# EcoTec, Inc.

ENVIRONMENTAL CONSULTING SERVICES
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September 25, 2019

Mr. Edward O'Harte
Lakeland Hills, LLC
136 Seekonk Street
Norfolk, MA 02056

RE: Review of Environmental Inspection Report, 144 Seekonk Street, Norfolk, Massachusetts

Dear Mr. O'Harte:

On September 21, 2019, EcoTec, Inc. was retained by Lakeland Hills, LLC in regard to this matter. EcoTec has reviewed the Environmental Inspection Report, prepared by Patrick C. Garner Company, Inc., dated August 8, 2019 (the "Report"). EcoTec offers comments specifically regarding the soil analysis, methodology, and conclusions of the soil analysis discussed in the Report.

In particular, the Report at pages 7 to 10 describes a soil investigation within and near a 'filled' area (i.e., Area 2). The Report claims the soil investigation was conducted in accordance with the 1995 DEP Guidance for Delineating Bordering Vegetated Wetlands, pages 27 to 33). I strongly disagree with this claim. The Report describes the soils and methods used as follows:

- The Report indicates that eight borings were made with a 2-inch hand auger to depths of up to 23 inches from the ground surface.

- Five of these borings (i.e., A, C, D, G, and H) were made in the 'filled' area and three of these (i.e., B, E, and F) were made outside of the 'filled' area next to an excavated area and next to the 'filled' area.

- Despite the lack of 'fill' at three of these boring locations, the Report states that all eight borings revealed similar soil profiles: 9 to 13 inches of bright sand/gravel over a 4-to 6-inch thick organic layer which was designated in the Report as an Oe horizon with colors of 10 YR 3/1 and 3/2. The A horizon (beneath the Oe horizon) was described as mineral soil with a fine sandy loam texture with colors between 10 YR 2/2 with greater than 10% redoximorphic features to 10 YR 3/1 with less than 10% redoximorphic features. The thickness of the A horizon was not provided, the redoximorphic features were not described, and the B horizon was not mentioned or described.

- Figure 7 on page 7 shows a selected photograph of an auger containing soil; the caption explains that the bright soil noted is residue from the top fill layer.

- The Report on page 7 states that the coloration of the A horizon is indicative of hydric soils and references the 1995 DEP Guidance to support the conclusion.

- The soil in the photograph in Figure 8 on page 8 is not described in the Report text and visually is not consistent with the generalized soil profile on page 7 of the Report.

While the methodology provided in the 1995 DEP Guidance is sound and should be used for soil evaluations in the determination of BVW boundaries, these methodologies were not correctly used or applied in this case and the conclusions of the evaluation are flawed. There are major concerns with the procedures used, soil profiles that are generalized with individual profiles not provided, and the conclusions based on the incomplete and inadequate soil descriptions. These concerns are detailed as follows:

- Only one or two soil profiles are partly described or photo-documented in the Report. Page 9 of the Report indicates that the borings were photo-documented and logged; these photographs and soil logs were not found in the Report. All eight should have been documented in a soil profile excavated by spade (not auger – see 1995 DEP Guidance page 32, #5) by horizon, depth, soil texture, soil color, and soil features, with a suitable photograph or photographs to document each complete profile. Not a single complete profile was provided in the Report. The soil descriptions provided in the Report are incomplete. While they include the 'fill,' buried 'Oe,' and A horizons, the B horizon was not described at all. In most cases, the B horizon (i.e., the subsoil just below the A horizon) is necessary to determine the presence of Hydric Soil Indicators.

- The described soils have an O horizon that is 6 inches thick at most. The 1995 DEP Guidance (page 32, #10) indicates that if the O horizon is less than 8 inches thick, the soil colors within 20 inches of the mineral soil surface or just below the A horizon (i.e., B horizon) must be evaluated and compared to the Hydric Soil Indicators on page 29 of the 1995 DEP Guidance. Page 33, #11 of the 1995 DEP Guidance states that oxidized rhizospheres within the A horizon together with low-chroma colors right below the A horizon are indicators of hydric soils. While the Report does not call out oxidized rhizospheres, it is further proof that evaluation of the B horizon is necessary in hydric soil determinations. Without descriptions of the B horizon, it is not possible to conclude that the partially described soils in the Report have Hydric Soil Indicators.

- While the Report does not call out thick and very dark A horizons, these are also addressed in the 1995 DEP Guidance on page 30. As with other soil determinations, the subsoil immediately below the A horizon (i.e., B horizon) must be evaluated.

- Again, the soils information provided in the Report does not include descriptions of the B horizon from any of the eight soil borings.

- In comparing the soils described on page 7 of the Report to the Hydric Soil Indicators listed on page 29 of the 1995 DEP Guidance, the conclusions in the Report with regard to the presence of hydric soils within Area 2 are not supported.

    - The soils are not histosols or histic epipedons as the organic soil layer is 6 inches or less in thickness and are described as Oe (Hemic) versus and Oa (Sapric).

    - The soils within 12 inches of the bottom of the O horizon do not have a matrix chroma of 0 or 1 and value of 4 or higher. The soils described in the Report are 10 YR 2/2 with

undescribed redoximorphic features and 10 YR 3/1 with lessor undescribed redoximorphic features.

- The soils within 12 inches of the bottom of the O horizon do not have a chroma of 2 or less and value of 4 or higher in the matrix, and mottles with a chroma of 3 or higher. Again, the soils described in the Report are 10 YR 2/2 with undescribed redoximorphic features and 10 YR 3/1 with lessor undescribed redoximorphic features.

- The soils within 12 inches of the bottom of the O horizon do not have a matrix chroma of 3 and value of 4 or higher with 10 percent or more low-chroma mottles and do not have indicators of saturation (i.e., mottles, oxidized rhizospheres, concretions, or nodules) within 6 inches of the soil surface. Again, the soils described in the Report are 10 YR 2/2 with undescribed redoximorphic features and 10 YR 3/1 with lessor undescribed redoximorphic features.

- Lastly, the 1995 DEP Guidance (page 32, #5) indicates that soil test pits are to be excavated with a pointed spade. Soil augers are fine for routine delineations and exploration, but a proper soil test pit is necessary to accurately describe a soil profile. This is particularly important in potentially disturbed/disputed areas.

In conclusion, based upon a review of the above, the soils as described in the Report do not have Hydric Soil Indicators as described on page 29 of the 1995 DEP Guidance as indicated by the Report. Based upon the incomplete data and inappropriate interpretation of the presence of Hydric Soil Indicators, it is inappropriate for this information to be used in making a determination regarding the presence of vegetated wetlands.

EcoTec hopes that you find this information useful. A brief description of my experience and qualifications is attached. If you have any questions or require additional information, please feel free to contact me at any time.

Cordially,
ECOTEC, INC.

John P. Rockwood

John P. Rockwood, Ph.D., PWS
Chief Environmental Scientist

Attachment (1; Resume)

18: NORFOLK144SEEKONKREVIEWLETTER09252019

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## ENVIRONMENTAL CONSULTING SERVICES

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**John P. Rockwood, Ph.D., PWS**
**Chief Environmental Scientist**

Dr. John P. Rockwood has been with EcoTec, Inc. since October 1999. Dr. Rockwood was previously a Chief Environmental Scientist at Sanford Ecological Services, Inc. of Southborough, Massachusetts from September 1990 to October 1999. Dr. Rockwood was certified in August 2002 and recertified in March 2008, January 2013, and June 2018 as a Professional Wetland Scientist (PWS) by the Society of Wetland Scientists, the leading professional organization in the field. His project experience includes wetland resource evaluation, delineation, and permitting at the local, state, and federal levels; wildlife habitat evaluation; pond and stream evaluation; vernal pool evaluation, certification, construction/replication, and monitoring; rare species habitat and impact assessment; wetland replacement, replication, and restoration area design, construction, and monitoring; and expert testimony preparation. He has served as a consultant to municipalities, conservation commissions, the development community, engineering and survey firms, industry, and citizen's groups. He has managed and participated in a wide variety of wetlands-related projects ranging in scope from single-family house lots to subdivisions, commercial developments, golf courses, a water park, and a regional mall. He has assessed the potential impacts of stormwater runoff, landfill leachate, and/or hazardous waste disposal sites on rare vertebrate and/or invertebrate species, and has conducted and/or directed surveys, delineated actual habitat, conducted habitat evaluations, and/or developed mitigation strategies necessary to protect rare vertebrate, invertebrate, and plant species and their habitats from proposed development-related impacts. He has conducted a drift fence study for the marbled salamander. He has conducted and led preconstruction sweeps for the spotted turtle, wood turtle, and eastern box turtle. He has filed MESA Project Review Checklists and has prepared applications for Conservation and Management Permits under MESA. He has conducted environmental impact assessments and has prepared MEPA documentation related to an office park, an MBTA commuter train station, water park, residential subdivisions, skating rink facility, landfill, and regional mall. Dr. Rockwood also has extensive experience in environmental site assessment related to possible oil and/or hazardous material contamination. He has conducted numerous environmental assessments, several including subsurface investigations, for sites located in Massachusetts, and has conducted preliminary environmental assessments for properties located in New York, New Hampshire, and Rhode Island. He has conducted ecological risk assessments (i.e., Stage I Environmental Screenings and Stage II Environmental Risk Characterizations) for a number of disposal sites in Massachusetts, including several disposal sites that had the potential to affect state-listed vertebrate and invertebrate species, and has utilized the EPA Rapid Bioassessment Protocol for macroinvertebrates to assess potential impacts of disposal sites and hazardous material releases on streams and rivers in Massachusetts and New York. He has served as the environmental contractor to the Franklin Consolidated Office of the Federal Deposit Insurance Corporation (FDIC-FCO) for 16 months, where he reviewed environmental reports, prepared scopes-of-work for site assessments, and provided technical advice to FDIC employees related to environmentally compromised assets. Dr. Rockwood has designed, conducted, and evaluated numerous surface water and groundwater monitoring programs. His prior research includes a laboratory study of the effects of low pH and aluminum on dragonfly nymphs and a field survey of the impact of chlorinated sewerage effluent on algal periphyton community dynamics. Dr. Rockwood is the co-author of a text book on aquatic biology and is the principal author of three peer-reviewed research publications in the field of aquatic toxicology that address the effect of low pH and aluminum on nymphs of the dragonfly *Libellula julia*. Dr. Rockwood served as the as the Editor of the AMWS Newsletter from November 2004 to October 2010 and as Assistant Editor from May 2003 to November 2004 and October 2010 to January 2012. He served as President of the Association of Massachusetts Wetland Scientists from November 2013 to December 2015 and as Immediate Past President from December 2015 to December 2017.

**Education:**
Doctor of Philosophy (Ph.D.): Aquatic Pollution Biology – Plant and Soil Sciences
University of Massachusetts at Amherst, 1989
Bachelor of Science (B.S.): Environmental Sciences, *Summa Cum Laude*
University of Massachusetts at Amherst, 1984

**Professional Affiliations:**
Society for Freshwater Science
Sigma Xi, Full Member
Association of Massachusetts Wetland Scientists, Voting Member
Society of Wetland Scientists
Massachusetts Association of Conservation Commissions

**Certifications:**
Society of Wetlands Scientists Professional Wetland Scientist, Certification Number 1349
OSHA Health and Safety Training, 40-Hour Training, 29 CFR 1910.120
OSHA Health and Safety Training, 8-Hour Supervisor Training
OSHA Health and Safety Training, 8-Hour Refresher Training