GE
159 Plastics Avenue
Pittsfield, MA 01201
USA

Transmitted Via Overnight Delivery

May 17, 2007

Susan Svirsky
U.S. Environmental Protection Agency
c/o Weston Solutions, Inc.
10 Lyman Street
Pittsfield, MA 01201

Re: GE-Pittsfield/Housatonic River Site
Unkamet Brook Area (GECD170)
Hydrologic/Hydraulic Modeling Proposal

Dear Ms. Svirsky:

On September 7, 2005, the General Electric Company (GE) submitted a document to the U.S. Environmental Protection Agency (EPA) titled *Pre-Design Investigation Report for Unkamet Brook Area Removal Action* (PDI Report). That report summarized the results of pre-design soil and sediment investigations performed by GE at the Unkamet Brook Area. The PDI Report was conditionally approved by EPA in a letter to GE dated February 22, 2007.

Condition No. 5 of the above-referenced letter states the following: *EPA requests that GE submit a proposal (Modeling Proposal) for conducting the characterization and modeling of the watershed and other activities described in this condition within 90 days of the date of this letter. This characterization shall include modeling of the watershed flows upstream of the discharge of Unkamet Brook in the East Branch of the Housatonic River. Upon determination of potential design considerations, additional sampling for PCBs may be required to completely characterize areas to insure adequate design of the new stream channel. All existing flow routing from Unkamet Brook into the wetland east of the landfill from upstream across Dalton Avenue shall be described as part of this characterization.*

In accordance with the above condition, the Attachment to this letter sets forth GE's Modeling Proposal.

GE proposes to conduct the above modeling activities in parallel with ongoing flow monitoring activities currently being performed within the North Area of the Unkamet Brook Area (since the flow monitoring data are instrumental to the modeling activities). As indicated in a letter from GE to EPA dated March 20, 2007, GE anticipates conducting flow monitoring activities over an approximately one-year period. EPA approved this schedule in a letter to GE dated March 26, 2007. GE proposes to submit the results of the modeling activities described herein to EPA following completion of flow monitoring activities (i.e., within approximately one year).

Please call me if you have any questions or comments regarding this proposal.

Sincerely,

Richard Gates/Acc

Richard W. Gates
Remediation Project Manager

Attachment

cc: Dean Tagliaferro, EPA
Rose Howell, EPA*
Holly Inglis, EPA
Tim Conway, EPA
John Kilborn, EPA
K.C. Mitkevicius, USACE
Susan Steenstrup, MDEP (2 copies)
Anna Symington, MDEP*
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Nancy E. Harper, MA AG*
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** cover letter only*

GE-Pittsfield / Housatonic River Site
Unkamet Brook Area
Hydrologic/Hydraulic Modeling Approach

Objectives

The remedial action for the Unkamet Brook Area will include the re-routing of approximately 600 ft of the stream channel that currently flows through the former interior landfill on the GE site. The channel will be relocated east of the former landfill in the vicinity of its original channel. To support the design of this channel re-location, modeling analyses are proposed to meet the following two objectives:

1) Provide estimates of the statistical characteristics of stream flows within the Brook (e.g., to predict flow rates associated with storm events of various intensities).
2) Provide a quantitative means of estimating the impact of channel re-routing on the flooding characteristics of the Brook upstream of the GE property. Specifically, this calculation will be used during design to confirm than the new channel section will not alter the Brook's stage-discharge relationship under elevated flow conditions.

Approach

The modeling approach will consist of using a hydrologic model of the Unkamet Brook watershed to predict stream flows during precipitation events of different intensity, and a hydraulic model of the Brook to evaluate the impacts of channel re-location on upstream flooding.

Hydrologic Modeling

As part of the Rest-of-River PCB modeling framework that was developed, calibrated, and validated by EPA, the Hydrologic Simulation Program-FORTRAN (HSPF) model was used to simulate the Housatonic River watershed between its headwaters and Great Barrington, MA. HSPF was used to predict flow rates in tributaries to the river as a function of precipitation, land use, and topography. The Unkamet Brook watershed is delineated as a specific sub-basin in EPA's HSPF application to the Housatonic. EPA applied HSPF over the period of 1979-2004, and the model thus provides predictions of hourly flow rates within Unkamet Brook over a 26-year period.

It is thus proposed to use EPA's HSPF model to evaluate flow statistics for the Unkamet Brook channel design. Because EPA calibrated HSPF to in-river flows, and not individual sub-basins, the calibration of the HSPF model for the Unkamet Brook sub-basin would first be evaluated by comparing its predictions to Brook flow data from two sources: 1) the monthly measurements at its mouth conducted by GE from 2002-2003; and 2) statistics from the continuous monitoring upstream and downstream of the former landfill that is planned to begin in the near future and last for up to one year. Based on these comparisons and other design needs, refinements to the model may be necessary, including:

- division of the Unkamet Brook basin into sub-basins to differentiate the GE property from the upper watershed;
- refinement of topographic and stream channel characteristic data based upon the detailed survey data currently being collected by GE; and
- modification of model input parameters to provide an improved match to the flow data.

Following the check of the calibration and potential refinements, the model predictions will be used in conjunction with the flow monitoring data to develop a design flow to assist in the sizing of the new stream channel. That design flow will be based on a return flow (calculated from the 26-year HSPF predictions) or a representative precipitation event that occurred during the timeframe simulated by HSPF.

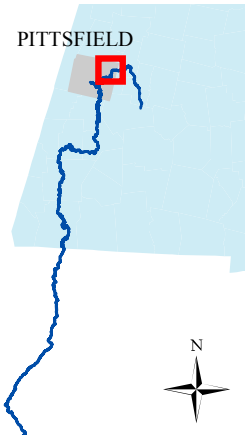
Hydraulic Model Calculations

To support the evaluation of the impact of channel re-routing on flooding upstream of the GE property, it is proposed to apply the widely-used U.S. Army Corps of Engineers model Hydrologic Engineering Centers River Analysis System (HEC-RAS).

HEC-RAS will be applied to the stretch of Unkamet Brook extending from its mouth to a point just upstream of Dalton Avenue. Model inputs for HEC-RAS include:

- cross-sectional areas of the stream channel and its adjacent floodplain, which will be obtained from the detailed site survey currently being conducted;
- bottom roughness coefficients for the stream and its floodplain, which will be based on knowledge of the stream bottom and floodplain vegetation characteristics and standard modeling practice; and
- the location and geometric characteristics of hydraulic structures (e.g., culverts and bridge abutments) that impact the Brook's flow.

HEC-RAS will be applied in steady flow mode to compute the water surface profile of Unkamet Brook based on the principle of energy balance. The model will be calibrated to ensure that is predictions of water depth match measurements at the new monitoring points under base and storm flow conditions. HEC-RAS will then be run for a design flow rate selected to be representative of storm conditions, for both the current and re-routed channel configurations. These model calculations will be used during design, potentially in an iterative manner, to ensure that the predicted high flow water surface elevation just upstream of Dalton Avenue is not increased by the re-routing.



SCALE

0 0.25 0.5 Miles

LEGEND

- Unkamet Brook Drainage Area
- Hydrographic Features
- Roads

NOTES:
Aerial Photography from MassGIS, 2001, 1m resolution.
Hydrography data (1:25,000) from MassGIS, 2005.

PRIVILEGED AND CONFIDENTIAL
ATTORNEY WORK PRODUCT
PREPARED AT REQUEST OF COUNSEL

GE - Housatonic River Project

Unkamet Brook Watershed

QEA
Quantitative Environmental Analysis, LLC

March 07

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