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U. S. ENVIRONMENTAL PROTECTION AGENCY – NEW ENGLAND
ONE CONGRESS STREET, SUITE 1100 (MAIL CODE HBT)
BOSTON, MA 02114-2023

January 30, 2001

Mr. Andrew T. Silfer
Corporate Environmental Programs
General Electric Company
100 Woodlawn Avenue
Pittsfield, MA 01201

Re: Final Conditional Approval of General Electric's (GE) June 1999 Detailed Work Plan for the On-Site Consolidation Areas (OPCA), as amended by GE's August 12, 1999 Addendum, and modified by GE's June 13, 2000 Response to EPA's comment letter for the On-Plant Consolidation Areas (collectively, the "Work Plan") GE-Pittsfield/Housatonic River Site.

Dear Mr. Silfer:

This letter contains the Environmental Protection Agency's (EPA) conditional approval of the above-referenced Work Plan. The Work Plan is subject to the terms and conditions specified in the Consent Decree that was entered by the U.S. District Court on October 27, 2000 (the "Consent Decree").

After EPA review of the Work Plan, numerous discussions between EPA and GE, observations documented by EPA's field oversight contractor of GE's consolidation efforts during the summer of 2000, and after consultation with the Massachusetts Department of Environmental Protection, the EPA approves the Work Plan, pursuant to Paragraph 73(b) of the Consent Decree, subject to the following conditions:

1. GE shall provide to EPA interim filling and grading plans to identify how the OPCA will be filled in stages over the next several construction seasons. Since GE has indicated that they intend to build out and fill the OPCA horizontally before going vertical, these plans, coupled with the engineering properties (i.e., shear strength, consolidation behavior, moisture content) determined for the waste material, can be used to periodically review the stability and overall structural integrity of the OPCA's developmental stages over time. These interim plans will also assist field personnel in the execution of the work and ensure that issues such as access and storm water management can be effectively addressed as GE fills the OPCA.

2. GE shall comply with standard engineering and construction practices associated with earthwork activities. Specifically,

   a. GE shall use appropriate material for structural fill in the construction of above-grade embankments (berms). This material shall be placed in a controlled manner, e.g., thin lifts of not more than 12 inches in loose thickness and compacted to a defined density.

   b. GE shall define in their construction quality control plan (CQC) a process for determining that the appropriate in-place moisture content and density, and verification of lift thickness, have been attained to verify that compaction criteria are being met in accordance with GE's OPCA design specifications. This comment will be repeated in EPA's comments on the CQC.

3. GE shall provide written guidance as to the acceptance criterion for miscellaneous debris. This guidance shall address the potential for the presence of large cobbles, broken concrete, organic debris such as roots and branches, and general debris such as tires and other metal objects. According to standard practices, the maximum allowable size of material is correlated to placement of the material. For example, debris **should be no larger than** could be the size of the lift. Debris may be larger than the lift, however, if sufficient distance, both horizontally and vertically, is maintained from the liner and cover system to enable compaction of soil on all sides. GE shall not stack, nest, or carthouse large debris due to the potential for future collapse of the material.

4. In response to EPA's July 6, 1999 conditional approval letter, GE agreed to conduct a geophysical survey along the perimeter of the final configuration of the Hill 78 Consolidation Area. GE shall complete the geophysical survey, data analysis and any necessary subsurface investigations, to meet the requirements of the July 6, 1999 conditional approval letter and this conditional approval letter, to any expansion of the current boundaries of Hill 78.

GE shall comply with the above-conditions prior to material placement in the OPCAs for the 2001 season.

EPA believes that proper design and construction of the OPCAs requires that GE investigate the moisture content and shear strength of the material placed in the OPCA during the year 2000 and that GE establish acceptance criteria for optimum moisture content for material to be placed in the OPCAs in the year 2001 and beyond. EPA believes that these steps, especially identifying and complying with moisture content criteria, are necessary for the continued stability of the OPCAs and for GE to meet the OPCA performance standards. Accordingly, EPA recommends GE address the following issues:

I. Based upon field observations of the material placed in the OPCA (e.g., high moisture content) and the fact that additional material placement is not planned to occur until the Spring of 2001, EPA suggests that GE investigate both the moisture content and shear strength of the material placed in 2000. EPA understands that GE believes that adequate drainage of the material placed in 2000 is occurring (based on the volume of water being collected by the under drain system) and that understanding moisture content is not necessary. However, without knowing the acceptable design moisture content and the residual moisture content of the material, knowing the quantity of water which passes through the placed material is not conclusive in evaluating the adequacy of the material's stability. The relationship of moisture content and shear strength will govern the overall slope stability of the OPCA. Therefore, GE should review the existing conditions to quantitatively determine if the OPCA cell will remain stable.

II. Based on the fact that moisture content has a significant influence on the behavior of material, EPA strongly recommends that GE establish a material acceptance criterion tied to the optimum moisture content rather than to the paint filter test. The range for optimum moisture content can be determined via either a standard or modified Proctor test. For example, a silty material may have an acceptable range of optimum moisture content, a clayey material have another range, and a sandy material yet another range.

III. Typically, EPA's review of landfill designs/consolidation areas include the evaluation of various geotechnical parameters in order to demonstrate that key earthwork, constructability, foundation, slope stability, and lining/cover system performance criteria are satisfied. The review usually includes soil stratigraphy and supplemental information obtained from geotechnical field and laboratory investigations. For the foundation soils, waste material, and proposed borrow soils, the following types of analysis are typically performed during landfill design:

a. Analysis of bearing capacity of foundation soils under the proposed facility for the anticipated loadings.

b. Settlement analysis of the waste material (and foundation soils) under the anticipated loadings and the impact of said settlements on the grading and stability of the facility's cover and bottom lining systems.

c. Stability analysis of any critical below-grade excavation slopes and above-grade perimeter berms/embankments for containment. Both circular arc (rotational) and planar wedge (transitional) analysis are necessary to demonstrate that adequate stability will be provided by the proposed slope geometry and facility configuration.

d. Stability analysis of both the critical interim waste side-slopes and of the developing facility, as well as critical above-grade side-slopes for the completely filled and closed facility, including an analysis of the veneer stability of the final cover system.

e. An evaluation of the effects of seismic activity on the proposed slope configurations of the facility.

Given our concerns regarding the moisture content of material to be consolidated in the OPCAs, the EPA will conduct our own sampling/analysis and propose acceptable ranges of moisture content for the 50,000 cubic yards of material from the 1.5 mile reach based on minimum compaction requirements as provided by GE in the CQC. This sampling and analysis will ensure that the material EPA provides to GE for inclusion in the OPCA will meet moisture content parameters acceptable for consolidation according to "typical" landfill design. If GE provides their moisture content requirements for the OPCA design by **May 1, 2001,** the EPA will then comply with the site specific parameters.

The EPA looks forward to GE identifying the moisture content design parameters discussed above in our recommendations.

If you have any questions or would like to have a meeting/conference call regarding the technical issues associated with the OPCAs, please contact me at (617) 918-1268.

Sincerely,

M.J. Nalipinski

Michael J. Nalipinski
GE Facility Lead

cc:	Bryan Olson,	US EPA
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