MEMORANDUM

DATE: March 5, 2003

SUBJECT: CSTAG Recommendations on the Housatonic Rest of River Contaminated Sediment Superfund Site: Region I Responses

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TO: Stephen J. Ells
Judith McCulley, Co-chairs
Contaminated Sediments Technical Advisory Group

Thank you for your December 13, 2002 memorandum, including the recommendations of the Contaminated Sediments Technical Advisory Group ("CSTAG") with respect to the Rest of River segment of the GE-Pittsfield/Housatonic River Site. Your recommendations, as well as the discussion at our October 28-30, 2002 meeting at the Site, are much appreciated.

To assist the reader, the Region's response below will follow a format which includes each original CSTAG recommendation followed by the corresponding EPA New England response. Please contact Bryan Olson or me if you have comments or questions in this regard.

## CSTAG Recommendations and EPA New England Responses

### Principle #1, Control Sources Early

**CSTAG Recommendation:**

Continue to evaluate and monitor all potential upstream sources of PCBs, including upland soils, former oxbows, and Unkamet Brook, to the Rest of River and to the remediated sediment areas.

**EPA New England Response:**

EPA's project team is working with GE to collect upstream surface water chemistry and flow data. This data, along with historical surface water data, will be used to determine the areas, if any, that are contributing PCBs to the water column. Analysis of historical data indicates that



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some of these areas may be sources of PCBs to the river. Based on this analysis, GE is already required to implement removal actions at those areas over the next couple of years. Once the actions are complete, the data will be evaluated to determine if additional actions are necessary to prevent recontamination of the downstream areas. Potential contaminant sources that may affect the water column include, but are not limited to, PCBs in groundwater, free phase oil, sediments and upland soils.

**CSTAG Recommendation:**

Continue to evaluate and quantify the mass loading of PCBs to the water column upstream of the ½ mile reach to more fully characterize background conditions that might be a continuing source to the Rest of River.

**EPA New England Response:**

As stated above, EPA and GE are continuing to collect surface water chemistry and flow data both upstream and downstream of the removal actions, including at the upstream boundary condition for the Rest of River model. These data will be used to quantify the loadings from any remaining upstream sources.

**Principle #2, Involve the Community Early and Often**

**CSTAG Recommendation:**

Continue to engage the community and local interested groups in discussions about the investigations and upcoming studies. Overall, the project team has encouraged early and meaningful community involvement and such practices should continue, especially with regard to decision criteria and potential remedial technologies. Should active cleanup be warranted, consider providing information to the community about available and emerging treatment/remedial technologies and their suitability for use at this site.

**EPA New England Response:**

The project team appreciates the CSTAG's recognition of the extensive public outreach that has been performed at the site. The Region intends to continue this effort and build on past outreach activities, and work closely with the community and GE regarding potential treatment technologies if cleanup of the Rest of River is deemed necessary. This type of work will fit nicely into the Corrective Measures Study process during which GE will propose and evaluate a number of cleanup alternatives.

**CSTAG Recommendation:**

Document how community input has been incorporated into EPA's plans and actions.

**EPA New England Response:**

Much of what the Region has learned from the community has been or will be documented in the various studies and assessments that are part of the Rest of River study. For example, in the Human Health Risk Assessment, responses from over 1500 individuals from an "Exposure Prevalence Survey" conducted by the Massachusetts Department of Public Health in the Housatonic River area were used in establishing several exposure parameters. Also, the Region's contractors interviewed local recreational groups to obtain information for use in refining certain

exposure scenarios.

In addition, the Peer Review Process for the modeling and risk assessments provides a formal mechanism to document public comments to the Peer Review Panel, the Peer Review Panel's comments to the Region and the Region's response to any comments received from the Peer Review Panel (Responsiveness Summary).

**CSTAG Recommendation:**

Continue to maintain and encourage public use of the EPA website as a source of up-to-date information about site investigations and progress.

**EPA New England Response:**

The project team intends to continue to update the website as a source of project information for the public. The project team has received many specific and general requests to include additional information on the website and has consistently added relevant documents in response to those requests. The Rest of River portion of the website is undergoing a reorganization to improve user access to the many documents that are currently posted there.

**Principle #3, Coordinate with States, Local Governments, Tribes, and Natural Resource Trustees**

**CSTAG Recommendation:**

Continue to share information with EPA and State water programs for use in TMDL development.

**EPA New England Response:**

The project team agrees with this recommendation and will continue to do so.

**CSTAG Recommendation:**

Continue to involve States, Trustees, and affected Native American tribes in the investigation and evaluation of potential cleanup alternatives should they be necessary.

**EPA New England Response:**

The project team intends to continue this coordination effort. As you know, the project team holds monthly meetings of the Citizens' Coordinating Council, a group of interested stakeholders who were brought together to discuss and review progress at the site. Similar meetings are also held quarterly in Connecticut. In addition to the general public, all of the entities referenced above have contributed to these meetings. The meetings are professionally facilitated and very interactive. The project team expects that these meetings will continue for the foreseeable future. In addition, the States and Trustees are involved in the review of all of the major documents as they are being developed. The Trustees have settled their natural resource claims with GE as part of the overall Consent Decree.

**Principle #4, Develop and Refine a Conceptual Site Model that Considers Sediment Stability**

**CSTAG Recommendation:**

Due to the high contaminant concentrations, large size, and complex nature of the site, the CSTAG commends the Region for its efforts in developing state-of-the-art models for assessing sediment stability and site risks. These models will also be useful in evaluating potential risk management options for the site.

**EPA New England Response:**

The project team appreciates the CSTAG's support of the modeling effort and other supporting studies that have been conducted to develop the conceptual model. As you know, the modeling effort is resource intensive. Thus far, the modeling framework has already been peer-reviewed and both the model calibration and validation peer will undergo Peer Review in 2004. We expect that the model will provide a useful tool to help evaluate potential remedial alternatives.

**CSTAG Recommendation:**

The CSTAG encourages that the lessons learned (*i.e.*, data requirements for calibration/validation, model linkage issues) in the modeling effort be shared with other regions.

**EPA New England Response:**

The project team expects to share what we have learned in not only the modeling efforts but also other aspects of the site. It would be helpful if the CSTAG could provide the project team with guidance on appropriate venues for this information exchange.

**CSTAG Recommendation:**

The CSTAG concurs with the Region's plans to monitor an extreme storm event should one occur during the investigation period.

**EPA New England Response:**

Resources have been set aside, and Standard Operating Procedures have been prepared to monitor an extreme storm event should one occur during the investigation period.

**<u>Principle #5, Use an Iterative Approach in a Risk-Based Framework</u>**

**CSTAG Recommendation:**

The CSTAG supports the general approach of starting upstream and moving downstream, and incorporating lessons learned as remedial actions progress. The CSTAG agrees with the iterative approach that the Region is taking to address the first two miles and Unkamet Brook, concurrent with performing the investigations and evaluating any necessary response actions for the Rest of River. This approach will allow the current schedule to be maintained, resulting in expeditious implementation of any necessary actions in the Rest of River.

**EPA New England Response:**

The project team appreciates the support of the CSTAG in the application of the iterative approach that was developed in the Consent Decree between the government and GE. As you

know, that process assumed a seamless transition between the ½ Mile Reach removal action and the 1 ½ Mile Reach removal action and also assumed the same between the completion of the 1 ½ Mile Reach and the start of any necessary cleanup actions in the Rest of River. With respect to the transition between the ½ Mile Reach and the 1 ½ Mile Reach, the Region's assumption was accurate, since EPA initiated the 1 ½ Mile Reach removal action within days of GE's completion of the ½ Mile Reach removal action. The current schedule projects a completion of the 1 ½ Mile Reach work in 2007 and a Rest of River decision in 2006. The project team intends to utilize, at a minimum, engineering experience and data generated during and after the ½ Mile Reach work and during the 1 ½ Mile Reach work to better inform the Rest of River decision. The Region believes that the Rest of River decision-making process will be improved by this iterative approach.

**CSTAG Recommendation:**

Any lessons learned from evaluating the monitoring data from the upstream removal actions should be considered in the decision-making process for the Rest of River.

**EPA New England Response:**

The project team agrees with this recommendation. As stated above, the project team intends to utilize, at a minimum, engineering experience and data generated during and after the ½ Mile Reach work and during the 1 ½ Mile Reach work to better inform our Rest of River decision.

**Principle #6, Carefully Evaluate the Assumptions and Uncertainties Associated with Site Characterization Data and Site Models**

**CSTAG Recommendation:**
Due to the complexity of this site and the large amount of data collected, the CSTAG supports the team's rigorous analysis of the uncertainty associated with site data.

**EPA New England Response:**

The project team has focused a significant amount of time and effort toward the evaluation of uncertainty and developing the ability to communicate these uncertainties to the public and internal risk managers, and appreciates the CSTAG's support of this work.

**CSTAG Recommendation:**

It is important that the site team document the degree of uncertainty associated with key studies and data and explain how the uncertainties will be incorporated in future site decisions.

**EPA New England Response:**

The project team agrees with the CSTAG's recommendation and intends to document the uncertainties associated with work being performed and, as mentioned above, communicate these uncertainties to the public and to internal risk managers.

For example, in the case of the Human Health Risk Assessment, each of the three individual exposure pathway assessments (i.e., Direct Contact, Fish and Waterfowl Consumption, and Agricultural Product Consumption) will include an uncertainty section and the final volume (the Integrated Report) will also include a section in which the various types of uncertainty for each of the pathways are discussed and summarized. In addition, the Fish and Waterfowl Consumption

Assessment analyzes and presents risk using a number of techniques including Monte Carlo, micro-exposure modeling, and a relatively new statistical methodology known as p-bounds, which allows the relative magnitude of the two basic types of uncertainty (variability and incertitude) to be quantified and contrasted on the same graphical display.

In general, a very similar approach was followed for the Ecological Risk Assessment. Each of the eight assessment endpoints (e.g., benthic invertebrates, amphibians, fish, piscivorous mammals) is presented in a separate Appendix, each of which includes an uncertainty section which discusses sources, magnitudes, and implications of uncertainty specific to the particular endpoint. These individual uncertainty sections are summarized and integrated in the main body of the report. The ERA also makes use of Monte Carlo and p-bounds methods, where appropriate, to allow ready visualization and comparison of the relative magnitudes of the contribution of variability and incertitude to the uncertainty. A variety of bounding analyses are also performed in the ERA to address uncertainty. The project team presented a preview of these methods for dealing with uncertainty during one of the monthly Citizens' Coordinating Council Meetings to begin to familiarize the public with the ways in which risk and uncertainty will be communicated.

In addition, during the modeling study, sensitivity analysis is being performed on key model parameters, and the uncertainty associated with the parameterization of the model and resulting model predictions will be discussed in the calibration and validation reports.

**Principle #7, Select Site-specific, Project-specific, and Sediment-specific Risk Management Approaches that will Achieve Risk-based Goals**

**CSTAG Recommendation:**

Consider performing pilot tests or treatability studies of proven/available innovative treatment technologies that could be used if remedial action for the Rest of River is necessary.

**EPA New England Response:**

The project team agrees that pilot tests and/or treatability studies may be useful tools to evaluate treatment technologies if remedial action in the Rest of River is necessary. The merits of such studies will be evaluated during EPA's review of the Corrective Measures Study Proposal which is scheduled to be submitted by GE in 2005. However, the project team also intends to continue to review and evaluate any available information on treatment technologies between now and the Corrective Measures Study. Information may be gathered from various sources including EPA site managers, EPA Office of Research and Development, other EPA regional offices, academia and other sources. The project team intends to work closely with the Citizens' Coordinating Council and GE on these efforts.

**Principle #8, Ensure that Sediment Cleanup Levels are Clearly Tied to Risk Management Goals**

**CSTAG Recommendation:**

Should the risk assessments demonstrate unacceptable risks, the baseline risk assessment data should also be used to develop a range of protective sediment clean-up goals for the human health and/or ecological assessment endpoints that are driving the need for a response. If a cleanup is warranted, the relationship between the PCB sediment and/or flood plain soil actions levels, the final sediment and flood plain cleanup levels and residual contaminant concentrations,

and the risk-based goals (e.g., safe fish tissue concentrations) should be clearly explained.

**EPA New England Response:**

The Consent Decree and Revised RCRA Permit require that GE develop an Interim Media Protection Goals (IMPG) Proposal considering the information provided in the risk assessments. The Region will ensure that there is a clear rationale for the development of the IMPGs and an identification of the relationship between the IMPGs and any unacceptable risks that are identified in the risk assessments. The final cleanup goals that will be included in the Statement of Basis are expected to also reflect the results of the modeling of alternative remedial approaches, if required. The project teams expects that future meetings with the CSTAG will include a discussion of this topic.

**Principle #9, Maximize the Effectiveness of Institutional Controls and Recognize their Limitations**

**CSTAG Recommendation:**

Where institutional controls are not in-place to maintain dams, consider the appropriateness of establishing ICs to ensure that sediment does not migrate and/or cause unacceptable risks in the event of dam failure, or to ensure it is managed appropriately in the case of dam removal or maintenance.

**EPA New England Response:**

An evaluation of the sediment behind the dams and the risk that it poses under current and/or future conditions will be performed during the process of proposing appropriate corrective measures in the Statement of Basis. If unacceptable risks are identified, the use of institutional controls will be among the potential corrective measures considered, either alone or in conjunction with other corrective measures.

**CSTAG Recommendation:**

If the human health risk assessment indicates unacceptable risks from fish consumption, evaluate the effectiveness of the fish advisory signs in the Connecticut portion of the river. Consider additional outreach activities to ensure the public is aware of and understands the advisories.

**EPA New England Response:**

The project team agrees with this recommendation and will evaluate this issue following the completion of the Human Health Risk Assessment as suggested.

**Principle #10, Design Remedies to Minimize Short-term Risks while Achieving Long-term Protection**

**CSTAG Recommendation:**

The CSTAG recognizes that site investigations are still on-going, that data are still being evaluated, and that the Region is not ready to propose a remedy for the site. If a dredging and/or capping remedy is proposed, however, careful consideration should be given to evaluating the adverse impacts to biota and habitat that might result and to incorporating methods to mitigate and/or replace habitat that may be affected.

**EPA New England Response:**

The project team agrees with this recommendation. For that purpose, the extensive ecological characterization was performed and will inform such evaluations during the Corrective Measures Study and the Rest of River decision-making process. More specifically, under the Revised RCRA Permit, GE is required to submit for EPA approval a Corrective Measures Study ("CMS") Report, which evaluates alternative corrective measures for addressing Rest of River conditions. Among the criteria to be evaluated in the CMS Report is "short term effectiveness", which includes evaluation of impacts to nearby communities, workers or the environment during implementation of each alternative, including (but not limited to) risks associated with excavation, transportation, dewatering, disposal, or containment of sediments, soils, or other materials containing hazardous constituents.

**Principle #11, Monitor During and After Sediment Remediation to Assess and Document Remedy Effectiveness**

**CSTAG Recommendation:**

The CSTAG recognizes that the Region will not be developing a long-term monitoring program for this site for some time, and has no recommendations at this time.

**EPA New England Response:**

The project team recognizes that a long-term monitoring plan for the Rest of River may be required. The development of specific requirements for long-term monitoring will be carefully considered during the Corrective Measures Study and the Rest of River decision-making process.

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