W5005-023-06
September 23, 2022

Paul Starratt, PE
Town Engineer
25 North Street
Westford, MA 01886

Re: **Permit Year 4 Catchment Investigations**

Dear Paul,

Per *Part 2.3.4.8* of the 2016 Small MS4 General Permit and the Town of Westford's Illicit Discharge Detection and Elimination (IDDE) Program, the Town must investigate each catchment associated with an outfall or interconnection within the Town's MS4 for possible illicit discharges or connections. The source of any illicit discharge identified during dry or wet weather must be isolated, confirmed, and removed.

Tighe & Bond began catchment investigations with Town staff in October 2021 to inspect key junction manholes (KJMH) and complete wet weather outfall sampling in catchments with system vulnerability factors (SVF). The investigations were completed in accordance with the written Catchment Investigation Procedures developed in December 2019. Tighe & Bond conducted manhole and catch basin inspections, and captured photos, screening results, and maintenance needs. The inspections were logged in ArcGIS Online (AGOL) using an iPad with Survey123. The summary below describes the work completed; this summary and the Excel document enclosed with this letter will be provided to EPA and MassDEP in the Year 4 Annual Report. We anticipate adding this data to an overall summary document developed in Permit Year 5 for both Year 4 and Year 5 catchment investigations. The summary document will include a map of the completed catchments with refined connectivity networks and catchment delineations.

- Westford began catchment investigations in Permit Year 4 and completed two days of dry weather key junction manhole inspection field work on October 7, 2021 and December 15, 2021. The Town intends to continue investigations in Permit Year 5 and future Permit Years.
- On October 7, 2021, 15 catchments were investigated during dry weather conditions and 13 key junction manholes were screened. Of the 11 manholes, 2 had dry weather flow and were sampled. One of the manholes had 2 inlets with flow and therefore was sampled twice, one sample at each inlet. One additional manhole had flow. **No manholes had water quality results that met EPA's criteria for a likely sewer input.** On December 15, 2021, 12 catchments were investigated, and 12 key junction manholes were screened. None of the manholes investigated on this day had dry weather flow.
- To categorize the catchment investigation as complete, both the KJMH inspection and wet weather outfall inspection, if required for the catchment, are to be complete. Based on the information collected, 23 catchments should be considered successfully screened and complete because they either had no flow or had flow, but in-situ testing results were below benchmark, and did not require wet weather screening.

- An initial analysis of System Vulnerability Factors was completed in PY2 to determine outfalls that require wet weather sampling. For PY4 catchment investigations, no outfalls were visited that required wet weather outfall screening. The goal of these initial catchment investigations was to verify and update connectivity in the GIS mapping. Field investigations of outfalls that require wet weather sampling will be prioritized in PY5.
- In accordance with the Town's MS4 Catchment Investigation Procedures (December 2019), outfall catchments that do not include a junction manhole (e.g., the catchment may be small and only contain a number of individual catch basins) do not require dry weather key junction manhole inspections; the dry weather screening completed at the catchment's outfall fulfills the intent of the manhole inspection requirement when screening does not indicate the presence of a potential illicit discharge. For catchments that meet these criteria and do not require wet weather screening due to SVFs, the catchment investigation is considered complete. For catchments analyzed in Permit Year 4, 2 fell into this category: OF_19 and New_AA. However, field inspections were still conducted for these catchments in order to refine system mapping.
- During the PY4 field effort, Tighe & Bond and Westford staff visited 27 catchments, which includes the 23 catchments successfully completed and 4 catchments that are identified as 'Revisit'. The percent of total catchments investigated *(*4.4%*)* assumes each MS4 outfall (517 total) has its own catchment.

As stated above, 23 of the Town's catchments can be considered complete. Below is a log of these catchments:

- OF_181 Screened catchment's KJMH, no SVF noted for catchment
- UNK-35 Screened catchment's KJMH, no SVF noted for catchment
- OF_193 Screened catchment's KJMH, no SVF noted for catchment
- UNK-61 Screened catchment's KJMH, no SVF noted for catchment
- OF_298 Screened catchment's KJMH, no SVF noted for catchment
- OF_293 Screened catchment's KJMH, no SVF noted for catchment
- OF_292 Screened catchment's KJMH, no SVF noted for catchment
- OF_288 Screened catchment's KJMH, no SVF noted for catchment
- OF_286 Screened catchment's KJMH, no SVF noted for catchment
- OF_1048 Screened catchment's KJMH, no SVF noted for catchment
- OF_1049 Screened catchment's KJMH, no SVF noted for catchment
- OF_1032 Screened catchment's KJMH, no SVF noted for catchment
- OF_164 Screened catchment's KJMH, no SVF noted for catchment
- OF_1037 Screened catchment's KJMH, no SVF noted for catchment
- UNK-37 Screened catchment's KJMH, no SVF noted for catchment
- OF_1026 Screened catchment's KJMH, no SVF noted for catchment
- OF_459 Screened catchment's KJMH, no SVF noted for catchment
- OF_382 Screened catchment's KJMH, no SVF noted for catchment
- OF_540 Screened catchment's KJMH, no SVF noted for catchment
- OF_538 Screened catchment's KJMH, no SVF noted for catchment

- OF_533 Screened catchment's KJMH, no SVF noted for catchment
- OF_19 No KJMH, no SVF noted for catchment
- New_AA No KJMH, no SVF noted for catchment

In addition to the 23 completed catchments, there were 4 catchments investigated during this field effort that were determined to be incomplete because additional information or mapping is needed. These catchments should be revisited, and network connectivity should be investigated and confirmed by the Town before they can be considered complete. These catchments are listed below along with Tighe & Bond's recommendations for the Town:

- UNK-7 – This outfall was classified as a BMP structure during Permit Year 3 field work. It is recommended that the Town map and categorize the BMP and investigate the existence of an outlet structure (i.e., outfall).

- Unmapped outfall (KJMH 5533) – It is recommended that the Town investigate the network connectivity and inventory the outfall because it was not captured in the provided GIS network.

- OF_20 – It is recommended that the Town investigate the network connectivity because the outfall flows in two directions as per Tighe & Bond's observation and field notes.

- OF_290 – Tighe & Bond's observations indicated a structure that was missing from the Town's GIS mapping and could be considered a key junction manhole. It is recommended that the Town investigate network connectivity and confirm the existence of key junction manholes.

Inspection and screening data are included the enclosed Excel spreadsheet. The spreadsheet has three tabs, as described below. Note that all of this data is also available in the Town's GIS mapping.

- **OF-Master List** – A log of the outfalls categorized as screening completed (23) and the outfalls to be revisited (4), including catchment priority, notes of dry weather flow, and whether system mapping updates are necessary.
- **KJMH inspections** – A log of the screening completed at each KJMH, including notes on the presence of dry weather flow and possible source (if applicable) and any maintenance issues.
- **KJMH in-situ results** – A summary of the water quality screening results at KJMH during dry weather for ammonia, chlorine, and surfactants. The in-situ monitoring was completed using test kits; no laboratory analysis was conducted. No manholes had water quality results that met EPA's criteria for a likely sewer input.
- **Wet Weather Sampling** – No outfalls were visited that required wet weather screening.

Per EPA's implementation schedule, the Town should continue to complete catchment investigations, including dry weather KJMH screening and wet weather outfall sampling, during upcoming Permit Years. As investigations are completed, the Town and Tighe & Bond staff should consider refining the current catchment delineations as connectivity and mapping improves.

It has been a pleasure collaborating with you on implementation of the Town's stormwater IDDE Program. Please reach out with any questions or concerns.

Very truly yours,

TIGHE & BOND, INC.

Evelyn Ramos, PE
Project Manager

Enclosures: Catchment Investigation Data *(delivered electronically)*

Copy: Jeremy Downs, Assistant Town Engineer
Stephen Cronin, Director of Public Works
Emily Scerbo, Tighe & Bond

J:\W\W5005 Westford MA\023 Small MS4 Year 3 Compliance\06 - Catchment Investigations\Deliverables\PY4 Catchment Investigations Summary_Final_2022-09-23.docx