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Via Electronc Mail

November 21, 2023

Mr. Dean Tagliaferro
EPA Project Coordinator
U.S. Environmental Protection Agency
c/o HDR, Inc.
75 South Church Street, Suite 403
Pittsfield, MA 01201

Re: GE-Pittsfield/Housatonic River Site
Rest of River (GECD850)
Adaptive Management Plan

Dear Mr. Tagliaferro:

In accordance with Section II.H.13 of the Revised Final RCRA Permit issued by the U.S. Environmental Protection Agency (EPA) for the Housatonic Rest of River, Section 4.3.1.4 of the *Final Revised Rest of River Statement of Work*, and the schedule approved by EPA, the General Electric Company (GE) is submitting herewith for EPA's review and approval the *Adaptive Management Plan* for the Rest of River Remedial Action, prepared for GE by Anchor QEA, LLC.

Please let me know if you have any questions about this plan.

Very truly yours,

Kevin G. Mooney
Senior Project Manager – Environmental Remediation

Enclosure

Cc: (via electronic mail)
Anni Loughlin, EPA
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John Kilborn, EPA
Richard Fisher, EPA
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SEMS Doc ID 677682

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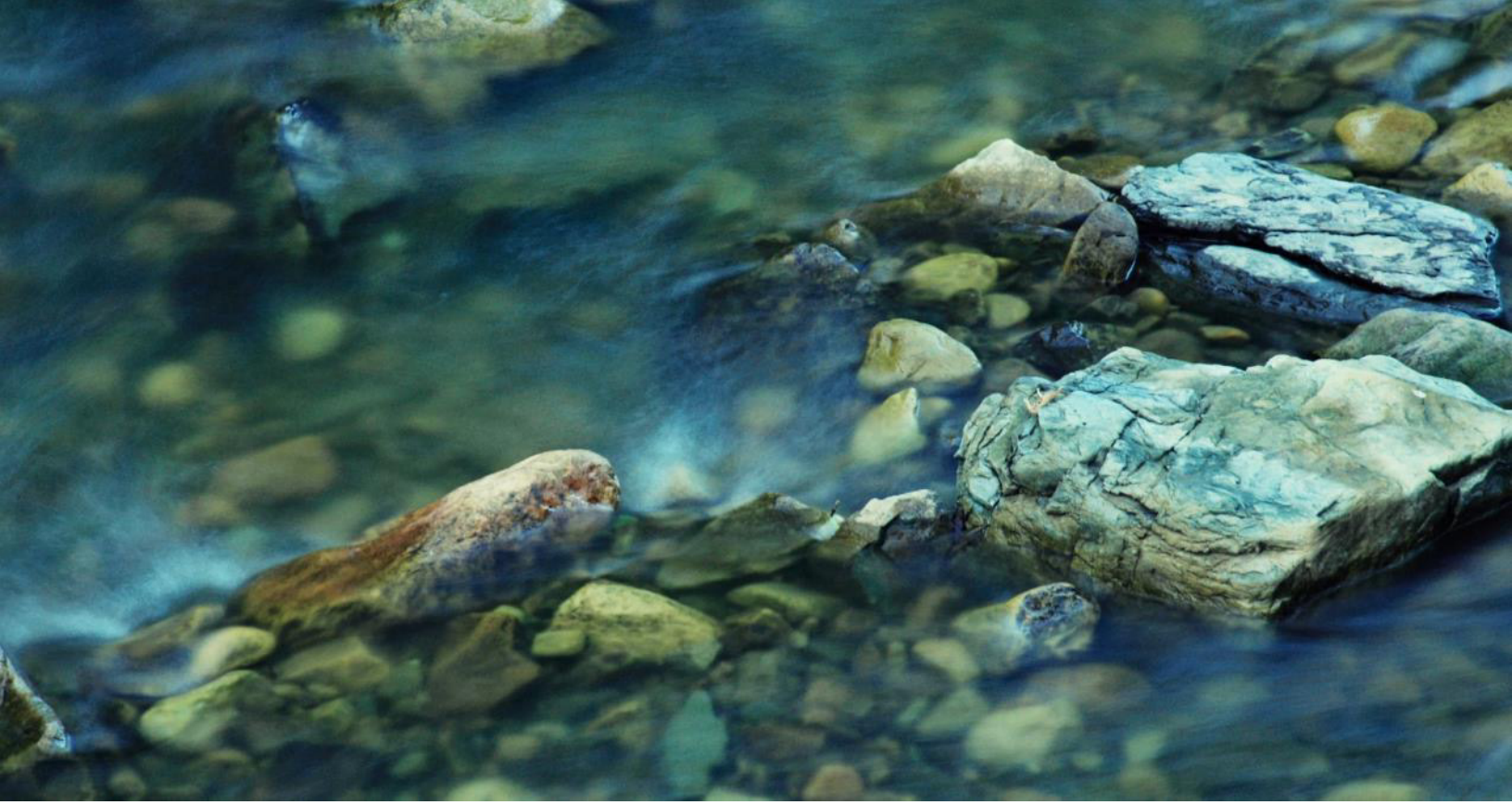
Michael Werth, Anchor QEA
Mark Gravelding, Arcadis
Dennis Lowry, AECOM
James Bieke, Sidley Austin
Public Information Repository at David M. Hunt Library in Falls Village, CT
GE Internal Repository



November 2023
Housatonic River – Rest of River

ANCHOR QEA

Adaptive Management Plan

Prepared for General Electric Company
Pittsfield, Massachusetts

November 2023
Housatonic River – Rest of River

Adaptive Management Plan

Prepared for
General Electric Company
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Pittsfield, Massachusetts 01201

Prepared by
Anchor QEA, LLC
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TABLE OF CONTENTS

FIGURES

ABBREVIATIONS

BMP	best management practice
CD	Consent Decree
ECN	engineering change notice
EPA	U.S. Environmental Protection Agency
Final Revised OSS	*Final Revised Overall Strategy and Schedule for Implementation of Corrective Measures*
Final Revised SOW	*Final Revised Rest of River Statement of Work*
GE	General Electric Company
PCB	polychlorinated biphenyl
RCRA	Resource Conservation and Recovery Act
RD/RA	Remedial Design/Remedial Action
Revised Final Permit	Revised Final Resource Conservation and Recovery Act Permit Modification
ROR	Rest of River
SOW	Statement of Work
UDF	Upland Disposal Facility

1 Introduction

1.1 Background

On December 16, 2020, pursuant to the 2000 Consent Decree (CD) for the GE Pittsfield/Housatonic River Site (EPA and GE 2000), the U.S. Environmental Protection Agency (EPA) issued to the General Electric Company (GE) a final revised modification of GE's Resource Conservation and Recovery Act (RCRA) Corrective Action Permit (Revised Final Permit) for the Housatonic Rest of River (ROR) (EPA 2020). The ROR is defined as that portion of the Housatonic River and its backwaters and floodplain (excluding Actual/Potential Lawns as defined in the CD) downstream of the confluence of the East and West Branches of the Housatonic River in Pittsfield, Massachusetts (the Confluence), which is located approximately two miles downstream from the GE facility in Pittsfield, Massachusetts. The Revised Final Permit set forth a Remedial Action selected by EPA to address polychlorinated biphenyls (PCBs) in the ROR.

The Revised Final Permit required GE to develop and submit a Statement of Work (SOW) specifying the deliverables and activities that GE will conduct to design and implement the ROR Remedial Action. In accordance with that requirement, after receipt of EPA's comments on an earlier version, GE submitted a *Final Revised Rest of River Statement of Work* on September 14, 2021 (Final Revised SOW; Anchor QEA et al. 2021), and EPA approved it on September 16, 2021.

Section II.F of the Revised Final Permit requires that an adaptive management approach be incorporated into the design and implementation of the Remedial Action to adapt requirements or activities based on new information and make changes as needed to achieve the expected benefits of the project. To implement this requirement, Section II.H.13 of the Revised Final Permit and Section 4.3.1.4 of the Final Revised SOW require GE to prepare an Adaptive Management Plan. This document constitutes that plan.

1.2 Project Setting and Remedial Action Overview

The Housatonic River is approximately 149 miles long. Its headwaters begin in northwestern Massachusetts. The river flows southeast through western Connecticut and into the Long Island Sound. The ROR area subject to the Revised Final Permit, including the river channel and its backwaters and floodplain, is shown on Figure 1-1, including river reach designations established by EPA within it.

In accordance with the Revised Final Permit, remediation activities are planned in Reaches 5 through 8, which are shown on Figure 1-2. The ROR Remedial Action includes remediation, as necessary, of sediments (including in backwaters), riverbank soils, and floodplain soils (including vernal pools) over an area covering approximately 30 river miles. Specifically, it includes active remediation of the following: (1) sediments in the river (including backwaters) within Reaches 5 through 8, with the

exception of the flowing subreaches in Reach 7 (i.e., Reaches 7A, 7D, 7F, and 7H); (2) riverbank soils in Reaches 5A and 5B; and (3) floodplain soils (including vernal pools) in portions of Reaches 5 through 8 where necessary to meet certain Performance Standards. The Revised Final Permit also provides for the construction and operation of an on-site Upland Disposal Facility (UDF) for the disposal of sediments and soils that meet certain criteria specified in the Revised Final Permit, and it requires off-site disposal of materials that do not meet those criteria.

The type of active remediation varies for the river subreaches and includes excavation of sediment, riverbank soils, and floodplain soils; capping of certain river sediments; post-excavation backfill placement; placement of sediment amendments in designated areas; and disposal of excavated sediment and soil in the UDF and at off-site disposal facilities. Based on the scale of the required remediation activities, the Remedial Design/Remedial Action (RD/RA) process is anticipated to take a number of years to complete, as described in the *Final Revised Overall Strategy and Schedule for Implementation of Corrective Measures* (Final Revised OSS; Anchor QEA 2022), approved by EPA on July 6, 2022.

1.3 Plan Objectives and Scope

As stated in Section 4.3.1.4 of the Final Revised SOW, the overall objective of the adaptive management approach will be to maintain or improve the efficiency of the project, mitigate short-term impacts as needed, and help ensure that the remediation activities are successfully completed, that the work remains consistent with the Revised Final Permit, and that the targets and objectives set forth in the Revised Final Permit are met. The adaptive management process will be implemented to adapt and optimize project activities (i.e., design and construction) to account for lessons learned from work conducted at early stages of the project, new information, changing conditions, evaluations of the use of new or innovative technologies (if any), results from any pilot studies, and additional opportunities that may present themselves over the duration of the project, including during periodic reviews. This Adaptive Management Plan describes the adaptive management process to be implemented for the ROR project. It does not describe any specific adaptive management adjustments or modifications to the Performance Standards or remediation activities specified in the Revised Final Permit, which cannot be identified at this time.

2 Adaptive Management Process

2.1 General

The adaptive management process will be implemented for the duration of the ROR Remedial Action and will include ongoing reassessment of the design of the remediation and restoration activities, construction methods, and best management practices (BMPs). The process will be iterative in that successful design elements, construction methods, equipment, and techniques that are identified early in the construction process will be built upon, while those that are less successful can be identified and then refined, modified, or eliminated, as appropriate, to achieve the remedial objectives more efficiently and effectively. The adaptive management approach will also evaluate the potential use of new or innovative technologies (if any) that could improve the implementation of the remediation activities. Because the ROR Remedial Action will be a multi-year project that is segmented into separate Remediation Units as described in the Final Revised OSS, lessons learned during work performed in earlier Remediation Units can be carried forward into future work performed in subsequent Remediation Units. Ultimately, the adaptive management process will evaluate project information, data, observations, and experiences to improve and/or optimize the design or construction methods to account for lessons learned, as well as any new developments in remediation technology.

Based the adaptive management assessments, GE will, if warranted, modify the implementation of the remediation actions (with EPA approval) to minimize adverse impacts on those response actions, expedite response actions, improve the remediation, and/or promote achievement of, or continued progress towards achieving, the General Performance Standards specified in the Revised Final Permit.

2.2 Identification of Potential Adaptive Management Items

During the course of the ROR Remedial Action, GE and EPA will review the progress of remedial activities and determine conditions that may warrant response actions through the adaptive management process. The following questions may be considered as a guide to identify whether a design or construction element has the potential for adaptive management consideration during the RD/RA process:

- Have conditions changed or are new data available that warrant a change to the design or construction methods?
- Are design or construction technique changes necessary to meet the project objectives or could they be optimized?
- Was technical implementation of the project components efficient and effective? If not, under what conditions were the techniques inefficient or ineffective, if any?

- Could modification be made to improve overall construction or operational efficiency?
- Are the monitoring and measurement protocols reliable and sufficient?
- Are there any overall lessons learned that could be applied to future designs or remedial construction operations?
- Are there new or innovative technologies that could improve the implementation of the remediation activities?

Potential adaptive management responses will be focused on elements related to the design, construction methods, and BMPs. Items that may be subject to potential adaptive management include, but are not limited to, remedial construction methods and equipment, material placement and handling methods, sediment dewatering methods, construction tolerances for sediment removal or capping, material specifications, channel or bank restoration elements, controls and BMPs for achieving quality of life standards or water quality requirements, monitoring locations and methods, temporary staging area operations, UDF operations, work limitations associated with weather or river conditions, project sequencing, and safety measures. Adaptive response actions would not modify the remedial extents.

Moreover, the adoption of an adaptive response action will be consistent with the provisions and limitations of the CD. Thus, in accordance with Paragraph 39.a of the CD, in the absence of agreement by GE, EPA may not require adaptive response actions that would modify the Final Revised SOW or work plans developed pursuant to that SOW unless they are consistent with the scope of the response actions for which the modification is required and do not modify the Performance Standards set out in the Revised Final Permit (except as provided in Paragraph 217 of the CD). Further, as provided in Paragraph 217 of the CD, adaptive response actions will not modify the Performance Standards in the Revised Final Permit except through the process set forth in that CD provision for modification of Performance Standards.

Adaptive management decisions will need to consider the practicability of making a change. For example, substitutions of major equipment during a construction season may be impracticable. If necessary, more significant changes in equipment, operations, or processes could occur for subsequent construction seasons or reaches of the river, provided that such changes are consistent with the scope of the response actions described in the Revised Final Permit, and provided that such changes do not require the use of equipment or technology that is not reasonably available.

2.3 Adaptive Response Actions

There are three types of adaptive responses that may be implemented during the project depending on the nature of the matter, the timing of the work, and the potential effect on meeting the project

objectives. It is anticipated that adaptive response actions may occur during a construction season, where necessary and feasible, or between construction seasons or reaches of the river.

- **Field response actions** would consist of relatively minor field refinements to construction procedures, methods, or equipment made by the contractors in coordination with the construction management team, as necessary, to address efficiencies, effectiveness, or changed conditions, as is done inherently on every construction project. These types of construction adjustments will be made informally, when appropriate, during construction, provided they are consistent with the design intent and in conformance with the performance requirements of the approved specifications. Field response actions would be made based on discussion between the contractors and construction management team and would not require GE or EPA approval unless such adjustment conflicts with an approved work plan or the design.

- **Near-term response actions** would be conducted to correct obvious deficiencies or changed conditions. These are actions that would be undertaken, as appropriate, at the time the condition is observed or within a period of several days to weeks or months following the observation. Proposed near-term response actions may be identified by GE, EPA, or their representatives during the course of construction. Final near-term response actions may involve a design modification or a change to construction methods or equipment (where practicable).

- **Longer-lead response actions** are those that are to be performed at some point after the condition is observed, typically in a time frame that allows them to be implemented or applied in the following construction season or for a subsequent Remediation Unit. Proposed longer-lead response actions may be identified by GE or EPA. Additionally, EPA may request that a review of innovative technologies or other modifications be considered during its required periodic (i.e., five-year) reviews. Final longer-lead response actions may involve design modifications, work plan revisions, or a change to construction methods or equipment (where practicable).

2.4 Coordination Between GE and EPA

GE and EPA will review the progress of remedial activities and determine conditions that may warrant response actions through the adaptive management process. Meetings and other coordination efforts will be conducted between GE and EPA to determine whether near-term or longer-lead response actions are needed. GE and EPA will work collaboratively through the adaptive management process to maintain project effectiveness and progress.

Proposed near-term adaptive management elements may be identified by GE or EPA during routine project progress meetings, and certain items may require discussion as part of separate meetings or

conference calls to determine how to resolve the item and whether a near-term response action is warranted.

Longer-lead response actions to be considered for the upcoming construction season will generally need to be proposed early in the first quarter of each year (e.g., by the end of January each year). This will require EPA and GE to prepare a list identifying any potential adaptive management elements along with justification for such modifications. It is anticipated that GE and EPA will then meet annually (e.g., in February) to review and determine whether response actions are warranted for the upcoming construction season. These meetings will focus on lessons learned, process efficiencies, and other measurable improvements to the performance of the work (including new or innovative technologies, if any). For a subsequent Remediation Unit, a similar work process will be followed to review potential adaptive management elements and longer-lead response actions, but the schedule for coordination and implementation will occur on an agreed-upon schedule during the design process. For example, ground rules could be established during a pre-design kick-off meeting before the conceptual design starts for the subsequent Remediation Unit.

As described in Section 2.2, decisions on final adaptive responses will be made based on reasonable availability and practicability of the proposed changes.

2.5 Documentation of Adaptive Response Actions

Adaptive management response actions that are accepted by both GE and EPA will be formally documented and incorporated into the project records and added to appropriate plans as required and summarized below.

Once agreed upon by GE and EPA, near-term response actions that are implemented in the field will be documented by the construction management team. If a near-term response action requires a change or modification to the project design, GE's engineering team will prepare an engineering change notice (ECN) to document the change, and the ECN package will be subject to EPA review and approval. Near-term response action documentation will be maintained for post-construction reporting and for consideration during subsequent design phases.

Once agreed upon by GE and EPA, longer-lead response actions will be documented as agreed upon by GE and EPA. This may include a change or modification to the project design through an ECN, design addendum, or other work plan revision. Response action documentation (e.g., revised work plans, ECNs, and design addenda) will be subject to EPA review and approval.

Modifications to applicable project documents will be documented and carried forward, as appropriate, to subsequent Remediation Units.

3 References

Anchor QEA (Anchor QEA, LLC), 2022. *Final Revised Overall Strategy and Schedule for Implementation of the Corrective Measures*. Prepared for the General Electric Company, Pittsfield, Massachusetts. July 2022.

Anchor QEA, AECOM, and Arcadis, 2021. *Final Revised Rest of River Statement of Work*. Housatonic River – Rest of River. Prepared for the General Electric Company, Pittsfield, Massachusetts. September 2021.

EPA (U.S. Environmental Protection Agency), 2020. *Revised Final Permit Modification to the 2016 Reissued RCRA Permit and Selection of CERCLA Remedial Action and Operation & Maintenance for Rest of River*. December 2020.

EPA and GE (General Electric Company), 2000. Consent Decree in *United States of America, State of Connecticut, and Commonwealth of Massachusetts v. General Electric Company*, Civil Action Nos. 99-30225, 99-30226, 99-30227-MAP, entered by the United States District Court for the District of Massachusetts, Western Division. October 27, 2000.

Figures

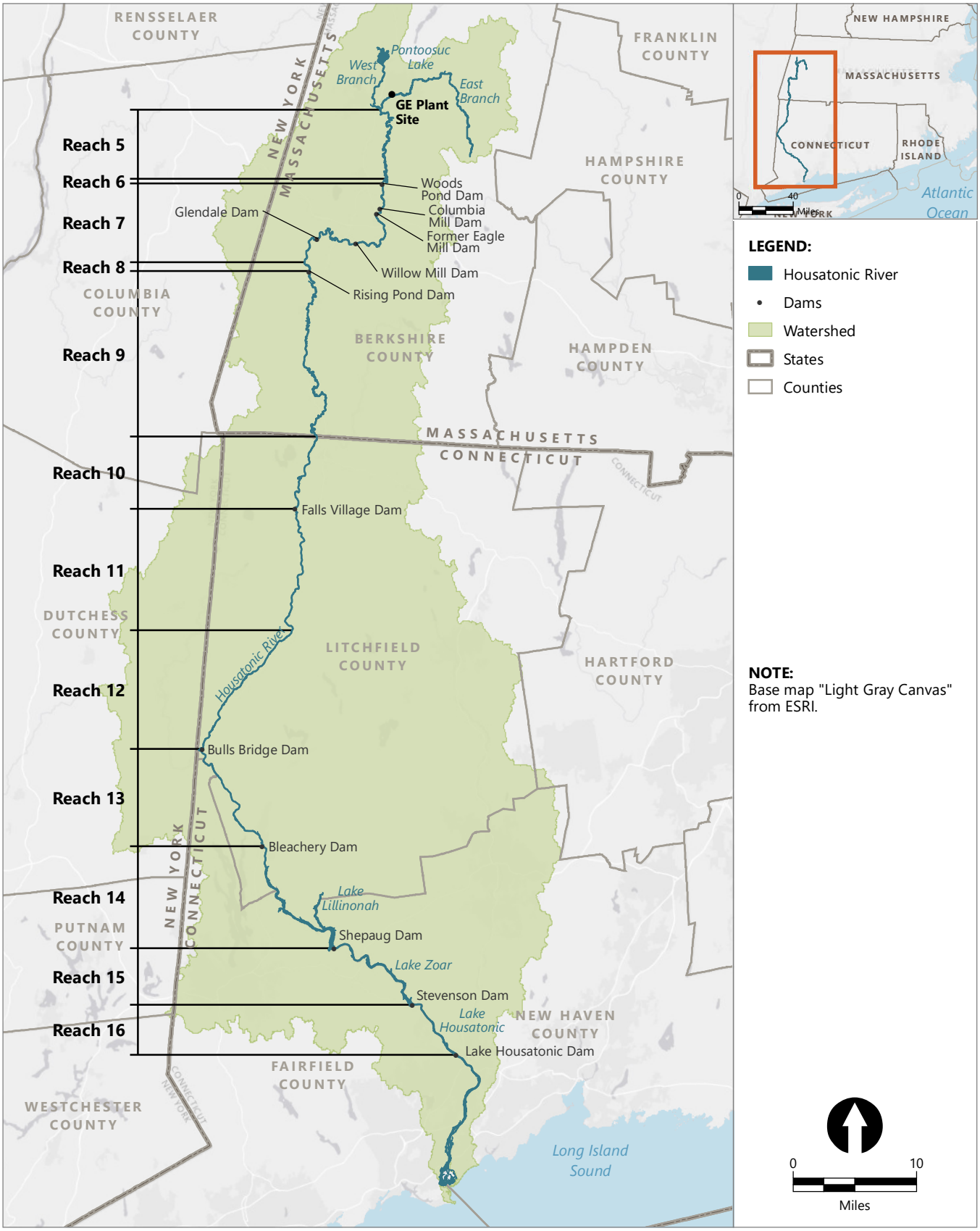

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Figure 1-1
Housatonic River Map
Adaptive Management Plan
GE-Pittsfield/Housatonic River Site

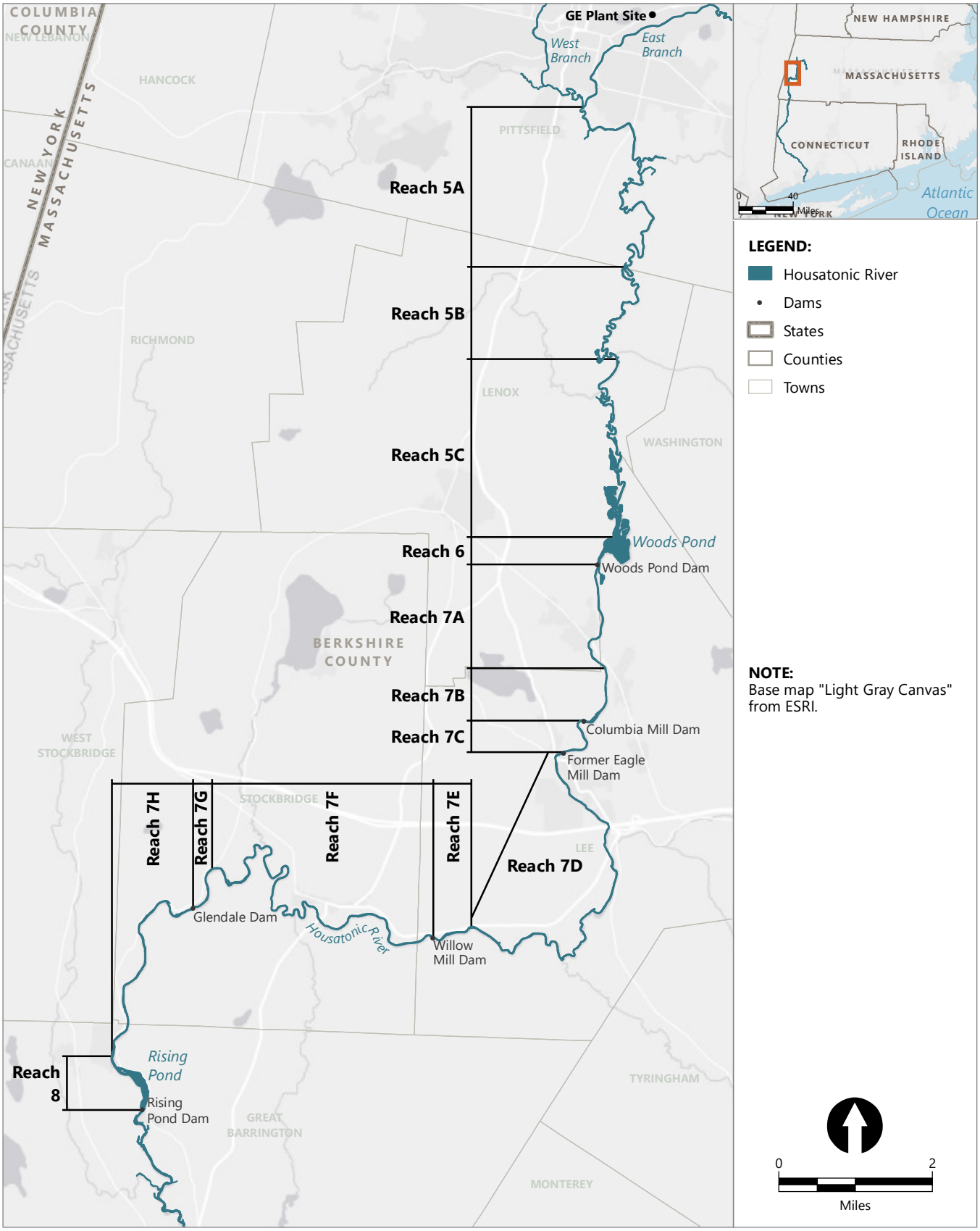

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Figure 1-2
Housatonic River Map (Subreaches in Reaches 5 and 7)

Adaptive Management Plan
GE-Pittsfield/Housatonic River Site