FUSS&O'NEILL

M E M O R A N D U M

TO: David Wong, PhD, Division of Wetlands and Waterways, MassDEP

FROM: Samantha Dow, PhD, Fuss & O'Neill; April Doroski, PWS, CPSS, Fuss & O'Neill

DATE: December 13, 2024

RE: Sediment Management Plan for McTaggart's Pond Dam Removal in Fitchburg, MA
Fuss & O'Neill Reference: 20200263.D20

A 401 Water Quality Certification (WQC) application was submitted to the Massachusetts Department of Environmental Protection (MassDEP) on February 23, 2024 (24-WW26-0013-APP) for the McTaggart's Pond Dam Removal and Phillips Brook Restoration Project. The application was submitted as a combined 401 WQC application for dredge and fill activities associated with the dam removal and restoration. Fuss & O'Neill met with MassDEP following the submittal of the application to discuss the sediment management plan and answer additional project-related questions. The meetings were held with Alice Smith on June 13, 2024 and with David Wong on August 12, 2024.

Fuss & O'Neill engineers met MassDEP and the City of Fitchburg on site on August 14, 2024 to review the project's sediment management approach and discuss potential downstream impacts of sediment release. The purpose of this memo is to provide additional information about sediment management, including documentation of existing channel conditions downstream of the dam, how sediment released following dam removal is anticipated to move through the system, and what mitigation measures will be taken by the City.

As described in the project application, we have estimated that approximately 10,050 cubic yards of impounded sediment (sand and silty sand with some gravel and cobbles) could be mobilized from the impoundment if the dam is removed and downstream release is unrestricted. We have, however, proposed to mechanically regrade Phillips Brook through the former impoundment, which would result in the excavation of approximately 8,000 cubic yards. Excavated material would be reused on site by placing it adjacent to existing upland areas (approximately 7,470 cubic yards) and to reconstruct the channel through the former dam site (approximately 530 cubic yards). A majority of the site will be stabilized and revegetated through the re-use of native soil on-site, which is assumed to have a seed bank. A small upland area will be stabilized by seeding and planting it with native riparian species.

The remaining approximately 2,050 cubic yards of impounded sediment is expected to be mobilized over time and transported to downstream reaches. Since the dam was breached and the impoundment drawn down in 2018, it is anticipated that some of the readily mobilized impounded sediment has already been washed downstream, leaving less than 2,050 cubic yards to be released in the future. Erosion and downstream transport of the material is expected to occur over a period of a few years.

Mobilized impounded sediment ranging in size from silt to cobbles will be easily transported by Phillips Brook. The brook downstream of the dam is relatively steep (approximately 6% slope vs. approximately 1% slope upstream of the dam) and characterized by bedrock pools and cascades (Figure 1). According to the City, there is no formal

access to the channel for recreational purposes, so no recreational impacts are anticipated to result from additional sediment moving through the system.

Figure 1. Bedrock channel downstream of Westminster Hill Road

Phillips Brook flows into the North Nashua River approximately 0.5 mile downstream of McTaggart's Pond Dam. Sediment mobilized during and after dam removal will eventually be deposited into the North Nashua River immediately upstream of the North Nashua River Mill No. 4 Dam. Fine sediment (i.e., silt and fine sand) held in suspension may be transported over the Nashua River Mill No. 4 Dam while coarse material (i.e., coarse sand to cobbles) will be trapped in the impoundment. The quantity and quality (refer to 401 application) of the sediment are not expected to adversely affect the North Nashua River or future dam removal projects on the river.

The City will monitor Phillips Brook during and immediately after dam removal for accumulation of formerly impounded sediment. An add alternate item for sediment dredging will be included on the bid form for the dam removal project. If excessive sediment accumulation occurs in the pools of the bedrock reach downstream of Westminster Hill Road, the City may, in consultation with MassDEP and other agencies, request that the contractor remove the accumulated material. Sediment removal will occur prior to final completion of the project.