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February 26, 2021

Town of Andover
Inland Wetlands and Watercourses Commission
17 School Road
Andover, CT 06232

RE: 26 Old Farms Road – Stream Crossing for Residential Development - Supplemental

REMA Job #: 21-2355-AND5

Dear Chair Lally and Commissioners:

At the request of the applicant, Mr. George Correia, REMA ECOLOGICAL SERVICES (“REMA”) has continued reviewing the plans and application for the wetland and intermittent stream crossing associated with the above-referenced residential development proposal.

Since our last letter to the Commission, dated January 22nd, 2021, we have reviewed a letter by the Commission’s consulting engineer, Mr. Brandon Handfield, P.E., as well as the meeting minutes of the February 1st, 2021. We also conducted an additional site visit, on February 12th, 2021, focusing on the eastern of the two intermittent streams that the proposed driveway would cross. Finally, we had several conversations by phone and by email with staff at the New England U.S. Corps of Engineers (USACE), to get clarification on potential requirements for stream crossings, under their jurisdiction.

1.0 Riparian Corridor

During the hearings, and in communications to the commission, the term “riparian corridor” and “riparian habitat” has been prescribed to the two intermittent streams that would be



crossed with a driveway. Technically, these terms can be ascribed to any watercourse, whether perennial or intermittent, but more often than not they are ascribed to perennial watercourses. This is because the values and functions of riparian corridors, such as baseflow, water quality, nutrient cycling, energy transfer, aquatic and terrestrial life, and specific characteristics in hydrology, soils, and vegetation, are magnified, and/or only occur in association with perennial watercourses.

While it cannot be denied that many of these functions, values, and characteristics of riparian corridors are associated with the two intermittent streams, many are not, or if they do occur, they are limited and ephemeral. For instance, both streams can provide baseflow (i.e., groundwater discharge), but that is limited to the early portion of the growing season. They provide water quality function, but not to a great extent, based on the size of their watersheds and existing landuses. They contain some aquatic life, but only to a limited extent, and they do provide travel corridors for certain wildlife species, but that too is limited, especially when compared with a major riparian corridor, such as the Hop River. Therefore, the extent that these values and functions occur and the landscape scale must be accounted for when recommending best management practices associated with intermittent streams.

According to the engineering consultants representing the applicant, the western stream has a watershed of roughly 40 acres, while the eastern stream has a watershed of almost 23 acres. The western stream corridor is wider, is associated with gentler slopes, and contains fringe wetlands. The eastern stream is much narrower, especially in the vicinity of the proposed crossing, is associated with much steeper slopes, at least for several hundred feet upgradient of the driveway crossing location. It is also associated with wetlands, but those occur further upslope, roughly 400 feet, as can be seen in the plans.

While we did not have specific permission to investigate the western stream corridor, we did look at the eastern stream upgradient of the proposed crossing to the forested wetland the hugs the northern property boundary of proposed Lot 1. At the time flows in the stream channel were minimal. Cover searching for aquatic organisms only revealed a few case-forming caddisflies attached to the hard substrate (i.e., rocks, cobbles, and boulders). These were not collected for identification but they likely belong to the Glossosomatidae family. These are often associated with intermittent streams, since they are adapted to thrive in low flow situations.



Based on our in-field observations and the character of the two stream corridors we have made the recommendation that a box culvert be installed at the western stream. This will be embedded into the stream channel, and will comply with the USACE “openness ratio” guidance, mentioned in Mr. Handfield’s report to the Commission. It will also pass the 50-year storm and not be under pressure flow.

For the eastern watercourse crossing the 36-inch culvert will be maintained but be buried to allow for a natural stream substrate. This will be sufficiently wide to allow for passage of small-bodied wildlife. We note that should any wood turtles travel the distance to the crossing area under existing conditions, they would not be able to negotiate the steep and rocky terrain associated with the eastern stream channel. However, with the proposed box culvert at the western stream, they could traverse unfettered to more level ground and potential habitat to the north of the crossing.

2.0 Mitigation

It has been suggested that opportunities for wetland mitigation be explored at the site to offset the impact of fill in wetlands for the proposed wetland crossing. In-kind compensatory mitigation (i.e., wetland creation) opportunities are not available at the site. Excavation in areas with mature trees is never recommended.

However, some opportunities for wetland habitat restoration/enhancement are available in Lot 1, within the riparian wetland that hugs the northern property boundary. This forested wetland is infested with a non-native invasive shrub, namely Japanese barberry (*Berberis thunbergii*). This exotic plant has outcompeted native vegetation, especially native shrubs and herbaceous species, and has depressed wetland and stream biodiversity. We would recommend that the barberry be removed via mechanical means (cutting, pulling), utilizing the protocols promulgated by the Connecticut Invasive Plants Working Group (CIPWG), along and within 15 feet of the intermittent stream, and for a length of at least 150 linear feet. Moreover, native shrubs should be planted, following two growing seasons of removal (only seedling removal in Year 2), in the spaces vacated by the barberry. These include such species as spicebush (*Lindera benzoin*), winterberry (*Ilex verticillata*), gray dogwood (*Swida racemosa*), and nannyberry (*Viburnum lentago*). A minimum of 50 shrubs should be planted. It should be noted that removal of Japanese barberry has been accomplished successfully across Connecticut.



3.0 Conclusion

Based on our review of the plans, our observations during our two site visits, and consultations with the project engineer, consulting engineer, and the USACE, it is our professional opinion that the above described plan revisions and proposed mitigation, will protect and maintain wetland functions and values, and the ecological integrity of the stream corridors.

Respectfully submitted,

REMA ECOLOGICAL SERVICES, LLC

A handwritten signature in black ink, which appears to read "George T. Logan". The signature is fluid and cursive, with a horizontal line extending to the right.

George T. Logan, MS, PWS, CSE
Professional Wetland Scientist, Registered Soil Scientist
Certified Senior Ecologist (ESA)

VIA E-MAIL