HOUSATONIC REST OF RIVER MUNICIPAL COMMITTEE

December 19, 2022

Dean Tagliaferro, EPA Project Manager
GE-Pittsfield/Housatonic River Site
Boston, MA
Submitted via email to R1Housatonic@epa.gov

Re: Comments on the *Sustainability and Climate Adaptation Plan*

Dear Mr. Tagliaferro:

The Housatonic Rest of River Municipal Committee (the Committee) respectfully submits the following comments on the *Sustainability and Climate Adaptation Plan* (hereafter referred to as the Plan). The Plan conceptually describes measures to ensure that Corrective Measures are designed and constructed to be resilient to potential changes due to climate change and, where practical and appropriate, methods to minimize greenhouse emissions. However, it does not clearly identify or define the potential climate change impacts to specific Remediation Unit (RU) performance standards and Corrective Measures

The Plan does not meet the standards for climate resilience planning as described within EPA's 2019 document *Climate Resilience Technical Fact Sheet: Contaminated Sediment Sites.* EPA should require that the Plan be revised to, at a minimum, summarize the RU-specific performance standards and Corrective Measures that are potentially affected by climate change, and the potential methods by which these changes will be addressed. In addition, the climate change impact analysis for each RU should be analyzed using methods described in EPA's 2019 *Climate Resilience Technical Fact Sheet: Contaminated Sediment Sites.* The Committee's full comments on the *Sustainability and Climate Adaptation Plan* are enclosed as Attachment A.

Sincerely,
The Housatonic Rest of River Municipal Committee

Enclosure: Attachment A - Housatonic Rest of River Municipal Committee Comments on the Sustainability and Climate Adaptation Plan

Enclosure: Attachment B - Technical Assistance Services for Communities Comments, October 27, 2022

ATTACHMENT A
HOUSATONIC REST OF RIVER MUNICIPAL COMMITTEE
Comments on the *Sustainability and Climate Adaptation Plan*
GE/Housatonic River - Rest of River

In general, the *Sustainability and Climate Adaptation Plan* (hereafter referred to as the Plan) conceptually describes measures to ensure that Corrective Measures are designed and constructed to be resilient to potential changes due to climate change and, where practical and appropriate, methods to minimize greenhouse emissions. However, it does not clearly identify or define the potential climate change impacts to specific Remediation Unit (RU) performance standards and Corrective Measures relating to sediment removal, engineered caps, riverbank soil remediation, floodplain and vernal pool soil remediation, restoration of areas disturbed by remediation, dam maintenance and inspections and the Upland Disposal Facility as they are described in the Revised Final Permit.

EPA should require that the Plan be revised to, at a minimum, summarize the RU-specific performance standards and Corrective Measures that are potentially affected by climate change, and the potential methods by which these changes will be addressed. In addition, the climate change impact analysis for each RU should be analyzed using methods described in EPA's 2019 *Climate Resilience Technical Fact Sheet* for contaminant sediment sites. These methods call for a vulnerability assessment. A vulnerability assessment evaluates the likelihood for climate change to impact the remedy's effectiveness. The results of the vulnerability assessment should be included in the *Conceptual and Final Remedial Design/Remedial Action (RD/RA) Work Plans*. The results could be summarized in a format similar to Table 1 and Figure 2 in EPA's Technical Fact Sheet. These results will highlight RU-specific remedy features that require particular attention to address potential climate change impacts.

In addition, the Committee offers the following comments:

1. The Plan conceptually describes forthcoming procedures which will be incorporated into the RU-specific RD/RA work plans. This has been the case with several recent documents such as the *Cultural Resources Assessment Work Plan* and the *Water Withdrawal and Uses Plan*. It is understandable that, with such a large and complex site, the Plan can only qualitatively describe anticipated approaches. However, it is concerning that while these plans commit to providing appropriate detail within the RU-specific RD/RA work plans the incorporation of such detail may ultimately be lost or discounted. It is critical that a mechanism be put into place to track the commitments made within this Plan and others to ensure that these commitments are met, and the appropriate level of detail is ultimately provided.

   GE should review all the previously provided plans and project documents (including this Plan) and work with EPA to develop a mechanism to track the required elements of each

RD/RA work plan. GE should consider developing a template RD/RA work plan outline to ensure all elements can be easily accounted for. The template RD/RA work plan outline should be made available for public review and comment.

2. EPA's 2019 *Climate Resilience Technical Fact Sheet: Contaminated Sediment Sites* was acknowledged as a referenced resource for the Plan; however, certain recommended elements from the EPA reference were not addressed in the Plan. These include the evaluation of the influence of climate change to "site operations and infrastructure" such as connections to municipal utilities and access to site features for routine monitoring and maintenance.

   GE should revise the Plan to include an assessment of climate change impacts to site operations and infrastructure.

3. The Plan is lacking detail regarding the sources of information to be used to estimate precipitation, flow and flood conditions to be evaluated as part of the upcoming RD/RA work plans. There are flow and velocity data available from existing U.S. Geological Survey gauges located in Coltsville, Great Barrington and Ashley Falls that would provide reliable, regionally relevant data. In addition, precipitation data sets offered by the Northeast Regional Climate Center (NRCC) should be accessed to obtain the latest extreme precipitation data.

   GE should provide detail regarding the sources of information to be used to estimate precipitation, flow and flood conditions. U.S. Geological Survey gauges and the Northeast Regional Climate Center (NRCC) should be included as sources.

4. The Plan acknowledges that drought may also be an impact related to climate change. Local habitats such as the vernal pools may be affected. The ROR cleanup planning process is at a unique stage to be able to foresee and potentially design remedy efforts to circumvent pending concerns such as climate change impacts on vernal pools. It may be useful to review RU-specific RD/RA work plans to consider stormwater controls that could route surface water to vernal pools potentially impacted by drought. Similar habitats such as Core Area wetlands may also benefit from these future stormwater management strategies.

   GE should work with EPA to evaluate the management of stormwater as a resource to safeguard sensitive habitats such as vernal pools and wetlands for inclusion in RU-specific RD/RA work plans.

5. Section 2.1 of the Plan summarizes climate projections and available resources that provide an indication of climate changes anticipated for the ROR area. The Plan recognizes that the frequency of flooding will increase as a result of climate change, but does not mention if the actual floodplain map changes have been considered. It is important to consider whether the

future 100-year and 500-year flood event projections are expected to differ from the historical and current 100-year and 500-year flood events.

It is important to note that the 100-year floodplain boundaries for the ROR corridor in Berkshire County were delineated in the early 1980s. The scientific community has recognized and documented the accelerated precipitation changes that have occurred in the past 40 years and most likely have rendered the floodplain boundaries for the river corridor outdated. However, local officials have been told that neither FEMA nor USGS have plans to update the floodplain maps for the county. GE should work with EPA to verify and/or update the floodplain boundaries before final PDI /Conceptual designs are finalized so that remediated reaches of the river, floodplain and caps can be designed to withstand the more frequent and intense flood events that climate change is predicted to deliver.

GE should not rely on floodplain maps that are out of date and should determine whether floodplain maps will be updated to capture future potential changes attributable to climate change impacts.

6. Page 5&6- The Plan refers to the NE CASC (2018), a 2013-14 model that generated the projected climate change impacts. The model utilized data only through 2005. Relying on projected precipitation patterns based on such outdated data may no longer be valid.

   While the annual precipitation levels discussed in the Plan are important to consider, the projected increase in the number and intensity of flood events result in flooding of land and scour and erosion of river channel, bank and backwaters. Projected increases in extreme storm events could increase the risk that damage or failure could occur in remediated sections of the river and redistribute newly exposed PCBs back into the river system. GE model projected climate change impacts based on the most current, relevant available data. Modeling should include the 1", 2" and 4" precipitation data rather than relying solely on annual precipitation data.

7. Page 9- Footnote 5 refers to two EPA guides for capping, including In-Situ Subaqueous Capping. GE should work with EPA to ensure that these references properly relate to dynamic river situations. The referenced 1998 *Guidance for Subaqueous Dredged Material Capping* seems to deal with capping in marine or very large lake environments (i.e. Great Lakes). It is unclear whether this document is relevant to designing caps in the Housatonic's flowing riverine environment, which includes scour and high velocity conditions. In addition, it is unclear whether the 25 year old document is still relevant, especially when considering climate change impacts. GE should work with EPA to ensure that to utilize the most up to date technical assessments of capping in riverine systems.

8. Page 12- The following flow and flood changes resulting from climate change were summarized within the Plan:

- The Housatonic River Basin is expected to rise from the 1971 to 2000 year average (47.4 inches) by approximately 1.1 to 6.4 inches by the middle of the 21st century and by approximately 1.6 to 7.7 inches by the end of the century.
- The 100-year flood event has been estimated to now occur every 60 years on average; by 2050, 100-year flood events are projected to occur every 10-20 years.

It is important to determine how these increased flow and flood conditions will affect the footprint for performance standards defined by media such as riverbed sediments, river bank soils and upland soils. As part of the forthcoming RU-specific RD/RA work plans, it is important to evaluate the future anticipated flow rates and possible influence to performance standard defined media (of riverbed sediments, bank soils, upland soils and vernal pools). These future work plans should provide a conservative range of estimates of the amount of these materials since the performance standards vary by type.

GE should include estimates of potential media changes attributable to the increased flows and flooding conditions resulting from climate change.

9. Section 3 of the Plan describes the proposed approaches to address greenhouse gas emissions. This section does not address the potential greenhouse gas emissions produced from the Upland Disposal Facility, which will contain disposed sediments and soils. Literature sources indicate that the anaerobic degradation of sediment organic matter leads to considerable gas production in landfills where contaminated sediments are disposed of; however, little is known about the magnitude of gas generation from dredged sediment. GE should include the possible gas production from the UDF landfilled sediments and soils as part of the greenhouse gas emission evaluation.

10. Section 3 only vaguely discusses greenhouse gas emission reduction practices by describing measures that could reduce direct greenhouse gas emissions from vehicles and heavy-duty equipment. GE should acknowledge and reference how future activities will meet the Commonwealth's more stringent medium- and heavy-duty vehicle requirements (Low Emission Vehicle Program, 310 CMR 7.40).

11. Page 14- It is acknowledged within the Plan, that the ROR remedy efforts will be designed to achieve "no net loss of flood storage capacity and no increase in water surface elevation". The Plan states that the forthcoming work plans will acknowledge future water flows and levels due to extreme flow or drought events brought on by climate change; however, it is not clear if these conditions will be quantitatively addressed and thoroughly incorporated into the RU-specific designs. Anticipated climate change flood events are expected to impact the ROR flood-carrying capacity requirements for climate change conditions. It appears the Plan anticipates that future RD/RA work plans will be prepared based on the most current flood capacity conditions measured within a close timeframe to RD/RA work plan development.

GE should evaluate climate change flood capacity conditions to determine if the existing flood capacity is sufficient to contain and store anticipated water capacity impacts from climate change.

12. Page 14- The Plan states “backfill material will not be designed to be resistant to erosive forces from extreme storm and flow events. Instead, over the long term, the backfill material is expected to serve a similar role as existing sediment within the river system, given that sediment transport is a natural function of river systems”. This approach does not consider the potential climate change impacts of:

    • increased sediment load attributable to both flooding of impervious surfaces and increased flooding that can scour upland soils that will create additional sediment, and
    • additional resuspended sediments within the channel itself from an increase in flood frequency.

    GE should identify suitable backfill materials based on the possible climate change impacts and consider the need to rely on backfill materials with additional erosion resistance.

Technical Assistance Services *for* Communities
GE-Pittsfield/Housatonic River Site
Comments on Sustainability and and Climate Adaptation Plan
October 27, 2022

Contract No.: 68HERH21A0018
Call Order Number: 68HERH22F0082 (14.0.0 OSRTI – Regional & Headquarters TASC/CI Support)
Technical Direction: R1 2.6.14 GE Pittsfield

Technical Assistance Services for Communities (TASC)
Comments on GE-Pittsfield/Housatonic River Site –
Sustainability and Climate Adaptation Plan,
September 2022

Introduction

This document provides TASC comments on the GE-Pittsfield/Housatonic River – Sustainability and Climate Adaptation Plan. This document is for the Berkshire Regional Planning Commission (BRPC) and municipalities to use as they develop comments to share with the U.S. Environmental Protection Agency (EPA). TASC does not make comments directly to EPA on behalf of communities. This document is funded by EPA's TASC program. The contents do not necessarily reflect the policies, actions or positions of EPA.

Pursuant to the Revised Resource Conservation and Recovery Act (RCRA) Permit Modification (Revised Final Permit) issued by EPA to the General Electric Company (GE) on December 16, 2020, for the Rest of River (ROR) portion of the GE-Pittsfield/Housatonic River site, GE is required to prepare a Sustainability and Climate Adaptation Plan that includes measures to ensure that the Corrective Measures (i.e., remediation activities) to be conducted in the ROR are designed and constructed to be resilient to potential changes due to climate change and to incorporate, where practicable and appropriate, methods to minimize greenhouse gas (GHG) emissions.

Summary

The September 2022 Sustainability and Climate Adaptation Plan (the Plan) has four sections:

- Introduction
- Climate Change Resiliency
- Greenhouse Gas Emissions Reductions
- References

The Plan describes the process for designing and constructing the remediation and restoration activities for the ROR to be resilient to potential impacts due to climate change to the extent practicable, and to minimize GHG emissions where practicable and appropriate. The Plan describes localized projections of climate change for consideration during remedial design and an assessment of potential localized effects of climate change on the ROR Remedial Action based on generally accepted climate projections for Massachusetts. It also describes specific elements of the remedy for which resiliency to the potential impacts of climate change will need to be evaluated during remedial design. The Plan also summarizes the potential sources of GHG emissions anticipated during the construction and operations associated with the ROR remedial action and measures that will be considered during remedial design and construction to minimize GHG emissions. GE will update the Plan in the future, upon notification by EPA, as relevant guidance evolves, including both federal and state guidance documents.

TASC Comments

TASC reviewed the Plan and compared it to the expectations in GE's Final Revised Rest of River Statement of Work, applicable elements of the Revised Final Permit and Attachment B to the Conditional Approval Letter for an earlier version of GE's ROR Statement of Work, which contained sustainability-related comments and references that EPA directed GE to address. The Statement of Work states that the Sustainability and Climate Adaptation Plan includes "measures to ensure that Corrective Measures are designed and constructed to be resilient to potential changes due to climate change," and "where practical and appropriate, methods to minimize greenhouse gasses."

The Plan is fairly conceptual in its approach, and says that design details and specific measures will be presented in the Conceptual and Final Remedial Design/Remedial Action (RD/RA) Work Plans for each Remediation Unit (RU). TASC provides comments below on methods to ensure the details that are forthcoming will be documented appropriately, as well as acknowledging some potential deficiencies in the document.

1. In general, the Sustainability and Climate Adaptation Plan conceptually describes measures to ensure that Corrective Measures are designed and constructed to be resilient to potential changes due to climate change and, where practical and appropriate, methods to minimize greenhouse emissions. However, it does not clearly identify or define the potential climate change impacts to specific RU performance standards and Corrective Measures relating to sediment removal, engineered caps, riverbank soil remediation, floodplain and vernal pool soil remediation, restoration of areas disturbed by remediation,

dam maintenance and inspections and the Upland Disposal Facility as they are described in the Revised Final Permit. TASC recommends that the Sustainability and Climate Adaptation Plan be revised to (at minimum) summarize the RU-specific performance standards and Corrective Measures that are potentially affected by climate change, and the potential methods by which these changes will be addressed. In addition, TASC also recommends that the climate change impact analysis for each RU be analyzed using methods described in EPA's 2019 Climate Resilience Technical Fact Sheet for contaminant sediment sites. These methods call for a vulnerability assessment. A vulnerability assessment evaluates the likelihood for climate change to impact the remedy's effectiveness. TASC recommends the results of the vulnerability assessment be included in each RD/RA work plan. The results could be summarized in a format similar to Table 1 and Figure 2 in EPA's Technical Fact Sheet. These results will highlight RU-specific remedy features that require particular attention to address potential climate change impacts.

The community may want to ask EPA if the Plan could be amended to list and evaluate in general (either yes or no) whether RU-specific performance standards and Corrective Measures will potentially be affected by climate change. In addition, the community may want to ask EPA to request a climate change sensitivity assessment requirement for the pending and future RD/RA work plans.

2. Recent documents (examples: Cultural Resources Assessment Work Plans, Water Withdrawal and Uses Plan, this Plan) have conceptually described forthcoming procedures to be incorporated (in more detail) into the RU-specific RD/RA work plans. With such a large and complex site, it is understandable that these up-front conceptual plans (such as this Plan) can only qualitatively describe anticipated approaches. It is concerning that some of the promised details to be provided in the RU-specific RD/RA work plans may be lost or discounted. For instance, the bulleted list of RD/RA work plan elements (provided on pdf pages 62-63 of the Statement of Work) does not call out climate change impacts specifically (however, there is a general bullet statement [second bullet pdf page 63] that states "an evaluation of issues that may affect the type and extent of remediation activities" is provided). It seems important to review all the previously provided plans and project documents (including this Plan) to carry over and develop a template RD/RA work plan outline for review to ensure all elements can be easily accounted for.

   The community may want to ask EPA if a draft example RD/RA work plan outline could be developed and reviewed by the community that captures elements only conceptually discussed in this Plan and others.

3. Climate changes to the ROR portion of the GE-Pittsfield/Housatonic River site could include more frequent higher precipitation events, flooding and severe storms. These conditions could create persistently higher flow rates within the Housatonic River channel. The following flow and flood changes from climate change were summarized in the Plan (pdf page 12):

- The Housatonic River Basin is expected to rise from the 1971 to 2000 year average (47.4 inches) by approximately 1.1 to 6.4 inches by the middle of the 21st century and by approximately 1.6 to 7.7 inches by the end of the century.
- The 100-year flood event has been estimated to now occur every 60 years on average; by 2050, 100-year flood events are projected to occur every 10-20 years.

It is important to determine how these increased flow and flood conditions will affect the footprint of performance standards that are defined by media such as riverbed sediments, river bank soils and upland soils. It is possible that future water-saturated river bank soils may become riverbed sediments. In addition, flooded upland soils could transition into river bank soils. In addition, increased flow rates will affect the channel pathway, which could move the channel's pathway within the flood plain. As part of the forthcoming RU-specific RD/RA work plans, it seems important to evaluate the future anticipated flow rates and possible influence to performance standard defined media (of riverbed sediments, bank soils, upland soils and vernal pools). These future work plans should provide a conservative range of estimates of the amount of these materials since the performance standards vary by type.

The community may want to ask EPA if the future RU-specific RD/RA work plans could encompass estimates of potential media changes attributable to the increased flows and flooding conditions resulting from climate change.

4. Section 2.1 of the Sustainability and Climate Adaptation Plan summarizes climate projections and available resources that provide an indication of climate changes anticipated for the ROR area. The Plan recognizes that the frequency of flooding will increase as a result of climate change, but does not mention if the actual floodplain map changes have been considered. It is important to consider whether the future 100-year and 500-year flood event projections are expected to differ from the historical and current 100-year and 500-year flood events. As per the EPA's 2019 Climate Resilience Technical Fact Sheet, FEMA develops updated floodplain maps that should be accessed and reviewed as part of the RU-specific RD/RA work plan development process (FEMA Flood Map Service Center, https://msc.fema.gov/portal/home).

   The community may want to ask EPA if the ROR floodplain maps will be updated to capture future potential changes attributable to climate change impacts.

5. Some climate models find that warming increases precipitation variability, meaning there will be more periods of both extreme precipitation and drought. This creates the need for expanded water storage for water users during drought years and increased risk of flooding and dam failure during periods of extreme precipitation. As defined in the Revised Final Permit, and acknowledged in the Plan, the ROR remedy efforts will be designed to achieve "no net loss of flood storage capacity and no increase in water surface elevation" (pdf page 14, first full paragraph). The Plan states that the forthcoming work plans will acknowledge future water flows and levels due to extreme flow or drought events brought on by climate change; however, it is not clear if these conditions will be quantitatively addressed and thoroughly incorporated into the RU-specific

designs. It seems important to acknowledge (perhaps model) anticipated climate change flood events to understand the ROR flood-carrying capacity requirements for climate change conditions. It appears the Plan anticipates that future RD/RA work plans will be prepared based on the most current flood capacity conditions measured within a close timeframe to RD/RA work plan development. TASC recommends also estimating remedy designs based on climate change flood capacity conditions. The results would help determine if the ROR site setting can mitigate flood disasters with the use of existing natural water system storage capacity or if additional consideration to amend floodplain storage is necessary (refer to comparable study methods described in Zhang et al., 2019).

The community may want to ask EPA if climate change flood capacity conditions could be evaluated to determine if the existing flood capacity is sufficient to contain and store anticipated water capacity impacts from climate change.

6. EPA's 2019 Climate Resilience Technical Fact Sheet: Contaminated Sediment Sites was acknowledged as a referenced resource for the Plan; however, certain recommended elements from the EPA reference were not addressed in the Plan. These include the evaluation of the influence of climate change to "site operations and infrastructure" such as connections to municipal utilities and access to site features for routine monitoring and maintenance.

   The community may want to ask EPA if the Plan should be revised to include an assessment of climate change impacts to site operations and infrastructure.

7. The Sustainability and Climate Adaptation Plan is lacking detail regarding the sources of information to be used to estimate precipitation, flow and flood conditions to be evaluated as part of the upcoming RD/RA work plans. There are flow and velocity data available from existing U.S. Geological Survey gauges located in Coltsville, Great Barrington and Ashley Falls that would provide reliable, regionally relevant data. In addition, precipitation data sets offered by the Northeast Regional Climate Center (NRCC) should be accessed to obtain the latest extreme precipitation data.

   The community may want to ask EPA if the forthcoming RD/RA work plans should acknowledge and review these additional hydrological data resources as part of the work plan development.

8. Section 3 of the Sustainability and Climate Adaptation Plan describes the proposed approaches to address greenhouse gas emissions. This section does not address the potential greenhouse gas emissions produced from the Upland Disposal Facility, which will contain disposed sediments and soils. Literature sources indicate that the anaerobic degradation of sediment organic matter leads to considerable gas production in landfills where contaminated sediments are disposed of; however, little is known about the magnitude of gas generation from dredged sediment (refer to Gebert et al., 2019; and Gebert and Knoblauch, 2017).

The community may want to ask EPA if the possible gas production from the UDF landfilled sediments and soils should be included as part of the greenhouse gas emission evaluation.

9. Section 3 only vaguely discusses greenhouse gas emission reduction practices by describing measures that could reduce direct greenhouse gas emissions from vehicles and heavy-duty equipment. TASC recommends that the Plan acknowledge and reference how future activities will meet the Commonwealth's more stringent medium- and heavy-duty vehicle requirements (Low Emission Vehicle Program, 310 CMR 7.40).

   The community may want to ask EPA if forthcoming work plans describing RD/RA efforts should acknowledge and include Massachusetts's greenhouse gas reduction practices as identified in 310 CMR 7.40.

10. The Sustainability and Climate Adaptation Plan states "backfill material will not be designed to be resistant to erosive forces from extreme storm and flow events. Instead, over the long term, the backfill material is expected to serve a similar role as existing sediment within the river system, given that sediment transport is a natural function of river systems" (pdf page 14, second paragraph). This approach does not consider the potential climate change impacts of:
    - increased sediment load attributable to both flooding of impervious surfaces (causing carriage of soils into receiving drainage systems) and increased flooding that can scour upland soils that will create additional sediment, and
    - additional resuspended sediments within the channel itself from an increase in flood frequency.

    As a result of these climate change increases in sedimentation, it seems important to consider the need to rely on backfill materials with additional erosion resistance.

    The community may want to ask EPA if the identification of suitable backfill materials should be based on the possible climate change impacts.

11. The Sustainability and Climate Adaptation Plan acknowledges that drought may also be an impact related to climate change. Local habitats such as the vernal pools may be affected. The ROR cleanup planning process is at a unique stage to be able to foresee and potentially design remedy efforts to circumvent pending concerns such as climate change impacts on vernal pools. It may be useful to review RU-specific RD/RA work plans to consider stormwater controls that could route surface water to vernal pools potentially impacted by drought. Similar habitats such as Core Area wetlands may also benefit from these future stormwater management strategies.

    The community may want to ask EPA if future RU-specific RD/RA efforts could consider evaluating the management of stormwater as a resource to safeguard sensitive habitats such as vernal pools and wetlands.

References Cited

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