External Comments on GE's Pre-Design Investigation Work Plan for the Upland Disposal Facility dated November 24, 2021

U.S. Environmental Protection Agency, Region 1

GE-Pittsfield/Housatonic River Site

Rest of River

HOUSATONIC REST OF RIVER MUNICIPAL COMMITTEE

January 20, 2022

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

Re: Comments on the *Pre-Design Investigation Work Plan for the Upland Disposal Facility*

Dear Mr. Tagliaferro:

The Housatonic Rest of River Municipal Committee (the Committee) respectfully submits the following comments on the *Pre-Design Investigation Work Plan for the Upland Disposal Facility* (hereafter referred to as the Work Plan). We recognize that this Work Plan comes early in the process and there are several more documents that will require review. The attached comments are specifically related to the Work Plan and are not all inclusive. The Committee intends to submit comments throughout the process. According to the Statement of Work, the next deliverables for the UDF area will include the following.

- PDI Summary Report
- Conceptual Design Plan for the UDF
- Final Design Plan for the UDF
- O&M Plan for the UDF
- Supplemental Information Plan for UDF
- Final Cover/Closure Plan for the UDF

The Work Plan describes baseline field strategies to address habitat surveys, cultural resources, groundwater and certain geotechnical characteristics. If this Work Plan is to capture all "baseline" media and conditions to be affected by the proposed work, there are several media/parameter types that require inclusion. More baseline monitoring of air, geologic hazards, extreme groundwater levels, archeological features, and migratory species would be important to include in the proposed baseline monitoring.

In addition, it should also be made clear whether the proposed Baseline Assessment includes only the UDF footprint, both the UDF and UDF Support areas, or the entire GE parcel. As proposed, there are large gaps in the downgradient monitoring well network, and spatial gaps in the soil geotechnical data collection. Additional monitoring is needed to determine the groundwater flow pathway. The method

used for estimating groundwater elevation projections is unclear, and the proposed groundwater elevation monitoring program is not adequate to support the assessment of the potential seasonally high groundwater conditions in the UDF area.

The Committee's comments on the *Pre-Design Investigation Work Plan for the Upland Disposal Facility* are enclosed as Attachment A.

Sincerely,

The Housatonic Rest of River Municipal Committee

Enclosure: Attachment A - Housatonic Rest of River Municipal Committee Comments on GE's Pre-Design Investigation Work Plan for the Upland Disposal Facility

Enclosure: Attachment B - Technical Assistance Services for Communities Comments, December 14, 2021

ATTACHMENT A
HOUSATONIC REST OF RIVER MUNICIPAL COMMITTEE
Comments on GE's *Pre-Design Investigation Work Plan for the Upland Disposal Facility*
GE/Housatonic River - Rest of River

The *GE-Pittsfield/Housatonic River Site, Rest of River, Final Revised Rest of River Statement of Work* (SOW) provides a conceptual map of the UDF in Figure 2 "Potential Transport Routes for Reach 5C/Woods Pond Sediment to Upland Disposal Facility". This conceptual map identifies an "Approximate Limit of Hydraulic Dredging Staging Area". Management of hydraulic dredged materials will require monitoring since this process manages semi-fluid media to be disposed in the UDF. Since the location of this Hydraulic Dredging Staging Area is known, it is important to develop a groundwater monitoring program within the UDF PDI Work Plan that captures this area. EPA should require the inclusion of all necessary monitoring to address the Hydraulic Dredging Staging Area as outlined in the SOW (at a minimum, a monitoring well above gradient (to the East) and down gradient (to the West) should be installed). Piezometer wells and soil testing necessary for the engineering design of the facility also need to be gathered.

In addition, baseline air quality monitoring is notably absent within the PDI. The PDI should include measures to document the meteorological microclimate at the site. Although prevailing winds in the region tend to be west to east, this site is at the foot of the October Mountain range, which may create a site-specific or unusual wind flow during changing weather patterns and storm events. Understanding wind movement patterns at the site should be used to inform design of the UDF and identify potential mitigation measures that may be needed to contain airborne particulate matter that may be created during construction of the UDF and subsequent deposition of contaminated materials. For example, it may be necessary to install berms, vegetation, fencing or other measures to protect populations and/or properties in the area from particulates movement.

The Rest of River Committee highlights the following Sections:

1. Section 3 (pp 5-8) – The Work Plan should include a summary of existing information such as the groundwater quality (and levels), and any available gravel mine operation information that would be useful for the design of the UDF.

2. Section 3.2.2 (pp 5-6) – The Work Plan provides a thorough description of proposed habitat surveys. However, it lacks any mention of nest inventory, which is typically a component of pre-construction surveys to determine if construction efforts need to be timed outside of nesting periods. Bird nest inventories should be included in the baseline habitat assessment.

3. Section 3.2.6 (p 7) – The mine pits occur to the northwest of the UDF and may present a hydrologic "sink" that draws groundwater movement. These pits may present an opportunity to sample pit water that likely represents groundwater. As stated in the Work

Plan, "because of the granular nature of the site soils, the pond water surface elevations are likely coincident with groundwater." EPA should consider whether sampling of the gravel mine pit water would be useful as a monitoring tool for assessing the UDF's effectiveness.

The Work Plan should describe the method that will be used for estimating groundwater elevation projections. The Work Plan states that the existing Schweitzer-Mauduit and Lee Municipal Landfill monitoring wells will be used to collect groundwater elevation data. EPA should clearly address within its Conditional Approval Letter whether it is appropriate to include the landfill groundwater wells as part of the planned UDF monitoring.

4. Section 3.2.6 (p 8) – Based on the Work Plan, it appears there is sufficient information to estimate the potential footprint of the Upland Disposal Facility (UDF), including the location of the support area(s). It may be beneficial to derive a "first draft" conceptual model of the UDF footprint prior to collection of the baseline monitoring plan. For instance, the placement and features of the conceptual UDF would better enable an appropriate suite of groundwater monitoring approaches (e.g., installation of paired wells inside and outside of UDF footprint and support areas to monitor any transport of contamination, installation of wells to identify any impacts from planned elutriate control/recycling, installation of wells to identify any flooding releases). At a minimum, there should be a commitment from GE to perform baseline soil and groundwater testing at the UDF Support Areas once the plans for these areas are better understood.

5. Section 5.2.1 (p 11) – The text states that aquatic resources "excluding the man-made ponded areas" will be subject to field verification using current federal wetland delineation criteria. These ponds may have acquired wetland values that are protected under the Clean Water Act, Section 404 program and the Massachusetts Wetlands Protection Act and should receive equitable consideration during the proposed baseline habitat surveys.

6. Section 5.2.2 (pp 11-12) – The text states that the new topographic survey will likely consist of a traditional field survey, an aerial survey using Light Detection and Ranging (LiDAR), or a combination of these methods. A combination of the field survey methods should be applied for the development of topographic maps to acquire the most accurate estimates for volumes and areas of material management.

   Figure 2 outlines "bathymetric survey areas" associated with each mine pit on the GE Parcel. These ponds are "contiguous waters" that overlap into the adjacent quarry. EPA should take the plans for the mine pits into consideration (e.g., if they will be filled in) and whether it is appropriate to collect a complete bathymetric survey of the ponds that overlap the GE Parcel and the quarry to get an accurate estimate of dredged and filled materials.

7. Section 5.2.3 (pp 12-13) – According to the Work Plan, soil geotechnical data will be gathered from 18 locations. However, there are spatial gaps in the north part of the

disposal facility area (between and to the north of B 2022-3 and PZ 2022-2), the west edge of the disposal facility area (west of PZ 2022-4, B-3, and B-5) and the southern part of the disposal facility area (south of PZ 2022-6 and B-4) of the outlined UDF footprint (refer to Figure 4). The proposed geotechnical data collection plan does not appear to be sufficient, and more sites in the northwest and west edge should be sampled due to the disturbed nature of this area due to historical mining activities. The proposed sampling in the area to the south seems spatially limited, with only one piezometer location planned.

It appears there is sufficient information to estimate the potential footprint of the Upland Disposal Facility (UDF), including the location of the support area(s). A conceptual model of the UDF footprint would enable strategic sampling of soil profile information necessary for the design of the final UDF. For example, if an area to be excavated has native materials that will be removed, it would be unnecessary to sample these removed materials for geotechnical parameters required for landfill construction. It would be more useful and cost effective to focus geotechnical boring efforts to depths below the excavated depth. In addition, the excavated materials will serve as a future cap, or serve other UDF-related purposes. Therefore, the suite of geotechnical parameters of interest for these excavated materials (soil content and type, organic carbon content) may be different from the parameters to test materials underlying the UDF (parameters to test structural integrity).

8. Section 5.2.4 (pp 14-15) – The first sentence is confusing and does not appear consistent with the third sentence or Figure 4. It appears to suggest that only 7 borings (6 permanent monitoring well locations and 1 temporary piezometer location interior to the UDF footprint) will be tested. EPA should require GE to describe the rationale for the selection of the soil sampling intervals.

9. Section 5.2.5 (pp 15-16) – The difference between monitoring wells and piezometers is unclear other than the diameter of the well material and that the piezometers are anticipated to be destroyed during the construction of the UDF. In addition, it is unclear how soil sampling will be performed at the piezometer locations that are not targeted for soil quality testing.

   EPA should require drilling at least three of the proposed monitoring well or piezometer locations to the target elevation of at least 910 feet to verify the presence of absence of any lithologic variability or potential confining or restrictive layers that may affect groundwater flow within the UDF area.

   The installation of nested monitoring wells or piezometers to verify the vertical component of groundwater flow in the UDF area would seem to be necessary to support assessing the adequacy of the proposed monitoring network for long-term groundwater quality monitoring. For example, there is concern that any potential future release from the

eastern portion of the UDF could flow under the proposed shallow/water table monitoring wells on the western side of the UDF if there is a downward flow component.

10. Section 5.2.5 and Figure 5 (pp 15-16) – There are large gaps in the downgradient monitoring well network between proposed monitoring wells MW 2022-4, MW 2022-5 and MW 2022-6. This poses a concern since this is the most likely downgradient groundwater flow direction from the UDF. Some options are suggested below.

    - One or two additional monitoring wells could be installed along the western and southwestern boundary of the UDF to address large gaps in the monitoring network in the likely downgradient flow direction (W/SW).
    - Consider shifting proposed monitoring well MW-2022-6 to the west to better capture potential flow from the UDF area to the southwest towards the Housatonic River, taking into consideration the direction of river flow and extent of the UDF area, however this does not address the gap between monitoring wells MW 2022-4 and MW 2022-5.

    There should be a contingency for the installation of additional monitoring wells based on the outcome of the PDI.

11. Section 5.2.5.2 (p 15) – The proposed permanent groundwater monitoring well installation locations (shown in Figure 6) are based on the assumed groundwater pathway from east to west. However, in the interest of planning a spatially complete sampling strategy, it would be prudent to plan on an additional monitoring well to the east until the groundwater flow pathway is more completely understood, and also to provide more substantial characterization of background conditions.

12. Section 5.2.6 (p 16) – The proposed groundwater elevation monitoring program is not adequate to support the assessment of the potential seasonally high groundwater conditions in the UDF area and can be easily modified to address this important consideration. Given the extreme variability in precipitation events and resultant groundwater recharge as a result of ongoing climate change, the four proposed manual water level measurements very likely will not be representative of the seasonal range of groundwater elevations in the UDF area.

    This program can be augmented for little to no additional cost or effort to provide significantly more certainty that the groundwater elevation data to be collected will be more representative of their seasonal and climatic variability. It is recommended that electronic dataloggers be installed in four of the proposed monitoring wells (MW-2022-1, MW-2022-2, MW-2022-4 and MW-2022-6) and allowed to collect at least daily readings for the proposed year-long (at a minimum) monitoring period. Given the importance of the minimum 15-foot separation between estimated high groundwater and the bottom of the

UDF to the Committee (and the Towns), this additional effort would be very beneficial and provide very useful site specific data.

13. Section 5.2.7 (p 16) – EPA should consider requiring the analysis of groundwater samples for PFAS to establish background conditions.

14. Section 5.2.8 (pp 16-18) – EPA should require GE to work with the Tribal Historic Preservation Manager and have a tribal specialist walk the land, including potential support areas down to Woods Pond.

15. Section 6.1 (p 20) – The Work Plan should clarify whether the results of the soil and groundwater analytical laboratory testing will be compared to any state or federal standards or risk-based thresholds to support their evaluations of existing soil and groundwater quality within the UDF area.

16. Table 1 – Adding a column for Minimum Bottom Boring Elevation (ft, NGVD 29) would be helpful in understanding the target elevations for the completion of the various borings relative to other elevations noted in the work plan.

17. Tables 2 and 3 – It is unclear why piezometers and monitoring wells are proposed to be installed with well screens straddling the water table as shown in these tables. GE should clarify whether this is necessary for the monitoring of groundwater elevations.

Technical Assistance Services *for* Communities
Comments on GE-Pittsfield/Housatonic River Site Pre-Design Investigation Work Plan for Upland Disposal Facility December 14, 2021

Contract No.: EP-W-13-015
Task Order No.: 68HE0S18F0209: OSRTI – Multi Regions & Headquarters Support
Technical Directive No.: R1 2.4.3 GE Pittsfield

Technical Assistance Services for Communities (TASC)
Comments on GE-Pittsfield/Housatonic River Site
Pre-Design Investigation Work Plan for
Upland Disposal Facility, November 2021

Introduction

This document provides TASC comments on the GE-Pittsfield/Housatonic River Site Pre-Design Investigation Work Plan for Upland Disposal Facility (UDF PDI Work Plan). This document is for the city of Pittsfield, the Berkshire Regional Planning Commission (BRPC) and municipalities to use as they develop comments to share with EPA. TASC does not make comments directly to EPA on behalf of communities. This document is funded by the U.S. Environmental Protection Agency's (EPA's) Technical Assistance Services for Communities (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 portion of the GE-Pittsfield/Housatonic River site, GE is required to prepare pre-design investigation work plans for the collection of pre-design data to be used to support the remedial activities in the Rest of River. This UDF PDI Work Plan includes descriptions for conducting desktop, field, and laboratory-based activities necessary to acquire information for design of the UDF component of the Rest of River Remedial Action. The UDF will be used for disposal of sediments and soils generated as part of the Rest of River Remedial Action, and disposal only of those sediments and soils that meet certain acceptance criteria specified in Attachment E to the Revised Permit.

Summary

The November 2021 UDF PDI Work Plan has eight sections:

- Introduction
- Performance Standards for UDF
- Site Background and Historical Site Data Summary
- Preliminary Conceptual Design Summary
- Pre-Design Investigation
- Data Evaluation and PDI Reporting
- Schedule
- References

The UDF will be constructed on a 75-acre property that was once part of a sand and gravel quarry. GE acquired the property from The Land Corporation in April 2021. The consolidation area (the waste containing portion) will:

- Have a maximum footprint of 20 acres and capacity of 1.3 million cubic yards.
- Include a double bottom liner, separated by a drainage layer, and incorporate primary and secondary leachate collection systems.
- Cover the consolidation area with a low-permeability cap, including liners, drainage layers and vegetation.
- Include a stormwater management system and groundwater monitoring network.
- GE must identify any current non-community and private water supply wells within 500 feet of the UDF consolidation area. If any wells are identified, GE must pay for the installation costs to connect those users to a public water supply (unless they do not consent). If such a well owner consents at a later date or any new water users are identified within 500 feet of the UDF consolidation area, GE must pay for the installation cost of a connection to a public water supply.

The PDI data collection will start after EPA's approval of the UDF PDI Work Plan. The majority of the field work is weather dependent and cannot start until the onset of warmer weather and melting of snow and ice that may otherwise prevent site entry, obscure the ground surface and prevent direct observation of growing season conditions.

PDI data collection is anticipated to take about 15 months from approval of the UDF PDI Work Plan. At that time, the second year of the two-year semi-annual groundwater quality monitoring program will not have been completed. Within 60 days after receipt of the results from the last groundwater monitoring event, GE will submit an Addendum to the UDF PDI Summary Report to document the results from the second year of groundwater testing.

TASC Comments

The TASC review indicates that the UDF PDI Work Plan provides a fairly thorough proposed investigation plan to prepare for the UDF. TASC comments below focus on potential additional sampling needs to characterize the groundwater and soils comprehensively on the parcel where the UDF will be located.

1. The 2020 GE Revised Final Permit outlines specific performance standards pertinent to the UDF design. Based on the UDF PDI Work Plan, it appears there is sufficient information to estimate the potential footprint of the UDF, including the location of the support area(s). It may be beneficial to derive a "first draft" conceptual model of the UDF footprint prior to collection of the baseline monitoring plan. For instance, the placement and features of the conceptual UDF would better enable an appropriate suite of groundwater monitoring approaches (e.g., installation of paired wells inside and outside of UDF footprint and support areas to monitor any transport of contamination, installation of wells to identify any impacts from planned elutriate control/recycling, installation of wells to identify any flooding releases).

   In addition, a conceptual model of the UDF footprint would enable strategic sampling of soil profile information necessary for the design of the final UDF. For example, if an area to be excavated has native materials that will be removed, it would be unnecessary to sample these removed materials for geotechnical parameters required for landfill construction. It would be more useful and cost effective to focus geotechnical boring efforts to depths below the excavated depth. In addition, the excavated materials will serve as a future cap, or serve other UDF-related purposes. Therefore, the suite of geotechnical parameters of interest for these excavated materials (soil content and type, organic carbon content) may be different from the parameters to test materials underlying the UDF (parameters to test structural integrity).

   The community may want to ask EPA if there is sufficient information available for development of a draft conceptual model of the UPF to maximize the effectiveness of the design of the proposed groundwater and geotechnical baseline investigation.

2. The UDF PDI Work Plan describes baseline field strategies to address habitat surveys, cultural resources, groundwater and certain geotechnical characteristics. If this Work Plan is to capture all "baseline" media and conditions to be affected by the proposed work, there are several media/parameter types that require inclusion:

   a. Baseline air monitoring of prevailing wind directions to determine possible waste (as dust) transport and exposure to downgradient human and ecological receptors. Baseline air monitoring of wind patterns in and around the UDF will assist in determining if the waste management practices will create possible exposure and risk to downgradient human and ecological receptors. An inventory of prevailing wind patterns year-round needs to be a component of baseline monitoring.
   b. Background geotechnical data collection to characterize geologic hazards (based on the Washington State Department of Transportation's Geotechnical Design

Manual[1]). The possible impact of geologic hazards is a component of the eventual UDF design. Geotechnical parameters typically gathered for a geologic hazard evaluation include grain size distribution, Atterberg Limits, specific gravity, organic content, moisture content, unit weight, soil shear strength tests (static and cyclic), and post-cyclic volumetric strain.

c. Modeled elevated groundwater levels that predict possible groundwater flooding conditions attributable to future climate change concerns. Groundwater elevations are the most important site characterization that will define the UDF design. To capture all possible groundwater elevation conditions adequately, taking groundwater level measurements as often as possible, during all seasons of the year, is recommended. In addition, given the fact that the area is likely to see increased groundwater levels from climate changes, it would be important to model the "worst-case" groundwater elevations to ensure the UDF design addresses these conditions.
d. Baseline migratory bird, waterfowl, and threatened and endangered species that may rely on possible attractive nuisance features of the UDF. Once wastes are transported into the UDF, it is possible that water from the sediments will separate and create a surface layer in the disposal area. This ponded water could act as an attractive habitat to migratory species. It is important to understand the species living in the area as well as migrating through it to plan for the management and control of possible future exposures.

The community may want to ask EPA if more baseline monitoring of air, geologic hazards, extreme groundwater levels and migratory species would be important to include in the proposed baseline monitoring.

3. The GE Final Permit (Section 5(2)(d), page 55) states the seasonally high groundwater elevation will be projected using site-specific groundwater elevation data collected in the location of the UDF, modified by an appropriate technical method that takes into account historical groundwater level fluctuations at similarly sited off-site long-term monitoring wells in Massachusetts. The estimation will be performed pursuant to a methodology reviewed and approved by EPA. Since the work plans for all proposed Rest of River work typically describe the methods of data interpretation, the UDF PDI Work Plan should describe the method that will be used for estimating groundwater elevation projections.

The community may want to ask if EPA will be provided with the groundwater elevation projection data interpretation method as part of the document deliverable.

4. The GE Statement of Work (SOW) outlines the basic requirements for documentation of this Work Plan. As per the SOW, a "description of pertinent site background, and a summary of information currently available to support design activities" is to be provided in this document (Section 4.2.2, PDI Plan and Report for Upland Disposal Facility, Subsection 4.2.2.1, first and third bullets). The Work Plan describes some of the area groundwater well location information but does not present any of the groundwater

[1] Skeo referenced this manual because it contains a full list of soil parameters used for geologic hazard evaluation.

quality results since the information "is relatively outdated" (Section 3.2.7, Groundwater Quality, first paragraph). Regardless of the dates for this information, describing baseline conditions remains beneficial. In addition, review of the adjacent gravel mine operation reclamation permit, which may provide useful information regarding the mined pit areas, volumes and water quality, is recommended.

The community may want to ask EPA if the UDF PDI Work Plan should include a summary of existing information such as the groundwater quality (and levels), and any available gravel mine operation information that would be useful for the design of the UDF.

5. The GE Parcel was "formerly part of an active sand and gravel quarry." The quarry area includes several open pits that appear to contain water, as shown in the aerial imagery in the Work Plan. The close proximity of the GE Parcel to the quarry raises two concerns:

   - If the quarry is temporarily closed and becomes active and will continue to manage mined materials (removal and storage) and water storage in the future, it is unclear if these practices will conflict with the UDF, or affect the groundwater flow pathway.
   - If the quarry has ceased operation and requires reclamation, it is unclear how reclamation efforts, including pit closure, may alter groundwater flow pathways.

   The community may want to ask EPA if due diligence regarding the former quarry operations and potential future plans has been done to ensure the compatibility of the property uses.

6. The document states clearly that the UDF support area has yet to be designed and that the UDF support area requirements and related facilities are not known at this time. The UDF support area may include sediment dewatering and material handling areas that can yield liquid wastes of potential concern. In addition, the UDF area would likely include hydraulic transport features associated with the wet sediments removed from the river.

The community may want to ask EPA if the community can review future documents related to the investigations for the UDF support area. The community may also want to ask EPA if it would be prudent to include proactively lining parts of the UDF support area in the design of the UDF support area to capture spilled materials in this work area.

7. A standard component of baseline ecological surveys is an assessment of migratory bird habitat and nests. This document provides a thorough description of proposed habitat surveys. However, it lacks any mention of nest inventory. In addition, the survey of nest sites is typically a component of pre-construction surveys to determine if construction efforts need to be timed outside of nesting periods.

The community may want to ask EPA if requesting bird nest inventories is a required element of the baseline habitat assessment.

8. The text states that aquatic resources "excluding the man-made ponded areas" will be subject to field verification using current federal wetland delineation criteria (Section 5.2.1, Baseline Habitat Assessment, third bullet). If these ponds are historic, they may have acquired wetland values that are protected under the Clean Water Act, Section 404 program.

   The community may want to ask EPA if the ponds should receive equitable consideration during the proposed baseline habitat surveys.

9. The text states that the new topographic survey will likely consist of a traditional field survey, an aerial survey using Light Detection and Ranging (LiDAR), or a combination of these methods.

   The community may want to ask if a combination of the field survey methods can be applied for the development of topographic maps to acquire the most accurate estimates for volumes and areas of material management.

10. The proposed permanent groundwater monitoring well installation locations (shown in Figure 6) are based on the assumed groundwater pathway from east to west. This assumption was based on existing area well information (landfill wells to the south). This assumption also fits the hydrodynamic groundwater flow path that would be expected to move to the west, toward the Housatonic River and the gravel mine pits. However, in the interest of planning a spatially complete sampling strategy, it may be prudent to plan on an additional monitoring well to the east until the groundwater flow pathway is more completely understood, and also to provide more substantial characterization of background conditions.

    The community may want to ask EPA if an additional groundwater monitoring well to the east would be useful for long-term monitoring of background water quality conditions as well as the groundwater flow pathway.

11. The completeness of the sampling strategies in the Work Plan was reviewed. Two potential spatial gaps and sampling recommendations were identified:

    - Soil geotechnical data will be gathered from 18 locations. However, there are spatial gaps in the north part of the disposal facility area (between and to the north of B 2022-3 and PZ 2022-2), the west edge of the disposal facility area (west of PZ 2022-4, B-3, and B-5) and the southern part of the disposal facility area (south of PZ 2022-6 and B-4) of the outlined UDF footprint (refer to Figure 4). It may be useful to sample more sites in the northwest and west edge due to the disturbed nature of this area due to historical mining activities. The proposed sampling in the area to the south seems spatially limited, with only one piezometer location planned.

      The community may want to ask EPA if the proposed geotechnical data collection plan is sufficient, or if there are gaps in the northeast, the east edge and south of the proposed UDF area.

- Section 3.2.5 (Groundwater Elevations) of the PDI UDF Work Plan states that the existing Schweitzer-Mauduit and Lee Municipal Landfill monitoring wells will be used to collect groundwater elevation data.

The community may want to ask EPA if it is appropriate to include the landfill groundwater wells as part of the planned UDF monitoring.

12. The mine pits occur to the northwest of the UDF and may present a hydrologic "sink" that draws groundwater movement. These pits may present an opportunity to sample pit water that likely represents groundwater. As stated in the Work Plan (Section 3.2.6, Groundwater Elevations, first paragraph, fifth sentence), "because of the granular nature of the site soils, the pond water surface elevations are likely coincident with groundwater."

The community may want to ask EPA if sampling of the gravel mine pit water would be useful as a monitoring tool for assessing the UDF's effectiveness.

13. Figure 2 outlines "bathymetric survey areas" associated with each mine pit on the GE Parcel. These ponds are "contiguous waters" that overlap into the adjacent quarry.

The community may want to ask EPA about the plans for the mine pits (e.g., if they will be filled in) and whether it is appropriate to collect a complete bathymetric survey of the ponds that overlap the GE Parcel and the quarry to get an accurate estimate of dredged and filled materials.

Resources

State of Washington, Department of Transportation: Geotechnical Design Manual. https://wsdot.wa.gov/engineering-standards/all-manuals-and-standards/manuals/geotechnical-design-manual (Chapter 6.: Seismic Design Guidelines. Guidelines: https://www.wsdot.wa.gov/publications/manuals/fulltext/M46-03/Chapter6.pdf).

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Transmitted via Electronic Mail – Sent on January 19, 2022

To: Richard Fisher, USEPA (Fisher.Richard@epa.gov)

From: John Ziegler, MassDEP (John.Ziegler@mass.gov)

Ec: Dean Tagliaferro (USEPA), Benjamin Guidi (MassDEP), Kimberly Longridge (MassDEP), Elizabeth Stinehart (MassDEP)

Subject: MassDEP comments on Pre-Design Investigation Work Plan for Upland Disposal Facility, GE-Pittsfield/Housatonic River Site, GECD850 Rest of River

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The Massachusetts Department of Environmental Protection appreciates the opportunity to comment and offers the following comments for consideration on the *Pre-Design Investigation Work Plan for Upland Disposal Facility, GE-Pittsfield/Housatonic River Site, GECD850 Rest of River*, submitted by General Electric Company to the U.S. Environmental Protection Agency on November 24, 2021. Please direct any questions to Benjamin Guidi at 857-383-7476 or Benjamin.Guidi@mass.gov, John Ziegler at 617-874-6733 or John.Ziegler@mass.gov, or Elizabeth Stinehart at 413-265-7022 or Elizabeth.Stinehart@mass.gov.

1. Section 3.2.2
   - *The Work Plan indicates that the UDF area and vicinity includes a seasonally flooded area off Woodland Road and "…a number of man-made or modified permanently flooded areas, which are associated with the prior quarry operations."*
     - *GE must gather necessary information for determination of whether these areas constitute jurisdictional resource areas subject to the Massachusetts Wetlands Protection Act (MGL c.131, Section 40 and 310 CMR 10.00), including but not limited to; Riverfront Area, Land Under Wetlands and Waterways, Bordering Vegetated Wetlands and Bordering Land Subject to Flooding. Information requirements to make such determination, include, but are not limited to, those requirements found in MassDEP's Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act, A Handbook, March 1995 and FEMA Flood Surveys. For those areas determined to be jurisdictional resource areas under the Massachusetts Wetlands Protection Act, GE must collect the necessary data to support mitigation for any loss of such jurisdictional resource areas resulting from construction of the UDF.*

2. Section 3.2.6
   - *In fall 2019, a preliminary investigation was conducted at the GE Parcel to evaluate subsurface conditions. This investigation included geoprobes in the locations depicted on Figure 5 (discussed in Section 5.2.5). From this effort, groundwater was encountered between elevation 947 ft and 949 ft relative to National Geodetic Vertical Datum of 1929 (NGVD 29).*
     - If GE is referring to this 2019 preliminary investigation and the data as part of its rationale for well construction plans, should it be included as a reference to the work plan?
   - *The report indicates that groundwater elevations in two wells (MW-84-1 and MW-94-1) along the eastern edge of the Lee Municipal Landfill (also approximately in line with the eastern edge*

of the GE Parcel) ranged from 955.40 ft to 959.91 ft (NGVD 29), depending on the well and gauging date.

- Is the Lee Municipal Landfill groundwater elevation change greater within a typical year than year-to-year for a particular season? If the year-to-year variation is greater, how will the high groundwater elevation be conservatively estimated based on one year of gauging data?

3. Section 5.2.1
   - *An evaluation will be conducted as to the presence of vernal pools at the GE Parcel through on-line aerial photography review and MNHESP database review confirmed via field verifications.*
     - How will the timeline of any required field verifications fit into overall schedule? This has been an iterative process in Reach 5A PVPs, taking several years at some locations.

4. Section 5.2.5
   - *The proposed soil borings are described in Section 5.3.3.1, and the specific borings to be used for piezometers (identified with a prefix of "PZ") and monitoring wells (identified with a prefix of "MW") are presented on Figure 5. Collectively, both types of features will provide groundwater data that will be used in the design of the UDF. The permanent monitoring wells may also be used for long-term monitoring of site groundwater during construction, operation, and post-closure of the UDF.*
     - The proposed number of wells may be adequate for pre-construction site characterization, but a more robust monitoring network should be installed for construction, operation, and post-closure phases.
     - Will piezometers be secure and durable enough for a full year?

5. Section 5.2.6
   - *Once installed, both the temporary piezometers and monitoring wells will be gauged on a quarterly basis for a minimum of one year (a total of four events minimum) to provide a seasonal range of groundwater elevations.*
     - Justify that a quarterly monitoring schedule will provide sufficient data for UDF design.

BERKSHIRE ENVIRONMENTAL ACTION TEAM
20 Chapel St. Pittsfield, MA 01201 ● thebeatnews.org
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Protecting the environment for wildlife in support of the natural world that sustains us all.

January 21st, 2022

Mr. Dean Tagliaferro
EPA Project Coordinator
U.S. Environmental Protection Agency
10 Lyman Street, Suite 2
Pittsfield, MA 01201

Submitted via email to: R1Housatonic@epa.gov

Re: GE-Pittsfield/Housatonic River Site, Rest of River (GECD850)
Pre-Design Investigation Work Plan for Upland Disposal Facility

Dear Dean Tagliaferro,

Please accept the following comments from the Berkshire Environmental Action Team, Inc. (BEAT). BEAT's mission is to protect the environment for wildlife in support of the natural world that sustains us all.

Consultation with indiginous tribes
We request that, as part of the pre-design investigation for the potential upland disposal facility support area (as well as rest of river), EPA should consult with members of the Stockbridge-Munsee Historical Preservation Office, Wampanoag Tribe of Gay Head (Aquinnah), Schaghticoke Tribal Nation, and Schaghticoke Indian Tribe. By consult, we mean actually talk and walk the land with representatives before the project design process to ensure that if there are historical artifacts, such as ceremonial stone landscapes or hunting/fishing setups, these are identified and any disturbance may be avoided. This should be done even if there are no current plans to use the entire upland facility support area to ensure that if plans change, this information is on file and will not be overlooked in a rush to meet timelines.

The EPA should be aware that as indigenous artifacts are discovered, they may have great spiritual importance. Those should not be disturbed. Disturbing some artifacts, then rebuilding them breaks the spiritual chain and destroys much of their significance.

Many of these artifacts cannot be identified from aerial photographs or topographic surveys, but require someone with a deep knowledge of Native American practices to actually walk the land. Sufficient money should be provided to adequately pay these specialists for their expertise.

Vernal pool & state-listed species investigation
The Natural Heritage and Endangered Species Program relies heavily on volunteers reporting what species they find wherever they happen to look. Natural Heritage does not have a system to survey the entire state for either rare species or vernal pools. We request that rather than relying solely on an online database review of state-listed species and vernal pools, a field survey be performed for vernal pools, bald eagle nesting sites, and northern long eared bats which the area is listed as being a potential habitat for.

Potential wetland missing in the figures
The pre-design investigation work plan submitted by the General Electric company (GE) mentions on page 6 under the 3.2.2 Habitat section:

> A potential wetland area has been identified on the GE Parcel consisting of an isolated palustrine, scrub/shrub, broad-leaved deciduous, seasonally flooded area off of Woodland Road (which will not be affected by the consolidation area). [3] As discussed in Section 5.2.1, this area will be evaluated further during PDI activities to determine whether it in fact constitutes a wetland.

However, we did not see this area identified in any of the figures. Please require GE to have this potential wetland shown in the figures on the final work plan.

Invasive species
Please add hardy kiwi (*Actinidia arguta*) to your invasive species survey list. While not listed as an invasive species by the state, this plant is a major problem in Berkshire County south through Connecticut and into New Jersey and New York, possibly being more invasive due to our calcareous soils. BEAT has detected at least one infestation of this plant off of Woodland Road on Department of Conservation and Recreation land near Woods Pond. BEAT staff would be willing to train investigators to identify this invasive species in all its life stages.

Medium yield aquifer
The entire property is on a large, medium yield aquifer shown on the state's MassMapper (the new version of Oliver mapping software).

Wellhead Protection Area and non-community water supply
We see no mention of the Wellhead Protection Area and non-community water supply shown on the state's MassMapper. It appears the entrance road to the upland disposal facility would run through this area.

Location of entrance road
The General Electric Company purchased the property along Woodland Road just south of the proposed upland disposal property. EPA should investigate whether entrance to the proposed upland disposal property would be less environmentally damaging by going through this property. However, it appears this would still be running through the wellhead protection area.

Location for dewatering area and hydraulic dredging pipeline
The pre-design investigation should include additional research, borings, and perhaps wells to determine appropriate location(s) for the dewatering and any additional support areas necessary, as well as a potential path for the hydraulic dredging pipeline.

Thank you for considering our comments.

Sincerely,

Jane Winn, Executive Director

Housatonic Environmental Action League, Inc.

Post Office Box 21, Cornwall Bridge, CT 06754-0021 860-672-6867

January 21, 2022

Dean Tagliaferro, PE, Project Coordinator
United States Environmental Protection Agency
c/o Avatar Environmental
10 Lyman Street. Suite 2
Pittsfield, MA 01201

Sent via electronic mail to: <tagliaferro.dean@epa.gov>

RE: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY GE-PITTSFIELD/ HOUSATONIC RIVER SUPERFUND MEGASITE; REST OF RIVER, UPLAND DISPOSAL FACILITY PRE-DESIGN INVESTIGATION WORK PLAN (661267); RCRA PERMIT (EPA ID: MAD002084093)

Dear Mr. Tagliaferro,
Please enter the below combined comments from HRI and HEAL into consideration for the final document. As you know, during the last CCC meeting in December 2021, HEAL requested an extension to comments for this document; you declined that request.

Below are our combined comments relating to the above noted UDF Pre-Design Investigative Work Plan:

1. We are submitting a report on the proposed Upland Disposal Facility written by David DeSimone, PhD of Petersburg, New York. Dr. DeSimone is a renowned geologist who received an award from EPA Region 1 for his outstanding geology work [see his attached report and CV]. This report is incorporated into our RCRA appeal brief to the EPA Environmental Appeals Board administrative court. EPA and GE are aware of this report, and continue to choose to ignore it.

Quotes from DeSimone Report:

The apparent absence of till beneath the sand and gravel further indicates this is a poor site for a landfill.

Such locales were often chosen for landfills primarily due to expediency and not based upon geology. These are the poorest geological locations for a landfill.

The surficial and bedrock geology described in the above discussion represents what we professors would tell our students in an environmental geology course as a textbook example of where not to locate a landfill.

2. We question whether the UDF Pre-Design Investigative Work Plan, and the actual site work associated with it, should be allowed to proceed while the HRI/HEAL appeal is in the courts. This provides unfair advantage to the powerful federal agency (EPA) and the powerful and monied RP (GE), thus continuing to shove this facility down the throats of Berkshire County. This is happening despite overwhelming opposition. Moving forward with plans for the disputed UDF while it is being litigated is disrespectful to the judicial system, and to the NGOs who have a combined 100+ years of participation at this site. We are respectfully requesting that you cease all work on the disputed UDF (including design and site work) until such time that all present and future courts have an opportunity to review our appeal and make their respective rulings.

HRI and HEAL appreciate the opportunity to provide comments on this document, although we would have preferred it to be opened for public comment after all our legal options are exhausted.

Respectfully submitted,
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Geological Evaluation of the Proposed Woods Pond Landfill Site, Lee, MA

Introduction: I reviewed documents and evaluated the surficial and bedrock geology for the proposed PCB landfill site north of Willow Hill Road and south of Woods Pond, Town of Lee, MA. My work scope was to address these parameters the nature and stratigraphy of glacial sediments and how this impacts infiltration and lateral movement of ground water beneath the PCB landfill site. Does the landfill site have geological characteristics that weigh against using the site as a PCB landfill? How likely is it that there is natural sediment overlying bedrock beneath the sand and gravel shown on surficial maps that is low in permeability - hydraulic conductivity - and can inhibit infiltration of leachate from inevitable leaks? Double composite liners and leachate collection systems should be expected to fail and I wanted to see what might happen to leachate that infiltrated the site below the liners.

Surficial geology: My analysis of surficial geologic maps of the East Lee 1:24,000 quadrangle by Stone and DiGiacamo-Cohen (2018) and Holmes (1962) indicates the proposed PCB landfill site lies in an area of ice contact stratified drift that is usually not associated with either thick, impermeable till sediment or glaciolacustrine silt-clay of any appreciable thickness or lateral continuity. Ice contact stratified drift is a variable mixture of sand and gravel, sediment that is highly permeable.

The Holmes (1962) map identifies the sediment at the proposed PCB landfill site as “Qcd” - ice contact stratified drift. Holmes described the sediments as kettled, collapsed or eroded glaciofluvial deposits - deposition from melt water and/or meteoric water in contact with melting glacial ice. Such environments may have sediments deposited beneath, within and atop glacial ice. More often than not, the ice itself may have become stagnant and even detached from the active glacial margin. Melting of glacial ice syn-depositionally and post-depositionally causes the sediments to collapse and form a hummocky, kettled landform. If the depositional environment can be associated with a slowed or paused retreat of a glacial margin in a valley, the landform may be identified as a kame moraine, a

cross valley accumulation of ice contact sediment associated with a glacial margin. The term kame moraine was defined by Frank B. Taylor during his time as a glacial geologist with the USGS in the early decades of the 20th century. Taylor worked extensively in the western Berkshires and southern Vermont, mostly in the Hoosic River drainage basin. He coined the term “kame moraine” to describe ice contact landforms composed predominantly of glaciofluvial sediments but representing deposition in an environment similar to that of a till moraine. My map review indicates the kame and kettle landforms at the proposed landfill site do not represent a kame moraine. Rather, it appears to be part of a larger area of the valley floor where ice became stagnant and blocks of ice were detached from an active ice front. Woods Pond, thus, represents a large kettle pond. Kame moraines have a greater chance of having some till within the sediment accumulation. Since this is not the case, it is more likely the sediments have little or no till beneath the sand and gravel.

Holmes’ map identifies exposures of sediment in the landfill areas as boulder gravel, cobble gravel, cobble sand and pebble sand. These are all very typical of ice contact stratified drift where the sediment texture can vary highly over a short lateral or vertical distance. In other words, sediments are rarely arranged in neat, horizontal layers but rather form a landform with abrupt and sharp sediment texture changes. This makes prediction of hydraulic properties in these sediments especially difficult to incorporate into ground water flow models, for example. Such models often assume “layer cake” stratigraphy with homogeneous sediment textures within layers. Glaciofluvial ice contact sediments almost never meet this assumption. Thus, modeled ground water flow must be viewed cautiously, at best. Note, these sediments are among the most permeable we find in glacial environments. They are the worst natural sediments to use for a PCB landfill because they allow easy migration of contaminants in the subsurface.

Stone & DiGiacamo-Cohen (2018) identify the same deposit as stratified coarse glaciofluvial sediments:

“Coarse deposits consist of gravel deposits, sand and gravel deposits, and sand deposits, not differentiated in this report. Gravel deposits are composed of at least 50 percent gravel-size clasts; cobbles and boulders predominate; minor amounts of sand occur within gravel beds, and sand comprises a few separate layers. Gravel layers generally are poorly sorted, and bedding commonly is distorted and faulted due to postdepositional collapse related to melting of ice. Sand and gravel deposits occur as mixtures of gravel and sand within individual layers and as layers of sand alternating with layers of gravel. Sand and gravel layers generally range between 25 and 50 percent gravel particles and between 50 and 75 percent sand particles. Layers are well sorted to poorly sorted; bedding may be distorted and faulted due to postdepositional collapse. Sand deposits are composed mainly of very coarse to fine sand, commonly in well-sorted layers. Coarser layers may contain up to 25 percent gravel particles, generally granules and pebbles; finer layers may contain some very fine sand, silt, and clay.”

"Sorted and stratified sediments composed of gravel, sand, silt, and clay (as defined in the particle-size diagram, figure 12, below), deposited in layers by glacial meltwater. These sediments occur as four basic textural units: gravel deposits, sand and gravel deposits, sand deposits, and fine deposits. On this surficial geologic map, gravel deposits, sand and gravel deposits, and sand deposits are not differentiated and are shown as Coarse Deposits where they occur at the land surface. Fine Deposits also are shown where they occur at the land surface. Textural changes occur both aerially and vertically (fig. 9); however, subsurface textural variations are not shown on this map."

This description is basically the same as Holmes older description of the deposits. What's changed is the nature of the map units used by the USGS. The current map units focus on the sediment types and origins - ice contact glaciofluvial for example - rather than any landforms the sediments may be associated with such as kame and kettle. It's a conservative approach to labelling map units and makes for a more accurate and functional map with fewer interpretations of the landform origins on the part of the mapper. This is a "safer" approach since so many different mappers may contribute to a statewide mapping program as was recently completed in MA.

surficial geology conclusions; The conclusion drawn from the surficial map analysis is that the proposed landfill site contains highly permeable sand and gravel sediments. These sediments vary texturally over both lateral and vertical distances as shown by Holmes descriptors for the sediments just within the landfill areas alone. There is no indication of till present beneath the sand and gravel in significant thickness or continuity to present a barrier to subsurface flow of contaminants. Ice contact stratified drift sediments are very poor locations for landfills due to their high permeability. My primary concern for this site as a landfill is that a leak in the liner and leachate collection system will eventually occur; then, leachate will have no natural sediment barrier to flow in the subsurface. EPA has stated "First, even the best liner and leachate collection systems will ultimately fail due to natural deterioration…"(53 Federal Register 33345, August 30, 1988). The sand and gravel aquifer will become contaminated and leachate will easily infiltrate underlying bedrock. This is a poor site for a landfill.

Bedrock geology: Ratcliffe (1985) mapped the bedrock geology of the East Lee, MA quadrangle. The proposed PCB landfill area is underlain by Stockbridge Formation carbonate rock, chiefly dolomitic marble. This rock contains fractures or joint planes that are migration pathways for ground water and any contaminants based upon my own experience as a mapper where this formation occurs. Further, enlargement of fractures/joints due to dissolution in carbonate bedrock provides pathways for very rapid movement of ground water in the subsurface. Thus, a PCB landfill sited in the proposed location might allow leachate to enter bedrock and flow toward the Housatonic River to the west. Once any leak occurs, the natural gravel and sand substrate - highly permeable sediment - will have pose no impermeable natural barrier to inhibit flow into the

underlying marble bedrock. Till is not likely present in a sufficiently thick and continuous layer to inhibit downward flow of the leachate.

bedrock geology conclusion; The Stockbridge marble is a rock that contains fractures/joints that may allow very rapid ground water flow along discrete pathways. Further, dissolution of rock along these fractures/joints makes this an extremely poor choice for bedrock beneath a PCB landfill.

Existing landfills: The 2 closed landfills along Willow Hill Road are identified (MA DEP, 2017) as unlined and capped in 1997 and 1999. A capped landfill minimizes infiltration of meteoric water through the landfill contents into the the water table aquifer and bedrock aquifer(s) below. Unlined landfills have no protection from leachate entering surficial aquifers and/or bedrock aquifers below the landfilled material. Both landfills were situated in the mapped ice contact stratified drift sediments. Both landfills likely took advantage of existing depressions in the land surface that were a result of historic gravel and sand mining. The depth of mining was often limited by the water table in the gravel and sand sediments.

Geological understanding of these glaciofluvial depositional environments is that these sediments are often deposited directly on bedrock with little or no low permeability till sediments to act as an aquiclude to protect the underlying bedrock aquifers. The overburden sediments are often a thick and highly permeable overall package that represent an unconfined aquifer and this sediment is likely directly atop fractured and dissolved marble. Such locales were often chosen for landfills primarily due to expediency and not based upon geology.

The 2 neighboring landfills have been capped, and both were landfills for non-hazardous waste. Yet, recent ground water monitoring results from both landfills reflect that they are leaching hazardous chemicals into the ground water. These results make it even more clear that Willow Hill Road is one of the poorest geological locations for a new PCB landfill.

Summary & suggestions: The surficial and bedrock geology described in the above discussion represents what we professors would tell our students in an environmental geology course as a <u>textbook example of where not to locate a landfill</u>. This location is underlain by highly permeable sediment of sand and gravel texture. Infiltration of PCB leachate through these sediments would not be inhibited by any impermeable sediment prior to reaching marble bedrock. The marble would allow rapid migration of contaminants. Very rapid migration of contaminants along fractures/joints enlarged by dissolution would pose an even greater risk of contamination at further distances from the landfill.

The surficial geology consists of high permeability sand and gravel sediments with unpredictable lateral and vertical stratigraphic continuity. Leachate that infiltrates through the designed barriers into this sediment will flow downward through the sand and gravel into the bedrock aquifer below.

The bedrock consists of Stockbridge carbonate rock that is susceptible to dissolution along vertical fractures and along bedding planes. Dissolution causes

very rapid ground water flow along discrete pathways through fractures and along bedding planes. Indeed, ground water flow in conduits - including caverns - is possible if they are present in the subsurface.

The bottom line is the geology of the proposed PCB landfill location is very likely to result in leachate contamination of surficial and bedrock aquifers if leachate penetrates the landfill liners. Based upon site geology, PCB disposal in a landfill in this location is a very poor choice that may result in PCB contamination of the sand and gravel aquifer and the underlying Stockbridge marble aquifer.

Background Information on the Author:

I am a geoscientist/environmental scientist engaged in contract, academic and applied research in geomorphology, geoarchaeology, hydrogeology and environmental geology. Contract work as project geomorphologist for archaeology investigations takes me on projects in the Northeast. My surficial geologic mapping occurs primarily in New York & Vermont for STATEMAP research and for understanding contaminant distribution & migration through glacial and post-glacial sediments.

Throughout my professional academic career as a lecturer and visiting/ adjunct professor, I've taught geoscience and environmental science at Williams College, RPI, Bennington College and The College of Saint Rose with a keen eye toward the application of these sciences to practical situations. I have attained a respected status as an expert in the glacial geologic history of upstate NY and adjacent Vermont demonstrated by maps & publications over many decades and by lectures given to colleagues and the public.

Most recently, I mapped the surficial geology of PFOA contaminated regions in Hoosick Falls and Petersburg, NY, and in Bennington and Rutland, VT. The Vermont work was performed for the VT Geological Survey. My research mapping has covered the Hudson-Champlain lowlands, Adirondack and Catskill Mountains, and portions of VT.

I have been a Visiting Scientist for the National Park Service, part of the GSA-NPS Geoscientists-in-the-Parks program. In 2015, I generated both surficial & bedrock geologic maps of 4 quadrangles in the Hudson Valley that encompass the Saratoga National Historical Park, a colonial era battlefield. Past mapping in the Catskills includes the Phoenicia & Thiells quadrangles completed for the NY Geological Survey.

Surficial mapping in VT over decades and the evolution of GIS map layers I developed has become the model for mapping in VT and elsewhere. I've conducted geomorphology research in CO, MT, WY & AK in glaciated, formerly glaciated and periglacial terrain. Cultural Resource Management experience is a growing part of my work along countless rivers, streams and reservoir shores and rights-of-ways.

Recent publications:

*****DeSimone, D. J., 2019, **Surficial Geology of the Rutland Airport, VT:** VGS Open File report and maps.

*****Rayburn, J. A., DeSimone, D. J., and Frappier, A. B., 2018, **New insights in Glacial Lakes Vermont and Albany:** Guidebook to Field Trips, Trip B-4, joint NYSGA-NEIGC conference, Lake George, NY.

*****DeSimone, D. J., 2017, **Surficial Geology of Petersburg, NY and Hydrogeology Implications, A Report to Accompany Surficial Geologic Map:** HFCSD 1:12,000 map with report and map.

*****DeSimone, D. J., 2017, **Surficial Geology and Recharge Potential of the North Bennington Area, Vermont:** VGS Open File report VG2017-1, (Plates 1 & 2), scale 1:12,000.

*DeSimone, D. J., 2017, **Surficial Geology of Hoosick Falls, NY with Implications for Hydrogeology of Village Aquifer, A Report to Accompany Surficial Geologic Map and Cross Sections:** HFCSD report and online publication.

*DeSimone, D. J., 2017, **Surficial geology of Hoosick Falls, NY:** 1:12,000 map and cross sections prepared for the HFCSD and online publication.

*Franzi, D.A., et al, 2016, **Post–Valley Heads Deglaciation of the Adirondack Mountains and Adjacent Lowlands,** Adirondack Journal of Environmental Science.

*DeSimone, D.J., 2015, **Surficial Geologic Map of Saratoga National Historical Park and Vicinity, New York:** National Park Service publication, map & text.

*DeSimone, D.J., 2015, **Bedrock Geologic Map of Saratoga National Historical Park and Vicinity, New York:** National Park Service publication, map & text.

*DeSimone, D.J., 2012 in press, **Surficial geologic map of the Thiells quadrangle, NY:** NYS Museum, Map & Chart series in press.

*DeSimone, D.J., 2009, **The surficial geology and hydrogeology of Londonderry, VT:** A technical discussion with executive summary; open file report and maps, Vermont Geological Survey.

*DeSimone, D.J., 2009, **Surficial geologic map of the Phoenicia quadrangle, NY:** USGS map completed under STATEMAP, NY Geological Survey.

*DeSimone, D.J., and Robert G. LaFleur, 2008, **Deglacial history of the upper Hudson region:** NYSGA Guidebook to field trips, 80th annual meeting, Trip 4, p. 35-56.

*****DeSimone, D.J., Wall, G.R., Miller, N.G., Rayburn, J.A., Kozlowski, A.L., 2008, **Glacial geology of the northern Hudson through southern Champlain lowlands:** Guidebook to field trip, 71st annual northeastern Friends of the Pleistocene meeting, Queensbury, NY.

Recent abstracts:

*DeSimone, D. J., 2018, **PFOA Surficial Mapping in Bennington, VT:** NE-GSA Abstracts with Programs, Burlington, VT, March 2018.

*DeSimone, D. J., 2018, **PFOA Surficial Mapping in Hoosick Falls, NY:** NE-GSA Abstracts with Programs, Burlington, VT, March 2018.

*DeSimone, D. J., 2018, **PFOA & Surficial Mapping - Contrasts Between VT & NY Cases:** NE-GSA Abstracts with Programs, Burlington, VT, March 2018.

*Rayburn, J.A., and DeSimone, D.J.,2017, **A Revised Correlation of Glacial Lacustrine Strandlines Between The Champlain and Hudson Valleys Helps Pinpoint A Missing Threshold:** NE-GSA Abstracts with Programs, Pittsburgh, PA, March 2017.

*DeSimone, D.J., 2016, **Surficial & Bedrock Maps of the Saratoga National Historical Park Generated for Archaeological & Educational Purposes:** NE-GSA Abstracts with Programs, Mt. Washington, NH.

*Rayburn, J.A., and DeSimone, D.J., 2016, **Ice Flow Indicators and the Behavior of the Hudson-Champlain Lobe During A Drawdown Of Glacial Lake Albany:** NE-GSA Abstracts with Programs, Mt. Washington, NH.

*DeSimone, D.J., and Miller, T.S., 2015, **Geomorphic History Determined from Coring at an Archaeologically Sensitive Site along the Wynants Kill, Troy, NY:**
NE-GSA Abstracts with Programs, Mt. Washington, NH.

*DeSimone, D.J., et al, 2015, **Hudson River Terraces Delineated from Archaeological Investigations, Van Schaick Island, Cohoes, NY:** NE-GSA Abstracts with Programs, Mt. Washington, NH.

*Rayburn, J.A., et al, 2015, **Age of ice advance lake on the lee side of the Catskill Mountains, New York, and rough estimates for the rate of ice advance to the LGM:** NE-GSA Abstracts with Programs, Mt. Washington, NH.
*DeSimone, D. J., Rayburn, J. A., et al, 2013, **Emerging views of Esopus basin glacial history:** NE-GSA Abstracts with Programs, Mt. Washington, NH.
*Staley, A. E., Rayburn, J. A., DeSimone, D. J., 2013, **3D Modeling of surficial sediments in the Stony Clove basin, Catskill Mountain region of New York:** NE-GSA Abstracts with Programs, Mt. Washington, NH.
*DeSimone, D. J., and Rayburn, J. A., 2012, **Phoenicia mapping suggests alternative glacial history**: NE-GSA Abstracts with Programs, Hartford, CT.
*Sandstrom, R. M., et al, 2012, **Reconnaissance mapping of surficial geology in the Catskill Mountains of New York:** NE-GSA Abstracts with Programs, Hartford, CT.
*DeSimone, D. J., and Kilkenny, C., 2011, **Archaeology and geomorphology – Hudson River terraces, Troy North quadrangle, NY:** GSA Abstracts with Programs, annual meeting, Minneapolis, MN.
*Kiser, K., et al, 2011, **Modeling the glacial history of the Ashokan watershed in the Catskill Mountains of New York using GIS:** GSA Abstracts with Programs, annual meeting, Minneapolis, MN.
*Carey, C. J.B., et al, 2011, **Surficial geology of a critical reach in Warner Creek, Phoenicia, NY, and its potential impact on New York City's drinking water supply:** NE-GSA Abstracts with Programs, Pittsburgh, PA.
*Becker, L. R., et al, 2009, **The Vermont geo-hazard experience and the NESEC State Geologists:** NE-GSA Abstracts with Programs, Portland, ME.
*DeSimone, D.J., 2008, **Field evidence for readvances – the Luzerne example**:
NE-GSA Abstracts with Programs, Buffalo, NY.
*Becker, L.R., et al, 2008, **Groundwater resources in the town of Williston, northwestern VT:** NE-GSA Abstracts with Programs, Buffalo, NY.

Recent honors and awards:

Co-recipient, 2020 EPA Region 1 Environmental Merit Award for scientific research into the PFOA contamination in North Bennington and Bennington, VT. Award presented in a virtual ceremony, September, 2020.