrid disposal approach, the total estimated number of truck trips for the 2020 remedy is 102,900 total trips (approximately 7,900 trips per year) compared to 151,700 total trips (11,700 trips per year) for the 2014 Alternative. Thus, the overall impacts to the local communities from truck traffic is approximately one-third less for the 2020 Alternatives compared to the 2014 Alternative. See Table 13c.

d) Potential Measures to Avoid, Minimize, or Mitigate Short-Term Community Impacts

With similar size/scope and duration, the two alternatives would have similar community impacts. One benefit for the 2020 Alternative is the robust Quality of Life Compliance Plan that requires GE to submit plans on how to avoid, minimize or mitigate impacts to the community.

e) Risks of Injuries and Fatalities

The risk of non-fatal injuries and fatal injuries to implement the 2020 Floodplain/Sediment Alternative due to implementation of the remedy (excluding transport of excavated material) is 14 and 0.14 respectively. This is slightly higher than the 2014 Alternative estimate of 9.2 (12 with rail) and 0.10 (0.12 with rail) respectively. See Table 14. This does not take into account any decrease in trucking related injuries/fatalities to the revised disposal alternative (TD 6) discussed below.

8. Implementability

The 2014 Alternative was evaluated on this criterion in the 2014 Comparative Analysis. Using that analysis as a starting point, the distinctions between the 2014 and 2020 Alternatives on Implementability factors are described below.

a) Ability to Construct and Operate the Technology

Comparing the 2014 Alternative to the 2020 Alternative on the ability to obtaining the large quantities of capping/backfill/stabilization material is somewhat uncertain as described in the 2014 Comparative Analysis, and also because of the sampling to be performed during remedial design that could affect the quantity of capping/backfill/stabilization material. Since there is reduced capping material needed for the 2020 Alternative, the uncertainty in obtaining large quantities of backfill/capping material is less for the 2020 Alternative compared to the 2014 Alternative, approximately 625,000 cubic yards of material for the 2020 Alternative vs. approximately 800,000 cubic yards in the 2014 Alternative (20% less material). See Table 15.

Overall, for both remediation and habitat restoration, both alternatives would be implemented using well-established and available methods and equipment, and remedial components selected have been used in similar applications.

b) Reliability of the Technology

Both alternatives satisfy the factor. Additionally, the hydraulic dredging/pumping approach in the 2020 Alternative is a reliable technology that has been successfully used at other sediment remediation sites and is scalable and adaptable to the proposed use in Rest of River.

c) Regulatory and Zoning Restrictions, Ease of Undertaking Additional Corrective Measures, and Ability to Monitor Effectiveness of Remedy

The evaluation for the 2014 Alternative in the 2014 Comparative Analysis on these three sub-criteria would apply equally to the 2020 Alternative; neither has regulatory or zoning restrictions that would affect implementability; neither alternative would preclude implementation of additional corrective measures or the ability to monitor the effectiveness of the remedy.

d) Coordination with Other Agencies

Both alternatives would include coordination with state agencies, and since the type of cleanup and estimated duration are similar between the two alternatives, they would not differ significantly on this sub-criterion.

e) Availability of Suitable Treatment, Storage, and Disposal Facilities, and Availability of Prospective Technologies

These components of the selection decision factor are discussed in the Supplemental Comparative Analysis of Treatment/Disposition Alternatives (Section II.G.).

9. Cost

The 2014 Alternative was evaluated on this criterion in the 2014 Comparative Analysis. The estimated cost for the 2020 Alternative for sediments and floodplains is approximately 3% less than the 2014 Alternative. The 2014 Alternative (in 2010 dollars) is \$326 million for sediments and floodplains compared to \$315 million for the 2020 Alternative (also in 2010 dollars). See Table 3 for full cost comparisons and costs in 2020 dollars.

10. Overall Conclusion for Sediment/Floodplain Alternatives

For the reasons discussed above, EPA believes that between the 2014 Alternative and the 2020 Alternative, the 2020 Alternative is better suited to meet the General Standards of the 2000 Permit in consideration of the Selection Decision Factors of the 2000 Permit.

E. DESCRIPTION OF TREATMENT/DISPOSITION ALTERNATIVES

In 2014, EPA performed a comparative analysis of five alternatives for treatment/disposition of excavated material in Rest of River. EPA reached an overall conclusion that the TD 1RR alternative, off-site disposal at licensed existing TSCA facilities with a preference for rail, was best suited to meet the General Standards of the 2000 Permit in consideration of the Selection Decision Factors of the 2000 Permit. TD 1RR was incorporated into the 2016 Permit. GE appealed EPA's selection of TD 1RR to the EAB. GE's preferred alternative from its 2010 Revised CMS was TD 3, on-site disposal of all material at one of three GE-proposed sites.

This Supplemental Comparative Analysis compares a new alternative, titled TD 6 (Hybrid Disposal), against TD 1 (off-site disposal via trucking), TD 1RR (off-site disposal via rail) and TD 3 (Woods Pond location only). TD 6 is the Hybrid Disposal approach provided for in the Settlement Agreement, and which has been incorporated into the Draft Revised 2020 Permit in Sections II.B.5. and II.B.6. The 2014 Comparative Analysis is still valid except where it is explicitly modified in this Supplemental Comparative Analysis. Please refer to the 2014 Comparative Analysis for additional details.

The Hybrid Disposal approach includes elements of both TD 1/TD 1RR from the 2016 Permit and TD 3 from the GE's 2010 Revised CMS, and provides, generally, for disposal off-site at existing licensed TSCA facilities of material that equals or exceeds 50 milligrams per kilogram ("mg/kg") on average of PCBs, or otherwise that is classified as RCRA hazardous waste. Notwithstanding these requirements, a minimum of 100,000 cubic yards of the most contaminated material must be disposed of off-site. Other lower-level excavated material may be disposed of at an on-site Upland Disposal Facility. Elements of the Hybrid Disposal approach include the following:

1. Material disposed of at the Upland Disposal Facility (as described below) pursuant to characterization and averaging method(s) approved and/or developed by EPA

(Attachment C to the Settlement Agreement) must not exceed the elevation, volume, and footprint limits described below. GE is required to dispose of any material not placed in the Upland Disposal Facility in any out-of-state facility that is licensed/permitted to accept such waste and will accept it, including RCRA Subtitle C Landfills, so long as said facility is in compliance with EPA's Off-Site Rule (40 C.F.R. 300.440). Notwithstanding the first sentence of this paragraph, a minimum of 100,000 cubic yards of PCB-contaminated sediment, riverbank soils, and/or floodplain soils must be disposed of out of State.

2. Transportation and disposal of sediment, floodplain soils and other Waste Material (as defined in the Consent Decree) that meet these criteria would occur at a location depicted in Figure 1 to the Settlement Agreement and as described in Sections III.D. through III.G. of the Settlement Agreement – that is at the Upland Disposal Facility. No material from the Rest of River Remedial Action will be disposed of at any other location in Berkshire County.
3. No one will take any materials to the Upland Disposal Facility for disposal except those identified for the Upland Disposal Facility and generated in the Rest of River Remedial Action. No materials from previously remediated sites in the Upper 2-Mile Reach of the Housatonic River cleanup nor any other materials associated with the other response actions conducted pursuant to the Site Consent Decree will be disposed of at the Upland Disposal Facility.
4. The Upland Disposal Facility will have a maximum design capacity of 1.3 million cubic yards. The landfill consolidation area will have a maximum footprint of 20 acres and a maximum elevation of 1,099 feet above mean sea level. If the seasonally high groundwater elevation is determined to be higher than 950 feet above mean sea level, the maximum elevation of the landfill consolidation area may be increased by the number of feet that is the difference between the seasonally high groundwater elevation and 950 feet above mean sea level in order for the Upland Disposal Facility to have a maximum capacity of 1.3 million cubic yards.
5. GE will construct the Upland Disposal Facility landfill with a double liner and a leachate collection system and will cap the Upland Disposal Facility with a low-permeability cap and vegetation. The liners will have a permeability equal to or less than 1×10^{-7} cm/sec, a minimum thickness of 30 mils and be chemically compatible with PCBs. The bottom liner of the landfill will be installed a minimum of 15 feet above a conservative estimate of the seasonally high groundwater elevation. The seasonally high groundwater elevation will be projected using site-specific groundwater elevation data collected in the location of the Upland Disposal Facility, modified by an appropriate technical method that takes into account historic groundwater level fluctuations at similarly sited off-site long-term monitoring wells in Massachusetts. The estimation of a seasonally high groundwater elevation will be performed pursuant to a methodology reviewed and approved by the EPA. The estimate of seasonally high groundwater elevation will then be used to support the design of the landfill relative to achieving the required

minimum separation distance from the bottom of the liner system to the seasonally high groundwater elevation. The double liner system, separated by a drainage layer, will incorporate primary and secondary leachate collection systems.

6. GE will identify all non-community and private water supply wells currently within 500 feet of the Upland Disposal Facility consolidation area. Unless the well owner does not consent, GE will pay the installation cost of a connection to public water. In the event any new water users (*e.g.*, new construction) move within 500 feet of the Upland Disposal Facility consolidation area during construction or operation and maintenance, GE will pay the installation cost of a connection to public water.
7. Pursuant to EPA-approved or developed remedial design, remedial action, and operation and maintenance documents, and in accordance with the Consent Decree and the Revised Permit,
 - a) GE will install a groundwater monitoring network around the Upland Disposal Facility to monitor for PCBs and other constituents identified in the groundwater monitoring plan as approved or modified by EPA. Groundwater monitoring will include a sufficient number of monitoring wells to allow detection of groundwater impacts.
 - b) GE will perform landfill inspections, maintenance, and groundwater sampling activities.
 - c) GE will be responsible for the proper functioning of the Upland Disposal Facility landfill during landfill operations and will remain responsible for the proper operation and maintenance of the landfill thereafter. GE will be responsible for the closure of the landfill including the installation of the impermeable cap and vegetative cover promptly upon EPA's determination that either of the following conditions has occurred: (1) the landfill is full (*e.g.*, when the maximum footprint, elevation and/or volume are reached), or (2) excavation and dredging activities conducted as part of the Rest of River Remedial Action are complete. GE will be responsible for post-closure activities and monitoring thereafter.
 - d) Landfill design will include a stormwater management system to control surface runoff, to minimize the potential for surface erosion or stormwater contribution to leachate generation.
8. GE will include in its landfill design submissions one or more proposals (based on GE's consultations with officials from the Town of Lee) describing how GE will prepare the Upland Disposal Facility for potential re-use once the landfill is capped if the Town of Lee desires. Any such proposals will be described in the final remedial design/remedial action work plans.

F. 2000 PERMIT NINE-CRITERIA ANALYSIS FOR THE HYBRID DISPOSAL ALTERNATIVE (TD 6)

The 2000 Permit provides for treatment/disposition alternatives to be evaluated pursuant to nine criteria in the 2000 Permit, along with any other relevant information in the Administrative Record for the modification of the 2000 Permit. In its Revised CMS, GE submitted its analysis of the nine criteria in the 2000 Permit for TD 1/TD 1RR (off-site disposal) and TD 3 (on-site disposal) and three other alternatives. EPA's 2014 Comparative Analysis included evaluation of TD 1/TD 1RR and TD 3. The Hybrid Disposal alternative described above, also referred to as TD 6 for this purpose, was not reviewed in the GE and EPA submittals. However, since it is essentially a combination of components from TD 1 and TD 3, the evaluation of the nine criteria for TD 6 can be in part based on the analysis of each of those alternatives. Immediately below is an evaluation of the Hybrid Disposal alternative – TD 6 – pursuant to the nine criteria from the 2000 Permit. Following that, in Section II.G. is the Supplemental Comparative Analysis of off-site disposal (TD 1/TD 1RR), on-site disposal (TD 3 - Woods Pond)²² and Hybrid Disposal (TD 6).

1. Overall Protection of Human Health and the Environment

The Hybrid Disposal alternative would provide high levels of protection. Excavated material will either (1) be removed from the site to an existing licensed off-site facility or, (2) for lesser-contaminated materials, contained in a secure Upland Disposal Facility, constructed with an appropriate double liner, cover, and double leachate collection system, similar to the description for TD 3 in GE's Revised CMS.

2. Control of Sources of Releases

The Hybrid Disposal alternative would control the potential for PCB-contaminated sediment and soil to be released and transported within the river or onto the floodplain. Placement of at least 100,000 cubic yards of the most highly contaminated material into a licensed off-site landfill or landfills would effectively isolate those materials from a release to the Housatonic River and floodplain. Placement of the remainder of the excavated material into a secure Upland Disposal Facility outside of the 500-year floodplain that will have a double liner and long-term monitoring and maintenance program will also control the potential for the release of contaminated material. Thus, the Hybrid Disposal alternative will effectively control the releases to the environment.

²² For the remainder of this section and for Section II.G., TD 3 refers to the alternative evaluated in the 2014 Comparative Analysis for the Woods Pond TD 3 location only.

3. Compliance with Federal and State ARARs

The new or modified ARARs identified for TD 6 are discussed in more detail in Attachment B to this Supplemental Comparative Analysis. Also see Section II.G. below for additional detail.

4. Long-Term Reliability and Effectiveness

The Hybrid Disposal alternative results in significant reductions in residual risk. At least 100,000 cubic yards of the most highly PCB-contaminated material will be removed from the site and sent to a licensed off-site disposal facility. The remainder of the material remains on-site in an Upland Disposal Facility; therefore, residual risk does exist. However, use of the secure on-site facility will permanently isolate those materials from direct contact with human and ecological receptors in a secure location outside the floodplain.

- a) For adequacy and reliability, for the portion of material being disposed of off-site, it is adequate and reliable because it does not rely on OM&M (other than at the receiving facility); for the remaining material being disposed at the Upland Disposal Facility, the Hybrid Disposal alternative relies on OM&M in the long-term to ensure the material remains adequately contained.
- b) Labor and materials are available for OM&M for the Hybrid Disposal alternative, and both the on-site and off-site disposal approaches have been used under similar conditions.
- c) The Hybrid Disposal alternative is not expected to have long-term adverse impacts on human health.

5. Attainment of IMPGs

This criterion is not directly applicable to the treatment and disposal alternatives; thus, EPA does not need to analyze the Hybrid Disposal alternative against this criterion.

6. Reduction of Toxicity, Mobility or Volume

The Hybrid Disposal alternative would not include any treatment processes that would reduce the toxicity of, or directly affect, PCB concentrations in the removed sediment and soil. However, the Adaptive Management provision in the 2016 Permit, which is retained in the Draft Revised Permit, does provide for the continued testing of treatment technologies that might, in the future, be applied to further reduce toxicity, mobility, or volume of contamination in the Upland Disposal Facility. The Hybrid Disposal alternative would reduce the mobility of soils and sediments by disposing in an off-site or on-site disposal facility. The Hybrid Disposal alternative would not reduce the volume of PCB-material, but it will reduce the higher-level PCB-material remaining within the Housatonic River Watershed due to those materials being disposed of off-site.

7. Short-Term Effectiveness

TD 6 will have short-term impacts to the community and the environment. There would be the potential for accidental releases of PCB-contaminated material; however, actions will be taken to prevent these potential releases. Given the industrial and previously disturbed setting of the Upland Disposal Facility, TD 6 would not have significant permanent loss of habitat or displacement of wildlife. This is supported by the following information in Massachusetts Geographic Information System (“MassGIS”) databases.²³

- a) There is no Priority Habitat for Rare Species as mapped by Massachusetts Natural Heritage and Endangered Species Program in or adjacent to the Upland Disposal Facility. The closest location of mapped Priority Habitat for Rare Species is Woods Pond itself, which is going to be impacted significantly by the remediation, not disposal.
- b) There are no BioMap Critical Natural Habitats mapped within either the footprint of the disposal/operational area or in the entire parcel to be owned/operated by GE.
- c) There are no BioMap areas of Core Habitat within the footprint of the disposal/operational area. There is a portion of the BioMap areas of Core Habitat within the support area of the Upland Disposal Facility near Woods Pond, but it is limited to approximately 0.24 acre.
- d) With respect to “Prime Forest” land, approximately 3.7 acres of prime forest, all of which is classified as Prime 2, is mapped within the approximate limits of the proposed operational area, with only 0.66 acre of this in the area designated for disposal.

Furthermore, if the mapping is correct, any disturbed areas, can, to extent practicable, be restored or enhanced. Additional restoration activities can occur in the area of Upland Disposal Facility to mitigate the loss, if any, of prime forest within the disposal area footprint.

There will be impacts to the areas and community surrounding the on-site disposal location, and the off-site disposal component will have short-term impacts during transport of waste material. For GHG emissions, TD 6 and the associated trucking/hydraulic pumping to transport the material to the Upland Disposal Facility and off-site disposal facilities is estimated to generate approximately 31,000 tonnes of GHG emissions. When TD 6 is combined with the 2020

²³From MassGIS database available at http://maps.massgis.state.ma.us/map_ol/oliver.php as further documents in a June 10, 2020 letter from Deborah Jones, Bluestone to Dean Tagliaferro, EPA, Re: GIS Support.

Sediment/Floodplain Alternative, the total estimated GHG emissions are 227,000 tonnes. See Table 12.

The truck traffic associated with the transport of waste to the Upland Disposal Facility and off-site disposal is estimated at a total of 47,000 truck trips, or 3,800 truck trips per year. When combined with the 2020 Sediment/Floodplain Alternative, the total estimated truck traffic, including truck traffic to construct the Upland Disposal facility is a total of 99,800 truck trips, or 8,000 truck trips per year. In addition, there would be 3,100 truck trips to construct the TD 6 Upland Disposal Facility. See Tables 13a, 13b, and 13c.

The risk to remediation workers and transportation related injuries/fatalities associated with the transport of waste to the Upland Disposal Facility and off-site disposal is estimated at 7.5 injuries and 0.35 fatalities. See Table 14.

8. Implementability

The implementability of the Hybrid Disposal alternative includes the following considerations:

- a) Both the on-site and off-site landfilling components can be constructed and operated and are reliable technologies.
- b) For regulatory and zoning requirements, the off-site landfill component location would have already satisfied regulatory requirements, if any. For the on-site landfill, state ARARs (discussed above in Section II.F.3. above) will have to be taken into consideration. With regard to zoning, the Upland Disposal Facility and adjacent area is zoned Conservation-Residential (“CR”) and Industrial (“I”) since at least 1974. Approximately half of the operational and disposal area is located in the CR zone and the other half is in the Industrial zone. Even though a portion of the Upland Disposal Facility is currently in a CR zone, its current use is a sand and gravel facility and there are two existing landfills located in close proximity. In addition, within the past three years, a residential lot immediately adjacent to the proposed Upland Disposal Facility was recently purchased and is currently being used as a gravel processing facility.
- c) Coordination with state and local agencies will be important for the Upland Disposal Facility and for siting a loading facility for off-site shipments. The agreement by the local governments in the Settlement Agreement is evidence of this coordination and their anticipated continued cooperation including concerning local zoning issues.
- d) For the availability of licensed off-site facilities, while the current universe of facilities is sufficient, there are uncertainties on future availability of necessary capacity but not necessarily for the size of the cleanup. For the availability of on-site facilities, there is sufficient capacity in the Upland Disposal Facility and each of the Berkshire County municipalities has agreed to the Hybrid Disposal approach as part of the Settlement Agreement.

- e) For undertaking additional corrective measures, the off-site portion of the Hybrid Disposal alternative would be easily implementable, and the on-site portion has a capacity of 1.3 million cubic yards, which is sufficient for the estimated 1,033,000 cubic yards²⁴ estimated to be generated from soil and floodplain remediation and the additional ancillary waste material, such as used road material, that will be generated during the implementation of the remedial action. However, if the Upland Disposal Facility is closed prior to identification of additional corrective measures, it may be administratively difficult and perhaps not cost effective to reopen the facility. Regardless, the off-site disposal method would still be viable and is included as part of TD 6.
- f) The Hybrid Disposal alternative can be monitored effectively; it will require long term OM&M to ensure protectiveness at the Upland Disposal Facility.

9. Cost

The estimated cost for TD 6, including total capital cost, estimated annual maintenance and monitoring cost, and total estimated present worth is summarized in Table 3.

G. SUPPLEMENTAL COMPARATIVE ANALYSIS OF TREATMENT/DISPOSITION ALTERNATIVES

This Supplemental Comparative Analysis compares three alternatives: TD 1/TD 1RR, TD 3 (Woods Pond location only), and the Hybrid Disposal alternative, which for purposes of this Supplemental Comparative Analysis is designated as TD 6. In this section, the three alternatives are analyzed against the relevant criteria.

1. Overall Protection of Human Health and the Environment

The evaluation of whether a particular treatment/disposition alternative would provide overall human health and environmental protection draws on evaluations under several other Permit criteria, notably long-term reliability and effectiveness (including long-term adverse impacts), and short-term effectiveness. In the 2014 Comparative Analysis, TD 1/TD 1RR and TD 3 were both viewed to provide high levels of protection to human health and the environment because the excavated material would be either removed from the site or contained in an Upland Disposal Facility, although TD 3 would require the proper OM&M to maintain its protectiveness. TD 6, being a hybrid of the TD 1/TD 1RR and TD 3 alternatives, would provide similarly high levels of such protection and would also require the proper OM&M to maintain its protectiveness. For long-term reliability and effectiveness, all three alternatives are strong, with TD 1/TD 1RR strongest due to the ability to isolate all the material from the Housatonic River watershed, and TD

²⁴ This excludes the minimum of 100,000 cubic yards of material designated for off-site disposal.

3 less strong than TD 6 because TD 6 includes removal from the site of a minimum of 100,000 cubic yards of the most highly contaminated material.

Evaluation of short-term effectiveness is described more fully below in Section II.G.7. Among the distinctions are as follows. All three alternatives have GHG emissions, with TD 1/TD 1RR having the most emissions, followed by TD 6 and TD 3 the fewest. See Table 12. For impacts on local communities, all of the alternatives will have short-term impacts to the local communities in the Rest of River area, such as disruption, noise, other impacts, truck traffic and potential remediation-related injuries/fatalities. TD 3 has the most truck traffic, followed by TD 1/TD 1RR and TD 6 has the least. See Tables 13a, 13b, and 13c. Similarly, TD 1/TD 1RR has the most remediation-related injuries/fatalities, followed by TD 6 and TD 3 has the least. See Table 14. Impacts related to having an on-site landfill would be greatest with TD 3 due to the high-level contamination that would be placed on-site, and TD 1/TD 1RR would have the fewest impacts.

As to compliance with ARARs, TD 1/TD 1RR has the fewest ARARs with which to comply. TD 3 and TD 6 both would need to comply with, or waive, specific ARARs related to an on-site landfill. TD 3 also would necessitate compliance or waiver for state hazardous waste disposal regulations for permanent disposal, an issue not associated with TD 6 because of the segregation and off-site disposal of higher-level PCB waste and all federal RCRA-hazardous waste. See ARARs section below and Appendix B for additional discussion regarding ARARs.

TD 6 is part of a Settlement Agreement that includes numerous enhancements to the floodplain and sediment remedies, an expedited start to implementation, and community coordination and benefits. These benefits serve to further protect human health and the environment and provide better short- and long-term protectiveness when compared to the two other TD alternatives which do not include such benefits.

2. Control of Sources of Releases

As to the potential for PCB-contaminated sediment and soil to be released and transported within the river or onto the floodplain, all three of the alternatives meet the criterion. In the 2014 Comparative Analysis, TD 1 best met the criterion, followed by TD 3 on the basis that TD 1 effectively isolated the materials from being released into the environment through removal to the off-site location. For the current evaluation TD 6 would also satisfy this criterion: it would be less effective than TD 1/TD 1RR but more effective than TD 3 in light of TD 6's off-site isolation of at least 100,000 of the most highly contaminated materials, a component that TD 3 does not have. TD 6 and TD 3 would share the potential for releases to the Housatonic River watershed if, in the long term, the facility, including the handling and treatment of leachate, is not properly operated and maintained. However, this potential is mitigated by the selection of a single disposal location over 1,000 feet from the river outside of the 500-year floodplain.

3. Compliance with Federal and State ARARs

A description of the proposed changes to ARARs, including for TD 6, can be found in Attachment B to this Supplemental Comparative Analysis. (Attachment C to the 2016 Permit provides the ARARs related to TD 1/TD 1RR.) Below is a summary of some of the more significant ARARs for the three alternatives being evaluated. The three alternatives would involve moving the sediment, bank soil, and floodplain soil from the point of excavation to the disposal location, and each treatment/disposition alternative would attain the ARARs, except as discussed below. TD 1 would attain the requirements. TD 6 has ARARs associated with the Upland Disposal Facility. TD 3 has those ARARs plus those associated with being a hazardous waste disposal site and a TSCA chemical waste landfill.

For TD 6, both the on-site and off-site disposal of PCBs are addressed pursuant to the EPA risk-based determination in Attachment D to the Draft Revised 2020 Permit. The Commonwealth of Massachusetts has promulgated certain Site Suitability Criteria for solid waste landfill facilities (310 CMR 16). EPA believes that the remedy can comply with all provisions of 310 CMR 16 except for the provisions of 310 CMR 16.40(4)(d). For each provision in 310 CMR 16, to the extent that it is deemed to be an ARAR, but cannot be met at the Upland Disposal Facility, including restrictions on siting solid waste facilities in an Area of Critical Environmental Concern (“ACEC”), EPA would invoke a waiver of the provision pursuant to CERCLA 121(d)(4)(B), 40 C.F.R. 300.430(f)(1)(ii)(C)(2), because compliance with the requirement will result in greater risk to human health and the environment than the proposed cleanup plan in the Draft Revised 2020 Permit. Furthermore, to the extent any material averaging below 50 mg/kg is deemed to be Massachusetts hazardous waste solely because of the presence of PCBs, EPA has determined that the requirements are not appropriate for the Upland Disposal Facility because compliance will create greater risk to human health and the environment than implementation of the remedy set forth in the Draft Revised 2020 Permit. However, if hazardous waste facility siting requirements in 310 CMR 30 are deemed an ARAR, EPA would also invoke the CERCLA waiver pursuant to CERCLA 121(d)(4)(B), 40 C.F.R. 300.430(f)(1)(ii)(C)(2). In the 2016 Permit, EPA waived restrictions on temporary management of solid and hazardous wastes within the ACEC for TD 1, and those waivers would remain in place under TD 6.

4. Long-Term Reliability and Effectiveness

This assessment of the three alternatives included an evaluation of the magnitude of residual risk, the adequacy and reliability of the alternatives, and the potential long-term impacts on human health and the environment.

a) Magnitude of Residual Risk

As noted in the 2014 Comparative Analysis, placement of PCB-contaminated sediment/soil in off-site permitted landfills (TD 1/TD 1RR) or in an Upland

Disposal Facility (TD 3) would permanently isolate those materials from direct contact with human and ecological receptors. TD 6, being made up of elements of TD 1 and TD 3, would also permanently isolate the materials, bolstered by the fact that it would be designed to be generally equivalent to a facility permitted to accept much higher concentration materials. Due to TD 3 and TD 6 using on-site disposal in whole or in part, the magnitude of residual risk and potential for exposure in the long-term due to a possible release would favor TD 1, then TD 6, then TD 3.

b) Adequacy and Reliability of Alternatives

Use of off-site disposal facilities, as TD 1/TD 1RR does, and TD 6 does for the highest-contaminated materials, is a common and effective means for permanent disposition of PCB-contaminated material. On site-disposal – as used in whole by TD 3, and in large part by TD 6 (for the less-contaminated material) – is an effective and reliable means for permanently isolating such materials, provided the facility, including the handling and treatment of leachate, is properly constructed, monitored and maintained. If a release were to occur from an on-site facility or handling of leachate, the risks posed by TD 3 would be greater than for TD 1/TD 1RR and TD 6 (because for TD 6, higher-concentration PCB materials will be sent off-site for disposal). However, while there is the potential for leachate to be generated from the landfill in TD 6, by virtue of the highest levels of contamination being shipped off-site, the potential concentration of contaminants in any such leachate would be expected to be lower than that of TD 3. Thus, the risks for TD 3 are greater than for TD 6. Similar to TD 3, the design of TD 6 would have to consider whether any such leachate requires treatment and, if so, whether such treatment would be conducted at the landfill location, at GE's Pittsfield water treatment facilities, or at an off-site location, all of which are expected to be viable options.

c) Potential Long-Term Adverse Impacts on Human Health and the Environment

TD 1/TD 1RR and the portion of TD 6 requiring off-site disposal both have very little long-term adverse impact on human and ecological receptors on the site. TD 3, and the on-site portion of TD 6 would isolate the removed sediment/soil from exposure because of the structures built specifically for the purpose of containing them. The 2014 Comparative Analysis notes two other distinctions: first, that TD 1 would not have a long-term environmental impacts on the site, TD 1RR, despite building a rail loading facility, would also not result in adverse long-term environmental impacts because the rail yard and loading facility would be demobilized following completion of the remedy and the area restored to its former condition; and second, that depending where the TD 3 location was built, there was the potential for alteration in habitat due to the operation of the facility. In TD 6, the Woods Pond location has been specified for the Upland Disposal Facility. The Upland Disposal Facility's operational footprint is part of an existing sand and gravel facility in close proximity to two other solid waste disposal facilities, with less impact to habitat

than the other two potential upland disposal facilities evaluated under TD 3 (the two other GE-proposed sites were “Forest Street” site in Lee, and the “Rising Pond” site in Great Barrington; see GE’s 2010 Revised CMS for details). Therefore, TD 1/RD 1RR would have the least impact on habitat. TD 3 and TD 6 would have a similar impact assuming Woods Pond was the TD 3 location.

In summary, the long-term adverse human health and environmental impacts would be least with TD 1/TD 1RR, next least with TD 6, followed by TD 3.

5. Attainment of IMPGs

Attainment of IMPGs is not applicable to evaluation of treatment and disposal alternatives.

6. Reduction of Toxicity, Mobility, or Volume

The degree to which TD 1/TD 1RR, TD 3, and TD 6 would reduce the toxicity, mobility or volume of PCBs in Rest of River is discussed below.

a) Treatment Process Used and Materials Treated, and Amount of Hazardous Material Destroyed or Treated

Neither TD 1/TD 1RR, TD 3, nor TD 6 would include any treatment processes that would reduce the toxicity of, or directly affect, PCB concentrations in the removed sediment and soil, except as part of Adaptive Management requirements outlined below.

b) Degree of Expected Reductions in Toxicity, Mobility, or Volume

(1) *Reduction of Toxicity* – TD 1/TD 1RR, TD 3, and TD 6 would not in the first instance include any treatment processes that would reduce the toxicity of, or directly affect, PCB concentrations in the removed sediment and soil.

(2) *Reduction of Mobility* – TD 1/TD 1RR, TD 3, and TD 6 would all reduce the mobility of PCBs in the sediment and soil. In TD 1/TD 1RR and TD 6 some or all of the materials would be removed and disposed of in off-site permitted landfill(s) or permanently contained within an Upland Disposal Facility (TD 3 in total, and TD 6 in part).

(3) *Reduction of Volume* – TD 1/TD 1RR, TD 3 and TD 6 would not reduce the volume of contaminated material in the first instance.

c) Degree to which Treatment is Irreversible and Type and Quantity of Residuals Remaining after Treatment

These criteria are not applicable to TD 1, TD 3, or TD 6 in the first instance, because these alternatives do not involve treatment except for through the Adaptive Management provisions in Section II.F. of the Draft Revised 2020

Permit, or the PCB remediation technology research commitments in the Settlement Agreement. For such potential future treatment, it is unknown if treatment is irreversible or whether and how many residuals would remain.

7. Short-Term Effectiveness

a) Impacts to the Environment

The 2014 Comparative Analysis stated that of the alternatives evaluated at that point, TD 1 would have the least impact, requiring only access roads and staging areas for loading of vehicles for off-site transport. TD 1RR would require construction of a temporary rail yard and loading facility along with access roads and staging areas, and TD 3 would have impacts depending on the habitat and operational footprint of the facility chosen among GE's three proposed sites. TD 6, being a hybrid of TD 1 and TD 3, would have the relatively lower impact of TD 1 for the materials being taken off-site, and slightly more impact than TD 3 because TD 6 has a larger footprint. All the TD alternatives have risk of accidental releases of PCB-contaminated materials. The use of hydraulic dredging and pumping, if feasible, for TD 6 would significantly reduce its impact on the environment by minimizing the truck transport of waste to the Upland Disposal Facility.

b) Carbon Footprint – GHG Emissions

Regarding carbon footprint and GHG emissions for transport to a final disposal facility, excluding the construction of the rail facility or Upland Disposal Facility, the calculated GHG emissions anticipated to result from treatment/disposition alternatives are shown in Table 12. TD 1 (164,800 tonnes) and TD 1RR (70,000 tonnes) both are estimated to generate more GHG emissions than TD 6 (31,000 tonnes). TD 3 is estimated to generate the least amount of GHG emissions at 6,600 tonnes. For overall combined remedy GHG, see Section II.F.7. above and Table 12.

c) Impacts on Local Communities and Communities along Truck Transport Routes

All of the alternatives will have short-term impacts to the local communities in the Rest of River area, such as disruption, noise and other impacts. TD 6, due to its use of hydraulic pumping of excavated material, if feasible, can eliminate nearly 50,000 truck trips to the Upland Disposal Facility. For truck trips, the estimated total and annual number of trips are 81,700 (6,100 average annual trips) for TD 1, with an additional 1,200 trips to construct the rail facility for TD 1RR; 81,700 (6,100 annual average) truck trips for TD 3, with an additional 2,400 truck trips to construct the disposal facility; and 47,000 (3,800 annual trips) for TD 6, and an additional 3,100 truck trips to construct the Upland Disposal Facility. Thus, TD 1 would have the highest number of truck trips, followed by TD 1RR and TD 3, with TD 6 having the lowest estimated number

of truck trips. See Tables 13a and 13b. For overall combined remedy truck counts, see Section II.F.7. above and Table 13c.

d) Potential Measures to Avoid, Minimize, or Mitigate Short-Term Community Impacts

As with the 2014 Comparative Analysis's description, TD 1/TD 1RR's mitigation measures relate to increased truck traffic. TD 3's mitigation measures would address the increase in truck traffic and impacts associated with construction and operation of the disposal facility. TD 6 would similarly include efforts to avoid, minimize or mitigate impacts, including the hydraulic pumping component to reduce truck traffic and the Quality of Life Compliance Plan. These efforts will ensure that GE's work planning addresses potential impacts on communities. EPA has committed to have public and stakeholder input on this plan. Those two items are improvements to the measures taken in TD 1/TD 1RR and TD 3.

e) Risk of Injuries and Fatalities

The estimated risk to remediation workers and transportation related injuries and fatalities associated with the transport of waste to the Upland Disposal Facility and/or off-site disposal were estimated as follows: 44 injuries and 2.1 fatalities for TD 1, (39 and 6.75 for TD 1RR), 7.5 and 0.35 for TD 6, and 5.4 and 0.25 for TD 3. Based on that information, the incidence of potential injuries and fatalities resulting from accidents associated would be greatest for TD 1 and TD 1RR, followed by TD 6 and then TD 3. See Table 14.

8. Implementability

The 2000 Permit provides eight specific components of this criterion.

a) Ability to Construct and Operate this Technology

The analysis of the 2014 Comparative Analysis for TD 1, TD 1RR and TD 3 is accurate, and also applies to TD 6. Each of the technologies can be constructed and operated as necessary. Landfills designed to accept remediation waste are routinely constructed and operated; techniques are well known and demonstrated as effective.

b) Reliability of the Technology

For TD 3 and TD 6, landfills have been proven to be reliable in reducing and/or eliminating exposure to hazardous materials. Transportation of hazardous and non-hazardous material by truck or rail (TD 1/TD 1RR) is a routine technology with appropriate controls to safeguard public and workers.

c) Regulatory and Zoning Restrictions

Overall, TD 1 would be easiest to implement relative to regulatory and zoning restrictions, followed by TD 1RR and TD 6. TD 3, with a hazardous waste landfill, would be the most difficult and time consuming from an administrative perspective. The zoning issues related to TD 6 as described above, are equally applicable to TD 3 for the Woods Pond Site. However, local governments have documented their acceptance of the Upland Disposal Facility location through their acceptance of the Settlement Agreement that specifies the on-site disposal location in TD 6.

d) Ease of Undertaking Additional Corrective Measures

For TD 3 and TD 6, the capacity of the Upland Disposal Facility is known and is sufficient to receive a volume of material greater than the proposed remedy. However, that capacity is finite and if the additional remediation is very large and the capacity of either TD 3 or TD 6 is exceeded, then off-site disposal would be necessary. TD 1/TD 1RR, and TD 6, to a much lesser extent, would have some uncertainties related to potential issues if the capacity of off-site landfills is less in the future.

e) Ability to Monitor Effectiveness of the Remedy

All of the alternatives can readily be monitored with existing and well-established techniques and that monitoring is included in the Draft Revised 2020 Permit as part of any comprehensive OM&M program (Sections II.B.5. and II.C. of the Draft Revised 2020 Permit).

f) Coordination with Other Agencies

Alternative TD 3 encountered substantial local and state opposition, even though it was not EPA's selected remedy in the 2016 Permit. In contrast, TD 6 has been endorsed by local municipalities, including all but one of the stakeholder groups that took part in mediated settlement (i.e., GE, the Towns of Lee, Lenox, Stockbridge, Great Barrington, and Sheffield, the City of Pittsfield, the State of Connecticut, the Massachusetts Audubon Society, the Berkshire Environmental Action Team, and C. Jeffrey Cook), but some stakeholders are not satisfied with the approach outlined in TD 6. TD 1RR has the least concerns from agencies/stakeholders due to disposal off-site and use of rail to minimize truck traffic. TD 1 is equivalent to TD 1RR on this metric but for the use of rail.

g) Availability of On-Site or Off-Site Treatment, Disposal, and Storage Facilities

TD 1, TD 1RR and TD 6 all have elements of off-site disposal. There are uncertainties about the future availability of necessary capacity in off-site landfills; however, there does not appear to be any current shortage of off-site capacity. For TD 3, construction and use of an on-site facility for all of the

materials, regardless of concentration, would be technically implementable, but perhaps difficult to implement for other reasons. To a certain extent, TD 6 would face similar concerns as TD 3, but these concerns are reduced by TD 6's requirement that only low-level soil and sediment are allowed in the on-site location, and the support of municipal organizations as documented in the Settlement Agreement. Moreover, TD 6 will save capacity (to the extent that it does become limited) in those off-site permitted landfills for material that is required to be disposed of in such a manner.

h) Availability of Prospective Technologies

Alternative technologies (soil washing and thermal desorption) were evaluated as part of the Revised CMS and, for the reasons cited in the 2014 Comparative Analysis, were not selected. Appeals to the EAB challenged EPA's decision not to select the specific treatment technologies. The Board upheld EPA's decision not to select the treatment technologies for the Site. However, as was the case in the 2016 Permit, the Draft Revised 2020 Permit includes an Adaptive Management provision to allow EPA to take advantage of any new innovative technologies. Additionally, in the Settlement Agreement, EPA has committed to significant steps to help solicit new research in PCB remediation technologies (Settlement Agreement, Section IV). There is no difference among the technologies for the three alternatives being evaluated.

9. Cost

The estimated cost ranges for the treatment/disposition alternatives, including total capital cost, estimated annual OM&M cost, and total estimated present worth, are summarized in Table 3. Overall, TD 3 is the least costly at \$63 million, TD 6 second-least costly at \$141 million, with TD 1 (\$308 million) and TD 1RR (\$287 million) more costly. For total remedy costs and costs in 2020 dollars, see Table 3.

10. Overall Conclusion for Treatment/Disposition Alternatives

For the reasons discussed above, EPA believes that among TD 1/TD 1RR, TD 3, and the new TD 6 Hybrid Disposal alternative, TD 6 is best suited to meet the General Standards in consideration of the Selection Decision Factors.

III. CONCLUSION

For all of the reasons discussed above, the combination of the 2020 Alternative for sediment and floodplain, and the Hybrid Disposal approach, TD 6, is best suited to meet the Remedy Selection Criteria outlined in the 2000 Permit and satisfactorily addresses the issues raised by the EAB.

The combined 2020 Alternative/TD 6 removes and disposes off-site a significant volume of the highest concentrations of PCB-contaminated sediment and soil, from both the River itself, and the associated floodplain, while consolidating lower-level contaminated

sediment and soil in a secure Upland Disposal Facility. It provides for the isolation (capping) of a portion of PCB contaminated sediments in the river to reduce the risk to human health and the environment but provides for significantly more sediment removal and less reliance on capping in the river than does the 2014 Alternative. This alternative combines the Hybrid Disposal approach discussed above with significant enhancements to the cleanup in the river and floodplain and provides other key benefits to local communities.

The estimated total cost for the combined 2020 Alternative/TD 6, including sediment and floodplain remediation, off-site transportation and disposal at facilities approved to receive such soil and sediment, as well as OM&M is \$576 million in current year dollars (which is equal to \$456 million in 2010 dollars when comparing against the 2016 Permit using an escalation rate of 26.26%). In current year dollars, the 2016 Permit estimated clean-up costs are \$774 million (or \$613 million in 2010 dollars as reflected in the 2016 Permit). This is a decrease in cost of \$198 million versus the cleanup outlined in the 2016 Permit (or a change of \$157 million when comparing in 2010 dollars). The combined 2020 Alternative/TD 6 will take approximately 13 years to implement.

Based on information currently available, EPA believes the combined 2020 Alternative/TD 6 meets the General Standards for Corrective Measures and provides the best balance of tradeoffs among the other alternatives with respect to the relevant criteria. EPA also expects the remedy to (1) control the sources of releases so as to reduce or eliminate, to the maximum extent practicable, further releases that may pose a threat to human health and the environment; (2) attain the Performance Standards; (3) comply with applicable standards for management of wastes; and (4) be protective of human health and the environment; (5) comply with ARARs (or justify a waiver); (6) be cost-effective; (7) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and (8) satisfy the preference for treatment as a principal element, or explain why the preference for treatment will not be met.

TABLES

**Table 1
Alternatives Summary and Comparison**

Media	Reach	2016 Permit Remedy ¹	Draft Revised 2020 Permit
Sediment/ Riverbank	Reach 5A (Sediment)	2.5 ft removal and capping	Unchanged
	Reach 5B (Sediment)	Removal and backfill of areas >50 mg/kg (1 ft) and EMNR in remainder of reach	Unchanged
	Reaches 5A & 5B (Banks)	Removal/stabilization of erodible river banks with PCBs >5 mg/kg in Reach 5A (1 ft), and banks in Reach 5B with PCBs >50 mg/kg (1 ft)	Same as 2016 Permit Remedy plus evaluate the PCB data, erosion potential, the adjacent floodplain removal (if any), constructability issues, and the potential impact to PCB downstream transport should such banks erode, and, based on these factors, consider supplemental bank removal
	Reach 5C (Sediment)	2 ft removal with capping	Removal of sediment and backfill to achieve 1 mg/kg average
	Reach 5 Backwaters	Combination of removal and capping to achieve 1 mg/kg average, excluding certain high-priority habitat, plus removal of PCBs >50 mg/kg (1 ft)	Unchanged
	Reach 6 Woods Pond	Combination of removal with capping, resulting in a post-capping minimum water depth of 6 ft	Unchanged
	Reach 7 Impoundments	Removal and capping to achieve 1 mg/kg average, plus removal of PCBs >50 mg/kg (1 ft); coordinate with dam removal	Removal and backfill at CMD/FEMD impoundments to achieve 1 mg/kg average; removal and backfill/capping at WMD/GD impoundments to achieve 1 mg/kg average (maximum 3 and 6.5 acres of capping in these impoundments, respectively); remove CMD and FEMD
	Reach 7 Channel	MNR	Unchanged
	Reach 8 Rising Pond	Removal and capping to achieve 1 mg/kg average, plus removal of PCBs >50 mg/kg (1 ft)	Same as 2016 Permit Remedy, but maximum capping area of 31 acres
	Reaches 9–16	MNR	Unchanged
Floodplain	Reaches 5–8	Remove/replace top 1 ft to achieve primary standards except in high-priority habitat areas, where top 1 ft will be removed/replaced to achieve secondary standards; in Frequently Used Subareas remove/replace top 3 ft to achieve standards; treat or remove/replace vernal pool soils to achieve 3.3 mg/kg	Same as 2016 Permit Remedy, with addition of new subarea in Canoe Meadows; plus, cleanup of up to 22 residential properties in Reach 5A and potentially 6 additional properties in Lenox to residential standards; pilot study on up to 10 vernal pools to evaluate removal and amendment
Treatment/ Disposition	--	Off-site disposal in existing licensed landfill(s), maximizing transport of material by rail to extent practicable (TD 1RR)	Hybrid disposal: disposal of material meeting PCB criteria in Att. C to Settlement Agreement in UDF; off-site disposal of remaining material (minimum 100,000 cy) in existing licensed landfill (TD 6)

Notes:

¹ Sediment removal depths specified previously by EPA for the 2016 Permit Remedy (summarized in this table) are approximate and were used for volume/cost estimation and for comparison purposes only.

CMD: Columbia Mill Dam

cy: cubic yard

EMNR: enhanced monitored natural recovery

FEMD: Former Eagle Mill Dam

ft: foot

GD: Glendale Dam

mg/kg: milligram per kilogram

MNR: monitored natural recovery

PCB: polychlorinated biphenyl

TD: Treatment/Disposition

UDF: Upland Disposal Facility

WMD: Willow Mill Dam

Table 2
Comparison of Quantities for Alternatives

	2016 Permit Remedy	Draft Revised 2020 Permit
Sediment Removal Volume (cy)	889,500	1,029,500
Bank Soil Removal Volume (cy)	25,500	25,500
Sediment Capping After Removal (acres)	298	202
Sediment Backfill After Removal (acres)	0	96
Floodplain Soil Removal Volume (cy)	75,000	78,000
Floodplain Acres Excavated (acres)	45	47
Total Soil/Sediment Volume Removal (cy)	990,000	1,133,000
Estimated PCB Mass Removed (pounds)	46,970	50,500
Estimated Time to Implement (years)	13	13

Notes:

Volumes and areas specified in this table are approximate and are for volume/cost estimation and for comparison purposes only.

cy: cubic yards

PCB: polychlorinated biphenyl

Table 3
Cost Summary for Remediation & Treatment/Disposition Alternatives

		2016 Permit Remedy with Rail^{1,2}	2016 Permit Remedy with Trucking	2016 Permit Remedy w/TD 3 (WP)³	Draft Revised 2020 Permit w/TD 6 (UDF)
Sediment/ Floodplain Remediation Alternative ^{4,5}	Capital Costs	\$314 M	\$314 M	\$314 M	\$303 M
	OM&M Costs	\$12 M	\$12 M	\$12 M	\$12 M
	Total Cost	\$326 M	\$326 M	\$326 M	\$315 M
	Total Present Worth	\$228 M	\$228 M	\$228 M	\$214 M
Treatment/ Disposition Alternative ^{6,7,8}	Capital Costs	\$0.3 M	\$0 M	\$33 M	\$35 M
	Disposal, OM&M Costs	\$287 M	\$308 M	\$30 M	\$106 M
	Total Cost	\$287 M	\$308 M	\$63 M	\$141 M
	Total Present Worth	\$183 M	\$196 M	\$38 M	\$96 M
Total Remedy Cost Estimate ⁹	Capital Costs	\$314 M	\$314 M	\$347 M	\$338 M
	Remediation & Disposal OM&M Costs	\$299 M	\$320 M	\$42 M	\$118 M
	Total 2010 Cost	\$613 M	\$634 M	\$389 M	\$456 M
	Total Present Worth	\$411 M	\$424 M	\$266 M	\$310 M
	Total 2020 Cost¹⁰	\$774 M	\$800 M	\$491 M	\$576 M

Notes:

- ¹ All costs are in 2010 dollars. \$ M = million dollars, except as otherwise noted.
- ² Total present worth cost is based on using a discount factor of 7%.
- ³ The TD 3 costs are only for the Woods Pond disposal location, not the other two locations identified in the Revised CMS. This is the same location used for the TD 6 (UDF).
- ⁴ Total capital costs are for engineering, labor, equipment, and materials associated with implementation, and do not include costs for disposition of sediment or soil removed. Total OM&M costs include monitoring, post-construction inspections and repair activities (if necessary), long-term monitoring (fish, sediment, water column, visual), and for the maintenance of institutional controls and environmental restriction easements.
- ⁵ Costs for the Draft Revised 2020 Permit are from GE's Summary and Evaluation of Settlement Agreement Remedy Report (June 2020).
- ⁶ Total capital costs are for engineering, labor, equipment, and materials associated with implementation. Total disposal and OM&M costs consist of the total of the average annual costs for construction, operation, placement, and/or disposal of sediment and/or soil as well as post-closure monitoring and maintenance program of 10 years for TD 3 and 100 years for TD 6.
- ⁷ The estimated disposal costs for the 2016 Permit Remedy do not include the Massachusetts hazardous waste transport fee. At the time of EPA's 2014 Statement of Basis for EPA's Proposed Remedial Action, the fee was \$56.25 per ton, including a vehicle identification fee, resulting in a total estimated fee of \$31.3 M. The fee is not applicable to off-site disposal via rail. The 2016 Permit TD 3 costs are from GE's Summary and Evaluation of Settlement Agreement Remedy Report (June 2020).
- ⁸ Costs for TD 6 for the Draft Revised 2020 Permit are from GE's Summary and Evaluation of Settlement Agreement Remedy Report (June 2020) and include the Massachusetts hazardous waste transport fee of \$56.25 per ton for the 100,000 cy of material to be disposed off-site via truck.
- ⁹ Certain elements of the Settlement Agreement that are not part of the revised Remedial Action have not been included in the cost estimates.
- ¹⁰ Estimated costs in 2020 dollars are calculated using an escalation rate of 26.26%.

CMS: Corrective Measures Study

cy: cubic yards

EPA: U.S. Environmental Protection Agency

GE: General Electric Company

OM&M: operation, monitoring, and maintenance

TD: Treatment/Disposition

UDF: Upland Disposal Facility, also at the

Woods Pond disposal location identified in the

Revised CMS

WP: Woods Pond Location

Table 4a
Evaluation of IMPG Attainment for Human Consumption of Fish (Bass Fillets)
Deterministic RME for Combined SED/FP Scenarios

River Reach	Average Fish (fillet) Concentrations (mg/kg)		10 ⁶ Cancer Risk			10 ⁵ Cancer Risk			10 ⁴ Cancer Risk			Non-Cancer: Child			Non-Cancer: Adult		
	2016 Permit Remedy	Draft Revised 2020 Permit	IMPG (mg/kg)	2016 Permit Remedy	Draft Revised 2020 Permit	IMPG (mg/kg)	2016 Permit Remedy	Draft Revised 2020 Permit	IMPG (mg/kg)	2016 Permit Remedy	Draft Revised 2020 Permit	IMPG (mg/kg)	2016 Permit Remedy	Draft Revised 2020 Permit	IMPG (mg/kg)	2016 Permit Remedy	Draft Revised 2020 Permit
5A	0.26	0.26	0.0019	>52	>52	0.019	>52	>52	0.19	>52	>52	0.026	>52	>52	0.062	>52	>52
5B	3.48	3.48		>52	>52		>52	>52									
5C	0.82	0.82		>52	>52		>52	>52									
5D	1.1	1.1		>52	>52		>52	>52									
6 (WP)	0.74	0.74		>52	>52		>52	>52									
7A	1.12	1.12		>52	>52		>52	>52									
7B	0.67	0.67		>52	>52		>52	>52									
7C	0.81	0.81		>52	>52		>52	>52									
7D	1.37	1.37		>52	>52		>52	>52									
7E	0.64	0.64		>52	>52		>52	>52									
7F	0.82	0.82		>52	>52		>52	>52									
7G	0.38	0.38		>52	>52		>52	>52									
7H	0.69	0.69		>52	>52		>52	>52									
8 (RP)	0.37	0.37		>52	>52		>52	>52									
BBD	0.022	0.022		>52	>52		>52	>52		10	10		37	37		19	19
LL	0.015	0.015	>52	>52	>52	>52	36	36	8	8	28	28	16	16			
LZ	0.011	0.011	>52	>52	>52	>52	27	27	0	0	21	21	12	12			
LH	0.010	0.010	>52	>52	>52	>52	26	26	0	0	20	20	12	12			

Notes:

post-remediation EPC is higher than IMPG	<value>: time to achieve predicted by the model; <value>: time to achieve based on uncertain extrapolation of the model results as described in Section 3.2.1 of the Revised CMS Report
post-remediation EPC is lower than IMPG	

CMS: Corrective Measures Study IMPG: Interim Media Protection Goal RME: reasonable maximum exposure
EPC: Exposure Point Concentration mg/kg: milligrams per kilogram

Table 4b
Evaluation of IMPG Attainment for Human Consumption of Fish (Bass Fillets)
Probabilistic RME (5th percentile) for Combined SED/FP Scenarios

River Reach	Average Fish (fillet) Concentrations (mg/kg)		10 ⁶ Cancer Risk			10 ⁵ Cancer Risk			10 ⁴ Cancer Risk			Non-Cancer: Child			Non-Cancer: Adult		
	2016 Permit Remedy	Draft Revised 2020 Permit	IMPG (mg/kg)	2016 Permit Remedy	Draft Revised 2020 Permit	IMPG (mg/kg)	2016 Permit Remedy	Draft Revised 2020 Permit	IMPG (mg/kg)	2016 Permit Remedy	Draft Revised 2020 Permit	IMPG (mg/kg)	2016 Permit Remedy	Draft Revised 2020 Permit	IMPG (mg/kg)	2016 Permit Remedy	Draft Revised 2020 Permit
5A	0.26	0.26	0.0064	>52	>52	0.064	>52	>52	0.64	17	17	0.059	>52	>52	0.12	>52	>52
5B	3.48	3.48		>52	>52		>52	>52									
5C	0.82	0.82		>52	>52		>52	>52									
5D	1.1	1.1		>52	>52		>52	>52									
6 (WP)	0.74	0.74		>52	>52		>52	>52									
7A	1.12	1.12		>52	>52		>52	>52									
7B	0.67	0.67		>52	>52		>52	>52									
7C	0.81	0.81		>52	>52		>52	>52									
7D	1.37	1.37		>52	>52		>52	>52									
7E	0.64	0.64		>52	>52		>52	>52									
7F	0.82	0.82		>52	>52		>52	>52									
7G	0.38	0.38		>52	>52		>52	>52									
7H	0.69	0.69		>52	>52		>52	>52									
8 (RP)	0.37	0.37		>52	>52		>52	>52									
BBD	0.022	0.022		>52	>52		18	18		0	0		19	19		13	13
LL	0.015	0.015		>52	>52		15	15		0	0		16	16		11	11
LZ	0.011	0.011	>52	>52	12	12	0	0	13	13	9	9					
LH	0.010	0.010	>52	>52	12	12	0	0	12	12	9	9					

Notes:

post-remediation EPC is higher than IMPG
post-remediation EPC is lower than IMPG

<value>: time to achieve predicted by the model; <value>: time to achieve based on uncertain extrapolation of the model results as described in Section 3.2.1 of the Revised CMS Report

CMS: Corrective Measures Study
EPC: Exposure Point Concentration

IMPG: Interim Media Protection Goal
mg/kg: milligrams per kilogram

RME: reasonable maximum exposure

Table 4c
Evaluation of IMPG Attainment for Human Consumption of Fish (Bass Fillets)
Deterministic CTE for Combined SED/FP Scenarios

River Reach	Average Fish (fillet) Concentrations (mg/kg)		10 ⁶ Cancer Risk			10 ⁵ Cancer Risk			10 ⁴ Cancer Risk			Non-Cancer: Child			Non-Cancer: Adult			
	2016 Permit Remedy	Draft Revised 2020 Permit	IMPG (mg/kg)	2016 Permit Remedy	Draft Revised 2020 Permit	IMPG (mg/kg)	2016 Permit Remedy	Draft Revised 2020 Permit	IMPG (mg/kg)	2016 Permit Remedy	Draft Revised 2020 Permit	IMPG (mg/kg)	2016 Permit Remedy	Draft Revised 2020 Permit	IMPG (mg/kg)	2016 Permit Remedy	Draft Revised 2020 Permit	
5A	0.26	0.26	0.049	>52	>52	0.49	26	26	4.9	9	9	0.19	>52	>52	0.43	33	33	
5B	3.48	3.48		>52	>52		>52	>52		16	16		>52	>52		>52	>52	
5C	0.82	0.82		>52	>52		>52	>52		11	11		>52	>52		>52	>52	
5D	1.1	1.1		>52	>52		>52	>52		12	12		>52	>52		>52	>52	
6 (WP)	0.74	0.74		>52	>52		>52	>52		12	12		>52	>52		>52	>52	
7A	1.12	1.12		>52	>52		>52	>52		12	12		>52	>52		>52	>52	
7B	0.67	0.67		>52	>52		>52	>52		11	11		>52	>52		>52	>52	
7C	0.81	0.81		>52	>52		>52	>52		12	12		>52	>52		>52	>52	
7D	1.37	1.37		>52	>52		>52	>52		12	12		>52	>52		>52	>52	
7E	0.64	0.64		>52	>52		>52	>52		11	11		>52	>52		>52	>52	
7F	0.82	0.82		>52	>52		>52	>52		11	11		>52	>52		>52	>52	
7G	0.38	0.38		>52	>52		>52	31		31	9		9	>52		>52	35	35
7H	0.69	0.69		>52	>52		>52	>52		>52	10		10	>52		>52	>52	>52
8 (RP)	0.37	0.37		>52	>52		>52	30		30	9		9	>52		>52	33	33
BBD	0.022	0.022	22	22	0	0	0	0	10	10	0	0						
LL	0.015	0.015	18	18	0	0	0	0	8	8	0	0						
LZ	0.011	0.011	15	15	0	0	0	0	0	0	0	0						
LH	0.010	0.010	14	14	0	0	0	0	0	0	0	0						

Notes:

post-remediation EPC is higher than IMPG	<value>: time to achieve predicted by the model; <value>: time to achieve based on uncertain extrapolation of the model results as described in Section 3.2.1 of the Revised CMS Report
post-remediation EPC is lower than IMPG	

CMS: Corrective Measures Study
CTE: central tendency exposure

EPC: Exposure Point Concentration
mg/kg: milligrams per kilogram

IMPG: Interim Media Protection Goal

Table 4d
Evaluation of IMPG Attainment for Human Consumption of Fish (Bass Fillets)
Probabilistic CTE (50th percentile) for Combined SED/FP Scenarios

River Reach	Average Fish (fillet) Concentrations (mg/kg)		10 ⁶ Cancer Risk			10 ⁵ Cancer Risk			10 ⁴ Cancer Risk			Non-Cancer: Child			Non-Cancer: Adult					
	2016 Permit Remedy	Draft Revised 2020 Permit	IMPG (mg/kg)	2016 Permit Remedy	Draft Revised 2020 Permit	IMPG (mg/kg)	2016 Permit Remedy	Draft Revised 2020 Permit	IMPG (mg/kg)	2016 Permit Remedy	Draft Revised 2020 Permit	IMPG (mg/kg)	2016 Permit Remedy	Draft Revised 2020 Permit	IMPG (mg/kg)	2016 Permit Remedy	Draft Revised 2020 Permit			
5A	0.26	0.26	0.057	>52	>52	0.57	21	21	5.7	9	9	0.71	15	15	1.5	12	12			
5B	3.48	3.48		>52	>52		>52	>52		13	13		>52	>52		>52	>52			
5C	0.82	0.82		>52	>52		>52	>52		10	10		>52	>52		>52	>52	14	14	
5D	1.1	1.1		>52	>52		>52	>52		12	12		>52	>52		>52	>52	35	35	
6 (WP)	0.74	0.74		>52	>52		>52	>52		12	12		>52	>52		>52	>52	15	15	
7A	1.12	1.12		>52	>52		>52	>52		12	12		>52	>52		>52	>52	18	18	
7B	0.67	0.67		>52	>52		>52	>52		10	10		>52	>52		>52	>52	14	14	
7C	0.81	0.81		>52	>52		>52	>52		12	12		>52	>52		>52	>52	16	16	
7D	1.37	1.37		>52	>52		>52	>52		11	11		>52	>52		>52	>52	33	33	
7E	0.64	0.64		>52	>52		>52	>52		10	10		>52	>52		>52	>52	14	14	
7F	0.82	0.82		>52	>52		>52	>52		10	10		>52	>52		>52	>52	16	16	
7G	0.38	0.38		>52	>52		>52	28		28	8		8	15		15	13	13		
7H	0.69	0.69		>52	>52		>52	>52		>52	9		9	38		38	14	14		
8 (RP)	0.37	0.37		>52	>52		>52	23		23	8		8	18		18	15	15		
BBD	0.022	0.022		20	20		0	0		0	0		0	0		0	0	0	0	0
LL	0.015	0.015		16	16		0	0		0	0		0	0		0	0	0	0	0
LZ	0.011	0.011	14	14	0	0	0	0	0	0	0	0	0	0	0					
LH	0.010	0.010	13	13	0	0	0	0	0	0	0	0	0	0	0					

Notes:

post-remediation EPC is higher than IMPG	<value>: time to achieve predicted by the model; <value>: time to achieve based on uncertain extrapolation of the model results as described in Section 3.2.1 of the Revised CMS Report
post-remediation EPC is lower than IMPG	

CMS: Corrective Measures Study EPC: Exposure Point Concentration IMPG: Interim Media Protection Goal
CTE: central tendency exposure mg/kg: milligrams per kilogram

Table 5
Summary of Percent of Floodplain and Sediment Exposure Areas Achieving
IMPGs for Direct Human Contact

Exposure Assumptions	Risk Level	Percent of 128 Floodplain and Sediment Exposure Areas Achieving IMPGs	
		2016 Permit Remedy	Draft Revised 2020 Permit
RME	Cancer 1x10 ⁻⁴	100	100
	Cancer 1x10 ⁻⁵	71-100	71-100
	Cancer 1x10 ⁻⁶	9-13	9-13
	Non-Cancer	100	100
CTE	Cancer 1x10 ⁻⁴	100	100
	Cancer 1x10 ⁻⁵	100	100
	Cancer 1x10 ⁻⁶	98-99	98-99
	Non-Cancer	100	100
Percent of 12 Floodplain Frequently Used Subareas Achieving IMPGs			
RME	Cancer 1x10 ⁻⁴	100	100
	Cancer 1x10 ⁻⁵	100	100
	Cancer 1x10 ⁻⁶	42	42
	Non-Cancer	100	100
CTE	Cancer 1x10 ⁻⁴	100	100
	Cancer 1x10 ⁻⁵	100	100
	Cancer 1x10 ⁻⁶	100	100
	Non-Cancer	100	100

Notes:

CTE: central tendency exposure

RME: reasonable maximum exposure

Percent of exposure areas achieving human direct contact IMPGs for the 2016 Permit Remedy was obtained from Table 5 of EPA's 2014 Comparative Analysis of Remedial Alternatives

Table 6
Summary of Percent Averaging Areas Achieving IMPGs for Benthic Invertebrates

IMPGs	Percent of Averaging Areas Achieving IMPGs for Benthic Invertebrates	
	2016 Permit Remedy	Draft Revised 2020 Permit
Upper Bound (10 mg/kg in sediment)	100	100
Lower Bound (3 mg/kg in sediment)	93	93

Notes:

Percent of averaging areas achieving benthic invertebrate IMPGs for the 2016 Permit Remedy was obtained from Table 8 of EPA's 2014 Comparative Analysis of Remedial Alternatives. Lower bound value reported was 931%; assumed typographic error corrected to be 93%.

IMPG: Interim Media Protection Goal

mg/kg: milligrams per kilogram

Table 7
Summary of Percent Averaging Areas Achieving
Warmwater and Coldwater Fish Protection IMPGs

IMPGs	Percent of Averaging Areas Achieving IMPGs in Fish Tissue	
	2016 Permit Remedy	Draft Revised 2020 Permit
Warmwater Fish Protection (55 mg/kg in fish)	100	100
Coldwater Fish Protection (14 mg/kg in fish)	100	100

Note:
Percent of averaging areas achieving warmwater and coldwater fish protection IMPGs for the 2016 Permit Remedy was from Table 10 of EPA's 2014 Comparative Analysis of Remedial Alternatives.
IMPG: Interim Media Protection Goal
mg/kg: milligrams per kilogram

Table 8
Summary of Percent Averaging Areas Achieving Piscivorous Birds IMPG

IMPG	Percent of Averaging Areas Achieving IMPG in Fish Tissue	
	2016 Permit Remedy	Draft Revised 2020 Permit
Piscivorous (3.2 mg/kg in prey)	71	71

Note:
Percent of averaging areas achieving piscivorous birds IMPG for the 2016 Permit Remedy was from Table 12 of EPA's 2014 Comparative Analysis of Remedial Alternatives.
IMPG: Interim Media Protection Goal
mg/kg: milligrams per kilogram

Table 9
Percent Reduction in Annual PCB Mass Passing Woods Pond and
Rising Pond Dams and Transported to the Reach 5/6 Floodplain
for Alternatives (relative to current conditions) and
Solids Trapping Efficiency for Woods Pond

Location	2016 Permit Remedy	Draft Revised 2020 Permit
Woods Pond Dam	89%	89%
Rising Pond Dam	89%	89%
Reach 5/6 Floodplain	92%	92%
Solids Trapping Efficiency in Woods Pond	30%	30%

Table 10
Modeled Subreach Average Fish (Fillet) PCB Concentrations
and Percent Reductions in Fish PCB Concentrations
at End of Project Modeling Period for Alternatives

Reach	2016 Permit Remedy	Draft Revised 2020 Permit
Fish PCB Concentration (mg/kg wet weight)		
Reach 5A	0.3	0.3
Reach 5B	3.5	3.5
Reach 5C	0.8	0.8
Reach 5D (Backwaters)	1.1	1.1
Reach 6	0.7	0.7
Reach 7	0.4–1.4	0.4–1.4
Reach 8	0.4	0.4
Connecticut (Bulls Bridge Dam Impoundment)	0.02	0.02
Percent Reduction in Fish PCB Concentration Relative to Initial Conditions		
Reach 5A	99%	99%
Reach 5B	80%	80%
Reach 5C	94%	94%
Reach 5D (Backwaters)	95%	95%
Reach 6	95%	95%
Reach 7	86–95%	86–95%
Reach 8	94%	94%
Connecticut (Bulls Bridge Dam Impoundment)	99%	99%
Percent Reduction in Fish PCB Concentration Relative to SED 2 MNR		
Reach 5A	96%	96%
Reach 5B	61%	61%
Reach 5C	89%	89%
Reach 5D (Backwaters)	89%	89%
Reach 6	91%	91%
Reach 7	75–88%	75–88%
Reach 8	87%	87%
Connecticut (Bulls Bridge Dam Impoundment)	81%	81%

Notes:
mg/kg: milligrams per kilogram
MNR: Monitored Natural Recovery
PCB: polychlorinated biphenyl

Table 11
Habitat Areas in Primary Study Area Affected by Alternatives

Habitat	2016 Permit Remedy ¹	Draft Revised 2020 Permit
Aquatic Riverine Habitat (acres)	99	99
Riverbank (linear miles)	3.5	3.5
Impoundment Habitat (acres)	139	139
Backwater (acres)	59	59
Floodplain (acres)	45	47
Total (acres) ²	343	345

Notes:

¹ Sediment and riverbank removal areas for the 2016 Permit Remedy was from Table 6 of EPA's 2014 Comparative Analysis of Remedial Alternatives.

² Total habitat area affected does not include riverbanks.

**Table 12
Estimated Greenhouse Gas Emissions Anticipated to Result from Alternatives**

			2016 Permit Remedy	2016 Permit Remedy w/ TD 3 (WP)	Draft Revised 2020 Permit
Sediment and Floodplain Soil Remedial Activities¹					
Direct GHG Emissions (tonnes)			70,000	70,000	80,000
Indirect GHG Emissions (tonnes)			3,400	3,400	3,900
Off-Site GHG Emissions (tonnes)			98,000	98,000	112,000
Total GHG Emissions (tonnes)			171,000	171,000	196,000
Transportation and Disposal Activities					
TD 1 /TD 1RR: Off-Site Disposal	Transport via Truck	GHG Emissions (tonnes) ²	164,800	--	--
	Transport via Rail	GHG Emissions (tonnes) ²	70,000	--	--
TD 3: On-Site Disposal at Woods Pond Site	Transport via Truck	GHG Emissions (tonnes) ²	--	6,600	--
TD 6: Combination of Disposal in UDF and Off-Site Disposal	Transport via Truck	GHG Emissions (tonnes) ³	--	--	31,000
Total GHG Emissions (tonnes)			164,800 (via trucking) 70,000 (via rail)	6,600	31,000
Overall Total GHG Emissions (sed/soil remediation plus TD)			335,800 (via trucking) 241,000 (via rail)	177,600	227,000

Notes:

¹ Emission estimates for the sediment and floodplain remedial activities portion of the 2016 Permit Remedy are those presented in Table 17 of EPA's 2014 Comparative Analysis of Remedial Alternatives and were used to estimate emissions for the Draft Revised 2020 Permit based on the tonnes CO₂/cy and the removal volume for that alternative for each emissions category.

² Emissions estimates for TD 1 /TD 1RR and TD 3 are taken from Table 3 of GE's October 27, 2014 Comments on EPA's Draft RCRA Permit Modification and Statement of Basis.

³ Emission estimates for the transportation and disposal portion of the Draft Revised 2020 Revised Permit (TD 6) were developed considering previous calculations made in 2014 for alternatives TD 1 (for off-site disposal) and TD 3 (for on-site disposal at the Woods Pond Site) and considering the use of hydraulic pumping in Reaches 5C and 6. This estimate assumes that 100,000 cubic yards of material, all of which would be subject to regulation under the Toxic Substances Control Act (TSCA) material, would be disposed of off-site at the Wayne Disposal Inc. (EQ) facility in Belleville, Michigan.

cy: cubic yards

EPA: U.S. Environmental Protection Agency

GHG: greenhouse gas

RCRA: Resource Conservation and Recovery Act

TD: Treatment/Disposition

tonnes: metric ton (i.e., 1,000 kilograms)

UDF: Upland Disposal Facility

WP: Wood Ponds Location

Table 13a
Estimated Truck Trips Anticipated to Result from Transport of
Excavated Materials and Import of Capping/Backfill Materials

	2016 Permit Remedy ^{1,2}	2016 Permit Remedy w/TD 3 (Woods Pond) ^{1,2}	Draft Revised 2020 Permit ^{1,2}
Truck Trips for Excavated Material ³	81,700 ⁴ (6,100)	81,700 ⁴ (6,100)	47,000 ⁵ (3,800)
Truck Trips for Capping/Backfill Material ⁶	68,800 ⁷ (5,100)	68,800 ⁷ (5,100)	52,800 ⁸ (4,200)
Total Truck Trips	150,500 (11,200)	150,500 (11,200)	99,800 (8,000)

Notes:

¹ The numbers in parentheses represents the average annual truck trips.

² Numbers rounded to the nearest hundred.

³ These truck trips represent truck trips for hauling excavated material from the staging areas to the disposal facility(ies) (or, for rail transport, the rail loading facility) using 20-ton capacity trucks.

⁴ These numbers were provided in Table 18 of EPA's Comparative Analysis of Remedial Alternatives. For off-site disposal via trucking, all of these trips consist of off-site truck trips to the designated off-site disposal facility(ies) over public roads. For off-site disposal via rail, these represent truck trips to the rail loading facility.

⁵ These numbers were based, for comparison purposes, on the numbers in the prior column with modifications to account for: (1) the revised removal volumes for the Draft Revised 2020 Permit (which increase truck trips by 11,800); and (2) the assumption that all sediments removed from Reaches 5C and Woods Pond will be pumped directly to the Upland Disposal Facility rather than being transported via truck (which reduce truck trips by 46,500). Of the 47,000 total truck trips, 8,300 truck trips consist of off-site truck trips for transport of 100,000 cubic yards of material to the designated off-site disposal facility(ies), and the remainder (38,700) consist of on-site truck trips to the upland disposal facility.

⁶ These truck trips represent truck trips for local hauling of capping/backfill material using 16-ton capacity trucks.

⁷ These numbers of truck trips for importation of capping/backfill material were provided in Table 18 of EPA's above-referenced Comparative Analysis. In addition, for off-site disposal by rail, there would be approximately 1,200 off-site truck trips to import material to construct the rail loading facility, as provided in Table 4 of GE's October 27, 2014 Comments on EPA's Draft RCRA Permit Modification and Statement of Basis (see Table 13b).

⁸ These numbers of truck trips for importation of capping/backfill material were based on the numbers in the prior column with modifications to account for the revised capping/backfill volumes for the Draft Revised 2020 Permit. In addition, there would be approximately 3,100 off-site truck trips for the importation of materials for construction of the Upland Disposal Facility, based on the off-site truck trips for TD 3 (Woods Pond Site) presented in Table 4 of GE's October 27, 2014 Comments on EPA's Draft RCRA Permit Modification and Statement of Basis (see Table 13b).

EPA: U.S. Environmental Protection Agency

GE: General Electric Company

TD: Treatment/Disposition

Table 13b
Estimated Truck Trips Anticipated to Result from
Construction of Transportation or Disposal Facility

		2016 Permit Remedy ¹	2016 Permit Remedy w/ TD 3 (WP)	Draft Revised 2020 Permit ¹
TD 1 / TD 1RR: Off-Site Disposal	Transport via Truck	0	--	--
	Transport via Rail	1,200 ²	--	--
TD 3: On-Site Disposal at Woods Pond Site	Transport via Truck	--	2,400 ³	--
TD 6: Combination of Disposal in UDF and Off-Site Disposal	Transport via Truck	--	--	3,100 ⁴

Notes:

¹ Numbers rounded to the nearest hundred.

² These truck trips represent truck trips to import material to construct the rail loading facility, as provided in Table 4 of GE's October 27, 2014 Comments on EPA's Draft RCRA Permit Modification and Statement of Basis.

³ These truck trips represent truck trips for importation of materials for construction of the on-site disposal facility at the Woods Pond Site, as provided in Table 4 of GE's October 27, 2014 Comments on EPA's Draft RCRA Permit Modification and Statement of Basis.

⁴ These truck trips represent truck trips for the importation of materials for construction of the UDF by extrapolation from the off-site truck trips for TD 3 (Woods Pond Site) presented in Table 4 of GE's October 27, 2014 Comments on EPA's Draft RCRA Permit Modification and Statement of Basis.

EPA: U.S. Environmental Protection Agency

GE: General Electric Company

RCRA: Resource Conservation and Recovery Act

TD: Treatment/Disposition

UDF: Upland Disposal Facility

WP: Wood Ponds Location

Table 13c
Estimated Total Truck Trips

	2016 Permit Remedy w/ TD 1	2016 Permit Remedy w/ TD 1RR	2016 Permit Remedy w/ TD 3 (Woods Pond)	Draft Revised 2020 Permit
Total Number of Truck Trips	150,500	151,700	152,900	102,900

Notes:

TD: Treatment/Disposition

Table 14
Estimated Non-Fatal Injuries and Fatalities Anticipated to Result from Alternatives

			2016 Permit Remedy ^{1,2}	2016 Permit Remedy With TD 3 (Woods Pond) ²	Draft Revised 2020 Permit ^{1,2}
Sediment and Floodplain Soil Remedial Activities					
Non-Fatal Injuries Due to Increased Truck Traffic ³			5.4 (0.40) [1.0]	5.4 (0.40) [1.0]	3.6 (0.28) [0.97]
Fatalities Due to Increased Truck Traffic ³			0.25 (0.019) [0.22]	0.25 (0.019) [0.22]	0.17 (0.014) [0.16]
Non-Fatal Injuries Due to Implementation ⁴			9.2 (0.69) [1.0]	9.2 (0.69) [1.0]	8.8 (0.70) [1.0]
Fatalities Due to Implementation ⁴			0.10 (0.007) [0.10]	0.10 (0.007) [0.10]	0.10 (0.0080) [0.010]
Transportation and Disposal Activities					
TD 1 /TD 1RR: Off-Site Disposal	Transport via Truck	Non-Fatal Injuries Due to Increased Truck Traffic for Disposal via Trucking ⁵	39 (3) [1.0]	--	--
		Fatalities Due to Increased Truck Traffic for Disposal via Trucking ⁵	1.8 (0.14) [0.83]	--	--
		Non-Fatal Injuries Due to Implementation of Disposal via Trucking	0	--	--
		Fatalities Due to Implementation of Disposal via Trucking	0	--	--
	Transport via Rail	Non-Fatal Injuries Due to Transport for Disposal via Rail ⁵	34 (3) [1.0]	--	--
		Fatalities Due to Transport for Disposal via Rail ⁵	6.5 (0.50) [1.0]	--	--
		Non-Fatal Injuries Due to Implementation of Disposal via Rail ⁶	3.0 (0.23) [0.95]	--	--
		Fatalities Due to Implementation of Disposal via Rail ⁶	0.022 (0.0017) [0.022]	--	--

Table 14
Estimated Non-Fatal Injuries and Fatalities Anticipated to Result from Alternatives (Continued)

		2016 Permit Remedy ^{1,2}	2016 Permit Remedy With TD 3 (Woods Pond) ²	Draft Revised 2020 Permit ^{1,2}
TD 3: On-Site Disposal at Woods Pond Site	Non-Fatal Injuries Due to Increased Truck Traffic ⁷	--	0.055 (0.0043) [0.054]	--
	Fatalities Due to Increased Truck Traffic ⁷	--	0.0026 (0.0002) [0.0026]	--
	Non-Fatal Injuries Due to Implementation ⁸	--	4.8 (0.37) [0.99]	--
	Fatalities Due to Implementation ⁸	--	0.038 (0.0029) [0.037]	--
TD 6: Combination Disposal in UDF and Off-Site Disposal	Non-Fatal Injuries Due to Increased Truck Traffic ⁹	--	--	4.0 (0.32) [0.98]
	Fatalities Due to Increased Truck Traffic ⁹	--	--	0.18 (0.015) [0.17]
	Non-Fatal Injuries Due to Implementation ¹⁰	--	--	4.8 (0.38) [0.99]
	Fatalities Due to Implementation ¹⁰	--	--	0.038 (0.0030) [0.037]
<i>Total Non-Fatal Injuries and Fatalities Due to Transport or Implementation (SED/FP remediation plus TD)</i>				
<i>Non-Fatal Injuries Due to Transport</i>		<i>44 (w/ trucking) 39 (w/ rail)</i>	<i>5.4</i>	<i>7.5</i>
<i>Fatalities Due to Transport</i>		<i>2.1 (w/trucking) 6.75 (w/ rail)</i>	<i>0.25</i>	<i>0.35</i>
<i>Non-Fatal Injuries Due to Implementation</i>		<i>9.2 (w/ trucking) 12 (w/ rail)</i>	<i>14</i>	<i>14</i>
<i>Fatalities Due to Implementation</i>		<i>0.10 (w/trucking) 0.12 (w/ rail)</i>	<i>0.14</i>	<i>0.14</i>

Table 14
Estimated Non-Fatal Injuries and Fatalities Anticipated to Result from Alternatives (Continued)

	2016 Permit Remedy ^{1,2}	2016 Permit Remedy With TD 3 (Woods Pond) ²	Draft Revised 2020 Permit ^{1,2}
<i>Overall Total Non-Fatal Injuries and Fatalities</i>			
<i>Total Non-Fatal Injuries</i>	<i>53 (w/ trucking) 51 (w/ rail)</i>	<i>19</i>	<i>22</i>
<i>Total Fatalities</i>	<i>2.2 (w/ trucking) 6.9 (w/ rail)</i>	<i>0.39</i>	<i>0.49</i>

Notes:

- ¹ The numbers in parentheses represent the average annual non-fatal injuries/fatalities. Numbers in brackets indicate the probability of at least one non-fatal injury/fatality.
- ² Numbers are rounded to two significant figures unless reported elsewhere with less significant figures (i.e., average annual fatalities of sediment/floodplain alternative reported in EPA's 2014 Comparative Analysis of Remedial Alternatives).
- ³ Non-fatal injuries and fatalities due to truck traffic include risks due to increased off-site truck traffic associated with the alternative, including to import capping/backfill and bank stabilization material to the site over public roads, as well as to dispose of materials used for the staging areas and access roads following completion of remediation. Quantities for the 2016 Permit Remedy were provided in Table 19 of EPA's above-referenced 2014 Comparative Analysis. Quantities for the Draft Revised 2020 Permit were calculated based on the 2016 Permit Remedy and the truck trips for the Draft Revised 2020 Permit.
- ⁴ Non-fatal injuries and fatalities due to implementation include risks due to implementation of the alternative, including transporting excavated materials to the staging area. Quantities for the 2016 Permit Remedy were provided in Table 20 of EPA's above-referenced 2014 Comparative Analysis. Quantities for the Draft Revised 2020 Permit were calculated based on the 2016 Permit Remedy and the estimated labor hours for the Draft Revised 2020 Permit.
- ⁵ Non-fatal injuries and fatalities due to transport include risks due to increased off-site truck and rail traffic to dispose of excavated material at an off-site facility and to construct rail loading facility and associated access road. As EPA's 2014 documents did not present risk numbers for off-site transport via rail (TD 1RR), all quantities are based, for comparison purposes, on quantities stated in (or calculated from) Table 6 of GE's October 27, 2014 Comments on EPA's Draft RCRA Permit Modification and Statement of Basis.
- ⁶ Non-fatal injuries and fatalities due to implementation include risks due to transporting excavated materials from the staging areas to the rail loading facility as well as due to daily operation of that facility. As EPA's 2014 documents did not present risk numbers for off-site transport via rail (TD 1RR), all quantities are based, for comparison purposes on quantities stated in (or calculated from) Table 7 of GE's above-referenced October 27, 2014 Comments.
- ⁷ Non-fatal injuries and fatalities due to truck traffic include risks due to increased off-site truck traffic to construct the on-site disposal facility at the Woods Pond Site, as provided in Table 6 of GE's above-referenced October 27, 2014 Comments.
- ⁸ Non-fatal injuries and fatalities due to implementation include risks due to transporting excavated materials from the staging areas to the on-site disposal facility at the Woods Pond Site as well as due to daily operation of the on-site disposal facility, as provided in Table 7 of GE's above-referenced October 27, 2014 Comments.
- ⁹ Non-fatal injuries and fatalities due to truck traffic include risks due to increased off-site truck traffic to dispose of excavated material at an off-site facility and to construct the UDF, as calculated by extrapolation from the quantities given in Table 6 of GE's above-referenced October 27, 2014 Comments.
- ¹⁰ Non-fatal injuries and fatalities due to implementation include risks due to transporting excavated materials from the staging areas to the UDF as well as due to daily operation of the UDF, as calculated by extrapolation from the quantities given in Table 7 of GE's above-referenced October 27, 2014 Comments.

FP: floodplain

SED: sediment

TD: Treatment/Disposition

UDF: Upland Disposal Facility

**Table 15
Estimated Required Import Material Volumes Anticipated for Alternatives**

			2016 Permit Remedy ¹	2016 Permit Remedy w/TD 3 (WP) ¹	Draft Revised 2020 Permit ¹
Sediment and Floodplain Soil Remedial Activities²					
Sand/Capping Material (cy)			726,500	726,500	537,400
Soil Backfill (cy)			75,000	75,000	78,000
Total Capping/Backfill/Stabilization Material (cy)			801,500	801,500	625,400
Transportation and Disposal Activities³					
TD 1 / TD IRR: Off-Site Disposal	Transport via Truck	Import Material (cy)	0	--	--
	Transport via Rail	Import Material (cy)	12,900	--	--
TD 3: On-Site Disposal at Woods Pond Site		Import Material (cy)	--	25,200	--
TD 6: Combination Disposal in UDF and Off-Site Disposal		Import Material (cy)	--	--	32,800
Total Import Material (SED/FP remediation plus TD)					
Total Import Material (cy)			814,400	826,700	658,200

Notes:

¹ Numbers are rounded to the nearest hundred.

² Quantities for capping materials and sand include materials for caps and backfill in the river as well as bank stabilization. Soil backfill quantities include the backfill to be placed in the floodplain excavations. Quantities for the 2016 Permit Remedy were provided in Table 21 of EPA's 2014 Comparative Analysis of Remedial Alternatives. Quantities for the Draft Revised 2020 Permit Remedy were calculated by extrapolation from the 2016 Permit Remedy.

³ Volume of import material for the TD IRR alternative includes material for the construction of the rail loading facility and associated access road, and that for the TD 6 alternative includes material for the construction of the Upland Disposal Facility (including cover) and associated access roads. Quantities for the 2016 Permit Remedy and for TD 3 were provided in Table 4 of GE's October 27, 2014 Comments on EPA's Draft RCRA Permit Modification and Statement of Basis (and converted to cy). Quantities for the Draft Revised 2020 Permit Remedy were calculated by extrapolation from the tons of material in for TD 3 (Woods Pond Site) presented in Table 4 of GE's above-referenced October 27, 2014 Comments and converted to cy.

cy: cubic yards

FP: floodplain

SED: sediment

TD: Treatment/Disposition

UDF: Upland Disposal Facility

WP: Woods Pond Location

FIGURES

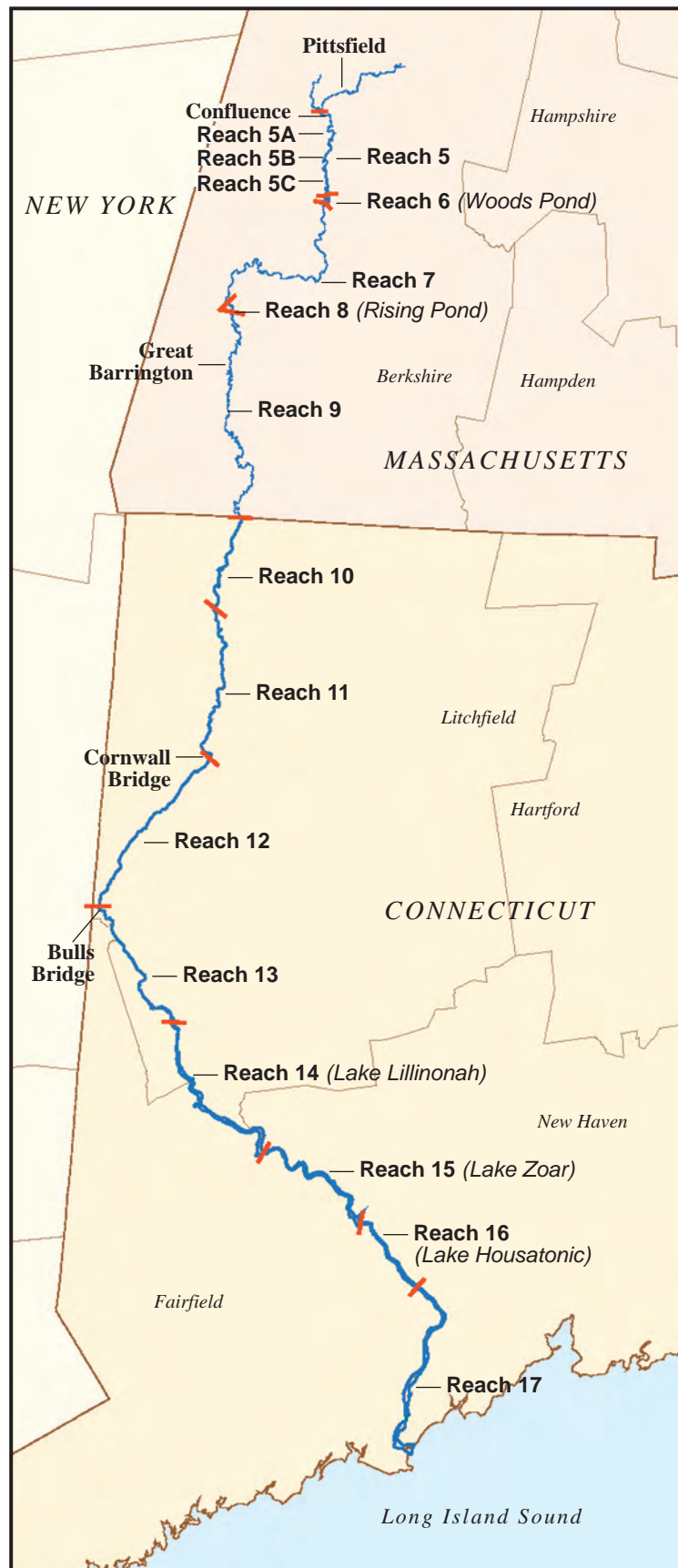
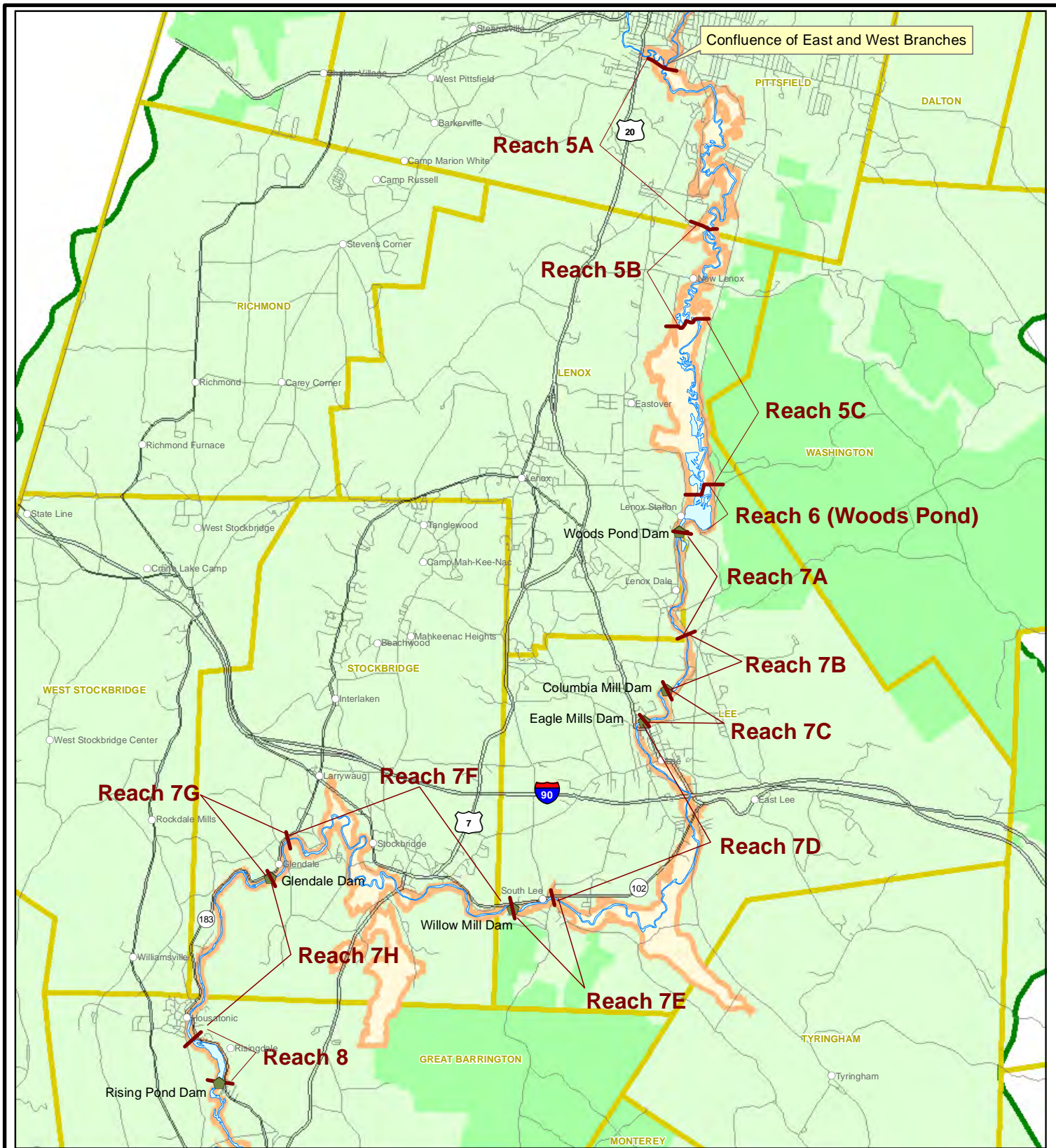


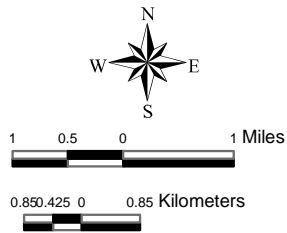
FIGURE 1 HOUSATONIC RIVER, REACHES 5 THROUGH 17

14P-0094-6



LEGEND:

- Town/City
- Roads
- Reach Division Line
- Housatonic River
- State Park
- Municipal Boundary
- 10-Year Floodplain



GE- Pittsfield/Housatonic River Site
Rest of River

FIGURE 2
HOUSATONIC RIVER,
PRIMARY STUDY AREA
(REACHES 5 AND 6) AND
REACHES 7 AND 8

ATTACHMENT A
SETTLEMENT AGREEMENT – FEBRUARY 2020

SETTLEMENT AGREEMENT

The undersigned parties (“Parties”) hereby jointly agree to resolve their disputes regarding EPA’s October 2016 RCRA Corrective Action Permit Modification for the “Rest of River” portion of the GE-Pittsfield/Housatonic River Site (“the 2016 Permit”), including those issues affirmed or remanded by the EPA Environmental Appeals Board (the “EAB”). This Settlement Agreement (“Settlement Agreement”) shall be binding on and inure to the benefit of each Party and each Party’s successors.

On October 27, 2000, a Consent Decree for the GE-Pittsfield/Housatonic River Site (“Site”) was entered by the U.S. District Court for the District of Massachusetts (the “Decree”). Appendix G to the Decree, as reissued, is a RCRA Corrective Action Permit between EPA and the General Electric Company (“GE”), governing GE’s investigation and alternative evaluation responsibilities with respect to the Rest of River (“the 2000 Permit”). Pursuant to the Decree and the 2000 Permit, EPA, in October 2016, issued the 2016 Permit, with concurrence from Massachusetts. Five parties challenged the 2016 Permit before the EAB, including the Berkshire Environmental Action Team, C. Jeffrey Cook, GE, the Housatonic Rest of River Municipal Committee (“Municipal Committee”), and the Housatonic River Initiative. The City of Pittsfield, Massachusetts Audubon Society (“Mass Audubon”), Connecticut and Massachusetts also participated in the EAB process. The EAB issued a decision in January 2018, denying the challengers’ review in part and remanding to EPA on two issues challenged by GE.

The Parties have been engaged in mediated discussions concerning the 2016 Permit, pursuant to a mediation agreement executed in March 2019 (“Mediation Agreement”). The Parties entered into the Mediation Agreement with the objective of identifying whether there was one negotiated resolution of the permit dispute before the EAB that would result in a protective cleanup that is more comprehensive and faster, that minimizes the disputes and litigation going forward concerning the cleanup, and that is consistent with the overall Consent Decree for the Site.

The Parties have agreed on the following measures to achieve a cleanup that is protective, faster and more comprehensive, while minimizing disruption to affected parties, addressing community impacts, and promoting economic development. This Settlement Agreement is intended to address all disputes between the Parties regarding the 2016 Permit, including those raised in petitions to the EAB. The Parties recognize that the terms of this Settlement Agreement must be approved by each of the five towns making up the Municipal Committee (Great Barrington, Lee, Lenox, Sheffield and Stockbridge) (“the Towns”). The terms of the Settlement Agreement are not severable or modifiable other than with the consent of the affected Parties.

Agreements in this Settlement Agreement that relate to the provisions of the 2016 Permit will be set forth in EPA’s proposed revision of the 2016 Permit (“the Revised Permit” or “Revision to the 2016 Permit”). The Revised Permit will be subject to a regulatory public comment process. This Settlement Agreement will become part of the public file for this matter upon execution by the Parties.

To promote the ability of this Settlement Agreement to expedite the Rest of River cleanup, the Parties agree not to challenge the Revised Permit unless it is inconsistent with the terms of this Settlement Agreement. Except as specified in Sections I, V.A.1, V.B.3, 5 and 6, and VI.D below, any agreements by any Party in the Settlement Agreement are contingent on the final issuance of a Revision to the 2016 Permit containing terms substantially similar to those in the 2016 Permit, revised as specified by the terms in Sections II and III below.

SETTLEMENT TERMS

I. Initiation of Rest of River Response Action Activities

In order to expedite response actions at the “Rest of River” portion of the Site, GE has agreed to commence and perform investigation and design work as contractual obligations effective upon the date on which all of the Parties including EPA have signed this Settlement Agreement.

Specifically, GE must submit a schedule for the Rest of River Scope of Work (SOW), develop the SOW, and, subject to approval by EPA, implement the investigation and design components of the SOW and subsequent Work Plans to accelerate the commencement of the Rest of River cleanup. The obligation to perform this investigation and design work shall continue unless and until EPA issues a Revised Permit that does not contain terms substantially similar to those in the 2016 Permit, revised as specified by the terms in Sections II and III below.

II. Cleanup Enhancements

As part of this Settlement Agreement, GE agrees to enhance the cleanup in the following ways, to be required in the forthcoming Revised Permit.

- A. GE shall implement all requirements of the 2016 Permit that are not explicitly modified in this Settlement Agreement, and all modifications of the 2016 Permit specified in Sections II and III of this Settlement Agreement.

- B. For Reach 5A Floodplains in Pittsfield, GE shall remove soil from twenty-two (22) floodplain properties specified in Attachment A to meet the residential Performance Standards in the 2016 Permit. To the extent the Town of Lenox determines that any of the owners of the six properties identified in Attachment B consent to such removal, GE shall remove additional floodplain soil from any such properties to achieve the residential Performance Standards in the 2016 Permit. Allocation of costs for such additional work in Lenox is governed by Section V.A.4 of this Settlement Agreement.
- C. For Reach 5A and 5B banks that do not otherwise require remediation pursuant to the 2016 Permit, GE shall evaluate the PCB data, erosion potential, the adjacent floodplain removal (if any), constructability issues, and the potential impact to PCB downstream transport should such banks erode and, based on these factors, consider supplemental bank removal.
- D. For Reach 5C, GE shall excavate sediment to achieve an average PCB concentration of 1 mg/kg or less followed by the placement of six inches of suitable backfill across the Reach. This will eliminate approximately 57 acres of capping otherwise required by the 2016 Permit.
- E. GE shall remove the sediments behind the Columbia Mill Dam in Reach 7 to achieve an average PCB level of 1 mg/kg or less, followed by the placement of a minimum of six inches of suitable backfill and additional material as necessary to maintain channel stability, and GE shall remove the Columbia Mill Dam, upon access being obtained to the property. The 2016 Permit will be revised to eliminate the option for any capping behind the dam. This will eliminate up to 10 acres of capping otherwise required by the 2016 Permit.

- F. GE shall remove the sediments behind the former Eagle Mill Dam in Reach 7 to achieve an average PCB level of 1 mg/kg or less, followed by the placement of a minimum of six inches of suitable backfill and additional material as necessary to maintain channel stability, and GE shall remove the former Eagle Mill Dam, upon access being obtained to the property. The 2016 Permit will be revised to eliminate the option for any capping behind the dam. This will eliminate up to 8 acres of capping otherwise required by the 2016 Permit.
- G. GE shall remove sufficient sediment to allow for a maximum of 3 acres of capping in the Willow Mill impoundment and 6.5 acres of capping in the Glendale impoundment, thus eliminating up to 10.5 acres of capping otherwise required by the 2016 Permit.
- H. For Rising Pond (Reach 8), GE shall remove sufficient sediment to allow for a maximum of 31 acres of capping, thus eliminating up to 10 acres of capping otherwise required by the 2016 Permit.
- I. All Legally Permissible Future Project or Work provisions in the 2016 Permit will be retained, but the related Corrective Measures provision of the Revised Permit will be modified to require that the specified “further response actions” will be (i) in accordance with and pursuant to the Consent Decree; (ii) consistent with the scope of the response actions selected in the Revised Permit; and (iii) that Permittee’s responsibility for the costs of said further response actions will be limited to those costs solely related to the presence of PCBs.
- J. For Vernal Pools, GE shall conduct a pilot study on not more than ten (10) Vernal Pools (none in Core Area 1 habitat) using either traditional excavation and restoration techniques, or amendments such as activated carbon. GE shall collect baseline data

including water and soil chemistry and a range of taxa and shall submit a plan that proposes criteria for success. Following an appropriate monitoring period determined by EPA, GE agrees to implement the appropriate remediation, as determined by EPA, on the remainder of Vernal Pools as necessary to meet the Performance Standards in the 2016 Permit.

- K. For the remediation of Reach 5C, Woods Pond and potentially in backwaters adjacent to Reach 5C and Woods Pond, GE shall implement, if feasible, a hydraulic dredging and/or hydraulic pumping approach with material from these areas pumped directly to the Upland Disposal Facility described below and depicted in Figure 1. To the extent that the hydraulic dredging and/or hydraulic pumping approach is not feasible, GE shall transport material from Reach 5C and Woods Pond to the Upland Disposal Facility via trucks while avoiding driving on public roads to the maximum extent practical. See attached Figure 2 for depiction of the potential pipeline location from these remediation areas to the Upland Disposal Facility and of potential truck routes. Although PCBs from Reach 5C, Woods Pond and potentially in backwaters adjacent to Reach 5C and Woods Pond at any concentration may be pumped or trucked to the Upland Disposal Facility (as described in this paragraph) for temporary processing, all material permanently disposed of at the Upland Disposal Facility shall meet the standard described below in Section III.A.
- L. Quality of Life Plan: GE is required to submit to EPA, for review and approval, a Quality of Life Compliance Plan, which specifies five separate areas to be addressed during remediation: noise, air, odor, light; recreational activities; road use and transport - related impacts; coordination with impacted residents/landowners; and community health

and safety. EPA will solicit input on this plan from local governments, impacted residents/landowners, neighborhoods in the vicinity of the cleanup, and other interested stakeholders. Section c of the Quality of Life Compliance Plan will include, among other requirements, consideration of methods to reduce residential impacts where practical, including remediation techniques that further restrict transport of waste material through residential areas. Examples of roads that would warrant such further restrictions include: Brunswick, Kenilworth, Warwick, Noblehurst, Chester, and Revilla Terrace; Shetland, Clydesdale, Pinto, and Palomino Drives; and Anita, Lucia, Quirco, Joseph, and Eric Drives. GE agrees to work with the City, the Towns and the landowners to take reasonable steps to minimize the adverse impact of the work activities by, among others, coordinating work activities, scheduling and traffic routing.

M. GE shall work cooperatively with the City of Pittsfield, the Towns of Great Barrington, Lee, Lenox and Stockbridge, and the State of Massachusetts to facilitate their enhancement of recreational activities, such as canoeing and other water activities, hiking, and bike trails in the Rest of River corridor. Such opportunities are possible on properties where remediation will occur and/or where temporary access roads are constructed.

N. GE shall coordinate as soon as practicable with municipal officials and affected landowners regarding work activities, schedules and traffic routes. GE's coordination with officials and landowners shall be described in the relevant work plans submitted to EPA.

O. Remediation of Mass Audubon Canoe Meadows Property:

In addition to the sampling and remediation described in the applicable Performance Standards in the 2016 Permit, GE will:

1. Expand the Exposure Area (EA) 10 boundary to the east so that the EA incorporates the area with PCBs greater than 1 ppm in the top foot of soil. This expansion would also allow evaluation of the trail in this area. The expanded EA is shown in Figure 6.
2. Include an additional subarea, beyond that included in the 2016 Permit, in the attached Figure 6 Mass Audubon Property Revised EA 10 Remediation and remediate additional floodplain soils to meet the applicable floodplain soil Performance Standards.

III. Disposal of Excavated Material in Rest of River Remedial Action

EPA's Revised Permit will include Performance Standards, corrective measures, and requirements for a Statement of Work and Work Plans, including for the disposal of excavated material. GE shall implement a hybrid disposal approach that includes the following;

- A. Material disposed of at the Upland Disposal Facility pursuant to characterization and averaging method(s) approved and/or developed by EPA (Attachment C to this Settlement Agreement) shall not exceed the elevation, volume, and footprint limits described below. GE shall dispose of any material not placed in the Upland Disposal Facility in any out-of-state facility that is licensed/permitted to accept such waste and will accept it, including RCRA Subtitle C Landfills, so long as said facility is in compliance with EPA's Off-Site Rule (40 C.F.R. 300.440). Notwithstanding the first sentence of this

paragraph, a minimum of 100,000 cubic yards of PCB-contaminated sediment, riverbank soils, and/or floodplain soils shall be disposed of out of State.

- B. Transportation and disposal of other sediment, floodplain soils and other Waste Material (as defined in the Consent Decree) shall occur at a location depicted in Figure 1 and as described in Section III.D-G of this Settlement Agreement (“Upland Disposal Facility”). No material from the Rest of River Remedial Action will be disposed of at any other location in Berkshire County.
- C. No one shall take any materials to the Upland Disposal Facility for disposal except those identified for the Upland Disposal Facility as set forth in this Section III and generated in the Rest of River Remedial Action. No materials from previously remediated sites in the Upper 2-Mile Reach of the Housatonic River cleanup nor any other materials associated with the other response actions conducted pursuant to the Site Consent Decree will be disposed of at the Upland Disposal Facility.
- D. The Upland Disposal Facility shall have a maximum design capacity of 1.3 million cubic yards. The landfill consolidation area shall have a maximum footprint of 20 acres and a maximum elevation of 1,099 feet above mean sea level. If the seasonally high groundwater elevation determined pursuant to Section III.E is determined to be higher than 950 feet above mean sea level, the maximum elevation of the landfill consolidation area may be increased by the number of feet that is the difference between the seasonally high groundwater elevation and 950 feet above mean sea level in order for the Upland Disposal Facility to have a maximum capacity of 1.3 million cubic yards.
- E. GE shall construct the Upland Disposal Facility landfill with a double liner and a leachate collection system and shall cap the Upland Disposal Facility with a low-permeability cap

and vegetation. The liners shall have a permeability equal or less than 1×10^{-7} cm/sec, a minimum thickness of 30 mils and be chemically compatible with PCBs. The bottom liner of the landfill will be installed a minimum of 15 feet above a conservative estimate of the seasonally high groundwater elevation. The seasonally high groundwater elevation will be projected using site-specific groundwater elevation data collected in the location of the Upland Disposal Facility, modified by an appropriate technical method that takes into account historic groundwater level fluctuations at similarly-sited off-site long-term monitoring wells in Massachusetts. The estimation of a seasonally high groundwater elevation will be performed pursuant to a methodology reviewed and approved by the EPA. The estimate of seasonally high groundwater elevation shall then be used to support the design of the landfill relative to achieving the required minimum separation distance from the bottom of the liner system to the seasonally high groundwater elevation. The double liner system, separated by a drainage layer, shall incorporate primary and secondary leachate collection systems.

- F. GE shall identify all non-community and private water supply wells currently within 500 feet of the Upland Disposal Facility consolidation area. Unless the well owner does not consent, GE shall pay the installation cost of a connection to public water. In the event any new water users (*e.g.*, new construction) move within 500 feet of the Upland Disposal Facility consolidation area during construction or operation and maintenance, GE shall pay the installation cost of a connection to public water.
- G. Pursuant to EPA-approved or developed remedial design, remedial action, and operation and maintenance documents, and in accordance with the Consent Decree and the Revised Permit,

1. GE shall install a groundwater monitoring network around the Upland Disposal Facility to monitor for PCBs and other constituents identified in the groundwater monitoring plan as approved or modified by EPA. Groundwater monitoring shall include a sufficient number of monitoring wells to allow detection of groundwater impacts.
 2. GE shall perform landfill inspections, maintenance, and groundwater sampling activities.
 3. GE shall be responsible for the proper functioning of the Upland Disposal Facility landfill during landfill operations, and shall remain responsible for the proper operation and maintenance of the landfill thereafter. GE shall be responsible for the closure of the landfill including the installation of the impermeable cap and vegetative cover promptly upon EPA's determination that either of the following conditions has occurred: (1) the landfill is full (*e.g.*, when the maximum footprint, elevation and/or volume are reached), or (2) excavation and dredging activities conducted as part of the Rest of River Remedial Action are complete. GE shall be responsible for post-closure activities and monitoring thereafter.
 4. Landfill design will include a stormwater management system to control surface runoff, to minimize the potential for surface erosion or stormwater contribution to leachate generation.
- H. GE shall include in its landfill design submissions one or more proposals (based on GE's consultations with officials from the Town of Lee) describing how GE will prepare the Upland Disposal Facility for potential re-use once the landfill is capped if the Town of

Lee desires. Any such proposals shall be described in the final remedial design/remedial action work plans.

NON-PERMIT AGREEMENT(S)

IV. Other GE/EPA Agreements

- A. GE and EPA's National Pollutant Discharge Elimination System permit program shall engage in good faith discussions regarding a renewal of the NPDES Permit for the former Pittsfield facility based on implementation of Best Management Practices to improve stormwater management, potentially including slip lining of damaged piping, pressure washing of other piping infrastructure, and removal of accumulated sediment from catch basins or other structures, as appropriate.

- B. The EPA will facilitate opportunities for research and testing of innovative treatment and other technologies and approaches for reducing PCB toxicity and/or concentrations in excavated soil and/or sediment before, during, or after disposal in a landfill. These opportunities may include: (1) reviewing recent and new research; (2) identifying opportunities to apply existing and potential future research resources to PCB treatment technologies, through EPA and/or other Federal research programs; and (3) encouraging solicitations for research opportunities for research institutions and/or small businesses to target relevant technologies. The research may focus on soil and sediment removed (or to be removed) from the Housatonic River or similar sites to ensure potential applicability to the permit/selected remedy. GE and EPA will continue to explore current and future technology developments and, where appropriate, will collaborate on on-site technology demonstration efforts and pilot studies, and, consistent with the adaptive management

requirements in the Final Permit together, will consider the applicability of promising research at the Housatonic Rest of River site.

V. Economic Development and Other Community Benefits

- A. GE shall pay a total of \$55 million, which the Towns of Lenox, Lee, Stockbridge, Great Barrington and Sheffield shall distribute among themselves.
1. GE agrees to establish an interest-bearing escrow account and to pay into that escrow account \$55 million no later than 30 days after the Agreement is signed by the Parties. GE and the Towns of Lenox, Lee, Sheffield, Stockbridge, and Great Barrington agree to enter into a mutually acceptable escrow agreement regarding said escrow account, including instructions to the escrow agent, specifying the terms on which the \$55 million deposited into said escrow account, and the interest, accrued, will be released.
 2. GE shall donate the Rising Pond Site (parcel 113/005.0-0000.0008.0 listed as 149 acres) to the Town of Great Barrington or its designee to allow for conservation and/or development contingent on GE retaining necessary easements to conduct response actions at Rising Pond and to maintain the Rising Pond Dam.
 3. GE shall release the use limitations currently effective at the adjacent Hazen Paper Mill Site subject to appropriate releases from future liability.
 4. After Lenox determines whether any of the owners of the six properties identified in Attachment B seek additional floodplain soil removal to achieve the residential Performance Standards in the 2016 Permit pursuant to Section II.B of this Settlement

Agreement, Lenox and GE will share equally the cost of such additional removal for any such owners who request such additional removal.

B.

1. GE shall pay a total of \$8 million to the City of Pittsfield within sixty (60) days of the final issuance of a Revision to the 2016 Permit containing terms substantially similar to those in the 2016 Permit, revised as specified by the terms in Sections II and III of this Settlement Agreement, with the understanding that the \$8 million will be put into the Pittsfield Economic Development Fund.

2. Within sixty (60) days of the final issuance of a Revision to the 2016 Permit containing terms substantially similar to those in the 2016 Permit, revised as specified by the terms in Sections II and III of this Settlement Agreement, GE will donate, as is, the land and building that it owns on Woodlawn Avenue (Parcel ID I100005001) to the Pittsfield Economic Development Authority (“PEDA”) or another entity agreeable to the City, GE and PEDA. Pittsfield reserves the right to decline the donation. Should Pittsfield elect to decline the donation it shall do so within 12 months of the date of this Settlement Agreement.

3. By December 31, 2020, unless EPA has proposed a Revised Permit that is not substantially similar to the 2016 Permit, revised as specified by the terms in Sections II and III of this Settlement Agreement, GE will remove the pavement, fencing and guard rails on three parking lots on Tyler Street (Parcel IDs J11000701, J110003013, and

J110010001)(the “Parking Lots”). To landscape the Parking Lots, GE shall plant grass, and shall, at a cost not to exceed \$50,000, install appropriate shrubbery.

4. GE will also engage in good faith discussions with the City regarding the donation by GE of the Parking Lots to the City or another entity agreeable to the City and GE, which donation would occur within sixty (60) days of the later of the final issuance of a Revision to the 2016 Permit containing terms substantially similar to those in the 2016 Permit, revised as specified by the terms in Sections II and III of this Settlement Agreement, and completion of the landscaping of the Parking Lots.

5. GE will also agree to semi-annual meetings between the City and GE regarding GE’s plans for the maintenance, potential repurposing or eventual demolition of the structures located at 55 Merrill Road, Parcel J100009002: Building 12 complex including Buildings 12, 12X, and 12Y, Building 14 Complex including Buildings 14, 14A, 14D, 14E, 14H and any extensions, and the buildings and parcels south of East Street with the first semi-annual meeting to occur within 60 days of execution of the Settlement Agreement unless EPA proposes a Revision to the 2016 Permit that is not substantially similar to the terms of the 2016 Permit, revised as specified by the terms in Sections II and III of the Settlement Agreement.

6. Aesthetic Improvements on GE Owned Property in City of Pittsfield: Within 120 days of the execution of the Settlement Agreement, unless EPA proposes a Revision to the 2016 Permit that is not substantially similar to the terms of the 2016 Permit, revised as specified by the terms of Sections II and III of the Settlement Agreement, GE will commence the specified activities in this Section V.B.6 to aesthetically improve GE

owned property in the City of Pittsfield and will complete said specified activities within 12 months of the commencement of said specified actions.

- a. GE Property South of East Street
 - i. Remove barbed wire from fencing along East Street and remove former employee turnstile and associated infrastructure (if any) subject to concurrence by GE Corporate Security, to be discussed with the City.
 - ii. Plant 24 White pines or equivalent subject to availability. (This is limited to areas east of the Woodlawn Avenue/East Street intersection due to lack of unpaved areas west of Woodlawn Avenue. Additional aesthetic improvement will be suggested by GE which can be installed west of Woodlawn Avenue to improve the appearance of the property running parallel to East St.).
 - iii. Improve aesthetics of area currently being used as a storage area by WMECO.
- b. GE property bounded by RR tracks/Merrill Road, New York Avenue, Tyler Street and PEDDA property.
 - i. Remove all barbed wire from fencing along Tyler Street subject to concurrence by GE Corporate Security, to be discussed with the City.
 - ii. Remove pipe trestle extending from Building 12Y to the former 20s Complex (timing for removal subject to obtaining access and concurrence from CSX).
 - iii. Remove guard rail north of Building 14E/14 Ext along Tyler Street subject to concurrence from the Pittsfield Department of Public Service.

- iv. Remove 4 exterior vents/stacks that are on the outside wall of building 14/14-N and face Tyler Street.
- c. Building 14 complex
 - i. North side/facing Tyler Street; Paint rusted “columns” and “horizontal” facade near top of the building (excluding white siding) that faces Tyler Street.
 - ii. In the high bays on the north, east and south side of 14/14E; replace broken windows, or fill all window panes, and/or paint with consistent solid material if such work can be performed safely.
 - iii. Eastern side of Building 14/14E that faces south towards the SABIC parking lot; Remove, paint, refurbish or otherwise improve the rusted and/or peeling siding.
- d. Building 12, facing west (toward PEDA property): paint perimeter façade of southern most garage door and rusted wall.
- e. Building 12 complex
 - i. Remove, paint, refurbish or otherwise improve the rusted and/or peeling siding that faces south toward East Street. (Siding is currently white.)
 - ii. Remove, paint, refurbish or otherwise improve the rusted and/or peeling siding that faces southeast toward East Street/Merrill Road and siding on the west, south and east side of the upper building on 12 (Y). Portions of the upper building may be inaccessible and not subject to such aesthetic improvements due to lack of access/safety concerns. (Siding is currently red.)

- f. Additional aesthetic improvements identified by the City will be discussed by the City and GE at the semi-annual meetings referenced above in Section V.B.5.
- C. GE shall prioritize the use of local labor for the Rest of River Remedial Action to the extent feasible and economical.
- D. Upon request, GE will provide any municipality with information relevant to GE's liability to that municipality for taxes on any real or personal property that is related to the Rest of River cleanup.
- E. Compensation and Access:
1. Once Mass Audubon and GE execute an Access Agreement, GE agrees to pay Mass Audubon \$500,000 for the placement and operation, for a period not to exceed 2 consecutive years, of a staging area of up to 3 acres (with appropriate access roads). Mass Audubon agrees that the staging area can be used to facilitate the remediation of Canoe Meadows Wildlife Sanctuary as well as other floodplain soils and Housatonic River sediments in Reach 5A. GE and Mass Audubon agree to execute an Access Agreement to provide additional details of the access that is consistent with the substance of Appendix R to the Consent Decree.
 2. Such Access Agreement will include provisions relating to the restoration of Canoe Meadows Wildlife Sanctuary man-made infrastructure affected by the remediation, including but not limited to the boardwalk, walking trails, and public parking lot.

3. Such Access Agreement will include actions to be taken by GE to ensure continued recreational activities on walking trails and other areas of Canoe Meadows Wildlife Sanctuary that will not be affected by the remediation. This will include the provision of an alternate public parking lot and construction and maintenance of alternate connecting walking trails.

4. Such Access Agreement will not include additional monetary compensation.

F. Restoration of Canoe Meadows Staging Area:

Regarding ecological restoration of the staging area, GE agrees to comply with Section II.B.1.c of the 2016 Permit. Regarding all other restoration activities, GE agrees that when the remediation is complete and the staging area is no longer needed, GE will remove the staging area materials and plant appropriate vegetation based on a pre-construction survey of the area, replace any physical structures, trails, signs, public parking areas, and other improvements that are damaged or removed, and otherwise comply with the restoration provisions of the 2016 Permit.

VI. Coordination and Consultation

A. Coordination and Consultation with Stakeholders

1. EPA, in its 2016 Response to Comments on the Rest of River Permit, committed to soliciting input and working with all stakeholders as the cleanup design progresses. EPA reiterates that commitment in this Settlement Agreement. For example, during Remedial Design, EPA plans to engage with property owners, Native American tribes, local governments, communities and other stakeholders to ensure that their input is included in the design process. EPA will ensure that schedules for submissions and reviews take into account any necessary local government, property owner, and stakeholder reviews. At a

minimum, and not necessarily limited to the following, during remedial design EPA will provide an opportunity for input on key submittals required by the Permit, including the Quality of Life Compliance Plan and the design, construction and operation of the Upland Disposal Facility.

2. If in the course of remedial design, GE determines that it will encounter stormwater conveyances, GE will notify the municipality in which the stormwater conveyances are located. To the extent that said municipality wants to upgrade said conveyances, GE will coordinate with the municipality regarding said upgrade so long as it will not delay remedial action.

3. Prior to transporting any materials required for remediation or starting any work in the City of Pittsfield or in the towns of Great Barrington, Lee, Lenox, or Stockbridge, GE shall document the pre-existing condition of any municipal road to be used during remediation using 360 degree road imaging technology plus 3D road surface imaging technology. GE shall also photographically document the condition of other visible infrastructure associated with such roads, including bridges culverts and other exposed infrastructure that is not captured by the road scanning process and provide that documentation for review by the affected municipality. GE and the affected municipalities will meet and confer in good faith, and in consultation with experts, regarding the need for the use of Ground Penetrating Radar (“GPR”) technology to assess subsurface conditions in particular areas where such GPR assessment may be warranted. The required Quality of Life Compliance Plan will include documentation showing how GE will repair any damage to the roads, other than normal wear and tear, caused by GE in order to allow safe public access during remediation activities. At the completion of

any remediation activities affecting a specific road, GE will document the then-existing condition of the road and associated exposed infrastructure using the same technology as set forth above and provide that documentation for review by the municipality; at that time, GE and the affected municipalities will meet and confer in good faith, and in consultation with experts, regarding the need for the use of GPR technology to assess subsurface conditions in particular areas where such GPR assessment may be warranted. GE shall repair or replace any damage caused by GE; any dispute under this Agreement between GE and a municipality regarding GE's responsibility for road and/or infrastructure repair, if the parties cannot resolve the matter through mediation, shall be determined by a single, neutral arbitrator with arbitration to occur in Massachusetts. The arbitration shall (unless the parties to the dispute agree otherwise) be administered by the Boston office of JAMS pursuant to the JAMS Streamlined Arbitration Rules and Procedures, effective July 1, 2014. Such repair or replacement shall meet current State or Federal standards and must be acceptable to the municipality, provided such acceptance is not unreasonably withheld. This provision does not affect any of EPA's authorities pursuant to the Consent Decree or the Revised Permit. GE and the affected municipalities agree to share relevant information regarding the usage of the roads during the remediation process.

4. EPA will coordinate with the affected municipality and interested stakeholders on the Vernal Pools to be remediated pursuant to this Settlement Agreement.

5. EPA also commits to coordinate closely with Connecticut and Massachusetts environmental agencies in implementing the Revised Permit.

B. Consultation with Public and Private Property Owners where Remediation is Required

EPA, in consultation with Connecticut and Massachusetts environmental agencies, commits to working closely with the affected property owner to obtain input prior to finalizing design submittals and other documents specifically related to property owners where remediation is required. These submittals/documents shall include but are not necessarily limited to the following:

- Floodplain Pre-Design Investigation Work Plans, which include:
 - Soil Sampling Plan
 - Potential Vernal Pool Certification Investigation Reports
 - Survey Report on Morphology, Habitat Characterization, and Accessibility
- Riverbed and bank Pre-Design Investigation Work Plans
- Pre-Design Investigation Summary Reports (summarizes investigation activities and sampling data, identifies additional data needs, if any)
- Baseline Restoration Assessment and Restoration Plans
- Cultural Resource Survey(s)
- Conceptual Remedial Design/Remedial Action (“RD/RA”) Work Plan (Preliminary identification of excavation footprint and quantities, preliminary restoration activities, and preliminary plans and specifications.)
- Final RD/RA Work Plan (Final excavation footprint, detailed design details, plans and specifications, including potential access roads, staging areas, and restoration activities, long-term inspection, monitoring and maintenance requirements, and a preliminary schedule).

C. Coordination Among EPA, Mass Audubon, GE:

EPA, Mass Audubon, and GE recognize that, as envisioned in the 2016 Permit and this Settlement Agreement, the proposed remediation will affect Mass Audubon's Canoe Meadows property in Pittsfield.

1. Prior to submittal of the Conceptual RD/RA Work Plan relating to actions to be taken by GE at Canoe Meadows Wildlife Sanctuary, GE will meet with EPA and Mass Audubon at a mutually agreeable time to review the Revised Permit terms and discuss how these relate to: the actual areas of remediation on Canoe Meadows Wildlife Sanctuary; other areas on Canoe Meadows Wildlife Sanctuary that may be needed to facilitate the remediation; and applicable requirements of the Access Agreement between GE and Mass Audubon (including restoration requirements and actions to allow for continued recreational activities).
2. After executing an access agreement but prior to mobilization of the remediation at Canoe Meadows Wildlife Sanctuary or mobilization of activities to make a staging area at Canoe Meadows Wildlife Sanctuary, GE will meet with Mass Audubon and EPA to discuss concerns.
3. Prior to submittal of restoration plans for Canoe Meadows Wildlife Sanctuary (which typically are included in the Final RD/RA Work Plan), GE will meet with EPA and Mass Audubon at a mutually agreeable time to discuss restoration plans for the property.

D. Technical Assistance for Local Governments

EPA is providing contractor support to provide technical assistance to the City of

Pittsfield and the Towns of Lenox, Lee, Stockbridge, Great Barrington, and Sheffield.

The contractor is funded by EPA and can provide the following:

- Project planning,
- Communications/coordination with EPA, the States and other stakeholders,
- Technical review of Permit submittals and other documents,
- Preparing and presenting technical presentations to the local governments and the general public,
- Development of Fact Sheets,
- Development of community informational material for dissemination to the public that summarize technical information and technical issues in plain language,
- Technical presentations to community, and
- Provide support responding to questions raised by the public.

EPA has already committed \$20,000 for this effort, effective on signature by all Parties to this Settlement Agreement. EPA intends, subject to the availability of funds, to further fund this effort during the design and implementation of the remedy.

VII. Effect of this Agreement

A. This Agreement is not a modification of and shall have no impact upon, the terms and conditions of the Consent Decree.

B. Nothing in this Agreement shall be construed to create any rights in, or grant any cause of action to, any person not a party to this Agreement.

C. This Settlement Agreement may be executed in multiple counterparts. The executed signature page(s) from each actual or electronic copy of a counterpart may be joined together and attached and will constitute one and the same Settlement Agreement.

LIST OF ATTACHMENTS

- Attachment A: Reach 5A (Pittsfield) Floodplain Residential Properties Subject to Enhanced Cleanup
- Attachment B: Reach 5C (Lenox) Floodplain Residential Properties Subject to Potential Enhanced Cleanup
- Attachment C: Criteria/Methods Applicable to Disposal of Material Excavated in Rest of River Remedial Action

LIST OF FIGURES

(including figures referred to in Attachment C)

- Figure 1: Upland Disposal Facility
- Figure 2: Potential Transport Routes for Reach 5C/Woods Pond Sediment to Upland Disposal Facility
- Figure 3: Subreaches in Reaches 5/6 (referred to in Attachment C)
- Figure 4: Subreaches in Reaches 7/8 (referred to in Attachment C)
- Figure 5: Exposure Areas in Reaches 5 to 8 (referred to in Attachment C)
- Figure 6: Mass Audubon Property Revised EA 10 Remediation

THE UNDERSIGNED PARTY enters into this Settlement Agreement to resolve disputes regarding EPA's October 2016 RCRA Corrective Action Permit Modification for the "Rest of River" portion of the GE-Pittsfield/Housatonic River Site

For the Town of Lenox:

Edward Lane

Name

2/5/2020

Date

CHAIR - LENOX BOARD of SETTLEMENT

Title

THE UNDERSIGNED PARTY enters into this Settlement Agreement to resolve disputes regarding EPA's October 2016 RCRA Corrective Action Permit Modification for the "Rest of River" portion of the GE-Pittsfield/Housatonic River Site

For the Town of Lee:

Thomas P. Wilchman

Name

Feb 5, 2020

Date

Chairman Board of Selectmen

Title

J

THE UNDERSIGNED PARTY enters into this Settlement Agreement to resolve disputes regarding EPA's October 2016 RCRA Corrective Action Permit Modification for the "Rest of River" portion of the GE-Pittsfield/Housatonic River Site

For the Town of Stockbridge:

Terence R. Flynn

Name

2/4/20

Date

Select Board Chair

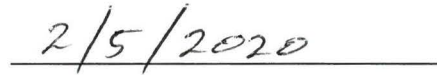
Title

THE UNDERSIGNED PARTY enters into this Settlement Agreement to resolve disputes regarding EPA's October 2016 RCRA Corrective Action Permit Modification for the "Rest of River" portion of the GE-Pittsfield/Housatonic River Site

For the Town of Great Barrington:



Name *Stephen Bannon*



Date

Great Barrington Selectboard,
Title *Chair*

THE UNDERSIGNED PARTY enters into this Settlement Agreement to resolve disputes regarding EPA's October 2016 RCRA Corrective Action Permit Modification for the "Rest of River" portion of the GE-Pittsfield/Housatonic River Site

For the Town of Sheffield:

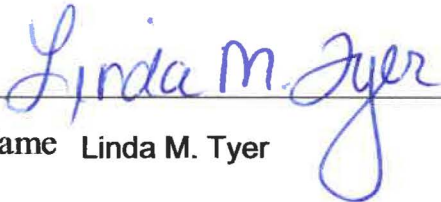
Rene C Wood
Name


Feb 3, 2020
Date

Chair, Board of Selectmen
Title

THE UNDERSIGNED PARTY enters into this Settlement Agreement to resolve disputes regarding EPA's October 2016 RCRA Corrective Action Permit Modification for the "Rest of River" portion of the GE-Pittsfield/Housatonic River Site

For the City of Pittsfield:


Name Linda M. Tyer


Date

Mayor _____
Title

THE UNDERSIGNED PARTY enters into this Settlement Agreement to resolve disputes regarding EPA's October 2016 RCRA Corrective Action Permit Modification for the "Rest of River" portion of the GE-Pittsfield/Housatonic River Site

For the State of Connecticut:

Lori D DiBella
Name Lori D. DiBella

2/5/2020
Date

Assistant Attorney General
Title

THE UNDERSIGNED PARTY enters into this Settlement Agreement to resolve disputes regarding EPA's October 2016 RCRA Corrective Action Permit Modification for the "Rest of River" portion of the GE-Pittsfield/Housatonic River Site

For C. Jeffrey Cook:

Name *C. Jeffrey Cook*

Date *2.6.20*

Title

THE UNDERSIGNED PARTY enters into this Settlement Agreement to resolve disputes regarding EPA's October 2016 RCRA Corrective Action Permit Modification for the "Rest of River" portion of the GE-Pittsfield/Housatonic River Site

For Berkshire Environmental Action Team:

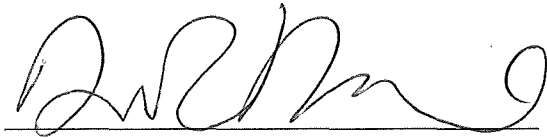
Jane Winn
Name JANE WINN

February 6, 2020
Date

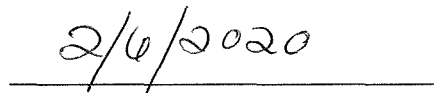
Executive Director
Title

THE UNDERSIGNED PARTY enters into this Settlement Agreement to resolve disputes regarding EPA's October 2016 RCRA Corrective Action Permit Modification for the "Rest of River" portion of the GE-Pittsfield/Housatonic River Site

For the United States Environmental Protection Agency:

A handwritten signature in black ink, appearing to be "D. W. [unclear]", written over a horizontal line.

Name

A handwritten date "2/6/2020" written over a horizontal line.

Date

The handwritten title "REGIONAL ADMINISTRATOR" written over a horizontal line.

Title

THE UNDERSIGNED PARTY enters into this Settlement Agreement to resolve disputes regarding EPA's October 2016 RCRA Corrective Action Permit Modification for the "Rest of River" portion of the GE-Pittsfield/Housatonic River Site

For Massachusetts Audubon Society:



Name Kathleen E. Connolly

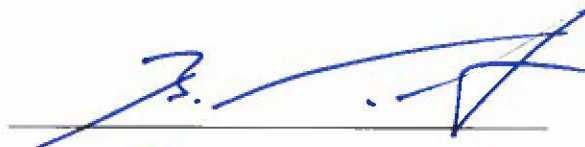
02/07/2020

Date

Title Attorney

THE UNDERSIGNED PARTY enters into this Settlement Agreement to resolve disputes regarding EPA's October 2016 RCRA Corrective Action Permit Modification for the "Rest of River" portion of the GE-Pittsfield/Housatonic River Site

For General Electric Company:


Name BUCHMASTER DEWOLF Date 2/10/20

VP, ENVIRONMENT, HEALTH & SAFETY
Title

Attachment A

Reach 5A Floodplain Residential Properties Subject to Enhancement

Parcel ID
I6-1-42
I6-3-13
J6-2-3
J4-3-7
J4-3-8
J4-3-9
J4-3-10
J4-3-11
J3-1-10
J3-1-9
J3-1-8
J3-1-14
J3-1-13
J3-1-12
J3-1-11
J3-2-2
J3-2-3
J3-2-4
J3-2-5
J3-2-6
K3-1-2
K2-1-10

Attachment B

Reach 5C Floodplain Residential Properties Subject to Potential Enhancement

Parcel ID
24-6
24-5
24-4
24-3
24-2
24-1

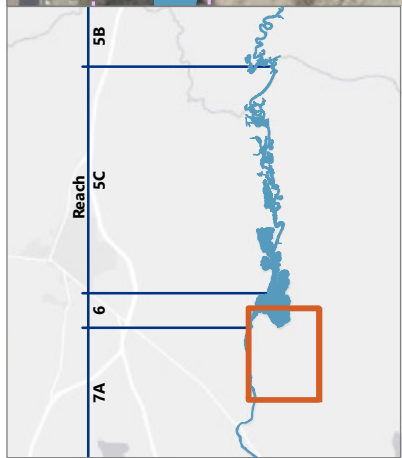
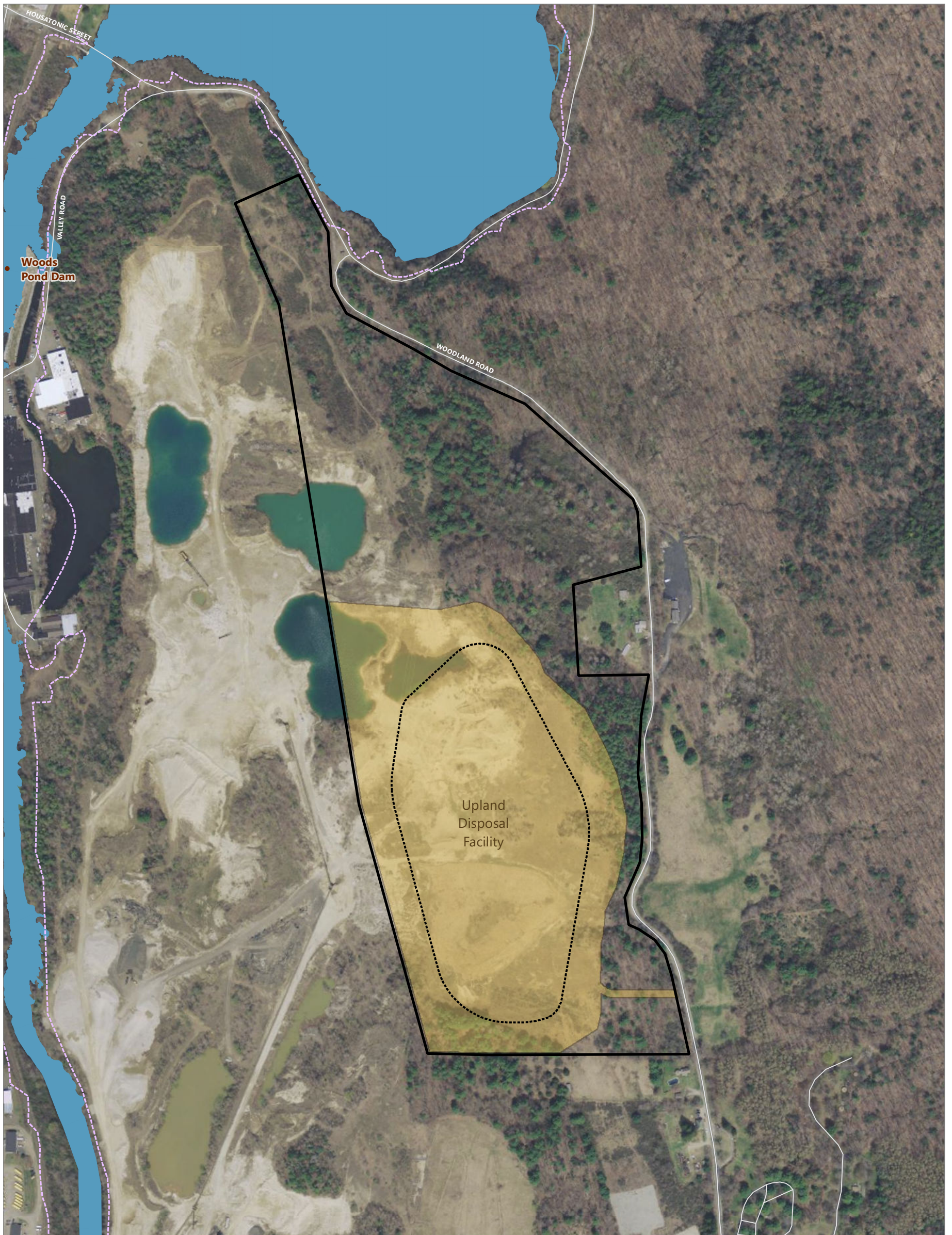
Attachment C to Settlement Agreement

Criteria/Methods Applicable to Disposal of Material Excavated in Rest of River Remedial Action

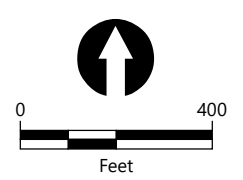
1. For floodplains in each of the 90 Exposure Areas shown in Figure 5, to the extent that remediation is required in any given Exposure Area, GE will segregate and dispose of off-site (out-of-state) soils containing high concentrations so that the remaining floodplain soil to be disposed of in the Upland Disposal Facility averages less than 50 mg/kg PCBs. The process is further described as follows:
 - After additional data collection required by the 2016 Permit, the horizontal footprint and vertical removal depth (the volume) of soil that needs to be removed in each Exposure Area will be determined.
 - The volume-weighted average PCB concentration of all soil to be removed from each Exposure Area will be calculated (using the same PCB data set used to delineate the soil to be removed).
 - If the volume-weighted average PCB concentration in the soil to be removed exceeds 50 mg/kg in an Exposure Area, the soil with the highest PCB concentrations (e.g., “hot spots”) in the Exposure Area will be segregated, or separated out, for out-of-state disposal until the average concentration of the remainder of the soil to be removed in the Exposure Area decreases to less than 50 mg/kg for disposal at the Upland Disposal Facility.
2. For Reach 5A banks, GE will segregate and dispose of off-site (out-of-state) soils containing high concentrations so that the remaining Reach 5A bank soil to be disposed of in the Upland Disposal Facility has a volume-weighted average of less than 50 mg/kg PCBs. In calculating the volume-weighted average concentration of PCBs in Reach 5A riverbank soils for disposal purposes, the only soils that will be considered are soils to be removed from Reach 5A riverbanks.
3. GE will dispose of all riverbank and sediment from Reach 5B off-site (out-of- state), except in the following circumstances: If, pursuant to Section II.C of the agreement, GE removes additional riverbank soil with PCB concentrations less than 50 mg/kg, this material may be disposed of in the Upland Disposal Facility.
4. For all sediment except for Reach 5B, GE will segregate and dispose of off-site (out- of- state) sediments containing high concentrations so that the remaining sediment to be disposed of in the Upland Disposal Facility averages 25 mg/kg PCBs or less on a Reach or Subreach basis as described below.
 - The 25 mg/kg average applies individually to: Reach 5A, Reach 5C, Woods Pond, Backwaters, Reach 7 Subreaches (Subreach 7B [Columbia Mill Impoundment], Subreach 7C [Eagle Mill Impoundment], Subreach 7E [Willow Mill Impoundment], Subreach 7G [Glendale Impoundment], and Rising Pond. These Reaches/Sub- Reaches are depicted in Figures 3 and 4. The segregation of sediment for Reach 5B is described in item 3 above, which provides that all sediment removed from Reach 5B shall disposed of off-site (out-of-state).

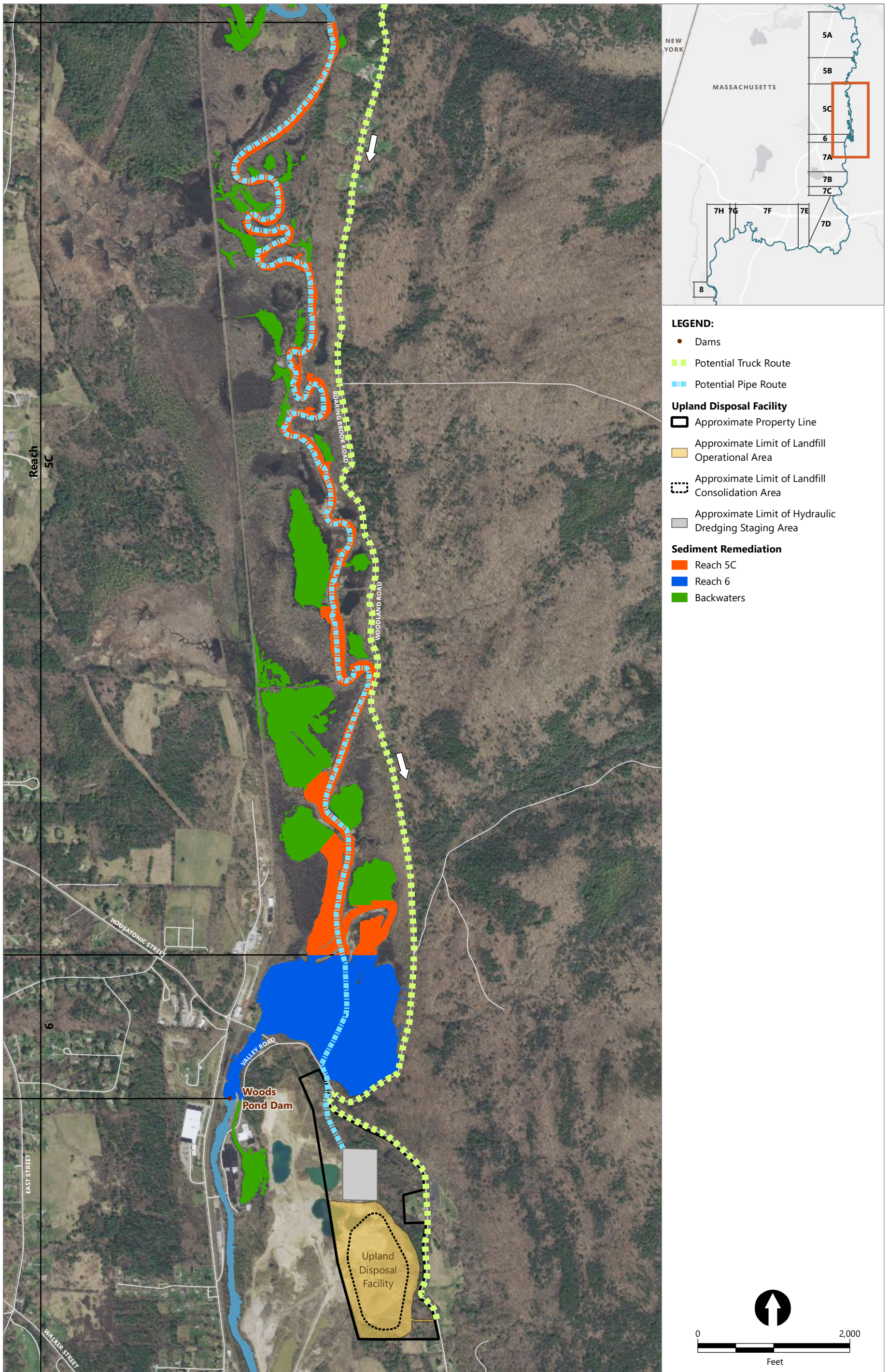
- As described in the 2016 Permit, each Subreach, and in some cases each Reach, has its own Performance Standards to be achieved through sediment removal and capping or backfill. Following additional data collection, the area and amount of sediment to be removed to meet the Performance Standard will be determined. After the horizontal footprint and vertical removal depth are determined, the volume-weighted average PCB concentration of the sediment within that footprint will be calculated.
 - If the volume-weighted average PCB concentration within a Reach or Subreach removal footprint exceeds 25 mg/kg, sediment with the highest PCB concentrations (e.g., “hot spots”) will be segregated for out-of-state disposal until the average concentration of the remaining sediment to be removed from the Reach or Subreach decreases to 25 mg/kg or less for disposal at the Upland Disposal Facility.
 - Relevant data from the RCRA Facility Investigation (RFI) and data collected pursuant to the 2016 Permit or Revised Permit will be used in determining average concentrations for comparison to the 25-mg/kg criterion for placement in the Upland Disposal Facility.
 - EPA agrees to work with GE to design an appropriate transition and hybrid disposal averaging area in the Woods Pond Headwaters area between Reach 5C and Woods Pond.
5. In addition, for all sediment in Reaches and Subreaches, including backwaters, except for Reach 5B, GE will segregate and dispose of off-site (out-of-state) sediment that is represented by a 3-dimensional polygon associated with a single vertical core that has an average concentration greater than or equal to 100 mg/kg PCBs, as further described below:
- GE will compare the 100 mg/kg criterion to the average concentration in each individual vertical core.
 - Vertical core polygons will be generated by a Thiessen polygon method. Thiessen polygon mapping involves the use of computer software to draw perpendicular bisector lines between adjacent sample locations to create two-dimensional polygon areas. The two-dimensional Thiessen polygon will be extended vertically to the depth of sediment removal to create a three-dimensional polygon.
 - The data used in this evaluation will be limited to, and representative of, the depth intervals that correspond to depth of removal associated with the location where the core was collected.
 - If sampling data, at a given vertical core location, consists of data from different depth intervals, the vertical PCB average concentration will be calculated as a depth-weighted average at that location.
 - Vertical sediment cores will be of sufficient depth to characterize sediment PCB concentrations throughout the full vertical interval required to comply with the Performance Standards for each Reach, Subreach and backwater under the 2016 Permit or Revised Permit.
 - If the vertical depth-weighted PCB average in a polygon is equal to or greater than 100 mg/kg, then all sediment associated with the vertical core polygon will be segregated and disposed of off-site (out-of-state).

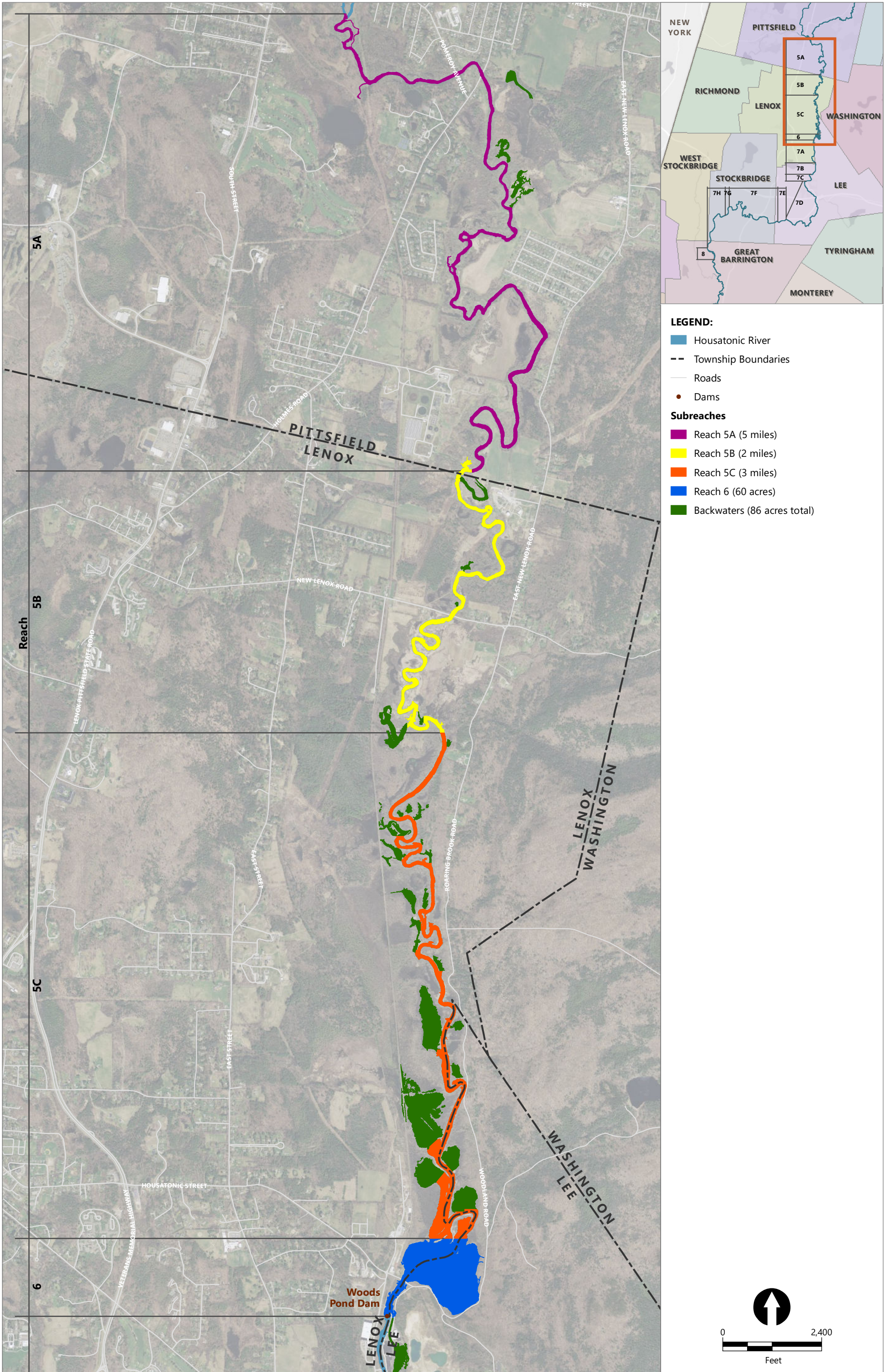
- For all reaches except Subreach 5A and 5C, relevant data from the RFI and additional data collected by GE pursuant to the 2016 Permit or Revised Permit, as applicable, will be used in determining these vertical depth-weighted core averages.
 - Additional vertical core samples will be collected by GE pursuant to the 2016 Permit or Revised Permit, as applicable, in Reach 6 (Woods Pond) to supplement existing data and to fill in data gaps.
 - For Reaches 5A and 5C, only data collected pursuant to the 2016 Permit or Revised Permit shall be used in this evaluation. Vertical core samples will be collected in six-inch increments. The sampling will consist of 3 vertical cores per transect (left, center and right of the channel) with transects performed at a linear spacing of 250 linear feet of the river channel.
 - Additional vertical sediment cores may be collected to further refine the areas where average sediment concentrations exceed 100 mg/kg and/or to assist in achieving the relevant Performance Standards in all Reaches or sub Reaches.
 - GE will submit sediment sampling plans to EPA for review and approval. These plans shall detail, at a minimum, the approach for collection of vertical sediment cores and the data analysis approach to determine compliance with the 100 mg/kg criterion.
6. GE will not dispose of material classified as federal RCRA hazardous waste, or free liquids, free product, or any intact drums, capacitors or containers, into the Upland Disposal Facility. GE can use relevant data from the RFI and apply the 20 times rule (i.e., dividing the concentration in the sample by 20 and comparing the result to certain threshold values described in 40 C.F.R. 261) to determine if there are compounds that could potentially exceed the Toxicity Characteristic Leaching Procedure (TCLP) testing requirements. GE can also use relevant data from EPA's 1.5- Mile Reach Removal Action (e.g., TCLP data and other RCRA Characteristic requirements including ignitability, corrosivity and reactivity). If existing data is not sufficient to demonstrate that material will not contain RCRA hazardous waste, then GE will propose additional sampling in the appropriate Work Plans. In any Subreach where RCRA hazardous waste may be present, GE will collect a reasonable number of composite samples for analysis (for example, TCLP sampling for metals). If any composite sample demonstrates the material is RCRA hazardous waste, then: a) the material can be treated until testing demonstrates that the material is non- hazardous, or b) the material can be disposed of at an off-site facility in compliance with EPA's off-site rule (40 C.F.R. § 300.440).
 7. Any other materials to be disposed of not otherwise addressed above will be sampled prior to disposal and disposed of in the Upland Disposal Facility if they have less than 50 mg/kg PCBs. (This could apply to haul road materials, etc. that GE may need to dispose of as part of the overall remedy construction.)
 8. GE will dispose of the segregated high concentration sediment, soil and waste materials, and any free liquids, free product, or intact drums, capacitors or containers, in any facility that is licensed/permitted to accept such waste and will accept it, including RCRA Subtitle C Landfills, so long as said facility is in compliance with EPA's off-site rule (40 C.F.R. § 300.440).

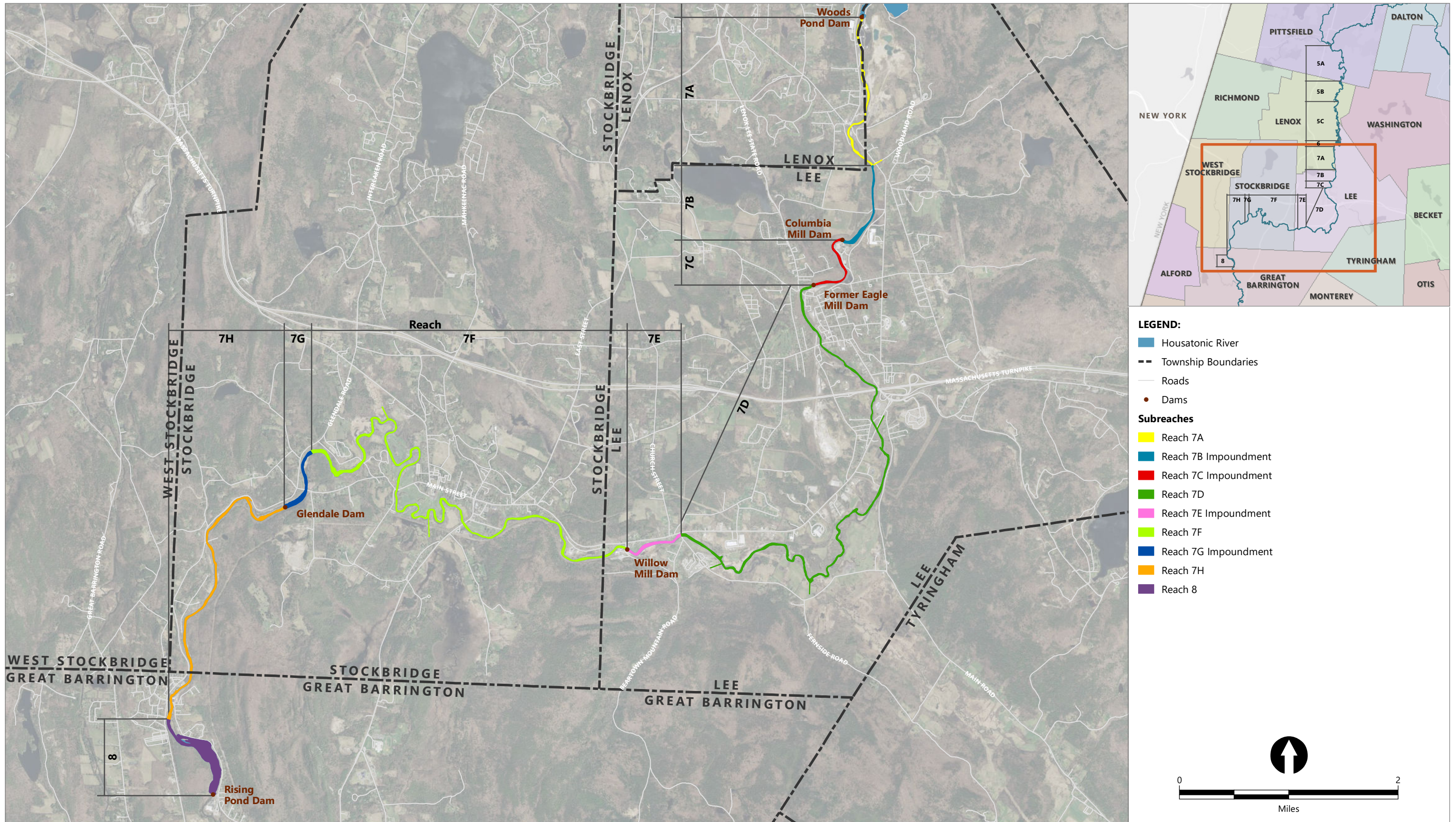


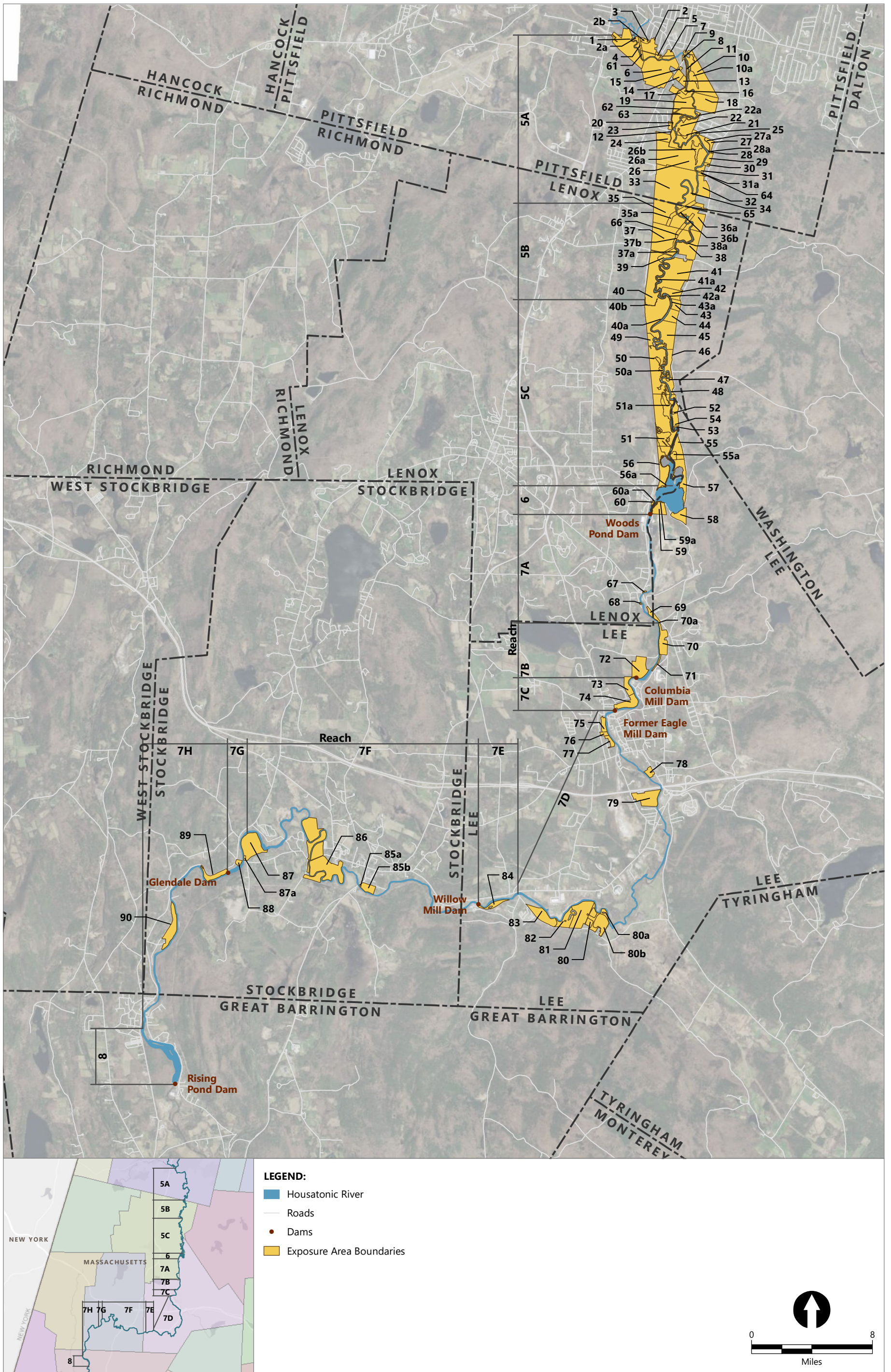
- LEGEND:**
- Dams
 - Roads
 - - - Floodplain Boundary
- Upland Disposal Facility**
- ▭ Approximate Property Line
 - Approximate Limit of Landfill Operational Area
 - - - Approximate Limit of Landfill Consolidation Area

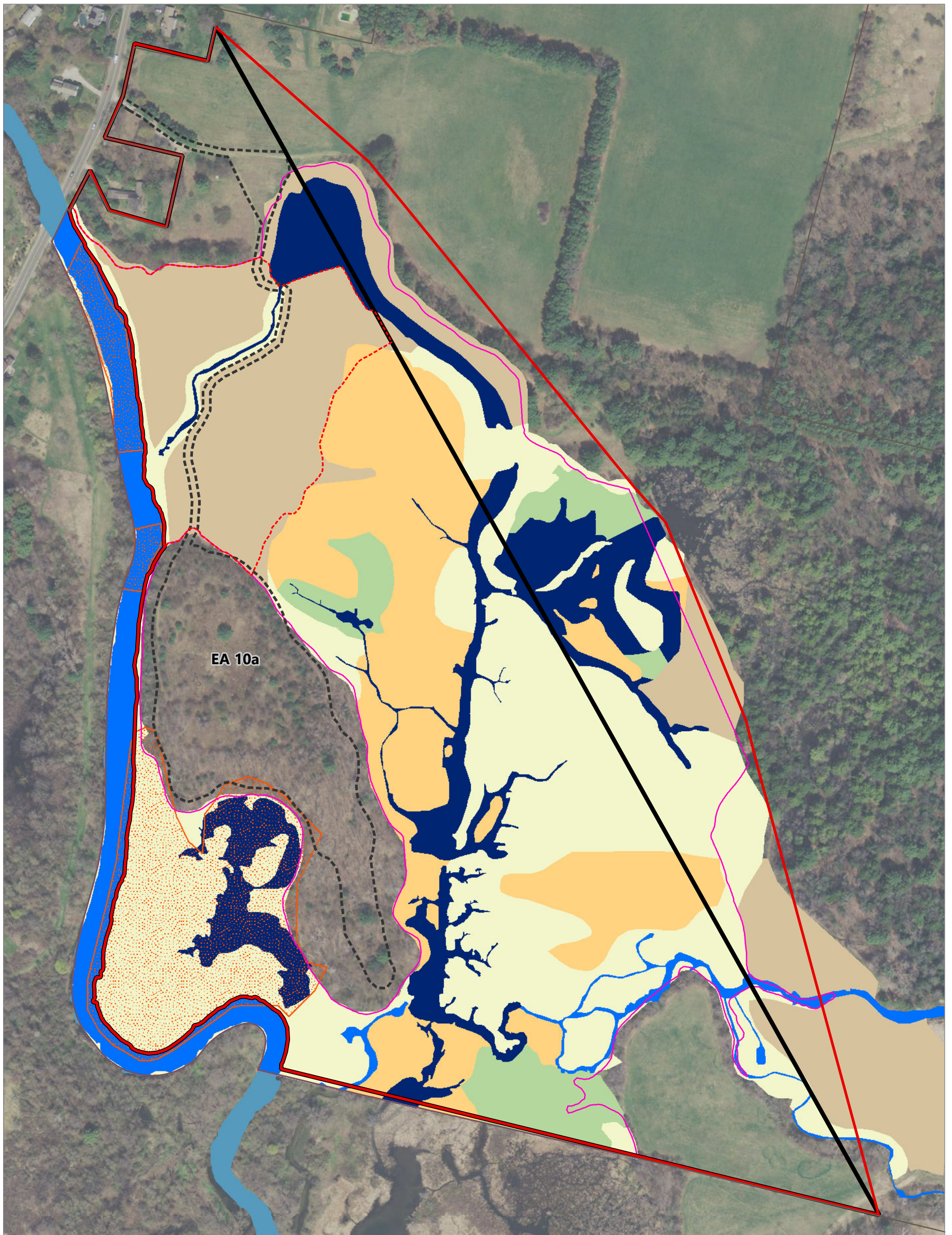




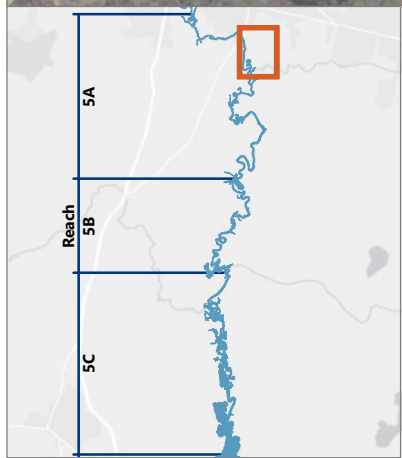






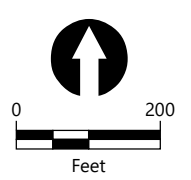


EA 10a



LEGEND:

Existing Exposure Area Boundary	Super Habitats (EPA Woodlot)
Existing Exposure Subarea Boundary	Emergent Marsh and Wet Meadow
New Proposed Subarea	Transitional Floodplain Forest
Proposed Revision to Exposure Area Boundary	Hardwood Forest, Agricultural Field
Parcel Boundary	Shrub Swamp
Core Area 1 Habitat	Stream
1 mg/kg PCB Isopleth	Lake/Pond



ATTACHMENT B
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS –
SIGNIFICANT CHANGES FOR DRAFT REVISED 2020 PERMIT

ATTACHMENT B

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS – SIGNIFICANT CHANGES FOR DRAFT REVISED 2020 PERMIT

Subsequent to the EAB Order, the Region initiated mediated negotiations with the challengers to the 2016 Permit and other interested stakeholders. Those negotiations yielded a February 2020 Settlement Agreement. EPA's Draft Revised 2020 Permit is consistent with that Settlement Agreement and provides changes to the 2016 Permit's selected remedy. Those remedy changes and other factors necessitated changes to the ARARs from the 2016 Permit. (Attachment C to the Draft Revised 2020 Permit is a table referencing all the ARARs that have changed, or for which relevant information has changed, since the 2016 Permit. Following evaluation of public comment on the Draft Revised 2020 Permit, EPA will provide with the Final Revised 2020 Permit a full listing of all ARARs for the Final Revised Permit.)

As required by CERCLA and the NCP, EPA has consulted with the Commonwealth of Massachusetts and the State of Connecticut regarding EPA's ARAR changes since the 2016 Permit.

Among the ARAR Table changes are the following:

- 1. United States Executive Order 13690**, "Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input", has been repealed through an August 15, 2017 Executive Order entitled, "Presidential Executive Order on Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure", and is no longer included in the ARAR table.
- 2. Toxic Substances Control Act (TSCA) Regulations on Cleanup of PCB Remediation Waste, 40 C.F.R. 761.61(c)** – The Draft Revised 2020 Permit includes a revised TSCA risk-based determination issued by EPA as Attachment D. Both the on-site and off-site disposal of PCBs are addressed pursuant to the revised risk-based determination. The revised risk-based determination finds that the remedy will not pose an unreasonable risk of injury to health or the environment as long as the remedy complies with all of the conditions set out in the revised determination.
- 3. Massachusetts Waterways Law and Regulations, MGL Ch. 91, and 310 CMR 9** – The revised description of the requirements identifies that if dredging in the river within the geographic boundary of the Area of Critical Environmental Concern is governed by 310 CMR 9.40, the dredging is permitted as an Ecological Restoration Project. If it is deemed not to be an Ecological Restoration Project, EPA reiterates the waiver from the 2016 Permit (that was not challenged under the 2016 Permit and thus is not subject to public comment on the revised Permit). Note that although the Upland Disposal Facility is in the ACEC, it is not in the waterway and is outside the 500-year floodplain.

4. **Massachusetts Dam Safety Standards, 302 CMR 10, and related guidance** – These regulations are applicable since the Draft Revised 2020 Permit includes specific requirements for Permittee GE to remove the Columbia Mill Dam and the Former Eagle Mill Dam. EPA has revised the reference to the ARAR and guidance to make clear that the remedy includes the dam removal requirement.
5. **Massachusetts Area of Critical Environmental Concern regulations, 301 CMR 12 -** Upon further review of the regulations, EPA has identified that virtually all the provisions in 301 CMR 12 are procedural, and thus are not substantive requirements that could be ARARs. The provisions of 301 CMR 12.11(1)(c) are substantive and may be relevant and appropriate. The remedy in EPA’s Draft Revised 2020 Permit thoroughly advances the seven values described in that provision (marine and aquatic productivity; surface and groundwater quality or quantity; habitat values and biodiversity; storm damage prevention or flood controls; historic and archaeological resources; scenic and recreational resources; and other natural resource values of the area). Additionally, the Hybrid Disposal approach portion of the Draft Revised 2020 Permit does not affect those values adversely.
6. **Massachusetts Site Suitability Criteria, 310 CMR 16** – EPA believes that the remedy can comply with all substantive provisions of 310 CMR 16 except for the provisions of 310 CMR 16.40(4)(d). For each provision of 310 CMR 16, to the extent that they are deemed to be an ARAR but cannot be met at the Upland Disposal Facility, EPA determines that compliance would create greater risk to human health and the environment and accordingly EPA would invoke a waiver of the provision pursuant to CERCLA 121(d)(4)(B)(hereinafter, references to CERCLA 121(d)(4)(B) include 40 C.F.R. 300.430(f)(1)(ii)(C)(2)). In the discussion of 310 CMR 16.40(4)(d) below is EPA’s analysis on compliance creating greater risk to human health and the environment. That analysis would also apply to the other 310 CMR 16 provisions discussed immediately below.

Below is EPA’s ARAR analysis regarding three specific provisions from 310 CMR 16.

- **310 CMR 16.40(3)(a).10.** Criteria for Landfill Facilities (Restricted Areas). No site shall be determined to be suitable or be assigned as a landfill facility where there is a potentially productive aquifer. In EPA’s assessment, this provision is not appropriate for the Upland Disposal Facility, because the flow of the groundwater from the site is away from residences, and the contamination of the area due to two existing landfills makes use as a productive aquifer unlikely and will be restricted by the remedy. As noted above, 2019 sampling demonstrated many exceedances of drinking water standards (sampling results exceeded drinking water standards for cyanide, 1,4-Dioxane, volatile organic contaminants, metals and total dissolved solids), making it likely that the aquifer cannot now, nor in the reasonably foreseeable future, be used as a public water supply due to existing contamination of the aquifer. Thus, EPA determines that even if it were relevant and appropriate, this area would meet one or more of the exceptions described in 310 CMR 16.40(3)(a).10.a-c. If, however, it were deemed to be an ARAR and not meet such exceptions, EPA proposes to waive the requirement based on greater risk to human health and the environment, as described below.

- **310 CMR 16.40(4)(a) Agricultural Lands.** EPA's position is that this provision is not appropriate because any agricultural or horticultural values for the area have been largely eliminated by long-term gravel mining activities and the land is not actively devoted to agricultural or horticultural uses. In addition, current Mass GIS mapping does not identify any land as Prime Forest 1, Prime Forest 3, Unique or of State and local Importance. Prime Forest 2 land is mapped as only 0.66 acres of the 20 acres designated for land disposal. Additionally, the remedy will include restoration of the Upland Disposal Facility after closure and the 0.66 acres of Prime Forest and any other disturbed areas of the operational/support area can be appropriately restored or mitigated. Additionally, if the requirement were deemed to be an ARAR, EPA determines that the purposes of the requirement have been met. If, however, it were deemed that this requirement is an ARAR and has not been met, EPA proposes to waive the requirement under CERCLA based on greater risk to human health and the environment, as described below.
- **310 CMR 16.40(4)(d) ACEC:** For the provisions at 16.40(4)(d), for each area in which material may be permanently disposed and/or temporarily managed during remedy implementation, including those within the ACEC, the remedy includes provisions for restoration of the disposal facility and what is disturbed by the temporary management of materials.

With respect to the disposal of materials during implementation of the remedy, EPA's position is that the provisions of 16.40(4)(d) are relevant. To the extent that: 1. the materials disposed of on-site during implementation of the remedy constitute solid waste under this regulation and 2. the locations for disposal of the materials are within the ACEC (or, the locations are outside but adjacent to the ACEC and such locations fail to protect the outstanding resources of the ACEC), EPA has determined that the requirements are not appropriate for the Upland Disposal Facility because compliance will create greater risk to human health and the environment than implementation of the remedy set forth in the Draft Revised 2020 Permit for the following reasons:

- The already damaged and altered area surrounding the Upland Disposal Facility location including the two adjacent landfills;
- The existing contamination from current industrial uses at or near the Upland Disposal Facility location (2019 sampling results as described above);
- The multiple protectiveness safeguards built into the design of the Upland Disposal Facility;
- The risks inherent to the disposal alternatives besides the Upland Disposal Facility; and
- The fact that the remedy includes cleanup enhancements, mitigation of impacts to towns and residents, and results in an expedited cleanup, as described below.

However, if the provisions of 310 CMR 16.40(4)(d) are deemed to be an ARAR, EPA proposes to waive, pursuant to CERCLA 121(d)(4)(B), the requirements of 16.40(4)(d) that prohibit or restrict such disposal locations during implementation of the remedy.

Compliance with 310 CMR 16.40(4)(d) would result in the disposal of all PCB-contaminated excavated material at one of GE's two other potential landfill sites, or at an off-site landfill. All of these locations create significantly greater risk to human health and the environment than the location identified in the Draft Revised 2020 Permit, because of the following: potentially substantial delays prior to PCB remediation; locational deficiencies that threaten the environment; and the elimination of substantial improvements to the protectiveness of the remediation obtained through the Draft Revised 2020 Permit.

First, the alternative of off-site landfilling creates greater risk to human health and the environment through the potentially indefinite delay before PCB removal will occur. The Region selected the off-site landfilling approach in its 2016 Permit, GE appealed that selection, and the EAB remanded that decision back to the Region for further consideration. The Board's Order does not preclude the Region from again proposing off-site disposal of all material; however, when compared to an approach that has the support (and commitment not to challenge) of GE, which explicitly challenged off-site disposal, the selection of an exclusively off-site remedy creates additional risk to human health and the environment. Of course, any remedy can be appealed, but by crafting a settlement with a wide cross-section of stakeholders, including virtually all the 2016 Permit appellants, the Region has cleared a path toward fewer, if any, appeals and faster implementation. One indicator of the support for the objectives of the 2020 Settlement Agreement is that it was entered into by eight parties to the EAB litigation, including GE and the six municipalities in Berkshire County most affected by the risks posed by PCBs in the River and floodplain. The sooner the cleanup in the Draft Revised 2020 Permit gets implemented, the sooner the risks of exposure to the PCBs in the river system are addressed. Accordingly, when compared to the 2020 Settlement Agreement, off-site disposal of all material increases the chances of delay, and – through greater opportunity for challenges at the EAB and federal court stages - greater risk of the cleanup plan not getting implemented. That translates directly into the risk of continued exposure to PCBs for a potentially indefinite number of years.

That being the case, when faced with a choice between an approach that will likely face significant delays before removal of PCB risks from the River and floodplain, and an alternative that directly addresses the issues posed by the EAB in its Order, the off-site landfilling option does present greater risks to human health and the environment by the increased and potentially indefinite delay in removing the PCB risks from the River and floodplain. Additionally, off-site disposal of all material would have increased greenhouse gas and other air emissions, fugitive dust, adverse community impacts due to increased truck traffic and risks of injuries and fatalities to transport workers, all of which represent a greater risk to human health and the environment.

Second, the Forest Street and Rising Pond landfill locations have significant environmental risks when compared to the Upland Disposal Facility. The footprints for the two areas are primarily forested, and the habitat value at these locations, which are otherwise undisturbed, would be significantly decreased. Also, Forest Street would require an access road within the 100-foot buffer zone of Goose Pond Brook and portions of the operational footprint would be within the 200-foot riverfront area of the Brook. Meanwhile, the Rising Pond site's operational area

directly abuts 25 acres of Priority Habitat for the state-listed Wood Turtle. By contrast, the Upland Disposal Facility does not impact any priority habitat for state-listed species, is virtually all disturbed, and has only 0.6 acres of any type of woodlands, with the rest being a low-value disturbed gravel area.

Third, compliance with the ACEC-related prohibition will eliminate the substantial gains to human health and the environment that can be obtained through the 2020 Settlement Agreement, which includes not only the expediting of response actions, but also a large number of cleanup enhancements to benefit human health and the environment, the disposal off-site at a licensed facility of the most highly contaminated material, and the protective disposal on-site of less contaminated material. The enhancements to the 2016 Permit's cleanup requirements represent significant reduction in the long-term risks to human health and the environment, as discussed below:

- By increasing excavation and reducing capping in six different river reaches, the Draft Revised 2020 Permit removes a significant amount of PCB-contaminated material from the river system, and the resulting reduction by nearly 100 acres of in-river capping will serve to reduce the need for long term monitoring, maintenance and repair associated with capping.
- Risks to human health and the environment are directly reduced by having more rigorous floodplain remediation on over 20 properties that eliminates the need for use restrictions called for in the 2016 Permit.
- Dam removal and restoration - Removal of two dams downstream of Woods Pond (Columbia Mill Dam and Eagle Mill Dam) results in the reduced risk to the environment by improving the health of river habitat and aquatic species, allowing additional unimpeded fish passage across these areas that are currently impounded and impassible. Furthermore, eliminating the risk of future failure of these dam structures, which otherwise have to be maintained or repaired frequently, will further protect human health in the long-term.
- Cleanup and restoration of vernal pools - The broadened approach to remediation of vernal pools by testing methods for excavation and restoration of vernal pools, as well as the use of innovative non-invasive methods, ensures that the most appropriate and ecologically sound method is used for the majority of the vernal pools.

Additionally, reduced risks to human health are achieved by: 1) requiring that sediments from Woods Pond and some areas north of the pond be hydraulically pumped via pipe to the disposal facility, if feasible, rather than be transported by truck, which will eliminate nearly 50,000 truck trips from the roads of Lee and Lenox; and 2) imposing limitations on the transport of waste material on small residential streets. Without the siting of the disposal facility in the proposed location, directly adjacent to approximately 30-40 percent of the materials to be excavated from the river, the opportunity to take advantage of this less-disruptive hydraulic pumping alternative would be lost.

By contrast, the hydraulic pumping system would not be feasible at the Forest Street location, given its multiple-miles distance from any significant level of river excavation, and while it theoretically could work for the sediment behind Rising Pond, the amount of material that could effectively be pumped there is minimal when compared to the amount from Reach 5C, Woods Pond, and associated backwaters that can be pumped to the Upland Disposal Facility.

Beyond the hydraulic pumping system, compliance would eliminate other substantial benefits of having an Upland Disposal Facility centrally located to the area of greatest excavation, such as reduced overall truck traffic, reduced emissions, and reduced potential for a release or spill between the river and the disposal facility. For example, the Forest Street location is at least a mile away from any remediation and the Rising Pond facility would be over 20 miles from the area of greatest excavation, Woods Pond.

In addition to the direct benefits, the Settlement Agreement also has “Non-Permit” terms that will have ancillary benefits to human health and the environment. Among those are EPA’s commitment to research PCB-remediation technologies, the requirements for increased cooperation and coordination by GE and EPA with stakeholders, potential stormwater improvements at the GE Plant area in Pittsfield, and EPA’s commitment to provide significant input opportunities on cleanup-related submittals.

The adverse impacts from not using the Settlement Agreement’s Upland Disposal Facility would be significant in duration, in magnitude, and in their irreparable nature. The Settlement Agreement provision limiting challenges by the settling parties to the Draft Revised 2020 Permit would help avoid prolonged litigation over the remedy, allowing the cleanup to be implemented expeditiously. Prompt implementation of the remedy translates directly into reduced risks to human health and the environment, by more quickly addressing the risks associated with PCB contamination. By contrast, delayed implementation of the remedy will result in fish, benthic invertebrates and other ecological receptors in the Housatonic River continuing to bioaccumulate PCBs, PCBs continuing to migrate downstream, and continued risks of exposure to PCBs by humans and wildlife.

Also, as demonstrated above, the magnitude of adverse impacts posed by prohibiting the remedy in the Draft Revised 2020 Permit is very significant. Disposal in one of GE’s two other disposal locations or off-site, as opposed to the Upland Disposal Facility, would negate the substantially greater protections to human health and the environment brought about by, among other items, significantly greater PCB removal, removal of two dams, the hydraulic pumping of material to the landfill, and increased protectiveness at over twenty floodplain properties. Finally, prohibiting the Upland Disposal Facility may cause irreparable damage. As mentioned above, the potentially indefinite delays that may accompany the selection of off-site landfilling would bring continued risks of exposure to PCBs. Additionally, habitat value at both the Forest Street and Rising Pond locations would be diminished by tree removal, by operating within buffer zones of a pond or riverbank. At a minimum, use of these locations would permanently change habitat from primarily wooded to open grassland; whereas at the Upland Disposal Facility, the grassland will be replacing primarily disturbed sand and gravel surface material. Also, the Rising Pond location directly abuts a Priority Habitat for a state listed species.

In short, the opportunity to have a significantly more permanent, protective, and faster cleanup, at a location that poses significantly fewer risks, with an assurance that all the highly contaminated material is still taken off-site, will all be negated by being forced to comply with the regulations in 310 CMR 16.40(4)(d) prohibiting disposal in an ACEC.

CONCLUSION

Compliance with 310 CMR 16.40(4)(d) will result in greater risk to human health and the environment than alternative options.

ATTACHMENT B
SUMMARY OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) THAT HAVE
BEEN REVISED SINCE 2016 PERMIT
DRAFT 2020 MODIFICATION TO THE 2016 REISSUED RCRA PERMIT
AND SELECTION OF CERCLA REMEDIAL ACTION AND OPERATION & MAINTENANCE FOR REST OF RIVER
FOR PUBLIC COMMENT – JULY 2020

Statute/ Regulation	Citation^a	Synopsis of Requirements	Status	Action(s) to be Taken to Achieve ARARs^b
CHEMICAL-SPECIFIC ARARs				
Federal ARARs				
Clean Water Act, National Recommended Water Quality Criteria for PCBs	National Recommended Water Quality Criteria: 2002, EPA-822-R-02-047, USEPA, Office of Water, Office of Science and Technology (Nov. 2002)			[This entry has been moved to Action-Specific ARARs and To-be-considered.]
State ARARs				
Numeric Massachusetts Water Quality Criteria for PCBs - Massachusetts Surface Water Quality Standards	314 CMR 4.05(5)(e)	[See entry below for Massachusetts action-specific Water Quality Standards.]	Relevant and appropriate	[See entry below for Massachusetts action-specific Water Quality Standards.]
Numeric Connecticut Water Quality Criteria for PCBs	Connecticut Water Quality Standards, Section 22a-426-1 to 22a-426-9	[See entry below for Connecticut action-specific Water Quality Standards.]	Relevant and appropriate	[See entry below for Connecticut action-specific Water Quality Standards.]

ATTACHMENT B
SUMMARY OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) THAT HAVE
BEEN REVISED SINCE 2016 PERMIT
DRAFT 2020 MODIFICATION TO THE 2016 REISSUED RCRA PERMIT
AND SELECTION OF CERCLA REMEDIAL ACTION AND OPERATION & MAINTENANCE FOR REST OF RIVER
FOR PUBLIC COMMENT – JULY 2020

Statute/ Regulation	Citation ^a	Synopsis of Requirements	Status	Action(s) to be Taken to Achieve ARARs ^b
LOCATION-SPECIFIC ARARs				
Federal ARARs				
National Historic Preservation Act and regulations	54 U.S.C. 300101 et seq. 36 CFR Part 800	A federal agency must take into account the project’s effect on properties included or eligible for inclusion in the National Register of Historic Places.	Applicable	If this remedy affects historic properties/structures subject to these requirements, activities will be coordinated with the state, tribal, and federal authorities and conducted in accordance with the substantive requirements of these regulations.
Archaeological and Historic Preservation Act	54 USC 312501 et seq.	When a Federal agency finds, or is notified, that its activities in connection with a Federal construction project may cause irreparable loss or destruction of significant scientific, prehistorical, historical, or archaeological data, such agency shall notify state, tribal, or federal authorities. Such agency may request state, tribal, or federal authorities to undertake the preservation of such data or it may undertake such activities. If the state, tribal, or federal authorities determine that such data is significant and is being or may be irrevocably lost or destroyed, it is to conduct a survey and other investigation of the area which are or may be	Applicable	If during remedial design or remedial action, it is determined that this remedy may cause irreparable loss or destruction of significant scientific, prehistorical, historical, or archaeological data, EPA will notify state, tribal, and federal authorities and comply with the substantive requirements in this statute.

ATTACHMENT B
SUMMARY OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) THAT HAVE
BEEN REVISED SINCE 2016 PERMIT
DRAFT 2020 MODIFICATION TO THE 2016 REISSUED RCRA PERMIT
AND SELECTION OF CERCLA REMEDIAL ACTION AND OPERATION & MAINTENANCE FOR REST OF RIVER
FOR PUBLIC COMMENT – JULY 2020

Statute/ Regulation	Citation^a	Synopsis of Requirements	Status	Action(s) to be Taken to Achieve ARARs^b
		affected and recover and preserve such data which are not being, but should be, recovered and preserved in the public interest.		
Endangered Species Act and regulations	16 USC 1536(a)-(d) 50 CFR Part 402, Subparts A&B 50 CFR 17	Must identify whether threatened or endangered (T&E) species or critical habitat is affected by proposed action, or take mitigation measures so that action does not affect species/habitat.	Applicable	These provisions will be complied with in regard to federally-listed threatened or endangered species and their critical habitat.
Executive Order 13690 (Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input)			[This Executive Order has been repealed.]	

ATTACHMENT B
SUMMARY OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) THAT HAVE
BEEN REVISED SINCE 2016 PERMIT
DRAFT 2020 MODIFICATION TO THE 2016 REISSUED RCRA PERMIT
AND SELECTION OF CERCLA REMEDIAL ACTION AND OPERATION & MAINTENANCE FOR REST OF RIVER
FOR PUBLIC COMMENT – JULY 2020

Statute/ Regulation	Citation ^a	Synopsis of Requirements	Status	Action(s) to be Taken to Achieve ARARs ^b
State ARARs				
Massachusetts Waterways Law and Regulations	MGL Ch. 91 310 CMR 9.00, including 9.40.	Regulates construction, placement, excavation, alteration, removal or use of fill or structures in waterways. Among the requirements is 310 CMR 9.40, Standards for Dredging and Dredged Material Disposal, which includes restrictions on improvement dredging.	Applicable	This remedy includes construction, placement, excavation, alteration, removal and use activities in the Housatonic River. Except as otherwise provided herein, measures undertaken will meet the substantive environmental standards and limit impacts. Portions of the remedy in the river will take place within the ACEC. If the dredging in the ACEC is governed by 310 CMR 9.40, the dredging is permitted as an Ecological Restoration Project. If it is deemed to not be an Ecological Restoration Project, EPA reiterates the waiver in the 2016 Permit in which EPA, in consultation with the Commonwealth, waived pursuant to CERCLA 121(d)(4)(C), the requirements of 310 CMR 9.40 that prohibit dredging in an ACEC.
Massachusetts Dam Safety Standards	302 CMR 10.00	Regulations govern design and construction of new and existing dams, and removal of existing dams, and inspection of dams.	Applicable	The remedy includes provisions for inspection, operation and maintenance of dams, removal of dams, and management of materials generated during work on, or removal of, a dam. Additionally, the remedy will comply with these regulations for Massachusetts dams in the area of remedy activity.
Massachusetts Site Suitability Criteria	310 CMR 16.40(3),(4)	Site suitability criteria for solid waste facilities, including facility-specific and general site suitability criteria.	No change in status from 2016 Permit for the temporary management of excavated materials; potentially applicable or relevant and appropriate for Upland Disposal Facility	The remedy includes, among other components, the excavation of PCB-contaminated soil and sediment, and the off-site disposal of at least 100,000 cubic yards of the PCB-contaminated material, including all PCB material that averages greater than or equal to 50 ppm (as determined by Attachment E to the Permit) at existing licensed facilities approved to receive such material, and the on-site disposal at the Upland Disposal Facility of material averaging less than 50 ppm PCBs. Portions of the remedy will be implemented in the ACEC, or in a Resource Area or Riverfront Area.

ATTACHMENT B
SUMMARY OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) THAT HAVE
BEEN REVISED SINCE 2016 PERMIT
DRAFT 2020 MODIFICATION TO THE 2016 REISSUED RCRA PERMIT
AND SELECTION OF CERCLA REMEDIAL ACTION AND OPERATION & MAINTENANCE FOR REST OF RIVER
FOR PUBLIC COMMENT – JULY 2020

			<p>As provided in Attachment D to the Permit, PCB-contaminated sediments and soils in the Rest of River are regulated for cleanup and disposal as PCB-remediation waste under 40 C.F.R. Part 761. For the portion of the remedy involving sediments and soils with PCB concentrations that average less than 50 ppm (see Attachment E to the Permit), siting standards in 310 CMR 16 are potentially relevant and appropriate</p> <p>EPA believes that the remedy can comply with all substantive provisions of 310 CMR 16 except for the provisions of 310 CMR 16.40(4)(d). For each provision of 310 CMR 16, to the extent that they are deemed to be an ARAR but cannot be met at the Upland Disposal Facility, EPA determines that compliance would pose a greater risk to human health and the environment and accordingly, EPA would invoke a waiver of the provision pursuant to CERCLA 121(d)(4)(B) (hereinafter, references to CERCLA 121(d)(4)(B) include 40 C.F.R. 300.430(f)(1)(ii)(C)(2)).</p> <p>For the provisions at 16.40(4)(d), the remedy portions in the ACEC (or, at locations outside but adjacent to the ACEC) or at a Resource Area or Riverfront Area may necessarily include temporary management of material excavated during implementation prior to off-site disposal. In the 2016 Permit, EPA, in consultation with the Commonwealth, considered as waived, pursuant to CERCLA 121(d)(4)(C), the requirements that prohibit or restrict such temporary management. The EPA Environmental Appeals Board upheld EPA’s waiver. The temporary management requirements have not changed since the 2016 Permit.</p> <p>For each area in which solid waste may be disposed of on-site during remedy implementation, including those within the ACEC or Resource Area or Riverfront Area, the remedy includes provisions for restoration of the disposal facility.</p> <p>To the extent: 1. the materials disposed of on-site during implementation of the remedy constitute solid waste under this</p>
--	--	--	---

ATTACHMENT B
SUMMARY OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) THAT HAVE
BEEN REVISED SINCE 2016 PERMIT
DRAFT 2020 MODIFICATION TO THE 2016 REISSUED RCRA PERMIT
AND SELECTION OF CERCLA REMEDIAL ACTION AND OPERATION & MAINTENANCE FOR REST OF RIVER
FOR PUBLIC COMMENT – JULY 2020

Statute/ Regulation	Citation ^a	Synopsis of Requirements	Status	Action(s) to be Taken to Achieve ARARs ^b
				regulation; and 2. the locations for disposal of the materials are within the ACEC (or, the locations are outside but adjacent to the ACEC and such locations fail to protect the outstanding resources of the ACEC) or in a Resource Area or Riverfront Area: the requirements are not appropriate for the Upland Disposal Facility because compliance will create greater risk to human health and the environment than implementation of the remedy set forth in the Draft Revised 2020 Permit given the already damaged and altered area surrounding the Upland Disposal Facility location, the existing contamination from current industrial uses at or near the Upland Disposal Facility location, the multiple protectiveness safeguards built in to the design of the Upland Disposal Facility, the risks inherent to the disposal alternatives besides the Upland Disposal Facility, and the benefits of the proposed remedy. However, if the provisions of 310 CMR 16.40(4)(d) are deemed to be ARARs, EPA considers as waived, pursuant to CERCLA 121(D)(4)(B), the requirements of 16.40 that prohibit or restrict such disposal locations during implementation of the remedy.
Massachusetts Facility Location Standards	310 CMR 30	Location standards for hazardous waste management facilities, including, but not limited to, Land Subject to Flooding and Areas of Critical Environmental Concern (ACEC). Criteria for proposed projects that name specific sites, including restrictions on projects in an ACEC or in wetlands.	No change in status from 2016 Permit for the temporary management of excavated materials; not an ARAR for the Upland Disposal Facility.	The remedy does not include disposal of hazardous waste on-site so this provision does not apply to disposal of materials at the Upland Disposal Facility. The remedy includes, among other components, the excavation of PCB-contaminated soil and sediment, and the off-site disposal of at least 100,000 cubic yards of the PCB-contaminated material, including all PCB material that averages greater than or equal to 50 ppm (as determined by Attachment E to the Permit) at existing licensed facilities approved to receive such material, and the on-site disposal of material averaging less than 50 ppm PCBs at the Upland Disposal Facility. Both the on-site and off-site disposal of PCBs are addressed pursuant to 40 C.F.R. 761.61(c) and EPA's revised risk-based determination in Attachment D of the Draft Revised 2020 Permit.

ATTACHMENT B
SUMMARY OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) THAT HAVE
BEEN REVISED SINCE 2016 PERMIT
DRAFT 2020 MODIFICATION TO THE 2016 REISSUED RCRA PERMIT
AND SELECTION OF CERCLA REMEDIAL ACTION AND OPERATION & MAINTENANCE FOR REST OF RIVER
FOR PUBLIC COMMENT – JULY 2020

Statute/ Regulation	Citation ^a	Synopsis of Requirements	Status	Action(s) to be Taken to Achieve ARARs ^b
				<p>In the 2016 Permit, EPA, in consultation with the Commonwealth, considered as waived, pursuant to CERCLA 121(d)(4)(C), the requirements that prohibit or restrict temporary management of excavated materials prior to disposal. The EPA Environmental Appeals Board upheld EPA's waiver. The provisions regarding temporary management of excavated materials prior to disposal have not changed since the 2016 Permit. For disposal of material on-site, to the extent any material averaging less than 50 ppm is deemed to be Massachusetts hazardous waste solely because of the presence of PCBs, EPA has determined that the requirements are not appropriate. However, if the provision is deemed to be an ARAR, EPA proposes to waive it pursuant to CERCLA 121(d)(4)(B) because compliance with the prohibition of disposal at the Upland Disposal Facility would pose a greater risk to human health and the environment than the proposed remedy, given the already damaged and altered area surrounding the Upland Disposal Facility location, the existing contamination from current industrial uses at or near the Upland Disposal Facility location, the multiple protectiveness safeguards built in to the design of the Upland Disposal Facility, the risks inherent to the disposal alternatives besides the Upland Disposal Facility, and the benefits of the proposed remedy.</p>
Massachusetts Area of Critical Environmental Concern (ACEC)	301 CMR 12.11(1)(c)	Provides for establishment of Areas of Critical Environmental Concern in the State. ACEC designation affects other state laws and regulations.	Relevant and appropriate	The ACEC regulations pertain to State agency actions, and are not applicable to the federal EPA action. However, the remedy complies with the substantive requirements of 301 CMR 12.11(1)(c), which may be relevant and appropriate, by advancing the values of 301 CMR 12.11(1)(c), while avoiding adverse effects on identified values in section 12.11(1)(c).

ATTACHMENT B
SUMMARY OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) THAT HAVE
BEEN REVISED SINCE 2016 PERMIT
DRAFT 2020 MODIFICATION TO THE 2016 REISSUED RCRA PERMIT
AND SELECTION OF CERCLA REMEDIAL ACTION AND OPERATION & MAINTENANCE FOR REST OF RIVER
FOR PUBLIC COMMENT – JULY 2020

Statute/ Regulation	Citation^a	Synopsis of Requirements	Status	Action(s) to be Taken to Achieve ARARs^b
To Be Considered				
MassDEP Guidance	Dam Removal and the Wetland Regulations, 2007	Provides guidance on permitting issues and review considerations associated with dam removal projects, especially as it relates to the Massachusetts Wetlands Protection Act.	To be considered	The remedy now includes dam removal requirements. To the extent that this guidance is pertinent to a Massachusetts dam that is in the area of remedy activity, the remedy will consider this guidance.
Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) Guidance	Dam Removal in Massachusetts: A Basic Guide for Project Proponents, 2007	Provides guidance through the initial conceptualization of a project, the feasibility studies, and the permitting process.	To be considered	The remedy now includes dam removal requirements. To the extent that this guidance is pertinent to a Massachusetts dam that is in the area of remedy activity, the remedy will consider this guidance.
Massachusetts Department of Fish and Game Guidance	Impounded Sediment and Dam Removal in Massachusetts: 2003	Provides guidance on a decision-making framework regarding dam removal and in-stream management options for impounded sediment.	To be considered	The remedy now includes dam removal requirements. To the extent that this guidance is pertinent to a Massachusetts dam in the area of remedy activity, the remedy will consider this guidance.

ATTACHMENT B
SUMMARY OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) THAT HAVE
BEEN REVISED SINCE 2016 PERMIT
DRAFT 2020 MODIFICATION TO THE 2016 REISSUED RCRA PERMIT
AND SELECTION OF CERCLA REMEDIAL ACTION AND OPERATION & MAINTENANCE FOR REST OF RIVER
FOR PUBLIC COMMENT – JULY 2020

Statute/ Regulation	Citation ^a	Synopsis of Requirements	Status	Action(s) to be Taken to Achieve ARARs ^b
ACTION-SPECIFIC ARARs				
Federal ARARs				
Toxic Substances Control Act (TSCA) Regulations on Cleanup of PCB Remediation Waste	40 CFR 761.61(c)	Risk-based approval through a TSCA determination issued by EPA is pursuant to 40 CFR 761.61(c) and requires demonstration that cleanup method will not pose an unreasonable risk of injury to health or the environment.	Applicable	The Draft Revised 2020 Permit includes a proposed revised TSCA risk-based determination issued by EPA as Attachment D (“TSCA Determination”). Both the on-site and off-site disposal of PCBs are addressed pursuant to the TSCA Determination. The TSCA Determination finds that the remedy will not pose an unreasonable risk of injury to health or the environment as long as the remedy complies with all of the conditions set out in the TSCA Determination.
State ARARs				
Numeric Massachusetts Water Quality Criteria for PCBs – Massachusetts Surface Water Quality Standards	314 CMR 4.05(5)(e)	Freshwater chronic aquatic life criterion (based on protection of mink): 0.014 µg/L. Human health criterion based on human consumption of water and organisms: 0.000064 µg/L.	Relevant and appropriate	The remedy activities to be conducted are designed to reduce human health and environmental risks posed by PCBs, including not contributing to any exceedances of the Water Quality Criteria. The remedy includes, among other components, excavation and capping of PCB contamination from the riverbed, riverbanks, Floodplains and Backwaters. The remedy will include excavation technology and multiple engineering controls to minimize resuspension of any PCB-contaminated water. (For purposes of this Attachment C, “remedy” includes the corrective measures, remedial design and remedial action activities, and operation and maintenance activities undertaken pursuant to the revised modification to the RCRA permit.) The freshwater chronic aquatic life criterion of 0.014 µg/L will be met by the remedy. Regarding the human health criterion based on human consumption of water and organisms of 0.000064 µg/L: in the 2016 Permit, EPA, in consultation with the Commonwealth, waived this criterion on the

ATTACHMENT B
SUMMARY OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) THAT HAVE
BEEN REVISED SINCE 2016 PERMIT
DRAFT 2020 MODIFICATION TO THE 2016 REISSUED RCRA PERMIT
AND SELECTION OF CERCLA REMEDIAL ACTION AND OPERATION & MAINTENANCE FOR REST OF RIVER
FOR PUBLIC COMMENT – JULY 2020

Statute/ Regulation	Citation ^a	Synopsis of Requirements	Status	Action(s) to be Taken to Achieve ARARs ^b
				<p>grounds that achievement of this ARAR is technically impracticable, given that based on current data, it is not predicted to be met by this or any sediment alternative in Massachusetts. To be protective of human health and the environment, as specified in the permit modification, EPA is establishing alternative criteria (that are not ARARs) for this waived criterion. That action has not changed since the 2016 Permit.</p>
Connecticut Water Quality Standards for PCBs	Connecticut Water Quality Standards, Section 22a-426-1 to 22a-426-9	<p>Freshwater chronic aquatic life criterion (based on protection of mink): 0.014 µg/L.</p> <p>Human health criterion based on human consumption of water and organisms: 0.000064 µg/L.</p>	Relevant and appropriate	<p>To the extent that remedy activities take place in a Connecticut waterway, such remedy activities will be conducted so as to not contribute to an exceedance of Water Quality Standards Criteria. Remedy activities will contribute to the achievement of the State Water Quality Standards.</p> <p>Regarding the human health criterion based on human consumption of water and organisms of 0.000064 µg/L:</p> <p>As in the 2016 Permit, in Connecticut, the remedy is intended to meet the standard. Current modeling shows the remedy will achieve attainment in at least 3 of the 4 Connecticut impoundments. However, the results from the Connecticut model are very uncertain due to the empirical, semi-quantitative nature of the analyses. As such, it is not possible to predict with certainty attainment or lack of attainment of the human health criterion based on human consumption of water and organisms of 0.000064 µg/L in Connecticut (Reaches 10-16). Thus, EPA, in consultation with Connecticut, does not believe that there is a basis to establish alternative standards at this time.</p> <p>In addition, this concentration (0.000064 µg/L) cannot be reliably measured using available analytical techniques. Monitoring, using appropriate analytical techniques and reporting levels, will be conducted to measure progress toward this standard over time throughout the Housatonic River in Connecticut.</p>

ATTACHMENT B
SUMMARY OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) THAT HAVE
BEEN REVISED SINCE 2016 PERMIT
DRAFT 2020 MODIFICATION TO THE 2016 REISSUED RCRA PERMIT
AND SELECTION OF CERCLA REMEDIAL ACTION AND OPERATION & MAINTENANCE FOR REST OF RIVER
FOR PUBLIC COMMENT – JULY 2020

Statute/ Regulation	Citation ^a	Synopsis of Requirements	Status	Action(s) to be Taken to Achieve ARARs ^b
To Be Considered				
Clean Water Act, National Recommended Water Quality Criteria for PCBs	National Recommended Water Quality Criteria: 2002, EPA-822-R-02-047, USEPA, Office of Water, Office of Science and Technology (Nov. 2002).	Freshwater chronic aquatic life criterion (based on protection of mink): 0.014 µg/L. Human health criterion based on human consumption of water and organisms: 0.000064 µg/L.	To be Considered	To be considered with respect to Action(s) to be Taken to Achieve ARARs in connection with Massachusetts and Connecticut Water Quality Standards.

^a The substantive requirements, including environmental performance standards, contained in the statutes, regulations, and other documents referenced in the column captioned “Citation” shall control to determine the requirements that must be met and the actions to achieve such requirements. Other references in the table that summarize the requirements of or action necessary to achieve ARARs are summary in nature, may not be all-inclusive, and are not controlling.

^b As stated in Attachment C to the 2016 Permit, for purposes of this Attachment C, compliance with ARARs or standards refers to compliance with the substantive requirements, criteria, or limitations of each provision.

Note: This Chart provides only the ARARs that have been revised since EPA’s issuance of the October 2016 RCRA Permit Modification. Revisions since the 2016 Permit are noted through redline/strikeout in the table. Following the opportunity for public comment on the changes to the proposed remedy, including the revised ARARs, EPA’s final revised RCRA Permit Modification will include all the ARARs for the remedy.

ATTACHMENT C
REVISED CLEAN WATER ACT SECTION 404 WETLANDS AND
FLOODPLAIN ANALYSIS

ATTACHMENT C

REVISED CLEAN WATER ACT SECTION 404 WETLANDS AND FLOODPLAIN ANALYSIS

I. INTRODUCTION

In conjunction with the EPA 2016 Reissued RCRA Corrective Action Permit Modification (the “2016 Permit”) for the GE-Housatonic, Rest of River Site, EPA issued a GE – Pittsfield/Housatonic River Site – Rest of River Section 404 (Clean Water Act) Wetlands and Floodplain Analysis, which focused on the achievement of project purposes and potential adverse impacts to wetlands and floodplains by alternatives evaluated for purposes of the proposed corrective measures for the Rest of River specified in the 2016 Permit. That analysis included an evaluation of how well each sediment/floodplain and treatment/disposition alternative addressed Section 404 of the Clean Water Act and wetlands/floodplain requirements.

The revised analysis herein supplements that analysis with respect to the alternatives reviewed in this Supplemental Comparative Analysis for the Draft Revised 2020 Permit.

II. SEDIMENT AND FLOODPLAIN REMEDIATION ALTERNATIVES

The Supplemental Comparative Analysis evaluates two combination alternatives: the EPA-selected alternative in the 2016 Permit (SED 9 MOD/FP 4 MOD, referred to herein as “2014 Alternative”), and the EPA-proposed alternative for the Draft Revised 2020 Permit (“2020 Alternative”). The 2014 Alternative is described in detail in the 2014 Comparative Analysis. The 2020 Alternative is very similar to the 2014 Alternative but for purposes of floodplain analysis it includes additional remediation on a Massachusetts Audubon Society property and more stringent environmental cleanup on 22 residential properties with contaminated floodplain in Pittsfield, and possibly also at up to six residential properties with contaminated floodplain in Lenox. Such additional activities serve to provide more thorough floodplain cleanup and represent a 4% increase (45 acres to 47 acres) of floodplain to be remediated and impacted.

A. SECTION 404/WETLANDS ANALYSIS FOR 2014 AND 2020 SEDIMENT/FLOODPLAIN ALTERNATIVES

There are no significant differences between the 2020 and 2014 Alternatives with respect to the Section 404/Wetlands Analysis. The 2020 Alternative equals the 2014 Alternative in achieving the project purposes, and EPA has determined that they are functionally equivalent in being least damaging to wetlands. See the 2014 Comparative Analysis, Attachment 14, Section II.B. for further details. But the 2020 Alternative is an even less damaging practicable alternative than the 2014 Alternative, given the 2020 Alternative’s significantly reduced reliance on permanent capping, thus allowing for an increase in habitat restoration in river Reaches 5C, 7, and 8. In addition, the removal of two dams will greatly increase long-term habitat quality by restoring the river to its

natural state before these impoundments were built, providing unimpeded fish passage within these subreaches.

B. FLOODPLAIN ANALYSIS FOR 2014 AND 2020 SEDIMENT/FLOODPLAIN ALTERNATIVES

In the 2014 Analysis, EPA determined that the 2014 Alternative's activities that affect the floodplain are not permanent and would be subject to restoration following remediation. Additionally, EPA determined that the 2014 Alternative is the most appropriate combination to address unacceptable risks to human health and the environment of the PCB-contaminated soil, while minimizing floodplain impacts. EPA cited to the 2016 Permit's iterative approach to addressing PCB contamination in Vernal Pools.

The 2020 Alternative, as described above, includes additional soil removal beyond that outlined in the 2014 Alternative at up to 29 properties that will reduce risks at those properties. The additional activity in the 2020 Alternative represents approximately 4% additional impacts to the Rest of River floodplains. This additional area of remediation will also be restored to pre-remediation conditions to the extent practicable. The 2020 Alternative also includes an iterative approach to addressing PCB contamination in Vernal Pools. EPA has determined that the 2020 Alternative, through retaining virtually all aspects of floodplain-related cleanup, and adding a small percentage of floodplain remediation, is the most appropriate combination to address unacceptable risks to human health and the environment of the PCB-contaminated soil, while minimizing floodplain impacts. To the extent that the very limited additional activities to remove PCB contamination from the floodplain and the support activities for other proposed Rest of River remediation activities are considered occupancy and modification of the floodplains, EPA has determined there is no practicable alternative to occupancy and modification.

III. TREATMENT/DISPOSITION ALTERNATIVES

The 2020 Supplemental Comparative Analysis evaluates three treatment/disposition alternatives:

First, the EPA-selected alternative in the 2016 Permit, which called for off-site disposal of all excavated material (TD 1); second, the alternative proposed by GE in its challenge to the 2016 Permit, on-site disposal of all excavated material (TD 3—Woods Pond Facility); and third, the EPA-proposed alternative in the Draft Revised 2020 Permit, a hybrid disposal approach that provides for the following:

- Off-site disposal of excavated material that equals or exceeds an average of 50 mg/kg PCBs, that otherwise would be classified as RCRA hazardous waste, and other excavated material, if the material that equals or exceeds an average 50 mg/kg PCBs or that otherwise would be classified as RCRA hazardous waste is less than 100,000 cubic yards, and

- On-site disposal of remaining excavated material at an Upland Disposal Facility (the Hybrid Disposal approach (hereafter referred to as TD 6) is described more fully in Draft Revised 2020 Permit Sections II.B.5. and II.B.6., and is a hybrid of the TD 1 and TD 3 alternatives). The footprint of the on-site Upland Disposal Facility would be located outside of wetland/floodplain areas.

A. SECTION 404/WETLANDS ANALYSIS

As provided in the Wetlands/Floodplain Analysis for the 2016 Permit, TD 1 and TD 3 have no impacts and clearly meet the project purpose and are therefore practicable alternatives to conducting work in wetland areas. TD 6 is a hybrid of TD 1 and TD 3; accordingly, TD 6 also has no impacts, clearly meets the project purpose, and is therefore a practicable alternative to conducting work in wetland areas.

B. FLOODPLAIN ANALYSIS

As provided in the Wetlands/Floodplain Analysis for the 2016 Permit, TD 1 and TD 3 can be conducted outside the floodplain and clearly meet the project purpose and are therefore practicable alternatives to floodplain development. TD 6 is a hybrid of TD 1 and TD 3; accordingly, TD 6 also can be conducted outside the floodplain and clearly meets the project purpose and is therefore a practicable alternative to floodplain development.