



A Service-Disabled Veteran-Owned Small Business

2 July 2018

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

Re: **2018 Phase 4C Floodplain Property Vernal Pool Survey**  
**Contract W912WJ-14-D-0004, Task Order 5**  
**GE-Pittsfield/Housatonic River Site**  
**DCN: AE-070218-AFAY**

Dear Mr. Tagliaferro:

Attached please find a summary memorandum titled “*2018 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 0004 to conduct a survey of the restored vernal pool at Parcel I6-1-106 within the Phase 4C Floodplain Properties Removal Action Area on May 3, 2018.

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,

A handwritten signature in blue ink that reads "Izabela Zapisek". The signature is enclosed in a thin black rectangular border.

Izabela Zapisek  
Deputy Program Manager

Cc: DCN Files (Avatar)  
Robert Leitch, USACE  
Christopher Ferry, EPA  
MA & CT Public Information Repositories

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To: Scott Campbell  
Avatar Environmental LLC

From: Daniel G. Nein, CWB  
Stantec Consulting Services Inc.

File: 195601048

Date: June 22, 2018

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**Reference: 2018 Phase 4C Floodplain Vernal Pool Survey — GE-Pittsfield/Housatonic River Site, Pittsfield, Massachusetts**

On May 3, 2018, Stantec Consulting Services Inc. (Stantec), under contract with Avatar Environmental LLC (Avatar), under contract to the U.S. Army Corps of Engineers (ACOE), conducted a survey of the restored vernal pool at Parcel 16-1-106 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. Certified Wildlife Biologist Dan Nein of Stantec conducted the survey with Scott Campbell of Avatar; and Richard Fisher, Stephanie Carr, and Dean Tagliaferro of the U.S. Environmental Protection Agency (EPA) in attendance. Post remediation assessments 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 2018 marks the tenth year of the survey.

The May 3 survey of the vernal pool began at approximately 11:15 AM under partly to mostly cloudy skies with a temperature of approximately 75°F. The vernal pool and surrounding landscape were free of snow and ice (Photos 1 and 2). Representative water depths within the vernal pool ranged from approximately 1 to 3.5 feet and were considered comparable to water depths observed during past years' surveys.

Survey methodology followed the Obligate Species Method of the March 2009 Natural Heritage and Endangered Species Program (NHESP) *Guidelines for the Certification of Vernal Pool Habitat in Massachusetts (Guidelines)*<sup>2</sup>. The Guidelines require evidence of breeding activity by obligate vernal species or the presence of fairy shrimp and evidence of no permanently flowing outlet for a vernal pool to meet certification criteria. Stantec methodically waded through 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>.

## **SURVEY RESULTS**

Wood frog (*Lithobates sylvatica*) breeding evidence including egg masses and tadpoles was documented during the May 2018 survey. Five-plus disassociated (hatched and hatching) egg

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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> Massachusetts Natural Heritage and Endangered Species Program. 2009. Guidelines for the Certification of Vernal Pool Habitat in Massachusetts. Available at <http://www.mass.gov/eea/docs/dfg/nhesp/vernal-pools/vpcert.pdf>. Accessed May 1, 2018.

<sup>3</sup> Kenney, L. and M. Burne. 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 [https://ssarherps.org/wp-content/uploads/2014/07/HC\\_39\\_7thEd.pdf](https://ssarherps.org/wp-content/uploads/2014/07/HC_39_7thEd.pdf). Accessed May 8, 2018.

**Reference: 2018 Phase 4C Floodplain Vernal Pool Survey — GE-Pittsfield/Housatonic River Site, Pittsfield, Massachusetts**

masses were observed near the western and eastern edges of the pool (Photo 3). Hundreds to thousands of wood frog tadpoles were observed near the eastern edge and congregated around wood debris. Based on their 0.25- to 0.5-inch size (Photo 4), the tadpoles likely hatched from a mat of egg masses fertilized and deposited in this area of the vernal pool in April 2018. Approximately 3 adult green frog (*Lithobates clamitans*), 1 eastern red backed newt (*Plethodon cinereus*), and 1 dead wood frog were also observed during the survey. No fish were observed in 2018.

Stantec observed one spotted salamander (*Ambystoma maculatum*) egg mass near the western edge of the pool (Photo 5). Spotted salamander breeding activity can overlap with wood frogs, but can also occur later in the spring.

Macroinvertebrates observed during the survey included abundant fairy shrimp (*Eubranchipus vernalis*) (Photo 6), caddisflies (Order Trichoptera), whirligig beetles (Family Gyrrinidae), water striders (Family Gerridae), water mites (Order Acariformes), water boatmen (Family Corixidae), mosquito larvae (Family Culicoidea), predaceous diving beetle (Family Dytiscidae), amphibious snails (Class Gastropoda), and amphipods (Order Amphipoda).

Fairy shrimp have been observed within Vernal Pool 4C for 6 consecutive years, suggesting that the pool completely or nearly dried out during the years prior to each survey. Fairy shrimp eggs laid in vernal pools require desiccation in the year (or years) following deposition for successful reproduction and to reduce the threat of predation.<sup>5</sup> Further evidence of complete or nearly complete dry pool conditions within Vernal Pool 4C is the wetland vegetation present in the pool, including upright sedge (*Carex stricta*), cottongrass bulrush (*Scirpus cyperinus*)<sup>6</sup>, and purple loosestrife (*Lythrum salicaria*), all of which do not typically grow 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 Guidelines require evidence of breeding activity by obligate vernal species or the presence of fairy shrimp and evidence of no permanently flowing outlet in order to meet certification criteria.

Observations in 2018 indicate that Vernal Pool 4C met the physical certification criterion (lacking a permanently flowing outlet) and the biological criteria (presence of fairy shrimp and evidence of obligate amphibian breeding [ $>5$  obligate species' egg masses and wood frog tadpoles]). The results of the May 2018 survey indicate that this vernal pool continues to be eligible for certification under the March 2009 NHESP *Guidelines for the Certification of Vernal Pool Habitat in Massachusetts*.

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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



June 22, 2018  
Scott Campbell  
Page 3 of 3

**Reference: 2018 Phase 4C Floodplain Vernal Pool Survey — GE-Pittsfield/Housatonic River Site, Pittsfield, Massachusetts**

**STANTEC CONSULTING SERVICES INC.**

A handwritten signature in blue ink, appearing to read "D. Nein".

Daniel G. Nein, CWB  
Senior Associate  
Phone: (207) 406-5465  
Fax: (207) 729-2715  
Dan.Nein@stantec.com

Attachment: Photographs

**Reference: 2018 Phase 4C Floodplain Vernal Pool Survey — GE-Pittsfield/Housatonic River Site, Pittsfield, Massachusetts**



Photo 1. Vernal Pool 4C looking south from the northwest edge. Stantec. May 3, 2018.

**Reference: 2018 Phase 4C Floodplain Vernal Pool Survey — GE-Pittsfield/Housatonic River Site, Pittsfield, Massachusetts**



Photo 2. Vernal Pool 4C looking north from the southern portion of the pool. Stantec. May 3, 2018.

**Reference: 2018 Phase 4C Floodplain Vernal Pool Survey — GE-Pittsfield/Housatonic River Site, Pittsfield, Massachusetts**



Photo 3. Disassociated wood frog egg mass from Vernal Pool 4C. Stantec. May 3, 2018

**Reference: 2018 Phase 4C Floodplain Vernal Pool Survey — GE-Pittsfield/Housatonic River Site, Pittsfield, Massachusetts**



Photo 4. Wood frog tadpoles in Vernal Pool 4C that hatched in April 2018. Stantec. May 3, 2018.

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Photo 5. Spotted salamander egg mass near western edge of Vernal Pool 4C. Stantec. May 3, 2018.

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Photo 6. Fairy shrimp captured from Vernal Pool 4C. Stantec. May 3, 2018.