08-0128
SDMS - 160519

Corporate Environmental Programs
General Electric Company
100 Woodlawn Avenue, Pittsfield, MA 01201

September 9, 2002

Mr. Dean Tagliaferro
US Environmental Protection Agency
c/o Weston Solutions, Inc.
10 Lyman Street
Pittsfield, MA 01201

**Re: GE-Pittsfield/Housatonic River Site
Upper ½-Mile Reach (GECD800)
Isolation Layer TOC Sampling**

Dear Mr. Tagliaferro:

In a letter dated August 26, 2002, to the General Electric Company (GE), EPA expressed concerns regarding the levels of total organic carbon (TOC) contained in some of the isolation layer material that was previously used in the Upper ½-Mile Reach Removal Action. In that letter, EPA directed GE to perform additional sampling to characterize the amount of TOC in all of the isolation layer material placed from the beginning of the project through October 2001, and to submit to EPA for approval a brief plan containing the following information:

- A figure with the proposed sample locations for the isolation layer material;
- A proposal to collect additional site-specific data, if any; and
- A schedule for the sampling and for submittal of a report presenting the analytical results and containing other evaluations and modeling results specified in EPA's letter..

This letter provides the above information.

EPA's letter directed GE to collect one sample from Cell A and two samples from each of Cells B, C, F1, F2, F3, G1, G2, G3, H1, H2, and I1, except that it allows use of existing in-place TOC data to assist in meeting these requirements. In accordance with EPA's letter GE will collect one sample from each of Cells A, F3, and G3 and two samples from each of the other cells listed by EPA, and will utilize existing in-place TOC data from Cells F3 and G3 (specifically data from Cap-Mon 4 and Cap-Mon 5) to represent the other required sample locations in those cells. Thus, GE proposes to collect samples from an additional 21 sampling locations, as shown on Figure 1. At each location, sampling will consist of the collection of a full-depth composite of the isolation layer material for TOC analysis.

Additionally, GE proposes to install three seepage meters in non-removal areas located in the ½-Mile Reach to provide site-specific data regarding the groundwater seepage velocity. Seepage meters will be installed to allow direct measurement of groundwater seepage rates into the river. The seepage meters will be placed in the bottom of the river for a known period of time and the net water accumulated will provide a direct measurement of groundwater seepage velocity. The proposed locations are also shown on Figure 1. The field protocol for the seepage meter installations and monitoring is provided as Appendix A to this letter.

GE proposes to begin sampling of the cap isolation layer material within two weeks (depending on flow conditions) of receiving approval of this letter by EPA. GE assumes that two samples will be collected per day. Therefore, the time required to collect the 21 proposed samples would be approximately 11 working days, assuming that flow conditions in the river remain favorable to collecting samples. The seepage meters will be installed during the first week of this sampling effort and will be monitored until completion of the sampling activities. GE further assumes that it will take approximately two weeks for analysis and receipt of the sample data, and that an additional four weeks will be necessary to evaluate the data and to prepare the figures and conduct the modeling required by EPA's letter.

Given these anticipated time frames, GE proposes to submit a report to EPA containing the information specified in EPA's letter within two months from EPA's approval of the sampling proposal contained herein. Specifically, that report will contain:

- A summary of all analytical results and a full data package for the TOC analyses;
- Results of the seepage meter study;
- A figure or figures indicating the TOC levels in the isolation layer, including a delineation of any areas of the isolation material cap that have TOC levels less than 0.5%;
- The sediment cap model output (e.g., PCB "breakthrough" curve) using the measured f_{oc} (fraction of organic carbon) in the isolation layer material and using both (a) all the same other parameters used in Appendix G to the Upper ½-Mile Reach Removal Action Work Plan and (b) alternate values for some of those parameters based on site-specific data;
- Additional model runs that also take into account the naturally deposited sediment material present in the armor stone layer of the cap;
- A discussion of the differences and implications between the model results contained in Appendix G-1 of the Work Plan and model results using the measured f_{oc}; and
- Additional information, if relevant, pertaining to the transport of PCBs through the isolation layer.

It should be noted that, in submitting this sampling proposal, GE is not making any concession of law or fact relating to potential liability in connection with this matter.

If you have any questions, please contact me.

Yours truly,

Andrew T. Silfer/dmn

Andrew T. Silfer, P.E.
GE Project Coordinator

ATS/dmn
Attachment
cc: T. Angus. MDEP
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J. H. Maxymillian, Maxymillian Technologies
S. Messur, BBL
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Public Information Repositories

Appendix A - Seepage Meter Protocol

Introduction

A seepage meter is used to collect groundwater that is flowing through the sediments and into a water body. The seepage meter is placed into the sediments for a known period of time; the volume of water collected in an expandable bag attached to the meter is proportional to the surface area covered by the meter and the groundwater discharge rate. The times of instrument installation and sample collection are recorded, as is the volume of water collected in the expandable bag. A volumetric flow rate can then be determined from these measurements. A seepage velocity is then determined based on the cross-sectional area of the meter exposed to the sediment bed.

Materials

The following materials will be available, as required, during seepage meter installation and water collection:

Personal protective equipment (as required by the Health and Safety Plan);
Waders;
Seepage meter;
Water collection bags;
Flexible tubing and clamps;
Measuring tape;
Graduated cylinder;
Funnel and tubing;
Field notebook and camera;
Waterproof watch;
Waterproof marker;
Water.

Seepage Meter Construction

Due to the shallow nature of the river and the relatively coarse bed, the seepage meter design for the Housatonic River will be modified from the traditional "Lee meter" design, which uses a 55-gallon drum, to a simpler design presented in Duwelius et al. (2002). The modified method allows for easier installation, although as noted below, it should only be used during base flow (non-fluctuating water level) conditions.

For this application, the 55-gallon drum will be replaced by an 8-inch diameter PVC pipe. The length of the pipe will be adjusted to allow it to be placed 12 inches into the sediment bed and still allow the upper end of the pipe to have a 6-inch clearance above the water line (i.e., meter length equals water depth plus a minimum of 18 inches). Approximately 16 inches above the bottom of the 8-inch diameter PVC pipe (which will be 4 inches above sediment surface when in-place), a nipple will be connected to the pipe extended through the outer wall of the pipe. Flexible plastic tubing connected to the removable plastic collection bag will be attached to the meter at the nipple. A valve will be used to connect the plastic bag to the tubing. A generalized diagram is shown in Figure A.

Field Procedures

The following are the general steps for seepage meter installation:

1. Push the meter (with tubing and bag **not** attached) approximately 12 (twelve) inches into undisturbed sediment. Record the depth of the water and the general nature of the sediments at the seepage meter location. Determine and record location as needed.

2. Purge the water collection bag of all air and water. Place a known volume of water (e.g., 200 milliliters) in the collection bag. A funnel with tubing to fit the inlet valve can be used. Close the inlet valve to the bag. Remove the funnel tubing from the valve and replace with tubing for connection to meter. Record the volume of water added.

3. Once the meter is in place for several minutes, allowing water levels to equalize, attach the collection bag and tubing to the fitting on the meter. Place several small rocks around the edge of the bag to serve as weights to hold it in place (avoid restricting expansion). Once the collection bag and tubing are attached, open the valve so that water may flow between the seepage meter and the collection bag. Record the sampling initiation time.

4. Mark with a waterproof marker the initial water level on the meter. Also record the water level below a predetermined location on the upper edge of the meter.

5. Return approximately 24 hours later for collection.

6. Observe the general area for notable conditions (e.g., turbidity, groundwater leakage around the meter, tilting of the meter, rainfall in past 24 hours).

7. Check the water levels inside and outside for obvious changes from the previous day. Measure and record water levels. If the river water level is within 1 cm of the previous day's level, continue. If the change is greater than 1 cm, continue but note that the results may be affected, and conduct re-monitoring by reverting to Step 2.

8. Close the water collection value at the bag. Disconnect the tube from the fitting. Record the sampling end time.

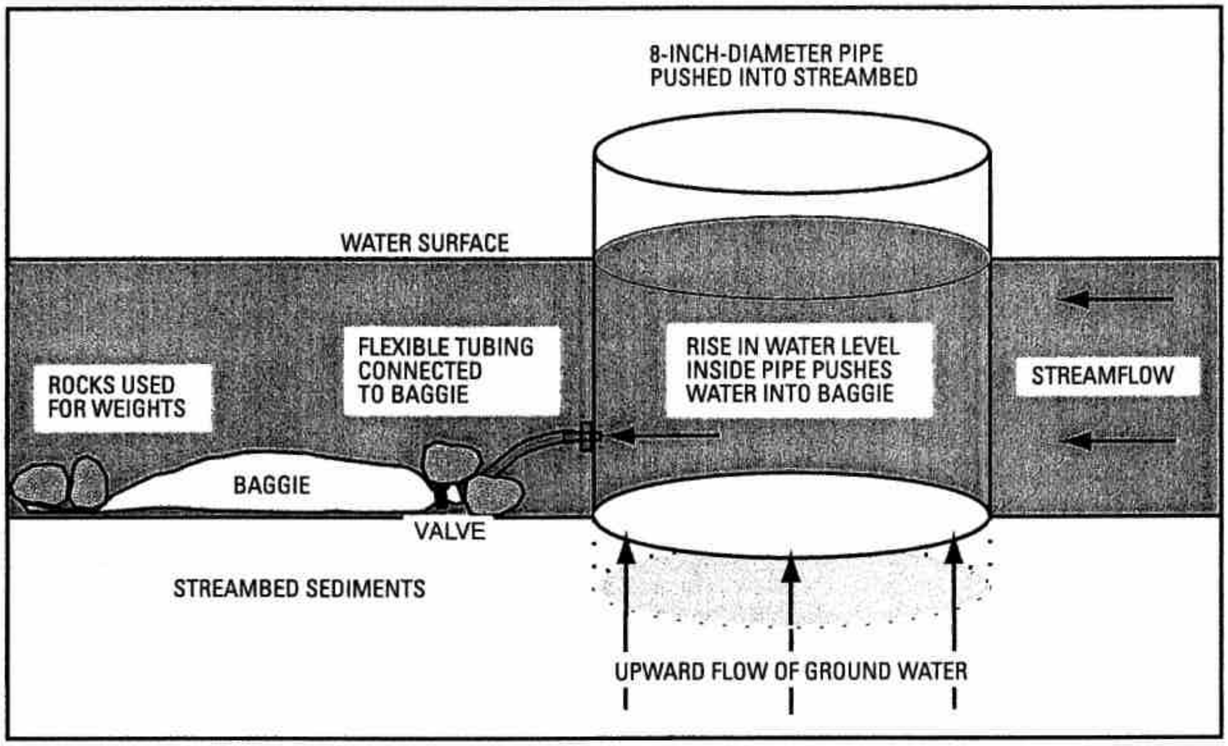
9. Disconnect tubing as needed. Measure and record the water volume in collection bag.

10. If there is no measurable change in the water levels, compute the volumetric flow rate from the change in the volume of water in the collection bag divided by the time of collection. To determine seepage velocity, divide volumetric flow rate by the cross-sectional area of the meter (324 cm^2). If there are measurable differences in the water levels, the collection volume must be based on the net change in volume of both the collection bag and meter. The change in the volume in the meter is determined from the change in water level inside the meter multiplied by the cross-sectional area.

11. The above steps are repeated at each monitoring location.

Reference

Duwelius, R.F., D.J. Yeskis, J.T. Wilson, and B.A. Robinson, 2002, "Geohydrology, Water Quality, and Simulation of Ground-Water Flow in the Vicinity of a Former Waster-Oil Refinery near Westville, Indiana, 1997-2000", USGS Water-Resources Investigation Report 01-4221, Indianapolis, Indiana, 169 pp.



REFERENCE:

Richard F. Duwelius, Douglas J. Yeskis, John T. Wilson and Bret A. Robinson, (2002).

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

UPPER ½-MILE REACH OF HOUSATONIC RIVER

TYPICAL SEEPAGE METER

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE A

09/06/02 SYR-D54-DJH
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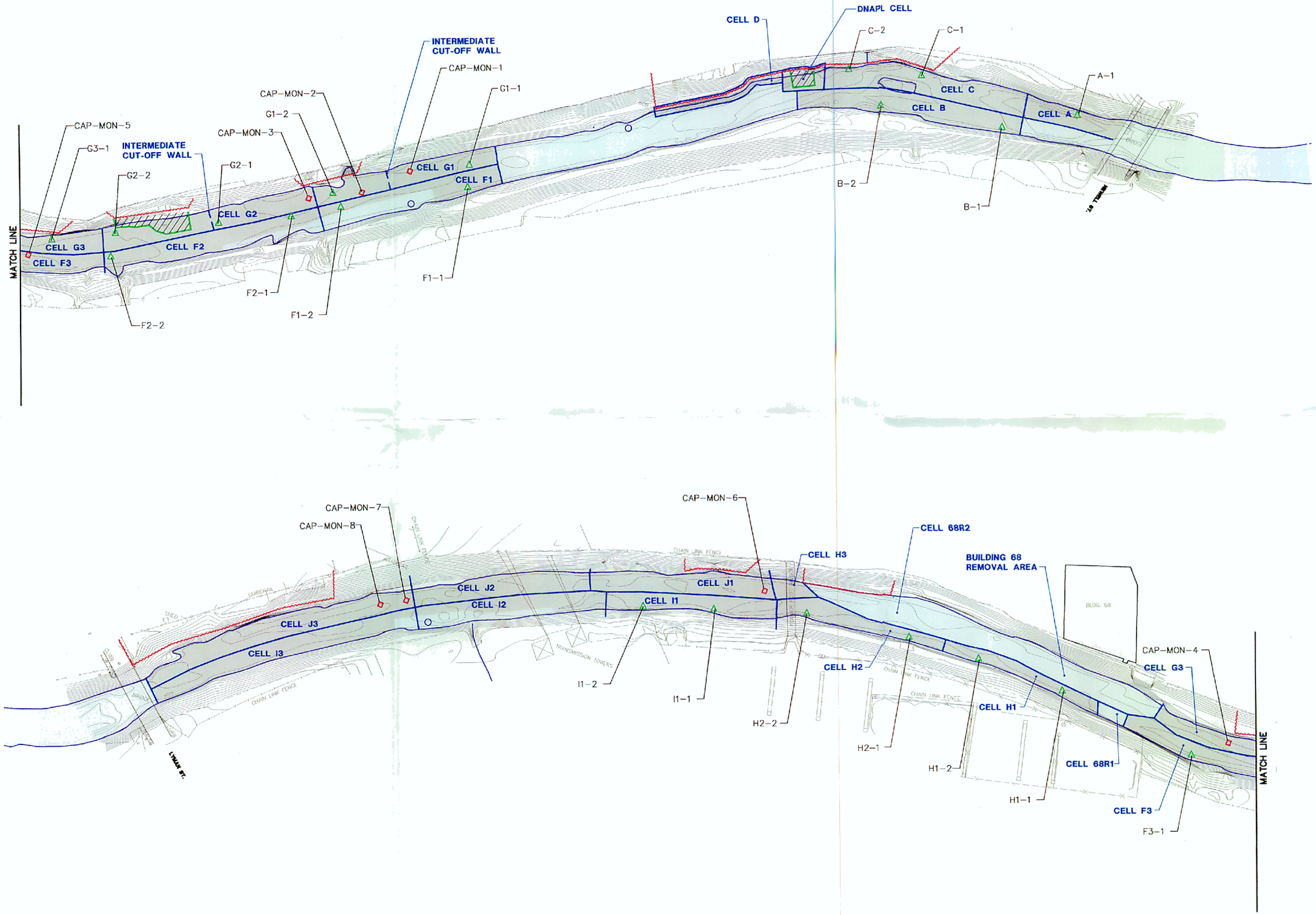

LEGEND:

- SEDIMENT CAP ISOLATION LAYER MONITORING LOCATION
- PROPOSED SEDIMENT CAP ISOLATION LAYER MONITORING LOCATION
- PROPOSED SEEPAGE METER LOCATION
- REMOVAL CELL BOUNDARY
- HDPE LINER
- SHEETPILE BARRIER WALL
- REMOVAL AREA
- NON-REMOVAL AREA

NOTES:

1. ALL LOCATIONS AND DISTANCES ARE APPROXIMATE
2. HDPE LINERS WERE DIGITIZED FROM THE FOLLOWING FIGURES PROVIDED BY S & K DESIGN GROUP, INC.: "PLAN OF DNAPL REMOVAL", FIGURE 1, DATED APRIL 12, 2000, AT A SCALE OF 1"=10'; AND "PLAN OF G2 NAPL REMOVAL", FIGURE 1, DATED JANUARY 12, 2001, AT A SCALE OF 1"=10', AND ARE APPROXIMATE.

0 80' 160'
GRAPHIC SCALE

X: 20197X01.DWG
L: ON=*, OFF=*REF*
P: PAGSET/PLT-DL
9/9/02 SYR-54-NES GMS NES
N/20197060/SEDIMENT/20197T07.DWG

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

UPPER 1/2-MILE REACH OF HOUSATONIC RIVER

PROPOSED SEDIMENT CAP ISOLATION LAYER MONITORING LOCATIONS

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE 1