

F. A. HESKETH & ASSOCIATES, INC.

3 Creamery Brook
East Granby, CT 06026
(860) 653-8000 (860) 844-8600(Fax)
email: ghesketh@fahesketh.com

MEMORANDUM

To: Frank Dellaripa, P.E.
Nick Casparino

Date: May 12, 2020

From: Guy Hesketh, P.E.

Subject: St. Francis – Water Quality Basin Remediation
GHFC Application Review

Our File: 05173

Frank and Nick, please see below written responses to the review comments dated May 6, 2020. Review comments in normal font, our responses in **bold font**.

1. There are issues with the depiction of the FEMA floodway limits as the floodway limits are plotted to the landside of the 100 - year flood limits in various locations. Revise accordingly.

Three lines for FEMA floodways and Flood Zones are depicted on the drawings. Two, the lines depicting the FEMA Floodway in Zone AE, and the line depicting the FEMA Flood Zone X OTHER FLOOD AREA, were digitized from the FEMA FIRM Maps. The other line, that depicts the 100-year flood elevations FEMA BFE (EL. 45.6 NAVD 29) is interpolated from field topography. Discrepancies would be anticipated, since some lines are digitized graphically, the other based upon actual field survey conditions. As Engineers and Surveyors, we cannot adjust FEMA lines without going through a formal FEMA review/approval process, but we can show an elevations line based on our interpretation of field topographic data.

2. All of the debris located within the area of disturbance or caused by the bank failure is to be removed and disposed of properly.

Acknowledged. A note has been added to the plans. See Note 6 under Greater

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Hartford Flood Commission Notes on Sheet GR-1 (revised May 12, 2020).

3. The rip rap scour protection limits are shown projecting into the watercourse. Construction detail and the plan / profile indicate the rip rap stops at the edge of the river. Clarify and revise accordingly.

The design of the outfall has been revised to remove the flared-end section and replace it with a standard CT DOT concrete endwall. The outfall was moved back seven feet to allow construction of a 17-foot-long rip rap scour protection apron. The western limits of the rip rap apron now extend approximately 4 feet west of the edge of the river bank. These changes are reflected on Sheet GR-1 and PP-1 (revised May 12, 2020). Design calculations for sizing the scour protection are attached. A detail of the rip rap scour protection is included on Sheet SD-1 (revised May 12, 2020). The detail specifies that the finish grade elevation of the scour protection in the river is to match the bottom elevation of the river at its western limits.

4. Provide calculations for the outlet scour protection.

Calculations for the design of the rip rap scour protection are attached. The methodologies presented in the CT DOT Drainage Manual, Chapter 11, were utilized in the design of the rip rap apron.

5. If the rip rap is placed within the river, provide information on the construction of the rip rap within the watercourse / floodway including the utilization of cofferdams.

Addition notes have been added to Sheet GR-1 and PP-1 (revised 05-12-2020) to depict construction of a sandbag or water-filled cofferdam to control river flow during construction of the rip rap scour protection. A dewatering basin detail and construction noted, related to dewatering have been added to Sheet SD-2 (revised 05-12-2020). Recent springtime observations of the river flow in the proposed area of the scour protection and stormwater outfall indicate that the river depth is on the order of 1.5 to two feet deep. It is anticipated that the construction will take place during summer, low flow periods. The use of sandbags or water-filled cofferdam would be appropriate for holding back the flow during low-flow conditions. These methods would allow the barrier to conform to the natural stream channel with minimal disturbance while providing an effective barrier from water intrusion.

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6. The turbidity curtain layout must prevent the migration of sediment downstream.

Acknowledged. A note has been added to the plans. See Note 7 under Greater Hartford Flood Commission Notes on Sheet GR-1 (revised May 12, 2020).

7. Provide a minimum of a 12-hour period after disturbance within the river prior to the removal of the turbidity curtain. Revise the detail accordingly.

Acknowledged. A note has been added to the plans. See Note 8 under Greater Hartford Flood Commission Notes on Sheet GR-1 (revised May 12, 2020).

8. Provide information on the anticipated dewatering means & methods.

Addition notes and a dewatering detail have been added to Sheet SD-2 (revised May 12, 2020).

9. The agreement between the Federal Government and the GHFC require maintaining the required flood storage area below elevation 51.92 NGVD within the watershed of the North Branch of the Park River. Based on the latest correspondence, an estimate of 75 CY of material must be removed from the river channel and along its banks up to elevation 52+/- . Provide the necessary cut & fill calculations utilizing the preconstruction grades and the proposed grades to document that the Flood Storage Area has at a minimum been maintained.

The 75 CY of material is an estimate of material deposited within the river itself. A comprehensive analysis of cuts and fills was submitted via a memorandum to Frank Dellaripa, dated March 3, 2020, and included an average end area analysis of the work proposed from below elevation 51.92 NGVD, where it was estimated that the work would result in an increase of 6,009 cubic feet of additional compensatory storage. This analysis has been updated to reflect the proposed changes to the outfall. (See attached memorandum.) The revised analysis is attached and indicates the work, with the revised outfall, will result in providing an additional 6,700 cubic yards of compensatory flood storage below elevation 51.92 NGVD.

If you have any questions, please do not hesitate to contact me at 860-653-8000.



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3 Creamery Brook
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Civil & Traffic Engineers • Surveyors • Planners • Landscape Architects

JOB St. FRANCES.
SHEET NO. _____ OF _____
CALCULATED BY _____ DATE _____
CHECKED BY _____ DATE _____
SCALE _____

LEVEL SPREADER CALCULATIONS -

FROM HYDRATION ANALYSIS 24" outlet -

$$Q - 10yr = 14.34 \text{ cfs} \quad V = Q/A = 4.6 \text{ fps}$$

PER CT DOT DRAINAGE MANUAL 11.13

NO DEFINED CHANNEL, MINIMUM TAILWATER

→ USE TYPE A RIPRAP APRON

$$V = 4.6 \text{ fps} \quad Q = 14.3 \text{ cfs so use } 16 \text{ cfs}$$

PER TABLE 11-12.1

$$L_1 = \frac{17 \text{ ft}}{2.0 \text{ ft}} (24" \text{ RCP})$$

$$\text{TYPE A} \quad X=3, \quad W_1 = 3S_p = 3(20) = \underline{6 \text{ ft}}$$

$$W_2 = 3S_p + 0.7L_1 = 6 + (0.7)(17)$$

$$\text{LEVEL SPREADER SIZE} = \underline{17.9 \text{ ft}}$$

