

August 8, 2019

David Turi, Chair
Conservation Commission
One Liberty Lane
Norfolk, MA 02056

**Subject: Environmental Inspection Report
144 Seekonk Street
(Assessors' Map 23, Block 76, Lot 71)**

Dear Mr. Turi:

This report follows my appointment by the Town of Norfolk as the Conservation Commission's authorized agent to provide environmental services at 144 Seekonk Street, Norfolk. The requested scope of work included:

- Conducting on-site assessment to review possible alterations of wetland resources on the property pursuant to state and local statutes, regulations and laws;
- Accurately identifying the wetland resources within the areas of possible alteration;
- Making use of aerial photographs, topographical, surficial geologic, soil, wetland and floodplain maps, as necessary;
- Taking soil samples, as well as other means to accurately determine if any violations exist as to the resource areas.
- Preparing a written report with findings to document the assessment and note any changes/revisions to the boundaries of any wetland resources, and
- Working, if necessary, with Town legal counsel.

In this regard, I visited the site during normal business hours on May 29, 2019, under Administrative Warrant #1957ASW2, issued by the Norfolk County District Court, Wrentham Division, on the same date. The Civil Administrative Warrant was for entry, inspection, observation, photographing, videotaping and soil sampling pursuant to the Massachusetts Wetlands Protection Act (G.L. c. 131, § 40) and the regulations promulgated thereunder at 310 CMR 10.00 et seq., and the Town of Norfolk Wetlands Protection Bylaw (Article VII, section 2).

In the course of my work I reviewed the plan by Andrews Surveying & Engineering, Inc. (Andrews). The plan is entitled "Abbreviated Notice of Resource Area Delineation of 144 Seekonk Street," prepared for Lakeland Hills, LLC, and revised through 5/21/18, and the Order of Resource Area Delineation issued by the Conservation Commission and the Superseding Order of Resource Area Delineation issued by the Department of Environmental Protection ("DEP").

Wetland Resource Protection

Wetland resources in Norfolk are protected by local, state and federal laws and regulations. My focus during the May 2019 site visit was identification of and potential alterations to local and state-protected wetlands.

The Massachusetts Wetlands Protection Act (WPA) (G.L. c. 131, section 40) states the following:

10.02: Statement of Jurisdiction

(1) Areas Subject to Protection under M.G.L. c. 131, § 40. The following areas are subject to protection under M.G.L. c. 131, § 40:

- (a) Any bank, the ocean, any freshwater wetland, any estuary, any coastal wetland, any creek, any beach, bordering any river, any dune, on any stream, any flat, any pond, any marsh, or any lake or any swamp
- (b) Land under any of the water bodies listed above
- (c) Land subject to tidal action
- (d) Land subject to coastal storm flowage
- (e) Land subject to flooding
- (f) Riverfront area.

The Norfolk Wetlands Protection Bylaw Regulations (Article VII, section 2) states, in part:

SECTION 2: Statement of Jurisdiction

(1) Areas Subject to Protection under the Bylaw ("Resource Areas"). The following Resource Areas are subject to protection under the Bylaw:

- (a) Any freshwater wetland, marsh, wet meadow, bog, swamp, bank, beach, dune or flat;
- (b) Any land within 100 feet of any of the areas set forth in Section 2(1)(a) above;
- (c) Any lake, river, pond, stream, estuary, or watercourse (ephemeral, intermittent or perennial);
- (d) Any land under any of the water bodies set forth in Section 2(1)(c) above;
- (e) Any land within 100 feet of the water bodies set forth in Section 2(1)(c) above;
- (f) Any land subject to flooding or inundation by: - groundwater or - surface water.

Findings

Based on my May 2019 observations, I conclude that Norfolk Bylaw resource areas (a), (c) and (f) found on the site are more extensive than shown by Andrews. Specific Bylaw resource areas *not shown* on Andrews mapping are: freshwater wetlands, see Bylaw, 2.(1)(a); bank associated with the stream, see 2.(1)(a); an intermittent stream, see 2.(1)(c); and areas subject to inundation by surface or groundwater, see 2.(1)(f).

In addition, based on my May 2019 observations I note that wetland resources protected under the Bylaw appear to have been impacted by on-site activities conducted prior to my first visit for the Norfolk Zoning Board of Appeals ("ZBA") to the property in February 2018. Probable impacted resources are freshwater wetland, bank, (see Bylaw, 2.(1)(a)) and watercourse (ephemeral) (see Bylaw, 2.(1)(c)).

Further, state-protected wetlands under definitions in the WPA appear to have been impacted by on-site activities conducted prior to February 2018. Probable impacted resources are freshwater wetlands and intermittent stream.

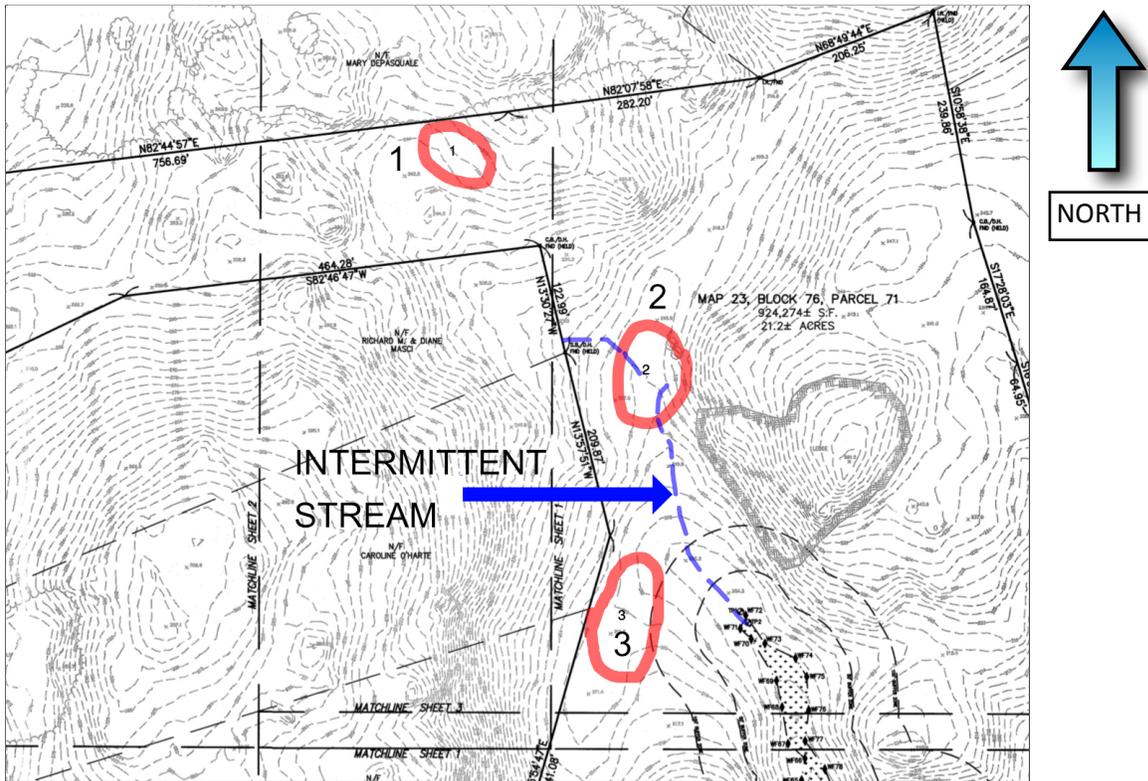


Figure 1. Areas in red were observed for potential wetland impacts and/or missing resources (base map from Andrews ANRAD plan, 12/1/17).

Figure 1 indicates areas that I identified in my February 19, 2018 Peer Review for the Zoning Board of Appeals (ZBA) as being wetlands potentially impacted by pre-2018 activities. I have labeled those areas

- 1 (the most northerly area),
- 2 (central location) and
- 3 (southerly).

As the timing and conditions for investigation of wetlands with a plant component were not optimal in February 2018, I did not conduct technical examinations at that time, and further, such additional examinations would have been outside the scope of my services for the ZBA. Rather, I recommended in my report to the ZBA that additional wetland investigations should be conducted in spring.

AREA 1

During my February 2018 site walk I found Area 1 to have been recently excavated and containing standing water. Newly excavated soils were exposed; there was no evidence of topsoil accumulation; and there was no old or emerging vegetation. These factors indicated clearing activities had occurred within the last 12 to 18 months.

During my May 2019 site visit I found the same area to be dry. This variability is characteristic of an ephemeral pond.

The Area 1 ponding is likely to reflect seasonal variations in groundwater elevation, as well as precipitation patterns. Typically, flooding in such areas

decreases as the growing season begins due to evapotranspiration¹, increasing temperatures and falling groundwater levels.



Figure 2. Area 1, as observed in February 2018. Note irregular shape of ponded area.



Figure 3. Area 1 as observed in May 2019. Note emergent FACW grasses and sedges.

¹ The process by which water is transferred from the land to the atmosphere by evaporation from the soil and other surfaces and by transpiration from plants.

connects to an area of Bordering Vegetated Wetlands (BVW). The Andrews contouring indicates that the stream connects to the BVW near wetland points IVW A-E (5/21/18 SORAD plan).

From my observations in both 2018 and 2019, during which I found the stream flowing (2018) and dry (2019)--and my observations that the stream has either banks or scouring along a definable hydraulic gradient from the upper reach at Area 2 to the wetland points IVW A-E, I conclude the stream is intermittent and as such, is protected under the Bylaw under 2.(1)(c). See 2018 photograph of stream below.



Figure 5. February 2018 shot of intermittent stream looking upgradient. Note stream terminates in upper portion of photo at its intersection with a dirt road that runs left to right in photo.

As indicated in Figures 4 and 5, the intermittent stream channel weaves upgradient until it abruptly ends in the vicinity of Area 2 at the edge of the dirt road.



Figure 6. May 2019 photograph of intermittent stream at its intersection with dirt road. Stream is on left in darker area and dirt road is to its right where grassed area appears. The two areas

are physically separated by the small rocks and boulders shown.

Area 2 itself is indicated in an oval polygon shown in Figure 4. Because the stream ends abruptly at its contact with the dirt road, I conducted eight soil borings in the filled area of the dirt road beside the stream at Area 2 during my May 2019 visit. Those borings were made with a conventional hand-auger (with a two-inch diameter) to depths of up to 23-inches. Borings were conducted in an area roughly 20 by 60-feet, and separated by distances between holes of nine to 36-feet.

All eight holes revealed similar soil profiles. The top layer consisted of sand and gravels to depths of between nine and 13-inches; soil colors were indicative of upland soils (10YR 7/4 - 7/6), and showed no root formation.

Directly below the fill layer of all holes was an original organic top layer (technically designated an "Oe" horizon) which was four to six-inches deep. Colors varied between 10YR 3/1 and 3/2.

Directly below the organic top layer of all holes was an undisturbed mineral horizon (technically designated as an "A" horizon). Colors varied between 10YR 2/2 with greater than 10% redoximorphic (redox) activity, to 10YR 3/1 with less than 10% redox. Coloration of the "A" layer is indicative of hydric soils². Soil layer "A" textures were fine sandy loam.

I photo-documented the general area of soil-testing, and representative test holes, in the selected photographs below.



Figure 7. May 2019 photograph of Hole A. Top of auger show Oe horizon; mid and end portions show A horizon (10YR 2/2 with >10% redox). The traces of brighter soil at end of auger are residue from the top fill layer.

² See March 1995 MassDEP publication entitled, "Delineating Bordering Vegetated Wetlands," for discussion of hydric soils (pages 27-33).



Figure 8. May 2019 photograph of Hole E. Top of auger (shown in lower left portion of photo) indicates Oe layer and tip of auger shows gleyed A layer (5BG 5/1).

Also, within Area 2 at its highest point (the top and terminus of the intermittent stream), an area approximately 15 by 35-feet in size was excavated before my observation in 2018. It, like Area 1, ponds water periodically and may, prior to excavation, have connected to the intermittent stream. In its current state, it, like Area 1, is protected under the Bylaw under 2.(1)(f), as an area subject to inundation by surface or groundwater.



Figure 9. February 2018 photograph of ponded area described directly above. (See Figure 10

below for May 2019 shot of same area).



Figure 10. February 2018 photograph of same area, dry.

In order to delineate disturbed areas which may have previously contained protected wetlands, MassDEP requires use of the standards articulated in the March 1995 MassDEP publication entitled, "Delineating Bordering Vegetated Wetlands." Page 48 of the publication states,

- Areas where vegetation has been altered or removed - such as golf courses, lawns, and agricultural fields - require the use of soils and other indicators of hydrology to delineate BVW boundaries. In some cases, such as where vegetation has been cut or removed (e.g. ongoing forestry activity), remnant vegetation should be considered, but other indicators of hydrology also should be used to establish the BVW boundary.
- Areas where fill has been placed in wetlands require the analysis of soils directly beneath the fill. A hole must be dug through the fill until the original soil is exposed. Look for evidence of a buried surface horizon and evidence of normal horization (topsoil and subsoil layers). Soil surveys may be useful as a reference for distinguishing between the original soil and fill material. Once you have dug through the fill, analyze the original soils and determine whether they are hydric soils or not. Look for evidence of soil saturation (see page 35). If the fill is recent, there also may be identifiable plant parts beneath the fill that can be used to help delineate the BVW boundary.

Based on these MassDEP protocols for disturbed or altered sites, I conclude that Area 2 was disturbed by pre-2018 activities, including both excavation and fill. Using said protocols for disturbed or altered sites (noted directly above), I conducted a series of soil borings beside the existing intermittent stream. All borings were made at distances of six to 12-feet from the closest undisturbed stream edge. These borings were photo-documented and logged.

As shown in Figure 11 below, all the soil borings made in the area marked,

"Area of Fill on Hydric Soils" indicated wetland (hydric) soils underlying a new sand/gravel fill. Therefore, this area, before disturbance, was likely to be WPA-protected BVW (or as categorized in the Bylaw, a freshwater wetland). The ponded area shown in Figure 9 (also shown in Figure 11 as, "Excavated, Seasonally-Ponded Area") may have been part of that BVW. However, because of the excavation, no original soils exist and a conclusive determination could not be made.

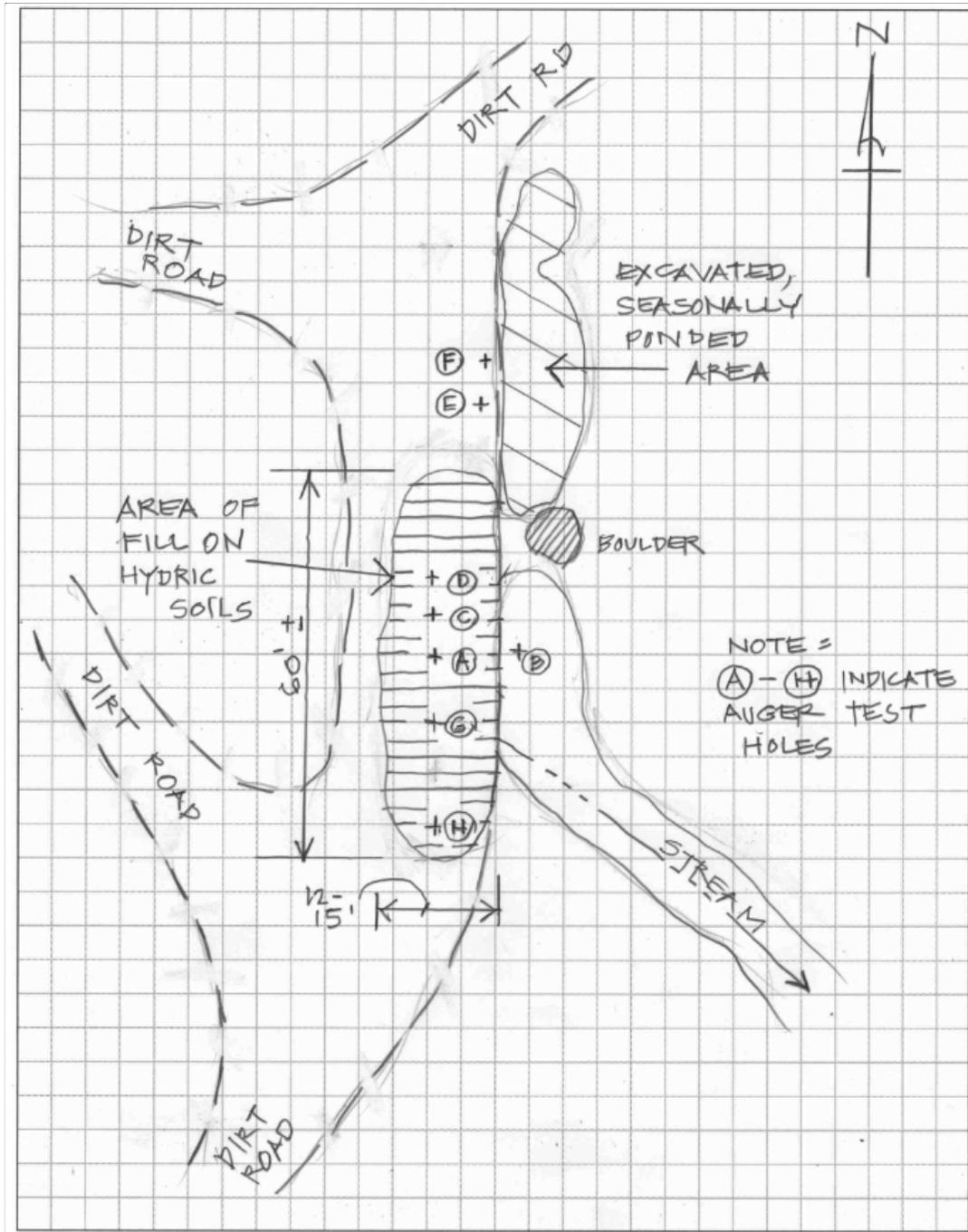


Figure 11. Area 2: Sketch from May 2019 field notes. Note that the terminus of the stream at its intersection with the road edge occurs at approximately auger test hole #G (between A and H).

AREA 3

During the May 2019 site visit, I found no local or state-protected wetland resources within or near Area 3 (see Figure 1 for locus).

Summary

Area 1

Area 1 may be protected by the Bylaw under 2.(1)(f), as an area subject to inundation by surface or groundwater. It is not protected as a resource area under the state WPA. In addition, it does not meet the Bylaw definitions for Land Subject to Flooding or Pond.

That said, I note also that prior to excavation, Area 1 may have existed as a freshwater wetland protected by the Bylaw under 2.(1)(a). Excavation may have removed previously existing hydric soils and wetland vegetation from Area 1. From my observations, hydric soil is presently forming and a portion of the emergent vegetation in the excavated areas is comprised of wetland species.

In Massachusetts, hydric soils and wetland vegetation are typically found in the first 12-24-inches of soil. Excavation to depths below 24-inches would have removed evidence of hydric conditions. My professional opinion is that excavation in 2018 may have exceeded depths of 24-inches.

Further, I note that the excavation activities could not have been associated with typical Title 5 deep hole testing. As a Massachusetts Certified Soil Evaluator (CSE), I have performed hundreds of deep holes and can affirm that Title 5 deep hole testing is discrete, that is, it typically occurs in an area approximately four foot by ten foot in size; both OSHA and Title 5 require that all deep holes be backfilled and compacted to the original surface elevation. The excavation activities in Area 1 do not reflect any deep hole testing I have ever witnessed as a CSE during a twenty-five-year career.

Last, I note that--with the exception of a smaller area within Area 2, described directly below--no other location on site represents the large scale excavation seen in Area 1. Other disturbed areas appear to be either typical Title 5 testing or road widening connected with the deep hole activity.

Area 2 and Intermittent Stream

Similarly, the small flooded area shown in Figure 9 of Area 2 is protected in the Bylaw under 2.(1)(f), as an area subject to inundation by surface or groundwater. It, like Area 1, does not appear to be the result of Title 5 testing, as deep holes must be properly backfilled to original surface elevation.

In addition, the location marked, "Area of Fill on Hydric Soils" on Figure 11 beside the stream (see Figure 11) is likely to have been both (1) state-protected BVW, and (2) Bylaw-protected freshwater wetland. This approximately 20 by 60-foot area contains wetland soils beneath nine and 13-inches of new sand/gravel fill. (I note that state-protected BVW is also federally-protected under the Clean Water Act.)

The intermittent stream connects a lower area of BVW (at wetland points IVW A-E) to the filled wetland in Area 2 and is jurisdictional under the Bylaw. In addition, if the Conservation Commission determines that Area 2 was formerly a BVW before excavation and/or filling activities occurred, the stream that would have connected to it is jurisdictional under the state WPA from the lower BVW at WF 71A to its connection at Area 2.

A portion of the stream may have been filled during construction of the road in Area 2, thereby altering both WPA and Bylaw-protected Bank.

Area 3

Area 3 contained no jurisdictional wetland resource areas as defined by local, state or federal laws and regulations.

Finally, under Bylaw (2.(1)(e)) lands within 100-feet of the filled wetland on Area 2, as well as the intermittent stream, are also subject to protection. Under the state WPA, the stream and BVW have a 100-foot protective buffer zone.

Thank you for this opportunity to be of service.

Very truly yours,

A handwritten signature in black ink that reads "Patrick C Garner". The signature is written in a cursive, slightly slanted style.

Patrick C Garner
Wetland Scientist, Certified Soil Evaluator