Project Background

The existing Lakeview Avenue Culvert, located between properties #1046 and #1064, consists of an arched corrugated metal pipe (CMP), approximately 7-feet wide by 5-feet deep. The culvert lacks a headwall and wingwalls and the DPW has expressed concerns about its integrity. These deficiencies could lead to future roadway failures similar to the Sladen Street culvert immediately upstream. The culvert is listed as a potential concern in the Town's Municipal Vulnerability and Hazard Mitigation Plans. Both plans describe the culvert as being undersized, and the cause of some flooding during intense rainfall events. In addition, severe scouring in the bank of the brook approximately 40-feet downstream of the Culvert were observed, which suggests high velocity water discharging from the culvert.

The Culvert is a stream crossing for the Peppermint Brook through Lakeview Avenue. Peppermint Brook, where the Lakeview Avenue Culvert is located, is a Federal Emergency Management Agency (FEMA) regulated floodway. The Brook is classified by United States Geological Survey (USGS) mapping as a year-round continuously flowing stream and is a major conveyance of stormwater from its surrounding watershed. Peppermint Brook discharges into Beaver Brook, a major conveyance to the Merrimack River.

Photo 1: Upstream of Culvert

Photo 2: Downstream of Culvert

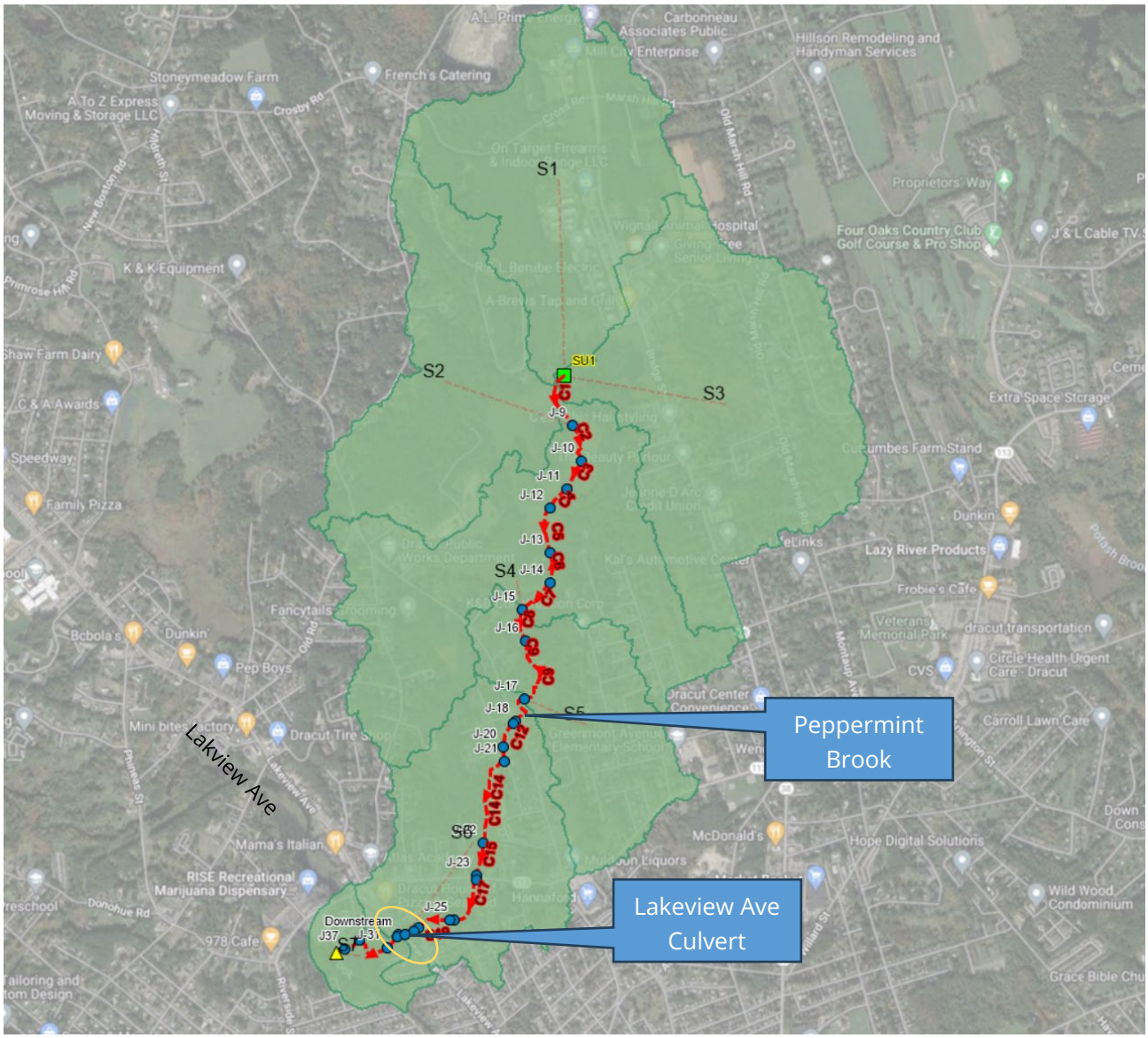

Figure 1 – Lakeview Avenue Culvert Watershed

Project Description

The proposed project includes the replacement of the existing culvert with the installation of a 10-ft wide by 10-ft high concrete box culvert. Two feet of the proposed culvert will be buried within the streambed, for a total clear open area of 10-ft by 8-ft.

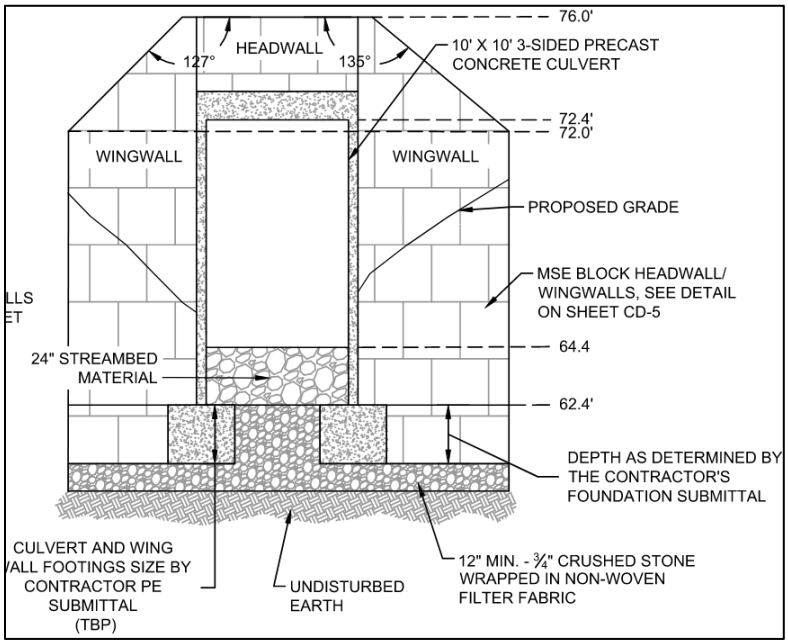

Figure 2 – Culvert Cross-Section Plan Excerpt

The culvert was designed for the conveyance of the 100-yr 24-hr storm, to meet the Massachusetts Stream Crossing Standards to the maximum extent practicable, and to stabilize the roadway above. In addition, the design includes restoration to the stream banks, and extended flood boundaries using a conservation slope stabilizing seed mix with erosion control blankets. The downstream bank is being restored with a tiered stone wall with natural plantings for stabilization. We believe that the areas upstream and downstream of the proposed culvert will create an increase in the ecological value.

Associated work includes the following activities:

- Installation of a temporary cofferdam upstream and downstream of the culvert;
- Installation of a 42-inch diameter PVC gravity bypass with pump backup.
- Removal and replacement of an existing 6-inch ductile iron water main;
- Regrading the downstream channel and banks and the construction of the stone wall;
- Installation of the downstream headwalls and wingwalls;
- Replacement of the culvert with a 10-ft wide by 10-ft high precast three-sided concrete box culvert with footings. Construction of the replacement culvert will include a 45-degree bend to realign the stream;
- Re-grading the upstream channel and banks;
- Installation of the upstream headwalls and wingwalls;
- Replacement of the existing drainage system with deep sump catch basins; and

Traffic Management

An assessment of traffic management alternatives was conducted. The Town assessed one-lane road closures, temporary traffic signals, and several detour routes. Based on the construction impacts to Lakeview Avenue, a full road closure was selected. When practical, the detour will be removed, and a one-lane road closure will be placed. The detour plan is shown below and is included in the design plans.

In general, northerly flowing traffic will be detoured from Lakeview Avenue to Aiken Avenue, traffic will continue onto Essex Street, Hildreth Street, and Pleasant Street. At the intersection of Lakeview Avenue and Pleasant Street, traffic will be able to continue north on Lakeview Avenue. Traffic flowing in the southerly direction will perform this detour in reverse order. A road closure on Lakeview Avenue to thru-traffic between properties #1012 and #1100. A detour route with signage will be installed prior to construction activities.

Residents and motorists should expect elevated levels of traffic during the detour along these routes. Access to driveways in the project area will remain accessible. Pedestrian access will be maintained through the project area. However, ADA access may be limited at times. Access will be maintained to local residents and businesses on Lakeview Avenue.

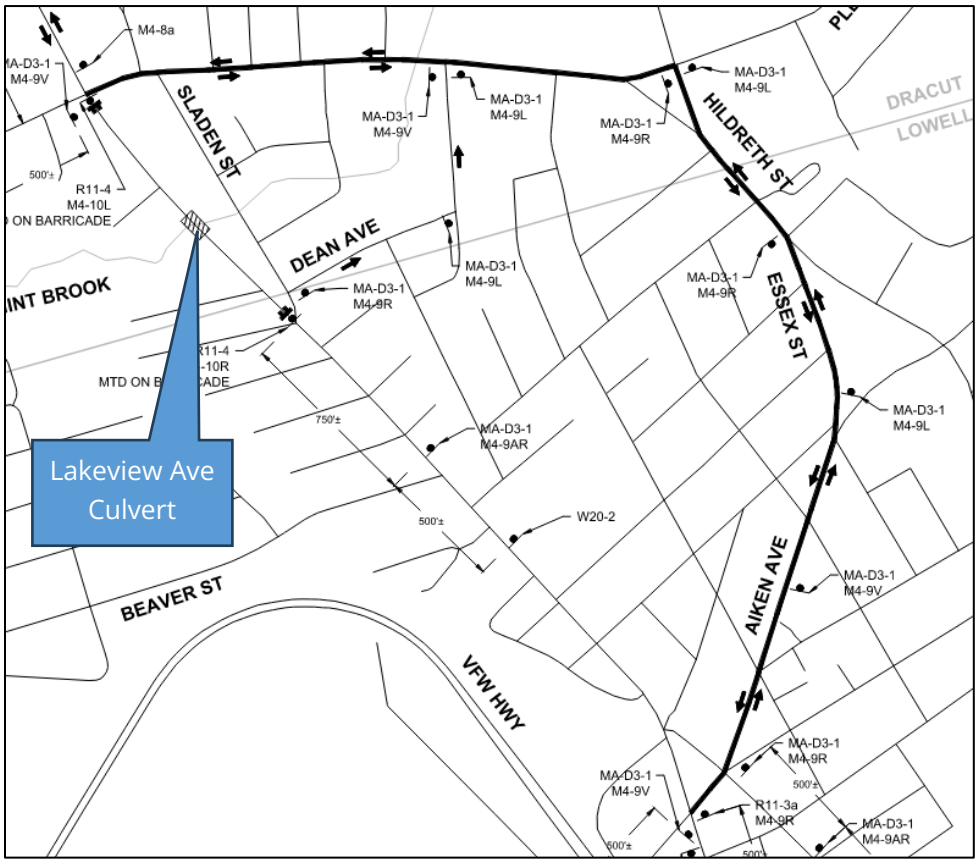

Figure 3 – Lakeview Avenue Culvert Project Detour Plan Excerpt

Schedule

The Town of Dracut plans to solicit bids in March 2024 for an estimated construction start date of July 2024. The project is anticipated to take approximately 4-months to complete with an estimated 3-month road closure between July 2024 and September 2024.

Additional advanced notifications to the public about the upcoming work and proposed road closure will be provided as the construction date nears.