

24 May 2016

Mr. Dean Tagliaferro  
Project Manager  
GE-Pittsfield/Housatonic River Site  
USEPA - Region 1  
5 Post Office Square –Suite 100  
Boston, MA 02109-3912

Re: **2016 Phase 4C Floodplain Property Vernal Pool Survey**  
**Contract W912WJ-14-D-0003, Task Order 0003**  
**GE-Pittsfield/Housatonic River Site**  
**DCN: AE-052416-ACEV**

Dear Mr. Tagliaferro:

Attached please find a summary memorandum titled “*2016 Phase 4C Floodplain Vernal Pool Survey — GE-Pittsfield/Housatonic River Site, Pittsfield, Massachusetts*” prepared by Stantec Consulting Services Inc. (Stantec) per request of Avatar Environmental LLC (Avatar).

Avatar subcontracted Stantec under contract W912WJ-14-D-0003, with the US Army Corps of Engineers, New England District Task Order 0003 to conduct a survey of the restored vernal pool at Parcel I6-1-106 within the Phase 4C Floodplain Properties Removal Action Area on April 15, 2016.

Should you have any comments or questions regarding this document, please contact me (508) 414-1762 or via e-mail at [izapisek@avatarenviro.com](mailto:izapisek@avatarenviro.com)

Sincerely,



Izabela Zapisek  
Deputy Program Manager

Cc: DCN Files (Avatar)  
Robert Leitch, USACE  
Chris Ferry, EPA  
Massachusetts Public Information Repository (Berkshire Athenaeum)

To: Izabela Zapisek  
Avatar Environmental LLC

From: Daniel G. Nein  
Stantec Consulting Services Inc.

File: 195601048

Date: May 23, 2016

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**Reference: 2016 Phase 4C Floodplain Vernal Pool Survey — GE-Pittsfield/Housatonic River Site, Pittsfield, Massachusetts**

On April 15, 2016, Stantec Consulting Services Inc. (Stantec), under contract with Avatar Environmental LLC (Avatar), who collectively are contracted to the U.S. Army Corps of Engineers (COE) in support of U.S. Environmental Protection Agency (EPA), performed a survey of the restored vernal pool at Parcel I6-1-106 within the Phase 4C Floodplain Properties Removal Action Area (hereafter, Vernal Pool 4C) adjacent to the 1 ½ Mile Reach of the Housatonic River in Pittsfield, Massachusetts. Dan Nein, Certified Wildlife Biologist, of Stantec conducted the survey with Izabela Zapisek of Avatar in attendance. Post remediation assessment of Vernal Pool 4C began in 2009 as outlined in General Electric's *Final Completion Report for Removal Action for Housatonic River Floodplain - Non-Residential Properties (FCR 2010)*<sup>1</sup> and 2016 marks the eighth year of the survey.

The survey of the vernal pool began at approximately 11:15 AM under clear skies with temperatures of approximately 55 degrees Fahrenheit (°F). The vernal pool and surrounding landscape were free of snow and ice (Photos 1 and 2). Weather data, as reported at Pittsfield Municipal Airport weather station (KPSF) for the few weeks preceding the survey, indicated variable conditions, with average daily temperatures below, at, and above typical daytime and overnight averages<sup>2</sup>. Several light to moderate rain and snow events occurred in the area during that time period.

Stantec methodically waded the vernal pool to visually characterize and document biota and ecological conditions. Species identification and taxonomy follows Kenney and Burne (2001)<sup>3</sup>; however, frog taxonomy follows Frost et al. (2012)<sup>4</sup>. Representative water depths within the vernal pool ranged from approximately 1 to 3 feet (ft) and were generally consistent with depths observed at this pool in past years' surveys.

## **SURVEY RESULTS**

Observations of amphibians during the survey included approximately 47 wood frog (*Lithobates sylvatica*) egg masses attached to aquatic vegetation along the western edge of the pool (Photos 3 and 4), 1 dead and 1 live adult green frog (*Lithobates clamitans*), and 1 dead red-spotted newt (*Notophthalmus viridescens viridescens*). The wood frog egg masses were advanced stage and hatching; there is a possibility the count is low because some egg masses were fully hatched at time of the survey, as evidenced by the thousands of young tadpoles observed in the pool.

Stantec did not observe breeding evidence (i.e., egg masses, spermatophores, or breeding congress) of spotted salamanders (*Ambystoma maculatum*) at the pool during this survey. Spotted salamander breeding can overlap with wood frogs; however, some spotted salamander breeding

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<sup>1</sup> Arcadis. 2010. Final Completion Report for Removal Action for Housatonic River Floodplain – Non-Residential Areas. General Electric Company. Pittsfield, Massachusetts. 1102 pgs. Document ID 462575.

<sup>2</sup> Pittsfield Municipal Airport (KPSF) historical weather data reviewed at Weather Underground and accessible at <https://www.wunderground.com/history>

<sup>3</sup> Kenney, L. and Burne, M. 2001. A Field Guide to the Animals of Vernal Pools. Massachusetts Division of Fisheries and Wildlife, Natural Heritage and Endangered Species Program, Westborough, MA. Vernal Pool Association, Peabody, MA.

<sup>4</sup> Frost, D., R. McDiarmid, J. Mendelson, and D. Green. 2012. Anura - Frogs. IN B. I. Crother (ed.), Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, With Comments Regarding Confidence in Our Understanding, pp. 11–22. SSAR Herpetological Circular 39:1-92. Available at [http://www.ssarherps.org/pdf/HC\\_39\\_7thEd.pdf](http://www.ssarherps.org/pdf/HC_39_7thEd.pdf). Accessed April 24, 2014.

**Reference: 2016 Phase 4C Floodplain Vernal Pool Survey — GE-Pittsfield/Housatonic River Site, Pittsfield, Massachusetts**

activity may occur later in the spring season, so use of the pool as breeding habitat by spotted salamanders could not be definitively determined at the time of the April 15, 2016 survey.

Macroinvertebrates observed during the survey included fairy shrimp (*Eubbranchipus vernalis*); (Photos 5 and 6), water striders (family Gerridae), backswimmers (family Notonectidae), waterboatmen (family Corixidae), amphibious snails (Class Gastropoda), mosquito larvae (family Culicoidea), fingernail clams (Class Bivalvia), caddisflies (Order Trichoptera), and isopods (Class Isopoda). Several hundred fairy shrimp were observed throughout the vernal pool, but primarily in deeper water near the center of the pool.

Fairy shrimp have been observed within the vernal pool for 4 consecutive years, suggesting that the pool completely or nearly dried out during the previous calendar years. To avoid predation, fairy shrimp employ a reproductive strategy that relies upon the desiccation of their eggs laid in the pool, which may happen in the year (or years) following deposition.<sup>5</sup> Further evidence of complete or nearly complete pool dry-out is the types of wetland vegetation present in the pool, including cottongrass bulrush (*Scirpus cyperinus*)<sup>6</sup>, uptight sedge (*Carex stricta*), and purple loosestrife (*Lythrum salicaria*), all of which do not typically establish in permanently inundated habitats.

## **RESULTS AND RELATIONSHIP TO RESTORATION REQUIREMENTS**

Section 7.2 of the FCR 2010 notes that the Obligate Species Method, as defined by the Massachusetts Division of Fisheries and Wildlife, will be used during surveys of Vernal Pool 4C. The Obligate Species Method specified in the March 2009 Natural Heritage and Endangered Species Program (NHESP) *Guidelines for the Certification of Vernal Pool Habitat in Massachusetts* requires evidence of breeding activity by obligate vernal species or the presence of fairy shrimp, and evidence of no permanently flowing outlet to meet certification criteria.

In 2016, Vernal Pool 4C on Parcel 16-1-106 met the physical certification criterion of lacking a permanently flowing outlet. The vernal pool also met the biological criteria based on evidence of 5 or greater egg masses for obligate amphibian vernal pool breeding species (i.e., wood frog) and the presence of fairy shrimp. Based on the results of the 2016 survey, this vernal pool continues to be eligible for certification under the March 2009 NHESP *Guidelines for the Certification of Vernal Pool Habitat in Massachusetts*.

**Stantec Consulting Services Inc.**



Daniel G. Nein, CWB  
Certified Wildlife Biologist / Project Manager  
Phone: 207-406-5465  
Dan,Nein@stantec.com

Attachment: Representative Photos

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<sup>5</sup> Ward, M. and P. deMaynadier. 2009. Fairy Shrimp: Coming Soon to a Wetland near You? *The Maine Entomologist* 13(1):4-5.

<sup>6</sup> Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. *The National Wetland Plant List: 2016 wetland ratings*. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X

**Reference: 2016 Phase 4C Floodplain Vernal Pool Survey — GE-Pittsfield/Housatonic River Site, Pittsfield, Massachusetts**



**Photo 1.** Vernal Pool 4C looking south from northern edge. Stantec. April 15, 2016.



**Photo 2.** Vernal Pool 4C looking east at the western edge. Stantec. April 15, 2016.

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**Photo 3.** Wood frog egg mass (advanced and hatching) in Vernal Pool 4C. Stantec. April 15, 2016.



**Photo 4.** Wood frog egg masses in Vernal Pool 4C. Avatar. March 23, 2016.

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**Photo 5.** Fairy shrimp from Vernal Pool 4C. Stantec. April 15, 2016.



**Photo 6.** Fairy shrimp and wood frog tadpole from Vernal Pool 4C. Stantec April 15, 2016.