GE
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Pittsfield, MA 01201
USA

Transmitted via Overnight Delivery

September 22, 2011

Dean Tagliaferro
Project Coordinator
U.S. Environmental Protection Agency
c/o Weston Environmental Engineering
10 Lyman St.
Pittsfield, MA 01201

Re: GE Pittsfield/Housatonic River Site
Upper ½-Mile Reach of Housatonic River (GECD800)
2011 Inspection of Aquatic Habitat Enhancement Structures and Armor Stone

Dear Mr. Tagliaferro:

Enclosed is a memorandum presenting the results of the 2011 inspection of the aquatic habitat enhancement structures and armor stone in the Upper ½ Mile Reach of the Housatonic River. This inspection was conducted on August 16, 2011.

It should be noted that this inspection included specific observations of the areas within the river channel in Cell J2 where we had previously observed displacement of the armor stone and exposure of the underlying geotextile fabric liner. Based on observations, these conditions appeared to have been caused primarily by water trapped beneath the geotextile fabric (which had become clogged with silt/clay), pushing the fabric liner toward the water surface and displacing the armor stone on top. These conditions had been repaired by GE on August 11, 2011, with EPA approval. In four such locations, each approximately 3 feet by 4 feet in size, the repair consisted of making small cuts (approximately 1 inch) in the geotextile fabric to release the trapped water and then replacing the missing armor stone on top of that fabric layer with similar armor stone. While a small amount of gas was released when the cut was initially made, the observations indicated that water trapped below the geotextile was a primary cause of the mounding of the geotextile. A fifth area with similar mounding was also vented, but the existing armor stone in this area had not been displaced so no additional armor stone was added there. Tom Czelusniak of Weston Solutions performed on-site oversight on behalf of EPA during the August 11, 2011 repair work.

As discussed in the enclosed inspection report, the observations of these areas during the August 16, 2011 inspection indicated that the river bottom in these areas was firm, and there was no evidence of the development of additional water pockets beneath the geotextile fabric causing mounding.

Please contact me if you have any questions.

Very truly yours,

for

Kevin G. Mooney
Remediation Project Manager

Enclosure

cc: Holly Inglis, EPA
Tim Conway, EPA
John Kilborn, EPA*
Rose Howell, EPA**
Robert Leitch, USACE
Linda Palmieri, Weston (2 copies)
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James Bieke, Goodwin Procter
Todd Cridge, ARCADIS
Charles Harman, AMEC
Robin MacEwan, Stantec
Public Information Repositories
GE Internal Repositories

* *without enclosure*

** *with enclosure in electronic format*

MEMORANDUM

TO: Kevin Mooney
General Electric

FM: Charles R. Harman, P.W.S.
AMEC Earth & Environmental

CC: Todd Cridge
Mark Gravelding, P.E.
ARCADIS

SUBJ: **Upper ½-Mile Reach of the Housatonic River**
2011 Monitoring Visit Trip Report
Inspection of Aquatic Habitat Enhancement Structures/Armor Stone

DATE: September 22, 2011

This memorandum reports the results of the 2011 inspection of the aquatic habitat enhancement structures and armor stone within the Upper ½-Mile Reach of the Housatonic River (½ Mile). This inspection was performed on August 16, 2011. (Inspections of the restored bank vegetation in the ½ Mile were completed with the 2010 inspection.)

The *Removal Action Work Plan – Upper ½ Mile Reach of Housatonic River* (Work Plan; BBL, 1999) provided that the General Electric Company (GE) would perform visual inspections annually for 5 years to assess the condition of the aquatic habitat enhancement structures that were placed within the ½ Mile, and to evaluate the armor stone layer placed within that reach for evidence of erosion. In 2007, in accordance with a proposal by GE as modified by EPA, this inspection program was extended for an additional 5 years. The inspection of the aquatic habitat enhancement structures consists of the physical observation of the condition of each of the structures. The monitoring also includes visual observations of the armor stone layer for evidence of erosion. This inspection constituted the fourth annual inspection of the current 5-year monitoring program.

As part of the armor stone monitoring, the August 2011 inspection included specific observations of areas within the river channel in Cell J2 where displacement of the armor stone and exposure of the underlying geotextile fabric liner had previously been observed – likely as a result of water trapped beneath the geotextile fabric, pushing the fabric liner toward the water surface and displacing the armor stone on top. These conditions had been repaired by GE prior to the August 16, 2011 inspection.

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INSPECTION RESULTS

Charles Harman of AMEC conducted the aquatic habitat enhancement structures/armor stone inspection on behalf of GE on August 16, 2010. The weather during the monitoring visit was cloudy/partly cloudy, with the temperature at approximately 80^{o} F at the beginning of the inspection. Robin MacEwan of Stantec was present on behalf of the Natural Resource Trustees. Water in the river was at a moderately elevated level (daily average flow at the US Geological Survey gage at Coltsville was 103 cubic feet per second), but was generally below the top of the riprap at the toe of the bank. The water was slightly turbid due to recent storms that had occurred in the area. The inspection was conducted by using waders and walking in the river the length of the ½ Mile. The following observations were made during this visit:

1 Water in the river was at a level that allowed for observations of most of the aquatic habitat enhancement structures.

2 In general, the aquatic habitat enhancement structures that were visible appeared to be providing good cover and habitat. The aquatic structures appeared to be structurally stable and were creating variations in water velocity and flow, as evidenced by the presence of scour zones and depositional areas in the sediment surrounding the structures. The development of these variations in sediment elevation and the creation of flow changes in the water column appear to be providing good habitat for fish and aquatic invertebrates. Photographs of and observations related to the condition of the aquatic habitat enhancement structures are presented in Attachment A.

3 As in previous years, the armor stone layer appeared to be stable with no areas of erosion or loss of armor materials noted. Specific observations of the areas where displacement of the armor stone and exposed geotextile fabric had previously been observed and which had been repaired indicated that the river bottom in these areas was firm, and there was no evidence of the development of similar mounding conditions beneath the fabric.

AQUATIC STRUCTURES MONITORING DATA SHEETS

Monitoring Date: 8/16/2011

Persons Conducting the Monitoring: Chuck Harman (AMEC) and Robin MacEwan (Stantec)

Daily Stream Flow at Time of Monitoring (Based on USGS Station Coltsville, MA): 103 cfs

General River Stage/Depth Observations: River was at a moderate water level, current was swift, most of the structures were exposed for observation

General Weather Observations: Skies were cloudy/partly-cloudy with temps in the 80's

Cell	Aquatic Structures	Aquatic Structure Condition/General Biological Observations
B	1. Single wing deflector	 1. Structures appear stable 2. Structure induced variations observed in areas immediately downstream of the deflector

Cell	Aquatic Structures	Aquatic Structure Condition/General Biological Observations
C	1. Boulders 2. Island	  1. Structures appear stable 2. Structure induced variations observed in areas immediately downstream of the island 3. The island is well vegetated with wetland herbaceous species 4. Boulders near island are causing scouring in the immediate area; good cover

Cell	Aquatic Structures	Aquatic Structure Condition/General Biological Observations
D	1. Boulders	 1. Structures were functional and providing variation in habitat
G1	1. Boulder Cluster	 1. Structures were functional and providing variation in habitat

Cell	Aquatic Structures	Aquatic Structure Condition/General Biological Observations
G2/F2	1. W-weir	 1. Much of the weir is buried in soft silt/sand; portion that is present appears to offer good cover for aquatic organisms
G3	1. Three-boulder cluster	 1. Structure appeared stable, no issue or concern 2. Structure was functional and providing variation in habitat

Cell	Aquatic Structures	Aquatic Structure Condition/General Biological Observations
F3	1. Three-boulder cluster 2. Two-boulder cluster 3. Three-boulder cluster	 1. All structures in this cell appear stable 2. Structures appear to be providing diversity in habitat
H1	1. Boulder cluster	 1. Structure appears stable and is providing diversity in habitat 2. Good habitat, variations in velocity around structure producing variations in stream bottom topography

Cell	Aquatic Structures	Aquatic Structure Condition/General Biological Observations
I1/J1	1. Vortex weir	 1. Much of the weir is buried in soft silt/sand 2. Structure appears stable and is providing diversity in habitat 3. Good habitat, variations in velocity
H2	1. Single boulder	 1. Structure appears stable and is providing diversity in habitat 2. Good habitat, variations in velocity around structure producing variations in stream bottom topography

Cell	Aquatic Structures	Aquatic Structure Condition/General Biological Observations
J1	1. Two-boulder cluster 2. Three-boulder cluster 3. Single-boulder	 1. Structures appears stable and is providing diversity in habitat 2. Good habitat, variations in velocity around structures producing variations in stream bottom topography 3. Boulders are being used as perches for feeding birds
J2	1. "J"- boulder formation	 1. Structure appears stable and is providing diversity in habitat 2. Good habitat, variations in velocity around structure producing variations in stream bottom topography

Cell	Aquatic Structures	Aquatic Structure Condition/General Biological Observations
I3	1. Single-wing deflector	 1. Structure appears stable and is providing diversity in habitat 2. Good habitat, variations in velocity around structure producing variations in stream bottom topography
I3/J3	1. Vortex rock weir	 1. Structure appears stable and is providing diversity in habitat 2. Good habitat, variations in velocity around structure producing variations in stream bottom topography

Cell	Aquatic Structures	Aquatic Structure Condition/General Biological Observations
J3	1. Boulder cluster 2. Three-boulder cluster 3. Three-boulder cluster	 1. Structures appears stable and is providing diversity in habitat 2. Good habitat, variations in velocity around structures producing variations in stream bottom topography