

Westford Illicit Discharge Detection & Elimination Program Summary – Permit Year 7

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Per *Section 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 inspect all outfalls/interconnections for the presence of dry weather flow as well as investigate each catchment (i.e., the land area draining to a single outfall or interconnection based on localized topography, impervious cover, and the location of drainage structures and the connectivity of MS4 pipes) 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.

1. Illicit Discharge Detection & Elimination (IDDE) Investigations Overview

Tighe & Bond conducted IDDE field work with Town staff in Permit Year 7 (PY7) to update the drainage mapping system, complete dry weather outfall screening, inspect key junction structures (manholes and catch basins, abbreviated as KJ), and complete wet weather outfall sampling in catchments with system vulnerability factors (SVFs). The investigations were completed in accordance with the written Catchment Investigation Procedures developed in 2019, as part of the Town's IDDE Plan.

Per *Section 2.3.4.7.b Dry Weather Outfall and Interconnection Screening and Sampling* of the 2016 Small Municipal Separate Storm Sewer Systems (MS4) General Permit, "all outfalls/interconnections ... shall be inspected for the presence of dry weather flow within three (3) years of the permit effective date" (i.e., June 30, 2021). To support compliance with this requirement, Westford, in coordination with Tighe & Bond, has continuously worked to locate, inventory, and screen all known MS4 outfalls, completing rounds of dry weather outfall investigations during Fiscal Years 2018-2024. Results from these field efforts, including details on field work preparation, data collection methods, and background water quality standards and sampling requirements, are documented in prior memoranda. Since the last effort, new outfalls have been identified and were therefore in need of screening. The summary in Section 2 below describes the work completed.

Per *Section 2.3.4.8.c.ii* of the General Permit, the Town must inspect key junctions (KJs) and gather information on the locations of MS4 pipes, manholes, and the extent of the contributing catchment area for each MS4 catchment. During dry weather, KJs shall be opened and inspected systematically for visual and olfactory evidence of illicit connections (e.g., excrement, toilet paper, gray filamentous bacterial growth, or sanitary products present). If flow is observed, it shall be sampled for ammonia, chlorine, and surfactants. Where sampling

results or visual or olfactory evidence indicate potential illicit discharges or sanitary sewer overflows (SSOs)¹, the area draining to the junction manhole shall be flagged for further upstream investigation. Key junction and subsequent manhole investigations will proceed until the location of suspected illicit discharges or SSOs can be isolated to a pipe segment between two structures. If no evidence of an illicit discharge is found, catchment investigations will be considered complete upon completion of key junction manhole investigations.

In accordance with the Town's MS4 Catchment Investigation Procedures and the MS4 Permit Section 2.3.4.8.c.ii.1.c, outfall catchments that do not include a junction manhole (e.g., the catchment may be small and only contain individual catch basins) do not require dry weather key junction inspections; the dry weather screening completed at the catchment's outfall fulfills the intent of the key junction 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, the catchment investigation is considered complete.

The Town must also document the presence or absence of SVFs for each catchment. SVFs are defined in *Section 2.3.4.8.c.i.* of the 2016 MS4 General Permit. Catchments with a minimum of one SVF are subject to wet weather sampling requirements of *Section 2.3.4.8.c.ii.2*, and the Town must inspect and sample the associated outfall under wet weather conditions to the extent necessary to determine whether wet weather-induced high flows in sanitary sewers or high groundwater in areas served by septic systems result in discharges of sanitary flow to the MS4. An initial SVF evaluation was completed in Permit Year 2 which reviewed catchments for EPA's screening criteria on a Town-wide basis. Beginning with catchment investigations in Permit Year 4, the Town conducted a more detailed review of potential SVFs on a catchment-by-catchment basis. Additional SVFs were identified in PY7. Results from this analysis are detailed in Section 3.2 below.

The Town's ArcGIS Online geodatabase has been updated with the results of the catchment investigations and outfall screening, including photographs of the outfalls investigated, additional outfall attributes, and water quality screening and laboratory results. The current outfall inventory, catchment investigation data, and exports of the Survey123 dry/wet weather screening inspection data can be found in **Attachment A** (delivered electronically in excel). Additionally, see **Attachment B** for a summary of PY7 catchment investigation tracking. A summary of the water quality screening results for dry weather outfall sampling can be found in **Attachment C**. A mapbook with field notes for the catchments investigated can be found in **Attachment D**. A summary of the water quality screening results for wet weather outfall sampling can be found in **Attachment E**. And the laboratory data for all water quality samples can be found in **Attachment F**.

2. Dry Weather Outfall Investigation Summary

During PY7, Tighe & Bond identified and mapped several newly discovered MS4 outfalls owned by the Town. These outfalls are listed in **Attachment A** and summarized in the sections below.

On June 16, 2025, Tighe & Bond with Town staff, conducted dry weather outfall screenings at all of the newly mapped outfall locations. In addition, two outfalls first identified in PY6, which had not yet been screened, were also visited during this effort. Field work activities included collecting outfall inventory data and sampling any outfalls where dry weather flow

¹ Likely sewer input indicators include olfactory or visual evidence of sewage; Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water; or Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and detectable levels of chlorine.

was observed. The data gathered during field work can be found in **Attachment A**. The following summary provides a breakdown of the PY7 field work results:

- **21 outfalls** were visited and successfully screened during the field effort. Of those:
 - 2 outfalls were discovered during PY6 investigations.
 - 1 of these, New4.24, was observed with dry weather flow and samples were collected (see Section 2.2).
 - 1 outfall, OF_330, was incorrectly removed from the inventory in a previous permit year. This was added back to the inventory and screened in PY7.
 - 18 outfalls were discovered during PY7 investigations (see outfalls listed with the Map Figure “Newly Mapped in PY7” in **Attachment A**).
 - 3 of these were observed with dry weather flow and samples were collected (see Section 2.2).
- **14 outfalls** were reclassified and should be removed from the inventory. See Section 2.5.

2.1 Outfall and Interconnection Inventory Summary to Date

A summary of the updates made to the Town’s MS4 outfall and interconnection inventory at the conclusion of PY7 is provided in **Table 2-1** below.

Table 2-1
Outfall and Interconnection Inventory Summary – PY7

	Change	Subtotal
MS4 Outfall & Interconnection Inventory at the Beginning of PY7		526
Outfalls Discovered during PY7 Investigation	+ 18	
Outfalls / Interconnections Removed from Inventory	- 14	
Outfall Added Back to Inventory *	+2	
Revised MS4 Outfall & Interconnection Inventory		532

*Note that OF_330 and OF_161 were removed from the inventory in a previous permit year but upon review in PY7, Tighe & Bond determined this was an error. These outfalls have since been added back to the inventory. The dry weather outfall screening was completed for OF_161 in 2017 and OF_330 in PY7.

At the conclusion of the PY7 field effort, **100% of Westford’s MS4 outfalls/interconnections are considered complete for dry weather screening investigations**. If additional outfalls are discovered during catchment investigation mapping efforts, they will be screened as expeditiously as possible.

2.2 Dry Weather Outfall Sampling Results

Sampling was conducted when flow was present at outfalls or interconnections when rainfall totals were less than 0.10 inches in the last 24 hours in accordance with *Section 2.3.4.7.b.ii* of the General Permit. The four (4) outfalls with dry weather flow during the June 2025 field work are listed in **Table 2-2** below.

Table 2-2

Outfalls Where Dry Weather Sampling was Completed Permit Year 7

Outfall ID	Location	Illicit Discharge?	Date
New5.8_2	Old Homestead Road	Unlikely	6/17/2025
OF_592	44 Tadmuck Road	Potential	6/17/2025
New5.12-4	32 Tadmuck Road	Unlikely	6/17/2025
New4.24	Greenbrier Drive	Unlikely	6/17/2025

Sampling results of the outfalls listed above are summarized in **Attachment A** and **Attachment C**. The Summary has a color-coded ranking system for the results of the outfall monitoring, which demonstrates the severity of the sampling results (i.e., a red result denotes a higher, potentially problematic concentration of a stormwater pollutant). The ranking system uses known EPA benchmarks for each pollutant analyzed. This system was used to understand the water quality at each outfall and will be used to determine the follow-up outfall prioritization required by *Section 2.3.4.7.c* of the 2016 Small MS4 General Permit. Samples were delivered to Pace Laboratories of Westborough, Massachusetts and laboratory analytical reports are provided in **Attachment F**.

An illicit discharge ranking of “unlikely”, “likely”, or “potential” has been assigned to each outfall with dry weather flow based on the likelihood that an illicit discharge exists, given the observations made in the field and the results of the laboratory analyses completed. This system was used to determine follow-up outfall prioritization, as required by *Section 2.3.4.7.c* of the 2016 Small MS4 General Permit. The PY7 field effort concluded the dry weather outfall screening for the Town and an updated priority ranking of “low” or “high” has been assigned to each outfall based on sampling results and the location’s potential for the presence of an illicit discharge.

Per *Section 2.3.4.7.a.ii* of the 2016 Small MS4 General Permit, likely sewer input indicators include any of the following:

- Olfactory or visual evidence of sewage;
- Ammonia \geq 0.5 milligrams per liter (mg/L), surfactants \geq 0.25 mg/L, and bacteria concentrations greater than the water quality criteria applicable to the receiving water; or
- Ammonia \geq 0.5 mg/L, surfactants \geq 0.25 mg/L, and detectable levels of chlorine.

The General Permit also requires that discharges that may cause or contribute to an in-stream exceedance of surface water quality standards should be considered a high priority for catchment investigations.

Characteristics of Likely Sewer Input: None of the confirmed Town-owned outfalls screened and sampled during the PY7 field effort met EPA’s criteria for likely sewer input. This is further described below:

- Outfall **New4.24** had levels of E.coli and chlorine that were at or above EPA benchmarks. However, it does not meet EPA’s criteria for likely sewer input, as levels

of ammonia and surfactants were either non-detect or below EPA's benchmarks. There were also no visual or olfactory signs observed during screening.

- Outfall **OF_592** had levels of E.coli, total phosphorus, salinity, and conductivity that were at or above EPA benchmarks. It does not meet EPA's criteria for likely sewer input, as levels of ammonia and surfactants were either non-detect or below EPA's benchmarks. However, we recommend additional review of sanitary sewer infrastructure in the catchment due to the high levels of E. coli. This outfall will be considered a **high priority for catchment investigations**. No visual or olfactory signs of an illicit discharge were observed during screening. The elevated concentration of E. coli could be attributed to nonpoint source pollution such as pet waste from nearby walking paths. In some cases, high conductivity may indicate the presence of industrial discharges or other wash water. Note that the catchment area for outfall OF_592 was investigated during this field effort as described in Section 3.1 below.

All outfalls, except for OF_592, screened during this field effort were ranked as low priority. Although OF_592 did not meet the criteria for likely sewer input, it was ranked as high priority, for catchment investigations due to exceedances for E. coli, total phosphorous, salinity and conductivity.

2.3 Submerged Outfalls

Three (3) outfalls investigated were submerged due to high water levels downstream. Per *Section 2.3.4.7.b.2.iii* of the General Permit, if an outfall is inaccessible or submerged, the investigator shall proceed to the first accessible upstream drain manhole or catch basin for the observation and sampling effort and report the location with the screening results. Of the 3 submerged outfalls, none had flow present in the upstream structure. **Table 2-3** below highlights the 3 outfalls that were found to be fully or partially submerged.

Table 2-3

Fully or Partially Submerged Outfalls

Outfall ID	Street	Notes
OF-330	Palace Road	Partially submerged in water, stagnant water at upstream structures.
New5.8-3	Jester Road	Fully submerged in water, no flow present in upstream catch basin.
New5.3-1	Orchard St	Partially submerged in water, no flow present in upstream structure.

2.4 Outfalls Requiring Maintenance

Some of the outfalls visited during field efforts were partially or completely full of sediment, leaves, or debris. Other outfalls were in poor condition due to concrete erosion and cracking or pipe corrosion. Tighe & Bond recommends that the outfall pipes and discharge areas of all outfalls are maintained on a regular basis for proper function of the drainage system. The outfalls listed in **Table 2-4** should be further evaluated by Town staff and cleaned or repaired, as necessary.

Table 2-4
Outfalls Requiring Maintenance

Outfall ID	Street	Reason
New5.6_3	Tallard Rd	Exposed rebar, top of pipe cracked/deteriorating.
New5.12	Timberlee Lane	Pipe cracked / broken, concrete deterioration.
New5.12-2	39 West Prescott	Pipe cracked / broken.
New6.3-2	26 Tadmuck Rd	Obstructed by rocks.
New-Ashley	Ashley	Buried in sediment.
New5.12-4	32 Tadmuck Rd	Land near pipe is eroded, pipe hanging.
New5.13-1	16 Orchard St	Partially submerged in water and sediment.
New5.6_2	Tallard Rd	Clogged by vegetation and sediment.
New3.20_1	Lanes End	Covered / mostly buried in sediment and vegetation.

2.5 Outfalls to Reclassify

Fourteen (14) mapped outfalls and interconnections investigated during the PY7 field work were determined to be either a BMP structure, private, state, or other stormwater structure. **Table 2-5** contains a list of outfalls and interconnections that were reclassified and removed from the Town's inventory because of these reasons.

Table 2-5
Outfalls to be Removed from the Outfall Inventory

Outfall ID	Street	Reason
OF_352	Littleton Rd	State owned, per town comment.
OF_213	Vose Hill Rd	BMP structure, per fieldwork.
New_QQQ	Ann Marigue Way	Private, per town comment.
OF_97-2	N Hill Rd	Private, per town comment.
OF_97-3	N Hill Rd	Private, per town comment.
OF_97-4	N Hill Rd	Private, per town comment.
UNK-73	Hidden Valley Rd	Inlet structure, per fieldwork.
New_46	West St	Private, per town comment.
OF_17	Wilson Farm Rd	Inlet structure per fieldwork.
New_LLL	Vose Hill Rd	Private.
UNK-37	Fernwood Dr	Inlets structure, per fieldwork.
OF_486	Russells Way	Inlets structure, per fieldwork.
OF_425	Heather Dr	BMP structure, per fieldwork.
IC-7	Nabnasset St	Not a town interconnection, per fieldwork.

3. Catchment Investigation Summary

Tighe & Bond with Town staff completed eight (8) days of dry weather catchment investigations between May 8 and June 17, 2025. These investigations included key junction (KJ) inspections, terminal structures confirmation², wet weather outfall sampling in catchments with SVFs, and mapping investigations. The investigations built off the field work completed in previous permit years and were completed in accordance with the written Catchment Investigation Procedures developed in 2019, attached to the Town's IDDE Plan. A mapbook of the targeted catchments investigated in PY7 was created by Tighe & Bond and is included for reference in **Attachment D**. The mapbooks have notes that include the following:

- Structures investigated (circled in green), including terminal structures where catchment connectivity was confirmed.
- Callouts of sampling results for structures found with dry weather flow.
- Mapping errors and updates are noted in red.
- Miscellaneous notes, including maintenance issues, noted in blue.

A summary of the dry weather catchment investigations conducted in PY7 is provided below:

- **96 outfall and interconnection catchments** were visited under dry weather conditions and of them:
 - 72 catchment areas were successfully investigated, and key junction structures were screened as necessary. These catchments were determined to have no SVFs and therefore, required no wet weather screening. These catchments can be called complete.
 - 2 catchment areas were successfully investigated, and key junction structures were screened as necessary. These catchments were determined to have 1 or more SVFs and were screened under wet weather conditions (see Section 3.2). These catchments can be called complete.
 - 20 catchment areas were visited but are incomplete due to requiring additional mapping investigations and/or key junction structure inspections. The SVF evaluation was completed for these areas and no SVFs were found. See **Attachments B and D** for more information.
 - 2 outfalls, New_53 and OF_BC, were visited but flagged as possibly being not town owned. The Town should verify the ownership of these outfalls and if they are determined to be town-owned, mapping investigations are required. See **Attachments B and D** for more information.
- **13 outfalls** were successfully investigated, and key junctions were screened as necessary, in Permit Year 6. These were considered incomplete at the time as they were identified with 1 or more SVFs. The required wet weather outfall screening was completed in Permit Year 7 (see Section 3.2), and those catchments can now be called complete.
- **1 outfall**, OF_83, was identified with 1 or more SVFs and wet weather outfall screening was completed in Permit Year 7 (see Section 3.2). Further mapping investigations are needed to complete the catchment investigation and key junction structure inspection as necessary.

² Terminal Structures: the most upstream structures in the catchment area.

- **7 areas** were visited as they were identified as potentially missing an MS4 outfall but are considered incomplete. Mapping investigations were conducted but the downstream outfalls could not be located. Additional mapping investigations are required for these locations. Depending on the results of the mapping investigation, outfall screening and key junction inspections may also be required. See **Attachments B and D** for more information.
- **5 potential interconnection** locations were visited but were determined to either not exist or not be a town-owned interconnection. These locations were not included in the Town's MS4 inventory.

To categorize the catchment investigation as complete, both the key junction inspection and wet weather outfall sampling, if required, must be completed. In PY7, **87 catchment areas can be considered complete**, which brings the Town to approximately **53% complete** for all MS4 catchments. The status of each catchment investigated is noted in the "Outfall" layer of the GIS web map as well as **Attachment A**.

Note that the number of catchments with no junction manholes has not yet been evaluated throughout the entire MS4 area, but we expect many other catchment areas will be considered complete as the Town continues catchment investigations. The percentage of total catchments investigated assumes each MS4 outfall has its own catchment, though the initial catchment delineations in the GIS mapping are not yet as refined as this.

A list of all the outfall and interconnection catchments investigated in PY7 and their status can be found in the Permit Year 7 Catchment Investigation Tracking spreadsheet in **Attachment B**. The incomplete catchments described above are those marked with the Catchment Status "Revisit" in GIS and **Attachment B**. **Attachment B** also includes a brief description of the remaining work but for additional information see the mapbook markups in **Attachment D**. The data collected from the key junction structure inspections can be found in **Attachment A**. Note that some catchments visited may have multiple key junction structures or no key junctions.

3.1 In-situ Screening Results

The in-situ monitoring sampling was completed at key junction structures and upstream structures, as needed, using test kits; no laboratory analysis was conducted. Sampling results can be found on the catchment investigation data tab of **Attachment A**. The data has a color-coded ranking system for the results of the key junction monitoring, which demonstrates the severity of the sampling results (i.e., a red result denotes a higher, potentially problematic concentration of a stormwater pollutant). The ranking system uses known EPA benchmarks for each pollutant analyzed. This system was used to understand the water quality at each structure.

None of the dry weather flow samples collected had water quality results meeting EPA's criteria for likely sewer input³. However, all samples collected had benchmark exceedances for at least one parameter. More detailed information on the parameters examined is bulleted below:

- Chlorine levels greater than or equal to the EPA benchmark of 0.02 mg/L may indicate potable water source inputs. Sources of the chlorine may include water main leaks or breaks, hydrant flushing, or chlorinated pool water discharges to the storm drain.

³ Likely sewer input indicators include olfactory or visual evidence of sewage; Ammonia \geq 0.5 mg/L, surfactants \geq 0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water; or Ammonia \geq 0.5 mg/L, surfactants \geq 0.25 mg/L, and detectable levels of chlorine.

Additionally, turbidity may cause interference with the meter; suspended particles in the water can interfere with the light path, causing the instrument to detect more color than is actually present, leading to an inflated chlorine measurement.

- Surfactant levels greater than or equal to the EPA benchmark of 0.25 mg/L could indicate a compromised sewer line, a failing septic system, resident car washing, or the use of detergents. It should be noted that surfactants were measured using a test kit including a color wheel where 0.25 was the lowest concentration (above 0). Overall, we were conservative in our readings, and if the final solution had a faint color, we record the sample as having a surfactants concentration of 0.25 mg/L.
- Ammonia levels in exceedance of the EPA benchmark of 0.5 mg/L may indicate runoff from agricultural lands, pet waste, fertilizers, and decomposition of organic waste.

Additionally, a few catchments had individual exceedances or observations that Tighe & Bond flagged for follow-up work:

- **Catchment OF_330** was found to have overland runoff from farmland discharging into upstream catch basin CB-6107 on Tadmuck Rd. Agricultural runoff is largely exempt from the NPDES requirements and state laws related to wetlands and water quality, see code 40CFR 122.3 Exclusions part (e). However, Tighe & Bond recommends the Town works with the property owner to manage this runoff. This catchment was found to have hits for surfactants and chlorine at multiple structures. Elevated levels of surfactants in stormwater could be from various sources as mentioned above. No visual or olfactory evidence was present. However, several pipes were partially submerged. See **Attachment D** for photos from this location.
- **Catchment OF_592** on Tadmuck Rd was found to have high hits for surfactants at multiple structures with the catchment system. The southeast inlet in manhole DMH-0020 was observed with suds / foam and tested at 0.75 mg/L for surfactants (no other hits). This flow was traced upstream to an unmapped inlet in DMH-0172 which also tested at 0.75 mg/L for surfactants. Additionally, the southern inlet in DMH-0020 tested at a 1.0 mg/L for surfactants (no other hits) and no upstream structures could be located. See **Attachment D** for mapping from this location. Although these results do not meet the criteria for likely sewer input, the water quality results indicate a potential illicit discharge, likely wastewater. Tighe & Bond recommends follow-up work be conducted at both locations to locate upstream structures and attempt to identify a source of the flow. Note that OF_592 was a newly discovered outfall and was categorized as high priority based on the dry weather outfall screening as described in Section 2.2 above.

Additionally, catchment OF_109 on N Hill Rd was flagged as a priority for catchment investigations based on excessive foam observed during the Town's catch basin cleaning. Tighe & Bond investigated here during PY7 field work and found excessive foam and flow with some high hits, 0.5 and 0.75 mg/L, for surfactants at multiple structures in the catchment system. This flow was traced upstream and appeared to be coming from the stream inlet along Hidden Valley Rd. No other town MS4 outfalls were found to discharge to the stream upstream of the inlet into the OF_109 system. This location does not appear to have a potential illicit connection and Tighe & Bond does not believe any follow-up action is required.

3.2 SVF Analysis and Wet Weather Screening Results

An analysis was completed by the Town for all outfall catchments selected for the PY7 investigations to determine if they had SVFs and therefore met the criteria for wet weather screening. The results of the PY7 SVF analysis are included in **Attachment B**. In addition to the fourteen (14) outfalls identified with one (1) or more SVFs in previous permits years, 2 outfalls were identified with SVFs in PY7.

Tighe & Bond and Town staff conducted wet weather outfall screening for these sixteen (16) outfalls with SVFs on March 17 and May 6, 2025. See **Attachment A** for the screening inspection data and sampling results. A summary table of the sampling results is also enclosed with this report (**Attachment E**). Similar to dry weather outfall summary, this summary has color-coding to demonstrate the severity of the sample results. Samples were delivered to Pace Laboratories of Westborough, Massachusetts and laboratory analytical reports are provided in **Attachment F**.

A total of **16** outfalls were visited and successfully screened during the field effort. Of those:

- 11 outfalls were observed with wet weather flow and samples were collected.
- 3 outfalls were observed with no flow at the outfall, but wet weather flow was observed upstream. Samples were then collected at the upstream structures (BMP or manhole).
- 1 outfall, OF_41, was observed with wet weather flow at both the outfall and the upstream BMP. Samples were collected at both locations due to the location of the sewer-drain crossing (SVF) identified in the system.
- 1 outfall, OF_317, was observed with no flow at outfall during 2 separate wet weather events. Based on record plans provided by the Town this appears to be a drywell and wet weather screening can be considered complete.

None of the wet weather outfall screening results met EPA's criteria for likely sewer input⁴. More detailed information on the wet weather screening is bulleted below:

- 7 samples had chlorine levels greater than or equal to the EPA benchmark of 0.02 mg/L, which may indicate potable water source inputs. Additionally, as stated earlier, high turbidity can cause false positives with the chlorine meter.
- 3 samples had salinity, conductivity, and chlorine levels in exceedance of the EPA benchmarks. This may be due to road salt in the runoff.
- 3 samples had bacteria levels greater than EPA benchmark levels. Elevated bacteria concentrations are expected for wet weather nonpoint source pollution and may not be indicative of sanitary input to the drain or SSOs because ammonia and surfactants levels were all non-detect or below EPA benchmarks.

4. IDDE Investigations Summary

Inspection and screening data are included in the enclosed annotated mapbook and excel spreadsheet (**Attachments D** and **A**, respectively). The mapbook includes sampling data and investigation notes in addition to mapping errors identified during catchment investigations that have since been updated on the Town's GIS. The spreadsheet has 6 tabs, as described below. Note that all of this data, as well as photos, are also available in the Town's GIS database.

- **MS4 Outfall Inventory** – A master log of the Town's MS4 outfalls, including dry weather outfall screening status and catchment investigation status.
- **Catchment Investigation Data** – An export of the observations and water quality data collected at structures during dry weather field work. This includes the screening completed at each KJ, including notes on the presence of dry weather flow and a summary of the water quality screening results for ammonia, chlorine, and surfactants.

⁴ Likely sewer input indicators include olfactory or visual evidence of sewage; Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water; or Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and detectable levels of chlorine.

- **Dry Weather Outfall Sampling** - A summary of the water quality sampling results at outfalls during dry weather conditions. Laboratory sampling reports are included in Attachment F.
- **Dry Weather Outfall Inspection Data** – An export of the observations and water quality data collected at outfalls during dry weather conditions.
- **Wet Weather Outfall Sampling** – A summary of the water quality sampling results at outfalls during wet weather conditions. Laboratory sampling reports are included in Attachment F.
- **Wet Weather Outfall Inspection Data** - An export of the observations and water quality data collected at outfalls during wet weather conditions.

5. Recommendations and Next Steps

The following are recommendations for the Town, which can be completed by Town staff or a Contractor in subsequent Permit Years:

- **Conduct follow-up investigations** at catchments OF_330 and OF_592 as described in Section 3.1. The Town should revisit OF_592 to determine the origin of the unmapped pipes from which the samples were taken and to identify any possible sources of the potential illicit discharges.
- **Revisit incomplete catchments.** Catchments needing mapping investigations or further key junction screening should be revisited to be considered complete. These catchments are listed in **Attachment A**.
- **Continue to improve drainage mapping.** During field work, staff noted some discrepancies between the stormwater GIS mapping and the in-field conditions, such as structure locations and pipe connectivity. These modifications are included as markups to the mapbooks of the investigated locations and were incorporated into the GIS mapping during Permit Year 7 field work. The Town should continue to improve drainage system mapping during subsequent field investigations including reviewing mapping discrepancies in additional catchments.
- **SVF Evaluation.** The Town should continue SVF evaluation for all Town-owned MS4 outfall catchments and conduct wet weather outfall screening where required.
- **Continue interconnection and outfall screening.** Per *Section 2.3.4.10. Ongoing Screening* of the General Permit, "Upon completion of all catchment investigations... and illicit discharge removal and confirmation... each outfall or interconnection shall be reprioritized for screening in accordance with part 2.3.4.7.a once every five years." Ongoing screening consists of dry weather screening and sampling at all outfalls and interconnections and wet weather sampling at outfalls and interconnections required due to system vulnerability factors (SVFs). The Town should plan and budget for ongoing screening accordingly.
- **Address maintenance issues.** Some structures were noted to have maintenance needs, such as cleaning and repairs. These notes are included in Section 2.4.
- **Continue ongoing catchment investigations.** Per EPA's implementation schedule, the Town should continue to complete remaining catchment investigations, including dry weather KJ structure screening and wet weather outfall screening in subsequent permit years. As investigations are completed, the Town should consider refining catchment delineations as connectivity and mapping improves.

- **Ongoing reporting and record keeping.** The work completed to date should be reported in each annual report submitted to EPA and MassDEP per Section 2.3.4.9 of the General Permit.

Attachments

Attachment A - Field Investigation Data (*delivered electronically*)

Attachment B - PY7 Catchment Investigation Tracking

Attachment C - Dry Weather Outfall Sampling Results Table

Attachment D - Catchment Investigation Mapbooks

Attachment E - Wet Weather Outfall Sampling Results Table

Attachment F - Laboratory Reports

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Attachment A
Field Investigation Data
(delivered electronically)

Attachment B
PY7 Catchment Investigation Tracking

Westford Permit Year 7 Catchment Investigation Tracking

Mapbook Name	Catchments in Mapbook ⁽¹⁾	Date Sent to Town	Date Returned to T&B	PY7 Catchment Status ⁽²⁾	Comments	SVF Review Complete?	Date of SVF Review Completed	Wet Weather Needed at this Outfall?	Wet Weather Screening Status	Date of Screening Visited	Reason to Investigate (SVF)
<i>Group 1</i>											
<i>Revisit from PY6</i>											
	OF_1070	1/7/2025	6/12/2025	Revisit	T&B investigated 5/27 but further mapping investigation needed after cleaning can be performed.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_1072	1/7/2025	6/12/2025	Revisit	T&B investigated 5/27 but further mapping investigation needed.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_346	1/7/2025	6/12/2025	Revisit	Mapping investigation needed.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_386	1/7/2025	6/12/2025	Revisit	T&B investigated 5/27 but further mapping investigation needed.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_1056	-	-	Complete	T&B investigated 6/3.	Yes	PY6	No	N/A	N/A	N/A
	OF_455	1/7/2025	6/12/2025	Complete	T&B investigated 5/27.	Yes	6/12/2025	No	N/A	N/A	N/A
<i>Group 2</i>											
<i>Verify Mapping</i>											
	OF_275	1/7/2025	6/12/2025	Complete	T&B investigated 5/6-8.	Yes	6/12/2025	No	N/A	N/A	N/A
	New5.6_2	1/7/2025	6/26/2025	Complete	T&B investigated 5/6-8.	Yes	6/26/2025	No	N/A	N/A	N/A
	New5.6_3	1/7/2025	6/26/2025	Complete	T&B investigated 5/6-8.	Yes	6/26/2025	No	N/A	N/A	N/A
	New_22	1/7/2025	6/12/2025	Complete	T&B investigated 5/29.	Yes	6/12/2025	No	N/A	N/A	N/A
	New_26	1/7/2025	3/3/2025	Complete		Yes	3/19/2025	No	N/A	N/A	N/A
	New_25	1/7/2025	3/3/2025	Complete		Yes	3/19/2025	No	N/A	N/A	N/A
	New_24	1/7/2025	3/3/2025	Complete		Yes	3/19/2025	No	N/A	N/A	N/A
	New_27	1/7/2025	3/3/2025	Complete		Yes	3/19/2025	No	N/A	N/A	N/A
	New3.20_1	1/7/2025	3/3/2025	Complete		Yes	3/19/2025	No	N/A	N/A	N/A
	New_28	1/7/2025	3/3/2025	Complete		Yes	3/19/2025	No	N/A	N/A	N/A
	New_31	1/7/2025	6/12/2025	Revisit	Mapping investigation needed	Yes	6/12/2025	No	N/A	N/A	N/A
	New_34	1/7/2025	6/12/2025	Revisit	Mapping investigation needed	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_168	1/7/2025	5/2/2025	Complete		Yes	5/2/2025	No	N/A	N/A	N/A
	New-BBB	1/7/2025	5/2/2025	Complete		Yes	5/2/2025	No	N/A	N/A	N/A
<i>Group 3</i>											
<i>Verify Mapping</i>											
	New_45	3/3/2025	3/19/2025	Complete	T&B investigated 5/8.	Yes	3/19/2025	No	N/A	N/A	N/A
	New4.26_1	3/3/2025	6/12/2025	Complete	T&B investigated. Complete	Yes	6/12/2025	No	N/A	N/A	N/A
	New5.13-1	3/3/2025	6/26/2025	Complete		Yes	6/26/2025	No	N/A	N/A	N/A
	New_55	3/3/2025	6/26/2025	Complete	T&B investigated 5/13. Needs SVF review to complete.	Yes	6/26/2025	No	N/A	N/A	N/A
	New_53	3/3/2025	5/2/2025	Revisit	Town to investigate ownership, may not be town-owned.	Yes	5/2/2025	No	N/A	N/A	N/A
	OF_BC	3/3/2025	5/2/2025	Revisit	Town to investigate ownership, may not be town-owned.	Yes	6/12/2025	No	N/A	N/A	N/A
	New_40	3/3/2025	5/2/2025	Complete		Yes	5/2/2025	No	N/A	N/A	N/A
	OF_353	3/3/2025	5/2/2025	Complete		Yes	5/2/2025	No	N/A	N/A	N/A
	New5.13-4	3/3/2025	5/2/2025	Complete		Yes	6/12/2025	No	N/A	N/A	N/A
	New_41	3/3/2025	6/12/2025	Complete	T&B investigated 5/13.	Yes	6/12/2025	No	N/A	N/A	N/A
	New5.13-3	3/3/2025	6/12/2025	Revisit	T&B investigated 5/13-29, some mapping work still needed.	Yes	6/12/2025	No	N/A	N/A	N/A
	New_38	3/3/2025	6/12/2025	Revisit	T&B investigated 5/13-29, some mapping work still needed.	Yes	6/12/2025	No	N/A	N/A	N/A
	New_44	3/3/2025	3/19/2025	Complete		Yes	3/19/2025	No	N/A	N/A	N/A
	New_52	3/3/2025	6/12/2025	Revisit	T&B investigated 5/13, some mapping work still needed.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_237	3/3/2025	6/12/2025	Revisit	T&B investigated 5/13, some mapping work still needed.	Yes	6/12/2025	No	N/A	N/A	N/A
	New_39	3/3/2025	5/2/2025	Complete		Yes	5/2/2025	No	N/A	N/A	N/A
	New_50	3/3/2025	5/2/2025	Complete		Yes	5/2/2025	No	N/A	N/A	N/A
	New_51	3/3/2025	5/2/2025	Complete		Yes	5/2/2025	No	N/A	N/A	N/A
	OF_44	3/3/2025	5/2/2025	Complete	Yes SVF	Yes	5/2/2025	Yes SVF	Visited - Complete	5/6/2025	Septic tanks and sewer located near the drainage pipe and OF_45. Unknown if there are any septic structures nearby these structures.
	OF_45	3/3/2025	5/2/2025	Complete	Yes SVF	Yes	5/2/2025	Yes SVF	Visited - Complete	5/6/2025	Septic tanks and sewer located near the drainage pipe.
	OF_1084	3/3/2025	3/19/2025	Complete		Yes	3/19/2025	No	N/A	N/A	N/A
	OF_1085	3/3/2025	3/19/2025	Complete		Yes	3/19/2025	No	N/A	N/A	N/A
	OF_358	3/3/2025	5/2/2025	Complete		Yes	5/2/2025	No	N/A	N/A	N/A

Westford Permit Year 7 Catchment Investigation Tracking

Mapbook Name	Catchments in Mapbook ⁽¹⁾	Date Sent to Town	Date Returned to T&B	PY7 Catchment Status ⁽²⁾	Comments	SVF Review Complete?	Date of SVF Review Completed	Wet Weather Needed at this Outfall?	Wet Weather Screening Status	Date of Screening Visited	Reason to Investigate (SVF)
	New_49	3/3/2025	5/2/2025	Complete		Yes	5/2/2025	No	N/A	N/A	N/A
	New_47	3/3/2025	5/2/2025	Complete		Yes	5/2/2025	No	N/A	N/A	N/A
	OF_259	3/3/2025	5/2/2025	Complete		Yes	5/2/2025	No	N/A	N/A	N/A
	New_46	3/3/2025	5/2/2025	N/A	Removed from inventory, private.	N/A	N/A	N/A	N/A	N/A	N/A
Group 4	<i>Interconnections</i>										
	IC-10	3/3/2025	6/12/2025	Revisit	Unconfirmed interconnection. Area under construction, further investigation needed. On hold for now.	Yes	6/12/2025	No	N/A	N/A	N/A
	IC-11	3/3/2025	6/12/2025	Revisit	Unconfirmed interconnection. On hold for construction	Yes	6/12/2025	No	N/A	N/A	N/A
	IC-12	3/3/2025	6/12/2025	N/A	Potential interconnection. DNE - not include in inventory.	N/A	N/A	N/A	N/A	N/A	N/A
	IC-13	3/3/2025	6/12/2025	N/A	Potential interconnection. DNE - not include in inventory.	N/A	N/A	N/A	N/A	N/A	N/A
	IC-14	3/3/2025	6/12/2025	N/A	Potential interconnection. DNE - not include in inventory.	N/A	N/A	N/A	N/A	N/A	N/A
	IC-3	3/3/2025	6/12/2025	Complete	T&B investigated 5/27-6/5	Yes	6/12/2025	No	N/A	N/A	N/A
	IC-4	3/3/2025	6/12/2025	Revisit	On hold for construction	Yes	6/12/2025	No	N/A	N/A	N/A
	IC-5	3/3/2025	6/12/2025	Revisit	T&B investigated 6/17. Further mapping investigation needed at upstream (Lanes End and May Rd)	Yes	6/12/2025	No	N/A	N/A	N/A
	IC-6	3/3/2025	6/12/2025	Complete	T&B investigated 5/27.	Yes	6/12/2025	No	N/A	N/A	N/A
	IC-7	3/3/2025	6/12/2025	N/A	T&B investigated 5/27. IC-7 flows into Westford, removed from inventory	N/A	N/A	N/A	N/A	N/A	N/A
	IC-8	3/3/2025	6/12/2025	N/A	Potential interconnection. Determined to be a duplicate point, not included in inventory.	N/A	N/A	N/A	N/A	N/A	N/A
	IC-9	3/3/2025	6/12/2025	N/A	Potential interconnection. Determined to be not town owned/maintained, not included in inventory.	N/A	N/A	N/A	N/A	N/A	N/A
	OF_1033	3/3/2025	6/12/2025	Complete	T&B investigated 5/27. Added because IC-7 was removed from inventory.	Yes	6/12/2025	No	N/A	N/A	N/A
Group 5	<i>From CB Potential Illicit Report</i>										
	OF_107	4/23/2025	6/12/2025	Complete	T&B investigated 5/6.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_108	4/23/2025	6/12/2025	Complete	T&B investigated 5/12.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_109	4/23/2025	6/12/2025	Complete	T&B investigated 5/8, 5/12, 5/29.	Yes	6/12/2025	No	N/A	N/A	N/A
	UNK-73	4/23/2025	6/12/2025	N/A	Removed from inventory, inlet not outfall.	N/A	N/A	N/A	N/A	N/A	N/A
	OF_97-1	4/23/2025	6/12/2025	Complete	T&B investigated on 5/12.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_97-2	4/23/2025	6/12/2025	N/A	Removed from inventory, private.	N/A	N/A	N/A	N/A	N/A	N/A
	OF_97-3	4/23/2025	6/12/2025	N/A	Removed from inventory, private.	N/A	N/A	N/A	N/A	N/A	N/A
	OF_97-4	4/23/2025	6/12/2025	N/A	Removed from inventory, private.	N/A	N/A	N/A	N/A	N/A	N/A
	OF_114	4/23/2025	6/12/2025	Complete	T&B investigated 5/12.	Yes	6/12/2025	No	N/A	N/A	N/A
	New5.12-3 (Reinsway)	4/23/2025	6/12/2025	Complete	T&B investigated 5/12, 5/29.	Yes	6/12/2025	No	N/A	N/A	N/A
Group 6	<i>KJ Inspections</i>										
	OF_161	4/23/2025	6/12/2025	Complete	T&B investigated 6/17.	Yes	6/12/2025	No	N/A	N/A	N/A
	New5.8_2	-	-	Complete	T&B investigated 5/8.	Yes	PY6	No	N/A	N/A	N/A
	OF_262	-	-	Complete	T&B investigated 5/8.	Yes	PY6	No	N/A	N/A	N/A
	OF_263	-	-	Complete	T&B investigated 5/8.	Yes	PY6	No	N/A	N/A	N/A
	OF_264	4/23/2025	6/12/2025	Complete	T&B investigated 5/12.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_48	4/23/2025	6/12/2025	Complete	T&B investigated 5/12.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_233	4/23/2025	6/12/2025	Complete	T&B investigated 5/12.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_244	4/23/2025	6/12/2025	Complete	T&B investigated 5/8.	Yes	6/12/2025	No	N/A	N/A	N/A
	New5.8_3	4/23/2025	6/12/2025	Complete	T&B investigated 5/8.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_330	4/23/2025	6/12/2025	Revisit	T&B investigated 5/8 and 5/27. Further mapping investigation needed to confirm connectivity. Follow-up work needed for overland Farm runoff at CB 6107.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_23	4/23/2025	6/12/2025	N/A	Mapping investigation conducted here, correctly previously removed from the inventory.	N/A	N/A	N/A	N/A	N/A	N/A
	New5.12-4	4/24/2025	6/26/2025	Complete	New outfall added in replace of OF_23. T&B investigated 6/3.	Yes	6/26/2025	No	N/A	N/A	N/A
	New6.3-2	4/25/2025	6/26/2025	Revisit	New outfall added in replace of OF_23. T&B investigated 6/3. Further mapping investigation needed, see data issue layer.	Yes	6/26/2025	No	N/A	N/A	N/A
	UNK-7	4/23/2025	6/12/2025	Complete	T&B investigated 5/12-13.	Yes	6/12/2025	No	N/A	N/A	N/A
Group 7	<i>Missing Outfalls</i>										
	New6.3-1 (Depot St DMH0690)	4/23/2025	6/12/2025	Complete	T&B investigated. Needs SVF review to complete.	Yes	6/12/2025	No	N/A	N/A	N/A

Westford Permit Year 7 Catchment Investigation Tracking

Mapbook Name	Catchments in Mapbook ⁽¹⁾	Date Sent to Town	Date Returned to T&B	PY7 Catchment Status ⁽²⁾	Comments	SVF Review Complete?	Date of SVF Review Completed	Wet Weather Needed at this Outfall?	Wet Weather Screening Status	Date of Screening Visited	Reason to Investigate (SVF)
	New5.12 (Timberlee Lane)	4/23/2025	6/12/2025	Complete	T&B investigated 5/12. Needs SVF review to complete.	Yes	6/12/2025	No	N/A	N/A	N/A
	Unknown Outfall (Main St CB0031)	4/23/2025	6/12/2025	Revisit*	T&B investigated but no outfall located. Potentially a leaching basin. Need town to verify	Yes	6/12/2025	No	N/A	N/A	N/A
	Unknown Outfall (Tadmuck Rd CB5030)	4/23/2025	6/12/2025	Revisit*	Mapping investigation started but downstream outfall not yet located. Further investigation needed.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_592 (Tadmuck Rd CB0020)	4/23/2025	6/12/2025	Revisit	Outfall located but further investigation needed for inlets with no origin.	Yes	6/12/2025	No	N/A	N/A	N/A
	Unknown Outfall (Crown Rd CB2122)	4/23/2025	6/12/2025	Revisit*	Mapping investigation started but downstream outfall not yet located. Further investigation needed. See data issue layer.	Yes	6/12/2025	No	N/A	N/A	N/A
	Unknown Outfall (Saint Mary's Drive CB1774)	4/23/2025	6/12/2025	Revisit*	Mapping investigation started but downstream outfall not yet located. Further investigation needed.	Yes	6/12/2025	No	N/A	N/A	N/A
	Unknown Outfall (South Chelmsford Rd CB4039)	4/23/2025	6/12/2025	Revisit*	Mapping investigation started but downstream outfall not yet located. Further investigation needed.	Yes	6/12/2025	No	N/A	N/A	N/A
	Unknown Outfall (Carlisle Rd CB0193)	4/23/2025	6/12/2025	Revisit*	Mapping investigation started but downstream outfall not yet located. Further investigation needed.	Yes	6/12/2025	No	N/A	N/A	N/A
	Unknown Outfall (Concord Rd CB0313)	4/23/2025	6/12/2025	Revisit*	Mapping investigation started but downstream outfall not yet located. Further investigation needed.	Yes	6/12/2025	No	N/A	N/A	N/A
	New5.12-2 (West Prescott St CB3301)	4/23/2025	6/12/2025	Complete	T&B investigated 5/12 and 6/3.	Yes	6/12/2025	No	N/A	N/A	N/A
Group 8	Verify Mapping										
	New_QQQ	6/2/2025	6/12/2025	N/A	Removed from inventory, private.	N/A	N/A	N/A	N/A	N/A	N/A
	OF_194	6/2/2025	26-Jun	Complete	T&B investigated 6/5. Needs SVF review to complete.	Yes	6/26/2025	No	N/A	N/A	N/A
	OF_24	6/2/2025	6/12/2025	Revisit	T&B investigated 6/5. Mapping investigation started but upstream connectivity could not be determined. Further investigation needed.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_25	6/2/2025	6/12/2025	Complete	T&B investigated 6/5.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_26	6/2/2025	6/12/2025	Complete	T&B investigated 6/5.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_27	6/2/2025	6/12/2025	Complete	T&B investigated 5/29.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_28	6/2/2025	6/12/2025	Complete	T&B investigated 6/5.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_29	6/2/2025	6/12/2025	Complete	T&B investigated 5/29.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_30	6/2/2025	6/12/2025	Complete	T&B investigated 6/17.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_224	6/2/2025	6/12/2025	Complete	T&B investigated 6/5.	Yes	6/12/2025	No	N/A	N/A	N/A
	New_NNN	6/2/2025	6/12/2025	Complete	T&B investigated 6/5.	Yes	6/12/2025	No	N/A	N/A	N/A
	New_III	6/2/2025	6/12/2025	Complete	T&B investigated 6/5.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_215	6/2/2025	6/12/2025	Complete	T&B investigated 6/5 (OF_215 is the outfall, OF-213 BMP).	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_218	6/2/2025	6/12/2025	Complete	T&B investigated 6/5.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_219	6/2/2025	6/12/2025	Complete	T&B investigated 6/5.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_403	6/2/2025	6/12/2025	Complete	T&B investigated 6/5.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_402	6/2/2025	6/12/2025	Complete	T&B investigated 6/5.	Yes	6/12/2025	No	N/A	N/A	N/A
	New-Ashley	6/2/2025	6/12/2025	Complete	Newly mapped outfall, T&B investigated 6/5.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_401	6/2/2025	6/12/2025	Revisit	T&B to revisit to inspect KJ.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_226	6/2/2025	6/12/2025	Complete	T&B investigated 6/5.	Yes	6/12/2025	No	N/A	N/A	N/A
	OF_225	6/2/2025	6/12/2025	Revisit	T&B investigated 6/5. Mapping investigation started but further investigation needed.	Yes	6/12/2025	No	N/A	N/A	N/A

Note:
 (1) Outfall IDs highlighted red were newly discovered during Permit Year 7 fieldwork.
 (2) For locations marked as "Revisit*", the downstream outfall has not been located and therefore will not appear on the town's MS4 outfall inventory. These locations are included here for the purpose of tracking the mapping investigations needed.

Attachment C
Dry Weather Outfall Sampling Results Table

Westford PY7 Dry Weather Outfall Sampling Summary Table

Location					Laboratory Analysis ⁽¹⁾				Water Quality Meter/Test Kit ⁽¹⁾				
Date	Time	Outfall ID	Street	Sample Location (Outfall / Upstream MH)	Ammonia mg/L	Surfactants mg/L	Total Phosphorus mg/L	E. coli CFU/100mL	Temperature °C	Temperature °F	Salinity ppt	Conductivity µS/cm ⁽²⁾	Chlorine mg/L
6/16/2025	8:20	New5.8_2	11 Old Homestead Road	Upstream CB	0.077	ND	-	38.39	15.0	59.0	0.34	689	0.00
6/16/2025	9:40	OF_592	44 Tadmuck Road	Outfall	ND	0.07	0.044	2419.57	12.2	54.0	2.16	4049	0.00
6/16/2025	9:55	New5.12_4	32 Tadmuck Road	Outfall	ND	ND	0.017	28.82	15.8	60.4	0.09	194.6	0.00
6/16/2025	12:55	New4.24	4 Greenbrier Drive	Outfall	ND	ND	0.018	866.44	16.5	61.7	0.28	580	0.08

REPORTING LIMITS

Ammonia = 0.075 mg/L
 Surfactants = 0.050 mg/L
 E. coli = 2 CFU/100mL
 Total Phosphorus = 0.01 mg/L
 "ND" = none detected

COLOR KEY (benchmarks are bold)									
	Ammonia	Surfactants	Total Phosphorus	E. coli		Temperature	Salinity	Conductivity	Chlorine
	mg/L	mg/L	mg/L	CFU/100 mL		°F	ppt	µS/cm	mg/L
	≥ 6.000	≥ 1.00	≥ 0.908	≥ 10,000			≥ 1.00	≥ 2,000	≥ 1.00
	≥ 1.000	≥ 0.50	≥ 0.466	≥ 1,260			≥ 0.75	≥ 1,500	≥ 0.30
	≥ 0.500	≥ 0.25	≥ 0.024	≥ 410		≥ 83.0	≥ 0.50	≥ 1,000	≥ 0.02
	< 0.5	< 0.25	< 0.024	< 410		< 83	< 0.5	< 1,000	< 0.02

Notes for Results Summary:

- (1) "-" means no analysis was completed
- (2) µS/cm is equivalent to µmhos/cm

Benchmark Sources:

Ammonia, Surfactants, and Chlorine - *EPA General Permit for Stormwater Discharges from Small MS4 in Massachusetts*
 Temperature, and Dissolved Oxygen - *314 CMR 4.00: Massachusetts Surface Water Quality Standards*
 E.coli and Fecal Coliform - *MassDEP Surface Water Quality Criteria for Bacteria (CN 563.0)*
 Total Phosphorus - *EPA Ambient Water Quality Criteria Recommendations for Rivers and Streams in Nutrient Ecoregion XIV*
 Salinity - *EPA Volunteer Estuary Monitoring: A Methods Manual*
 Conductivity - *Center for Watershed Protection Illicit discharge Detection and Elimination Guidance Manual*

Attachment D
Catchment Investigation Mapbooks

OF_275, New5.6_2 and New5.6_3
 Low Priority
 Royce Lane and Tallard Road
 Catchments Complete

MH-3740. Two, 2" PVC pipes at 2 o'clock and 10 o'clock position. Possibly buried outfall in sediment. There is 12" RCP at 4 o'clock position aiming towards a headwall (possible decor wall).

Frame is cracked at diagonal corners (pieces missing).

Possible secondary outlet or inlet structure here.

New5.6_2: Outfall completely submerged in water. Outfall also blocked by trees.

New5.6_3: Dry weather survey complete.

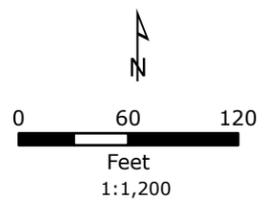
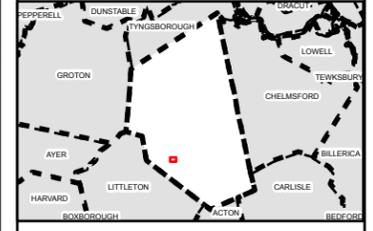
2 new outfalls mapped, connectivity updated

STORMWATER CATCHMENTS GROUP2

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Inlet
- Outlet
- Water Quality Inlet
- Flared End Structure
- Leak Off
- Overflow Structure
- Other
- ✱ BMP Location
- Drain Pipe
- ▬ Culvert
- BMP Area

LOCUS MAP

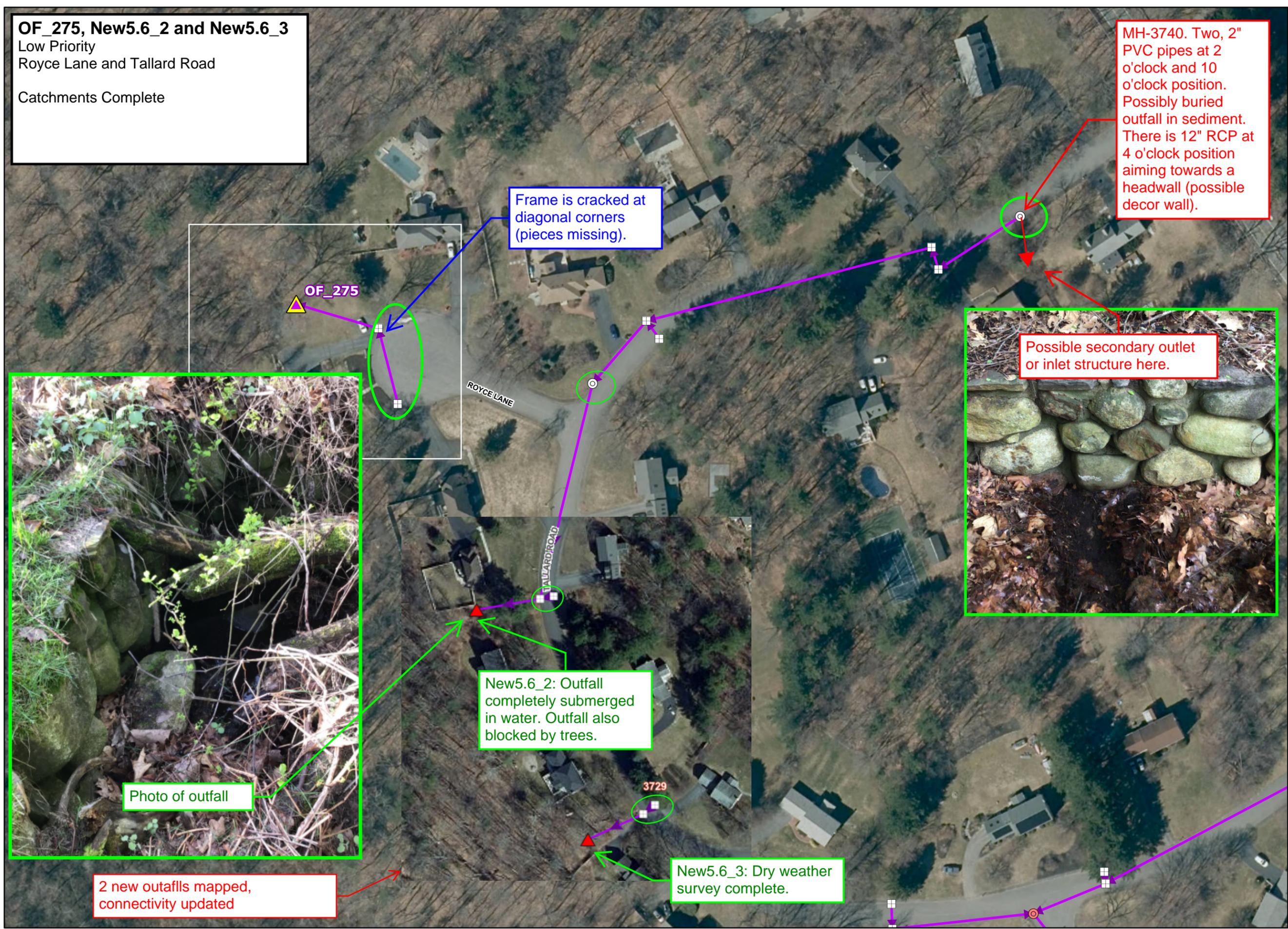


NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2024)

Catchment Area of OF_275 Westford, Massachusetts

Page 1 of 61



New_45
 Low Priority
 Village View Rd
 Catchment Complete

OF_390 investigation previously completed

MH-3563: Dry.

KJ MH-3369: Flow from Parkview Cir MH.
 Ammonia: 0 mg/L
 Surfactants: 0.5 mg/L
 Chlorine: 0.04 mg/L

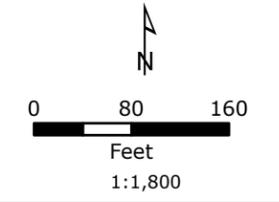
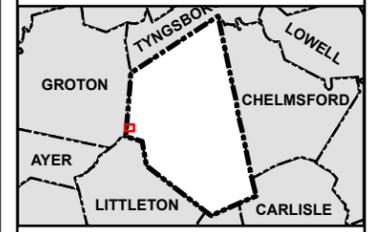
MH-3560: Dry.

CATCHMENT INVESTIGATIONS GROUP 3

LEGEND

- ▲ Outfall
- ✱ BMP Structure
- Culvert Inlet/Outlet
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Drainage Features**
- Inlet
- Outlet
- Water Quality Inlet
- Flared End
- Leak Off
- Overflow Structure
- Unknown
- ⊗ Interconnection
- Culvert
- Drain Pipe
- BMP Area
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.

Catchment Area of New_45



OF-262, OF-263 and New5.8_2

Low Priority
12 Old Homestead Rd

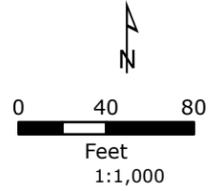
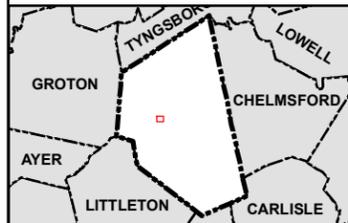
Catchments Complete

CATCHMENT INVESTIGATIONS MAPPING ISSUES

LEGEND

- Outfall
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Key Junction Manhole
- Junction Manhole
- Manhole
- Drain Pipe
- Culvert
- BMP Point
- BMP Area
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.

Catchment Area of Outfall: OF_262 OF_263



New outfall here, New5.8_2. Completely submerged in sediment/water.

2" black plastic pipe at 12 o'clock position. CNL upstream source.

2" black plastic pipe at 10 o'clock position. 4" inlet is at 8 o'clock position. CNL upstream sources.

Checked upstream CB-2899 for possible connection, there was none.

Pipe DNE.

KJ CB: 3018. Two flows. Flow from CB across the street (CB-3019):
Ammonia: 0 mg/L
Surfactants: 0.25 mg/L
Chlorine: 0.04 mg/L.
Flow from upstream CB (CB-3016):
Ammonia: 0 mg/L
Surfactants: 0.25 mg/L
Chlorine: 0.03 mg/L

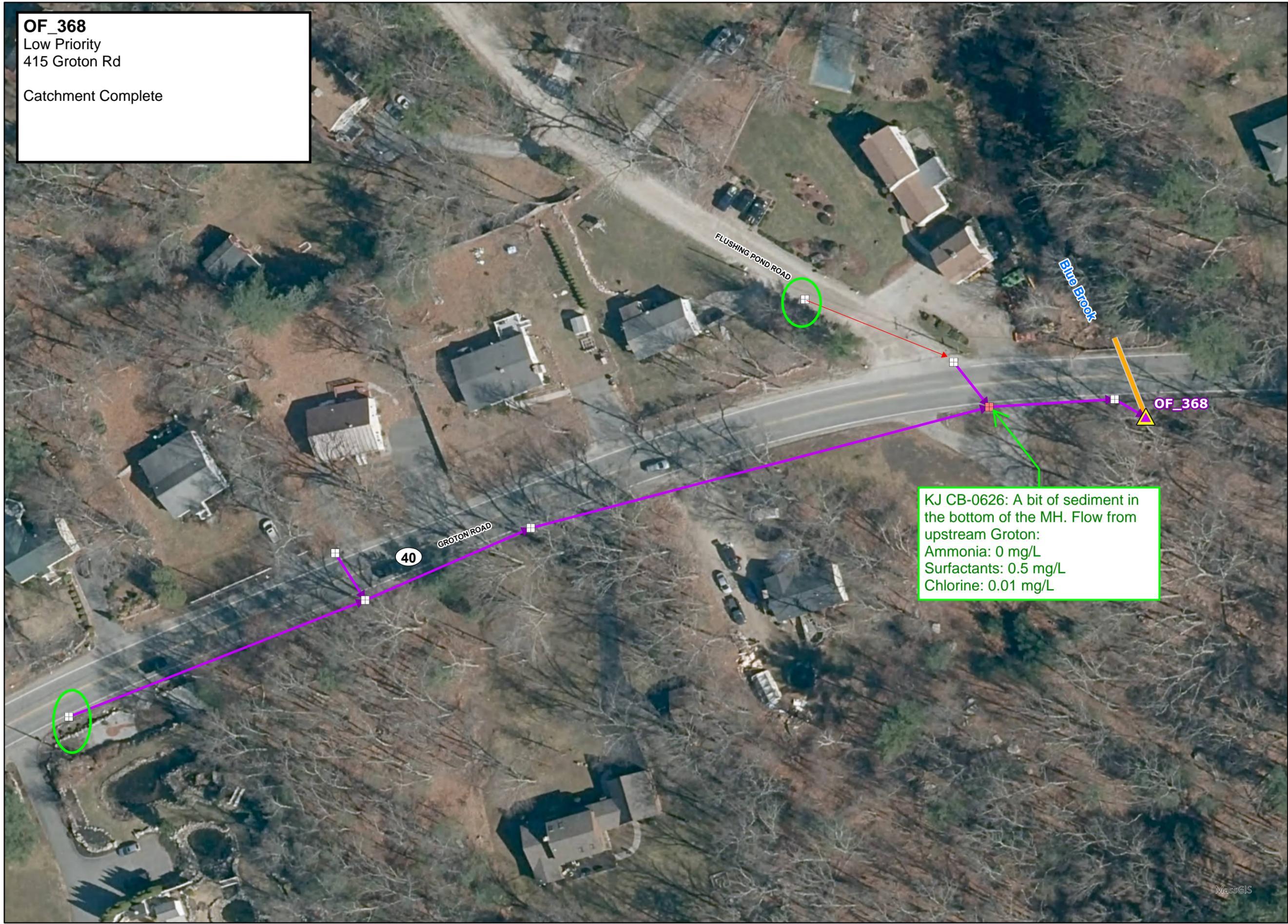
2" circular gap in concrete blocks, active flow. Possibly a deteriorated pipe, can not confirm source.

OF_263 is here. CB-3008 is connected to OF_263. OF_263 is completely filled with sediment and partially submerged in water.

Groundwater leaking in CB-3007. 6" CMP inlet, CNL upstream source.



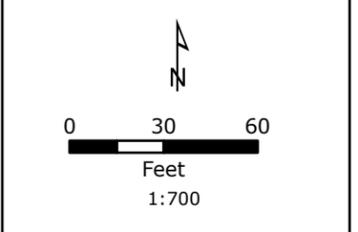
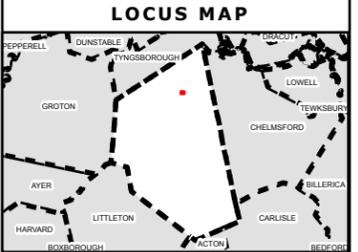
OF_368
 Low Priority
 415 Groton Rd
 Catchment Complete



KJ CB-0626: A bit of sediment in the bottom of the MH. Flow from upstream Groton:
 Ammonia: 0 mg/L
 Surfactants: 0.5 mg/L
 Chlorine: 0.01 mg/L

STORMWATER CATCHMENTS GROUP 6

- LEGEND**
- ▲ Outfall
 - ⊗ Interconnection
 - ⊙ Key Junction Manhole
 - ⊙ Junction Manhole
 - ⊙ Manhole
 - Key Junction Catch Basin
 - Junction Catch Basin
 - Catch Basin
 - Inlet
 - Outlet
 - ⊙ Water Quality Inlet
 - ⊙ Flared End Section
 - ⊙ Overflow Structure
 - ⊙ Other
 - ✱ BMP Location
 - ➔ Drain Pipe
 - ▬ Culvert
 - ▭ BMP Polygon



- NOTES**
1. Based on MassGIS Color Orthophotography (2023)
 2. Stormwater Data Provided by the Town of Westford (2025)

Catchment Area of OF_368
Westford, Massachusetts

Page 4 of 61



OF_244
 Low Priority
 Patriot Lane

 Catchment Complete



CB-2998 outlets down Graniteville Rd. Possibly to a buried structure. The closest mapped CBs have the same 12" white HDPE pipe used.

CB-2999: 6" PVC inlet at 12 o'clock position. CNL upstream source.

CB-3000: 2" PVC inlet at 1 o'clock position.

KJ CB-3001: Connected to outfall. Two flows flowing. From CB-2999:
 Ammonia: 0 mg/L
 Surfactants: 0.5 mg/L
 Chlorine: 0.03 mg/L
 Flow from CB-3002:
 Ammonia: 0.25 mg/L
 Surfactants: 0.25 mg/L
 Chlorine: 0 mg/L

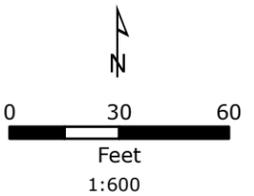
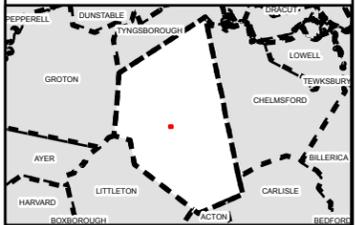
OF-244: Submerged in sediment.

STORMWATER CATCHMENTS GROUP 6

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- Water Quality Inlet
- Flared End Section
- Overflow Structure
- Other
- BMP Location
- Drain Pipe
- Culvert
- BMP Polygon

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

**Catchment Area of OF_244
 Westford, Massachusetts**

Page 5 of 61

OF_264
 Low Priority
 Long Meadow Rd
 Catchment Complete



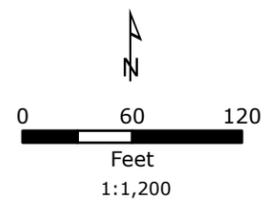
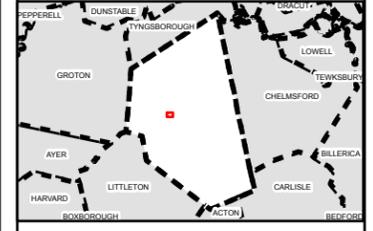
CB-2898 screened.
 Flow from 10 o'clock
 inlet pipe
 Surfactants (mg/L): 0.5
 Ammonia (mg/L): 0.0
 Chlorine (mg/L): 0.03

**STORMWATER
 CATCHMENTS
 GROUP 6**

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- Water Quality Inlet
- Flared End Section
- Overflow Structure
- Other
- BMP Location
- Drain Pipe
- Culvert
- BMP Polygon

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

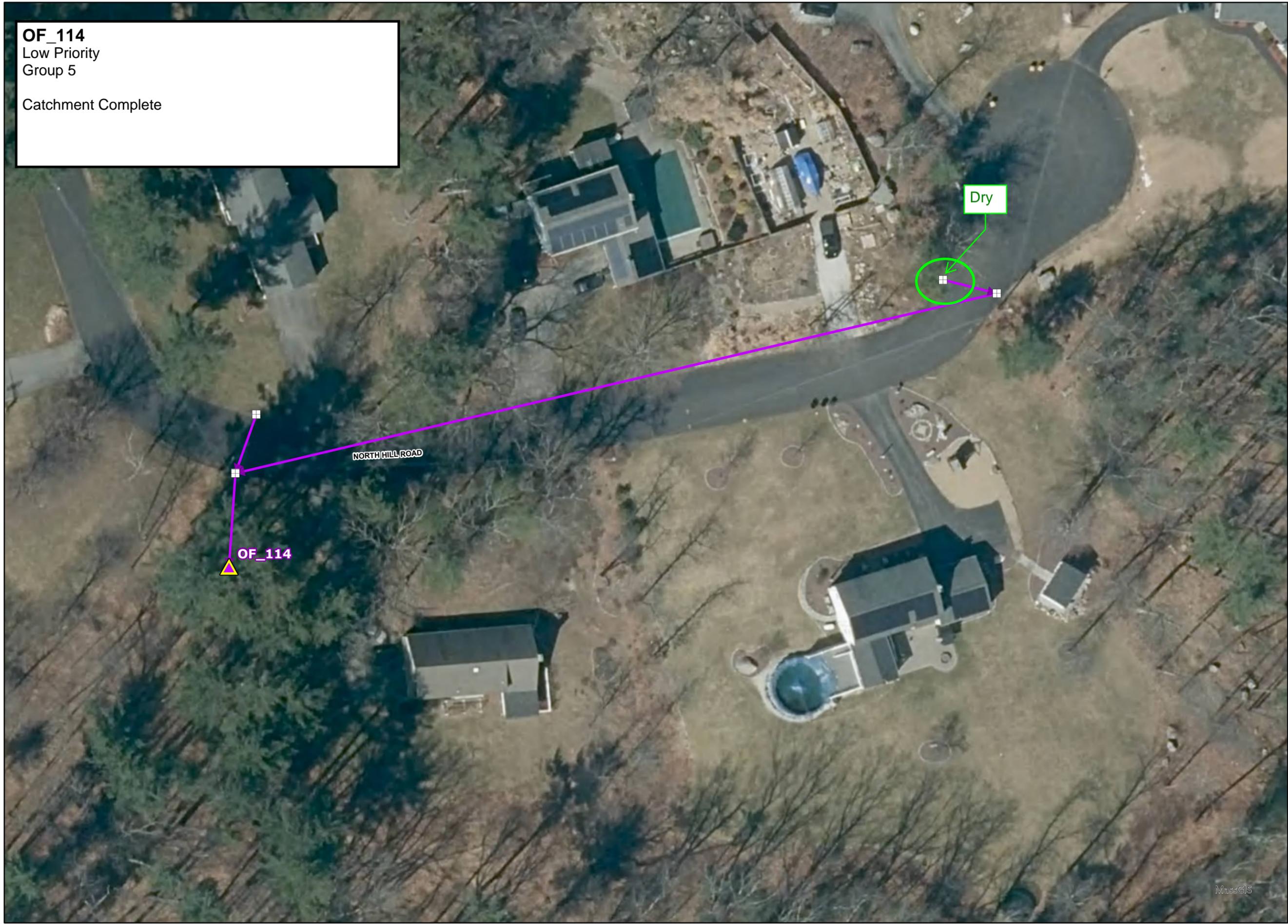
**Catchment Area of
 OF_264
 Westford, Massachusetts**

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OF_114
 Low Priority
 Group 5

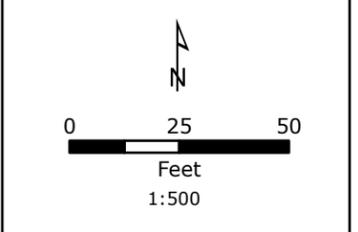
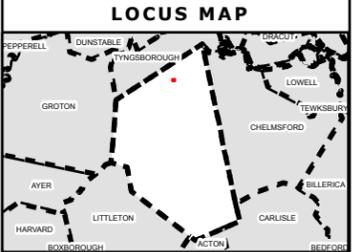
 Catchment Complete



STORMWATER CATCHMENTS GROUP 5

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- ⊙ Water Quality Inlet
- ⊙ Flared End Section
- ⊙ Overflow Structure
- ⊙ Other
- ✱ BMP Location
- ➔ Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon



NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

Catchment Area of OF_114
Westford, Massachusetts

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OF_97-1
 Low Priority
 North Hill Rd

 Catchment Complete

Stream here that leads to
 OF_109, see next page

Private drainage outlets

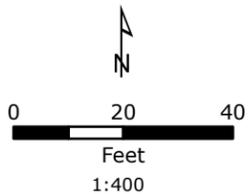
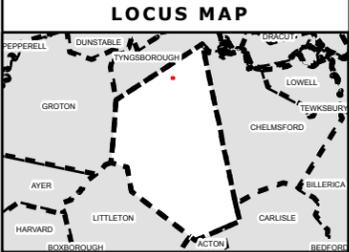
Heavy flow from private drainage
 4" PVC that outlets overland and
 flows into CB. Field staff could
 not investigate further the source
 of the PVC pipe because
 homeowner requested photos of
 his property deleted and staff to
 leave the property.

OF_97-2, OF_97-3 and OF_97-4
 Low Priority
 North Hill Rd

 Ownership changed to private. Removed from
 inventory.

**STORMWATER
 CATCHMENTS
 GROUP 5**

- LEGEND**
- ▲ Outfall
 - ⊗ Interconnection
 - ⊙ Key Junction Manhole
 - ⊙ Junction Manhole
 - ⊙ Manhole
 - ⊙ Key Junction Catch Basin
 - ⊙ Junction Catch Basin
 - ⊙ Catch Basin
 - Inlet
 - Outlet
 - ⊙ Water Quality Inlet
 - ⊙ Flared End Section
 - ⊙ Overflow Structure
 - ⊙ Other
 - ✱ BMP Location
 - ➔ Drain Pipe
 - ▬ Culvert
 - ▭ BMP Polygon



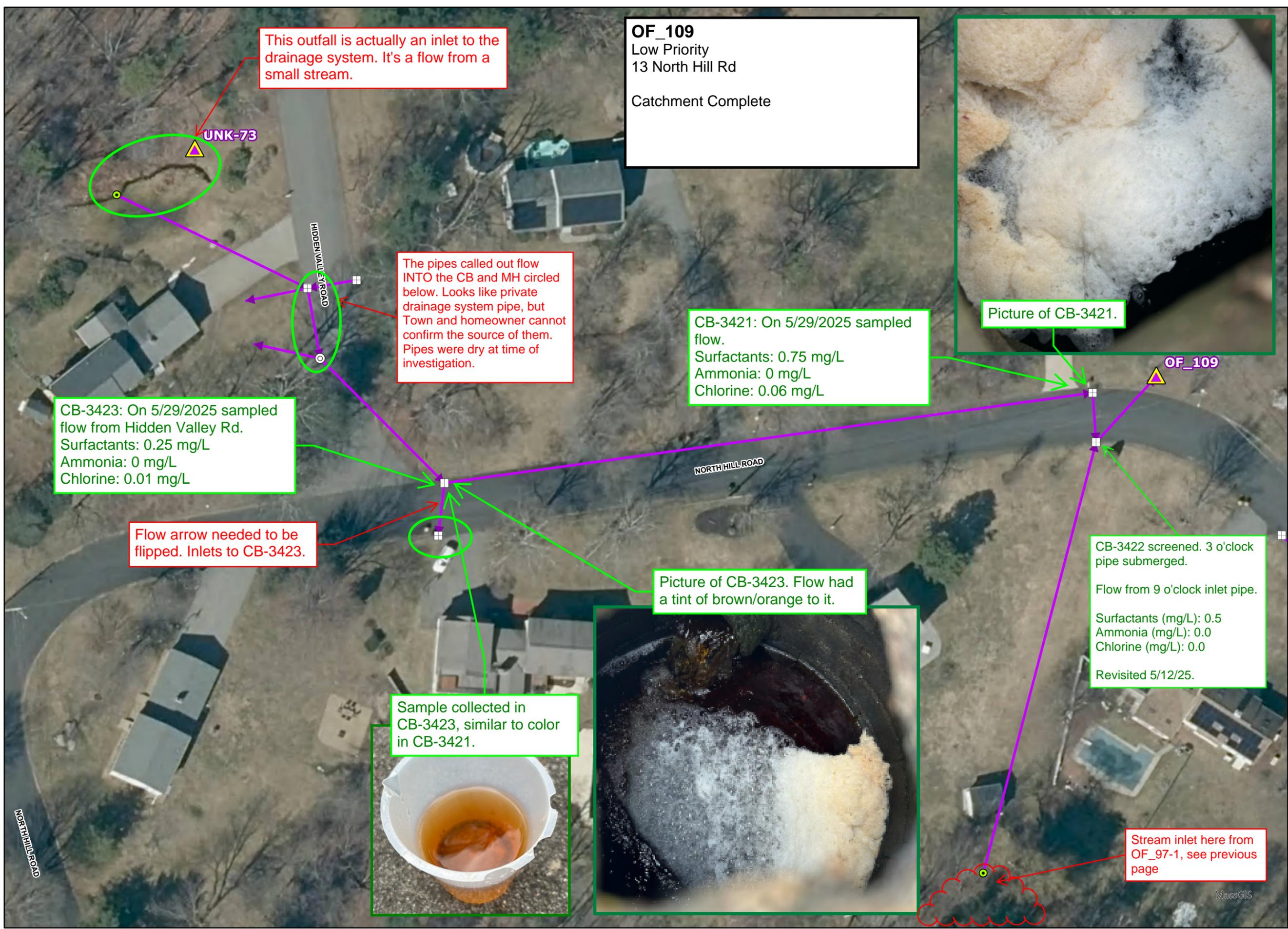
NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

**Catchment Area of
 OF_97-1 through OF_97-4
 Westford, Massachusetts**

Page 8 of 61





OF_109
 Low Priority
 13 North Hill Rd
 Catchment Complete

This outfall is actually an inlet to the drainage system. It's a flow from a small stream.

The pipes called out flow INTO the CB and MH circled below. Looks like private drainage system pipe, but Town and homeowner cannot confirm the source of them. Pipes were dry at time of investigation.

CB-3421: On 5/29/2025 sampled flow.
 Surfactants: 0.75 mg/L
 Ammonia: 0 mg/L
 Chlorine: 0.06 mg/L



Picture of CB-3421.

CB-3423: On 5/29/2025 sampled flow from Hidden Valley Rd.
 Surfactants: 0.25 mg/L
 Ammonia: 0 mg/L
 Chlorine: 0.01 mg/L

Flow arrow needed to be flipped. Inlets to CB-3423.

Picture of CB-3423. Flow had a tint of brown/orange to it.

Sample collected in CB-3423, similar to color in CB-3421.



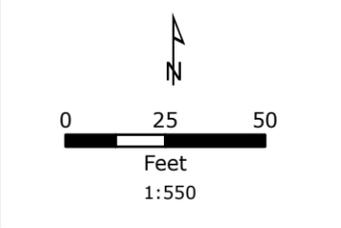
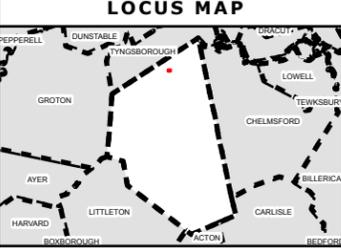
CB-3422 screened. 3 o'clock pipe submerged.
 Flow from 9 o'clock inlet pipe.
 Surfactants (mg/L): 0.5
 Ammonia (mg/L): 0.0
 Chlorine (mg/L): 0.0
 Revisited 5/12/25.

Stream inlet here from OF_97-1, see previous page

STORMWATER CATCHMENTS GROUP 5

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- ⊙ Water Quality Inlet
- ⊙ Flared End Section
- ⊙ Overflow Structure
- ⊙ Other
- ✱ BMP Location
- Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon



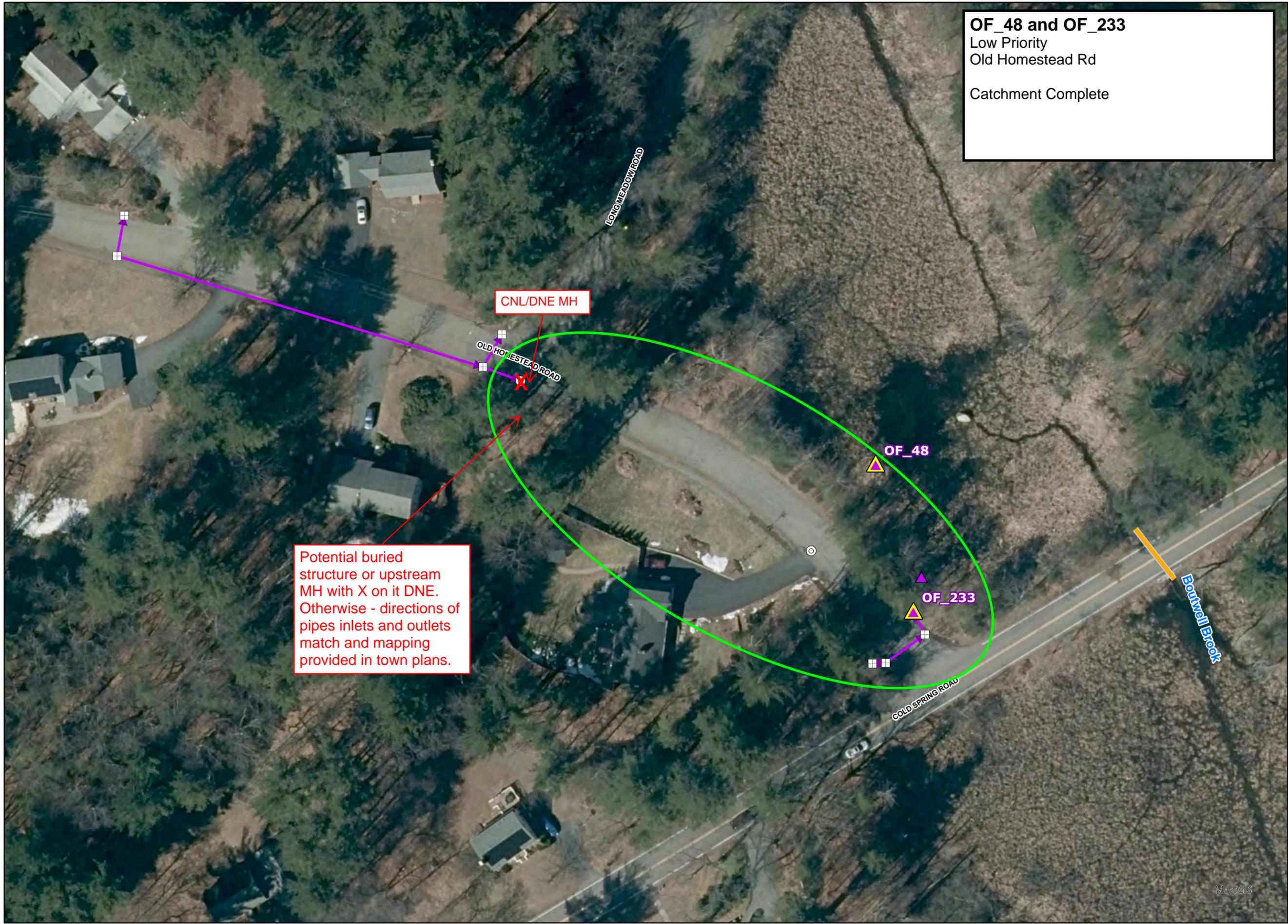
NOTES

- Based on MassGIS Color Orthophotography (2023)
- Stormwater Data Provided by the Town of Westford (2025)

Catchment Area of OF_109 & UNK-73
 Westford, Massachusetts

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OF_48 and OF_233
 Low Priority
 Old Homestead Rd
 Catchment Complete

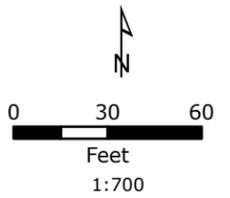
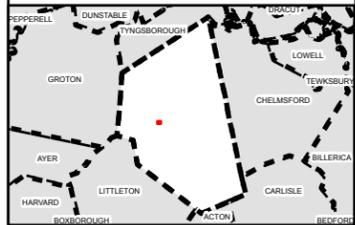
Potential buried structure or upstream MH with X on it DNE. Otherwise - directions of pipes inlets and outlets match and mapping provided in town plans.

STORMWATER CATCHMENTS GROUP 6

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- ⊙ Water Quality Inlet
- ⊙ Flared End Section
- ⊙ Overflow Structure
- ⊙ Other
- ✱ BMP Location
- ➔ Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon

LOCUS MAP

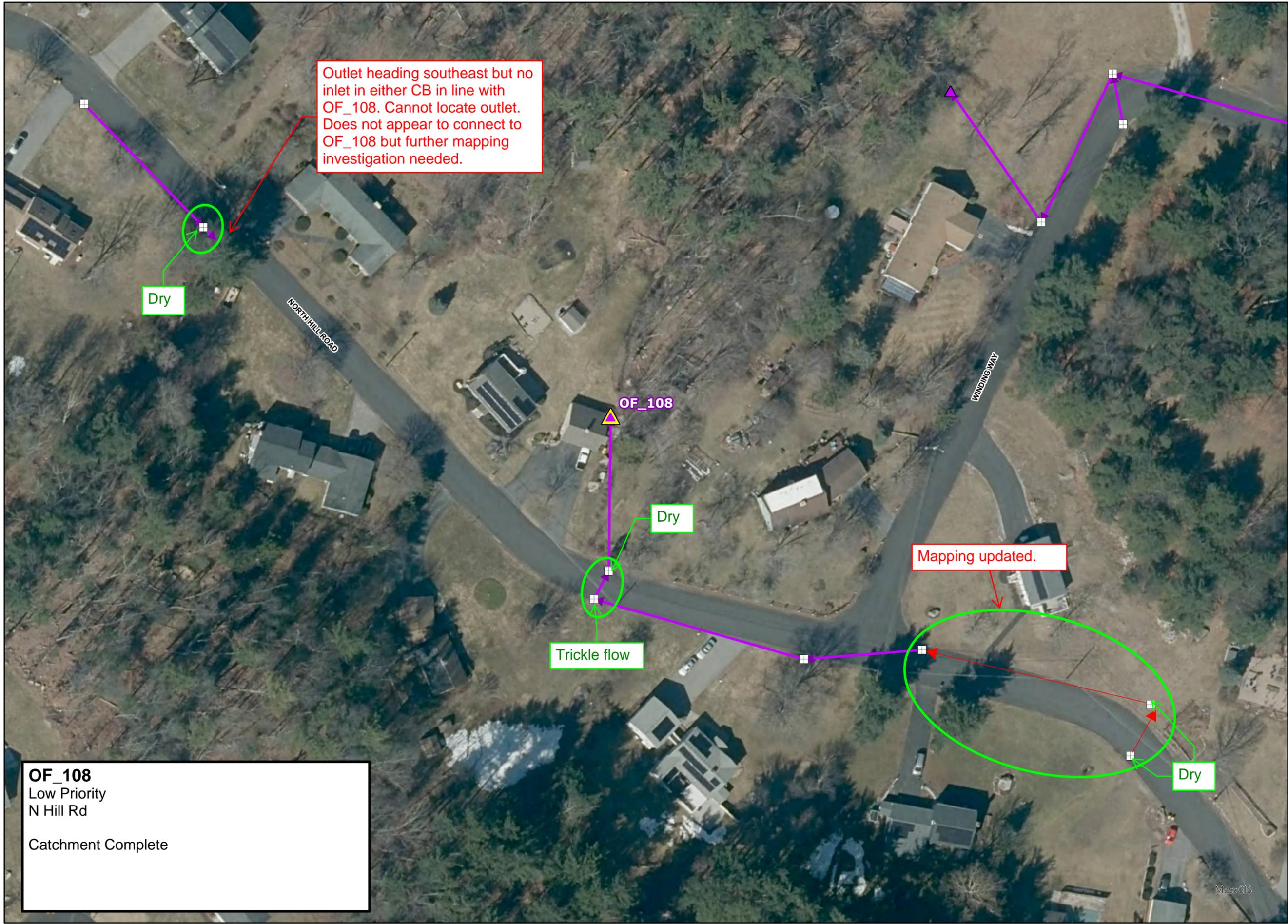


NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

Catchment Area of OF_48 & OF_233
 Westford, Massachusetts





Outlet heading southeast but no inlet in either CB in line with OF_108. Cannot locate outlet. Does not appear to connect to OF_108 but further mapping investigation needed.

Dry

Dry

Trickle flow

Mapping updated.

Dry

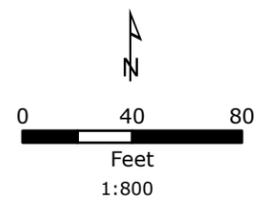
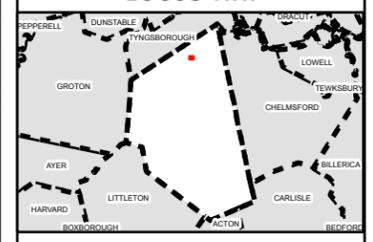
OF_108
 Low Priority
 N Hill Rd
 Catchment Complete

STORMWATER CATCHMENTS GROUP 5

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- Water Quality Inlet
- Flared End Section
- Overflow Structure
- Other
- BMP Location
- Drain Pipe
- Culvert
- BMP Polygon

LOCUS MAP



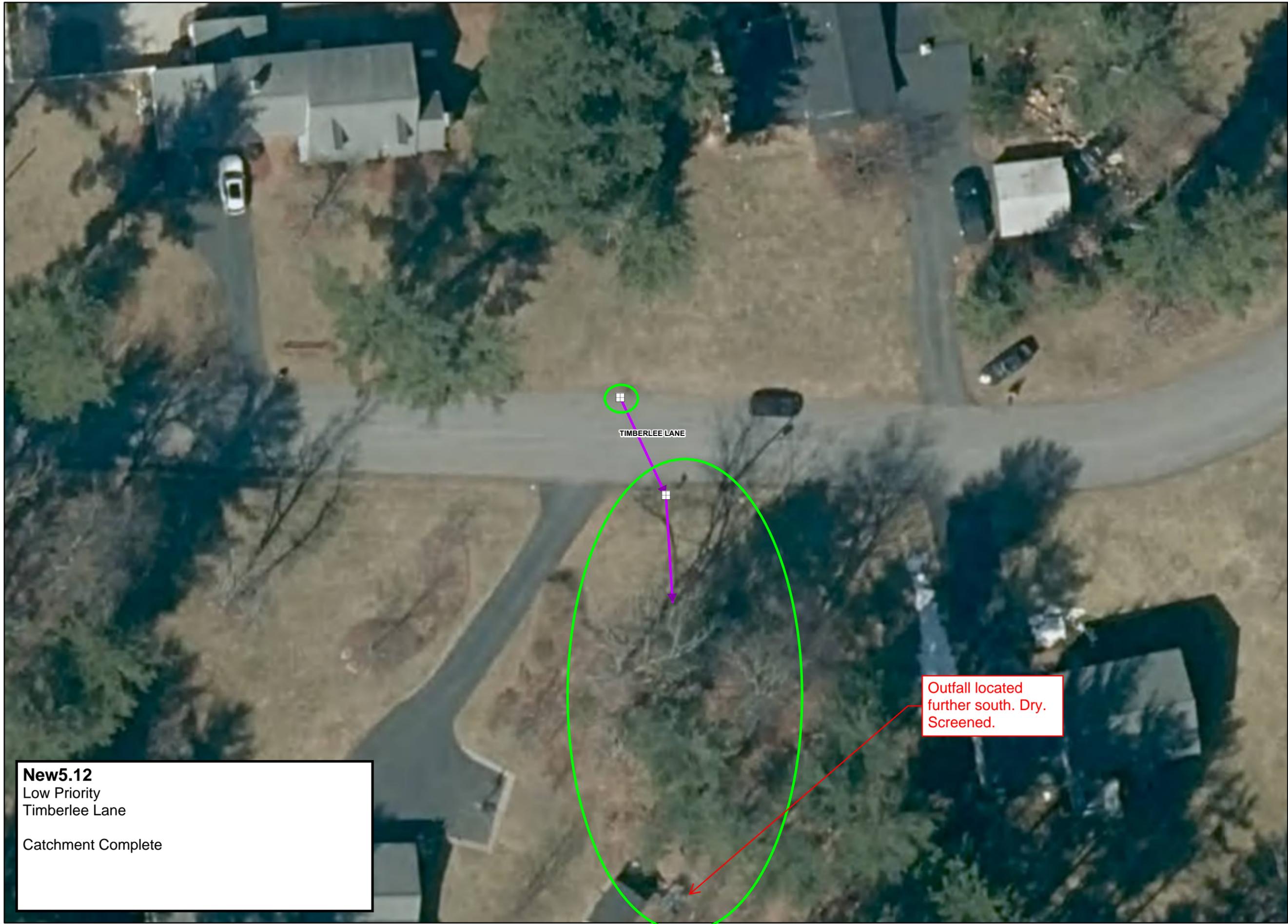
NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

Catchment Area of OF_108
 Westford, Massachusetts

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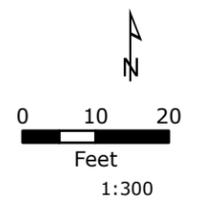
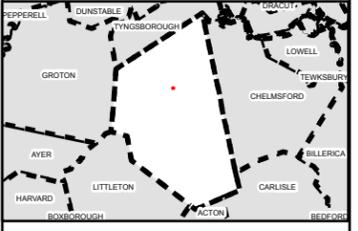
New5.12
 Low Priority
 Timberlee Lane
 Catchment Complete

**STORMWATER
 CATCHMENTS
 GROUP 7**

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- Water Quality Inlet
- Flared End Section
- Overflow Structure
- Other
- ✱ BMP Location
- ➔ Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

**Catchment Area of
 No Outfall
 Westford, Massachusetts**

Page 12 of 61



New_41 and New5.13-4

Low Priority
Palermo St

Catchments Complete.

Inlet seen
towards CB.
Used pole cam
to verify.

New5.13-4 Outfall
located. Dry.
Screened.

Cannot see outlet.
Potential clogged
with sediment or
water?

Dry

New_41

DNE MH.

Private
drainage inlet
seen in CB.
CNL/DNE MH.

Dry

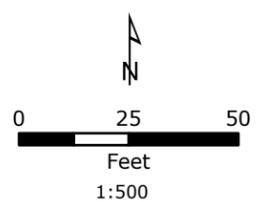
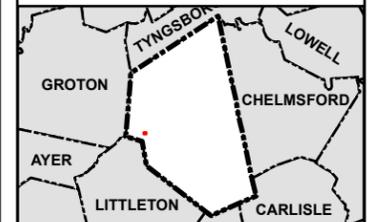
Mapping for area
complete and updated
in GIS.

**CATCHMENT
INVESTIGATIONS
GROUP 3**

LEGEND

- ▲ Outfall
- ✱ BMP Structure
- Culvert Inlet/Outlet
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Drainage Features**
- Inlet
- Outlet
- Water Quality Inlet
- Flared End
- Leak Off
- Overflow Structure
- Unknown
- ⊗ Interconnection
- Culvert
- Drain Pipe
- BMP Area
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

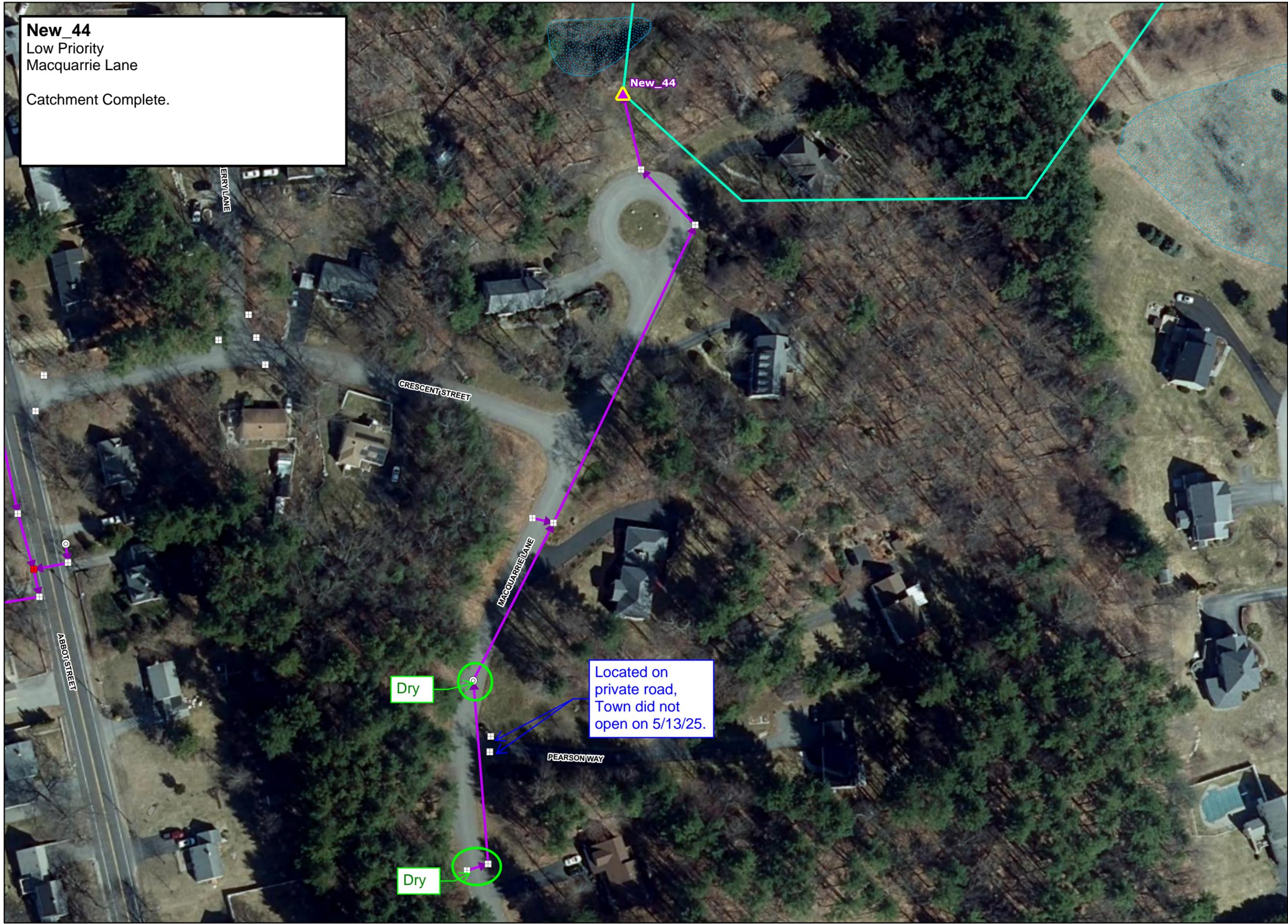
1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.

**Catchment Area of
New_41**

Page 13 of 61



New_44
 Low Priority
 Macquarrie Lane
 Catchment Complete.

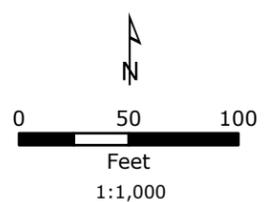
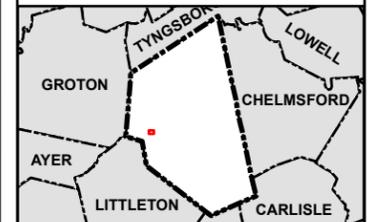


CATCHMENT INVESTIGATIONS GROUP 3

LEGEND

- Outfall
- BMP Structure
- Culvert Inlet/Outlet
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Drainage Features**
- Inlet
- Outlet
- Water Quality Inlet
- Flared End
- Leak Off
- Overflow Structure
- Unknown
- Interconnection
- Culvert
- Drain Pipe
- BMP Area
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

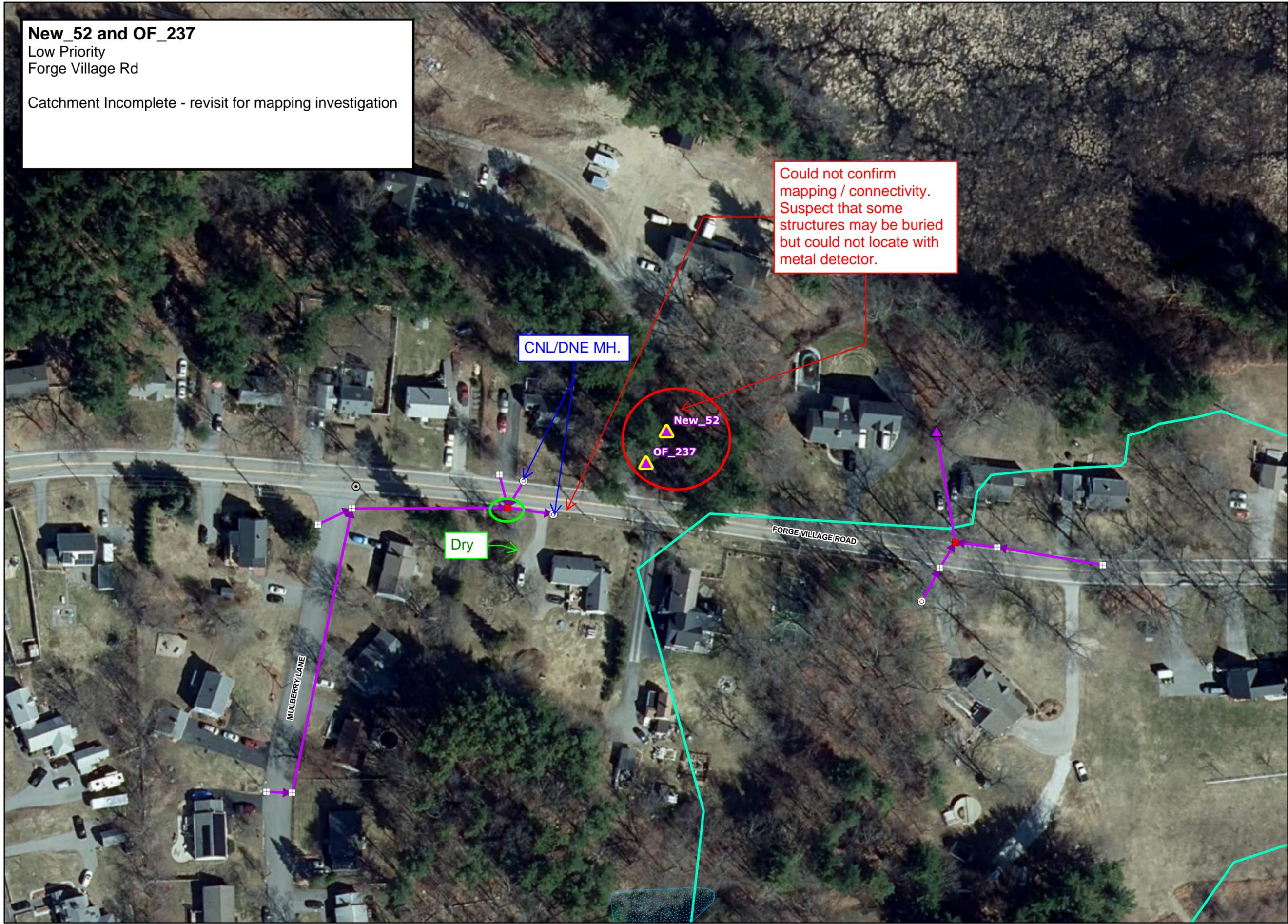
1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.

Catchment Area of New_44

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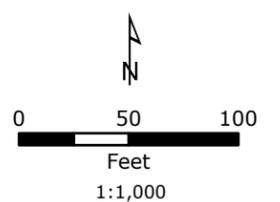
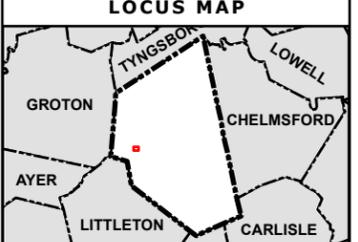


New_52 and OF_237
 Low Priority
 Forge Village Rd
 Catchment Incomplete - revisit for mapping investigation



CATCHMENT INVESTIGATIONS GROUP 3

- LEGEND**
- ▲ Outfall
 - ✱ BMP Structure
 - Culvert Inlet/Outlet
 - Key Junction Manhole
 - Junction Manhole
 - Manhole
 - Key Junction Catch Basin
 - Junction Catch Basin
 - Catch Basin
- Drainage Features**
- Inlet
 - Outlet
 - Water Quality Inlet
 - Flared End
 - Leak Off
 - Overflow Structure
 - Unknown
 - ⊗ Interconnection
 - Culvert
 - Drain Pipe
 - BMP Area
 - Catchment Area
 - Town Boundary



- NOTES**
1. Based on MassGIS Color Orthophotography (2021)
 2. Stormwater data provided by the Town of Westford.

Catchment Area of OF_237 & New_52

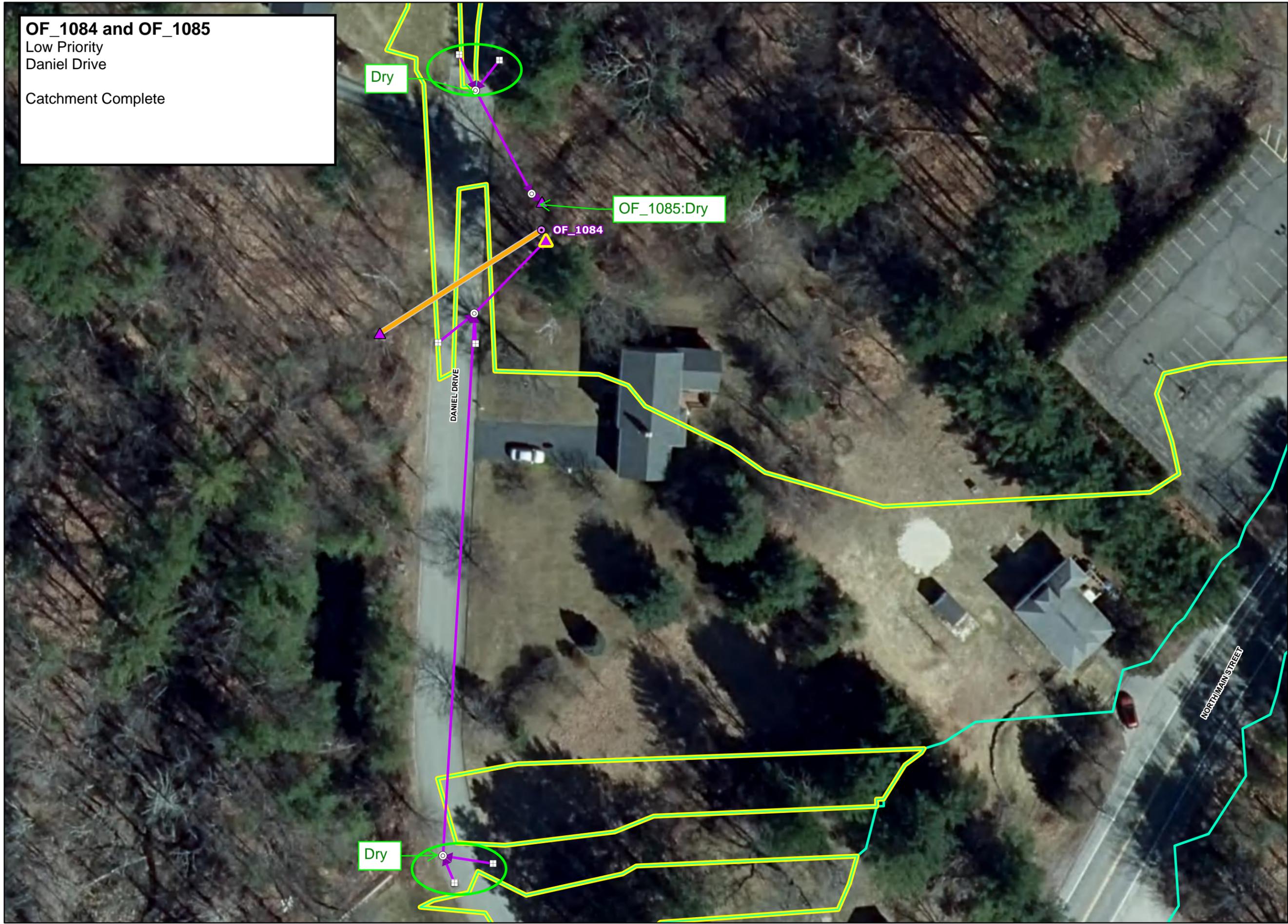
Page 15 of 61



OF_1084 and OF_1085

Low Priority
Daniel Drive

Catchment Complete

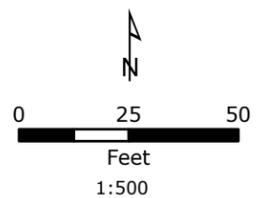
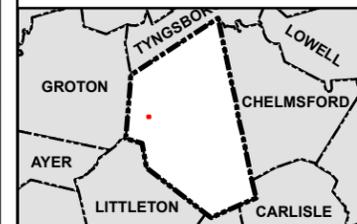


CATCHMENT INVESTIGATIONS GROUP 3

LEGEND

- Outfall
- BMP Structure
- Culvert Inlet/Outlet
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Drainage Features**
- Inlet
- Outlet
- Water Quality Inlet
- Flared End
- Leak Off
- Overflow Structure
- Unknown
- Interconnection
- Culvert
- Drain Pipe
- BMP Area
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.

Catchment Area of OF_1084

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Tighe & Bond

UNK-7
 Low Priority
 Steeple Chase Rd
 Catchment Complete

Field staff attempted to knock at 9 Steeplechase, no answer. Not able to investigate BMP. Town provided record plans.

Determined to be a settling tank per Town. Apparent collapse a few years ago. Might be plans on file. Field staff opened 1 MH to confirm.

Labeled as SEWER. Opened 5/13/25 after confirming 2 drain MH pointing at this MH. KJ MH 5527 screened, no flow. Does have pipe at lower invert towards BMP behind house and pipe towards UNK-7.

CNO MH. 5/12/25
 Opened MH 5/13/25.

CNO MH 5/12/25
 Opened MH 5/13/25

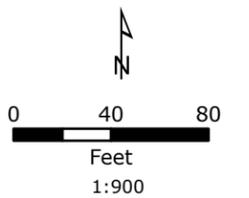
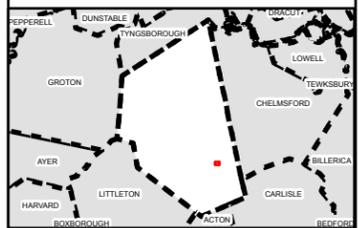
Homeowner confirmed that UNK-7 is a pipe that they clean out every year. No outlet pipe seen in 30 years living there.
 Field staff observed detention pond, pipe must be submerged.

STORMWATER CATCHMENTS GROUP 6

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- Water Quality Inlet
- Flared End Section
- Overflow Structure
- Other
- ✱ BMP Location
- Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

**Catchment Area of UNK-7
 Westford, Massachusetts**

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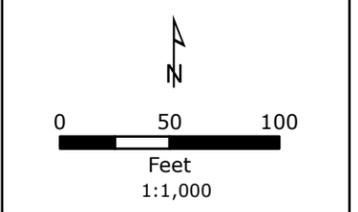
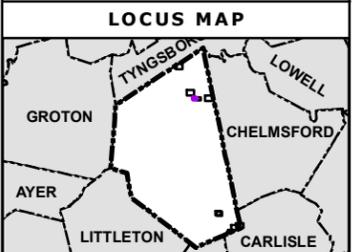


MassGIS

OF_1070
 Low Priority
 Forest Rd
 Catchment Incomplete - revisit for mapping investigation

STORMWATER CATCHMENTS GROUP1

- LEGEND**
- ▲ Outfall
 - ⊗ Interconnection
 - Key Junction Manhole
 - ⊙ Junction Manhole
 - ⊙ Manhole
 - Key Junction Catch Basin
 - Junction Catch Basin
 - ▣ Catch Basin
 - ⊙ Inlet/Water Quality Inlet
 - Outlet
 - ▲ Overflow Structure
 - ▲ Flared End Section
 - ▲ Other Stormwater Structure
 - ✱ BMP Point
 - Drain Pipe
 - Culvert
 - ▨ BMP Polygon
 - ▭ Catchment Area
 - ▭ Town Boundary



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_1070

Outside Receiving

Page 18 of 61



Checked CB-5430, heavily submerged in sediment and a little water. Possibly tied to CB-5431.

CNL structures connected to CB-5431, possibly a buried CB in this area. This area has a lot of sediment/dirt and possibly could be the cause for the sediment filled pipes.

CB-5431: All pipes are nearly filled with sediment, so is half the basin (also filled with some water). Tried doing a sound test to see if CB and OF_1070 were connected but did not hear anything. Sediment build up could have also prevented the sound from traveling well. Both pipes with no structures attached seem to be inlets and the outlet to the outfall is most likely buried in sediment. OF pipe is same material pipe as used in CBs.

OF_1072

Low Priority
Forest Rd

Catchment Incomplete - revisit for mapping investigation

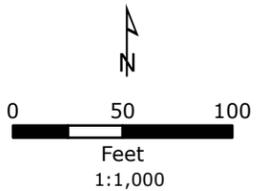
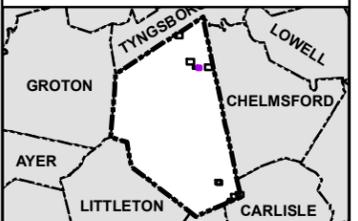
Most likely another buried structure, possibly connected to CB-5431?

STORMWATER CATCHMENTS GROUP1

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



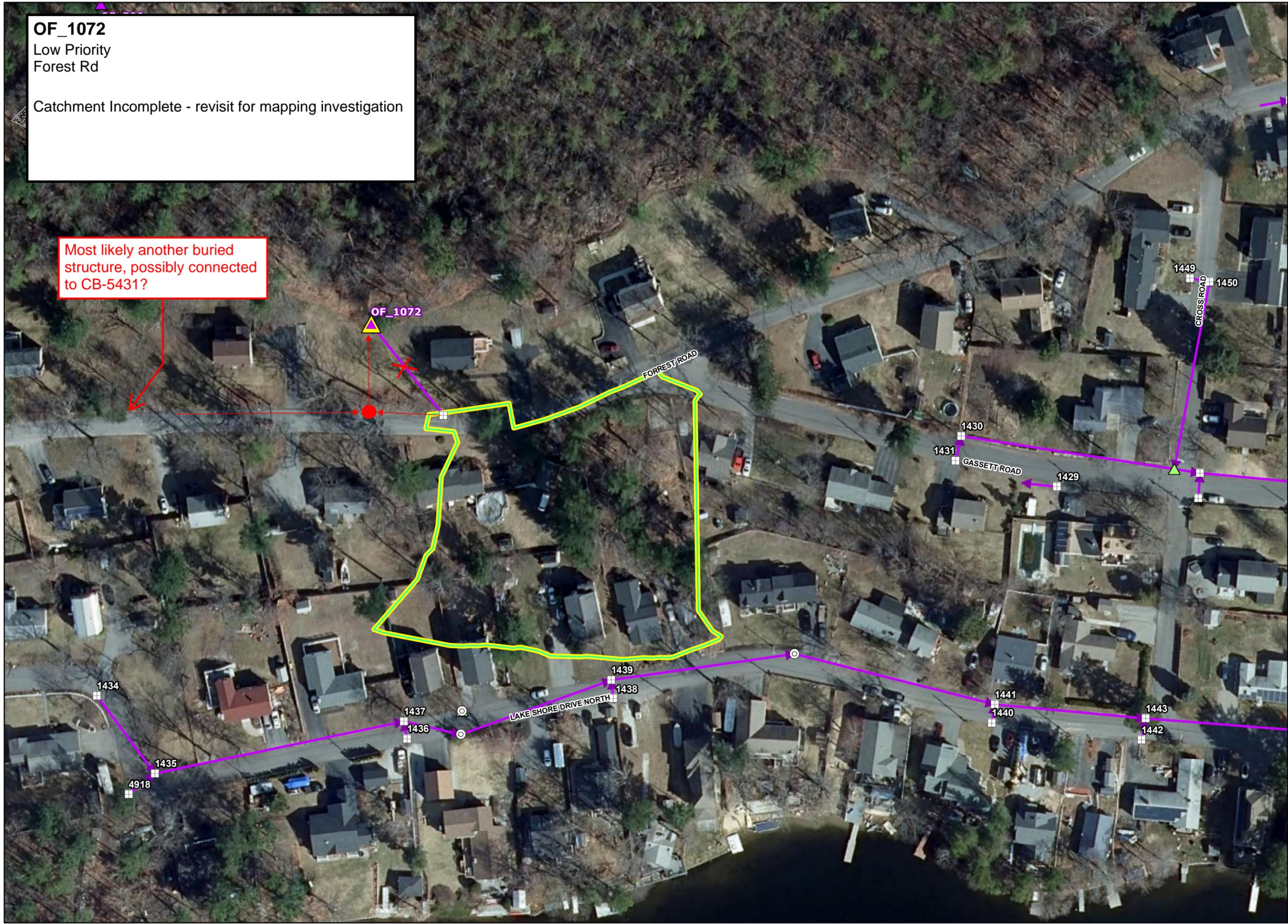
NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_1072

Outside Receiving

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OF_455
High Priority
Main St

Catchment Complete

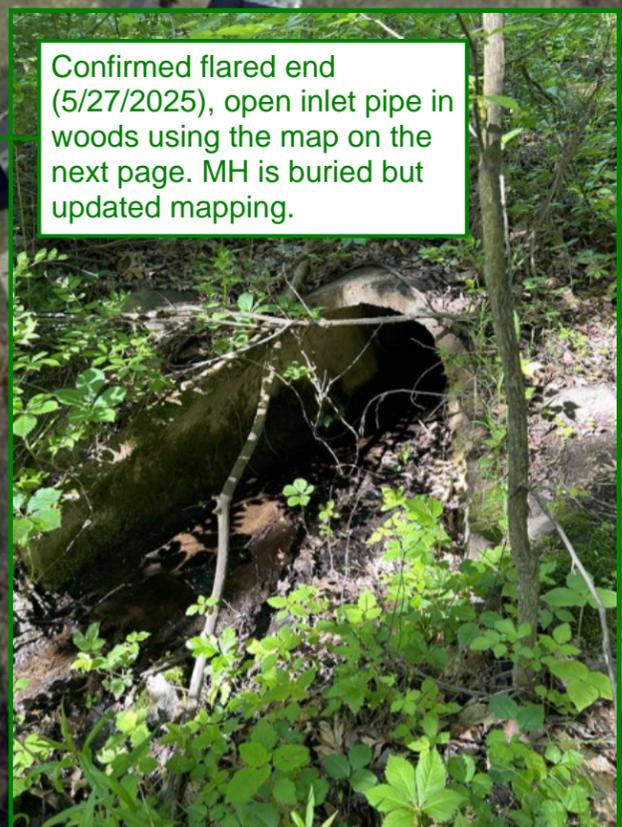
Location of OF_455 based on as-built and Town comments

Structure here marked as unknown in GIS but field confirmed it as DMH

Confirmed terminal structures

Confirmed flared end (5/27/2025), open inlet pipe in woods using the map on the next page. MH is buried but updated mapping.

DMH 2606 has an inlet pipe coming from the marshland (not an outfall). Pipe invert was above the outlet pipe.

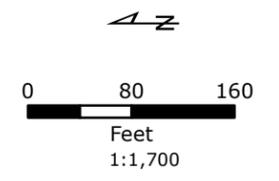
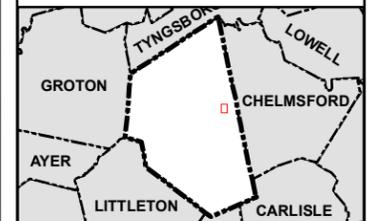


STORMWATER CATCHMENTS GROUP1

LEGEND

- ▲ Outfall
 - ⊗ Interconnection
 - Key Junction Manhole
 - ⊙ Junction Manhole
 - Manhole
 - Key Junction Catch Basin
 - ▣ Junction Catch Basin
 - ▤ Catch Basin
 - ⊖ Inlet/Water Quality Inlet
 - ⦿ Outlet
 - ▲ Overflow Structure
 - ▲ Flared End Section
 - ▲ Other Stormwater Structure
 - ⊗ BMP Point
 - Drain Pipe
 - ▬ Culvert
 - ▭ BMP Polygon
- Manhole Label Outfall Label Catch Basin Label

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2024).

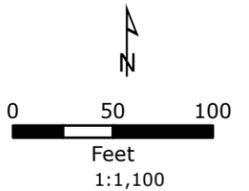
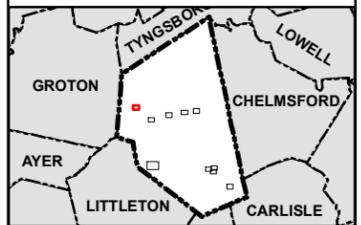
Catchment Area of Outfall: OF_455

STORMWATER CATCHMENTS GROUP 1

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- ⊙ Inlet/Water Quality Inlet
- ⊙ Outlet
- ▲ Overflow Structure
- ▲ Flared End Section
- ▲ Other Stormwater Structure
- ⊙ BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP

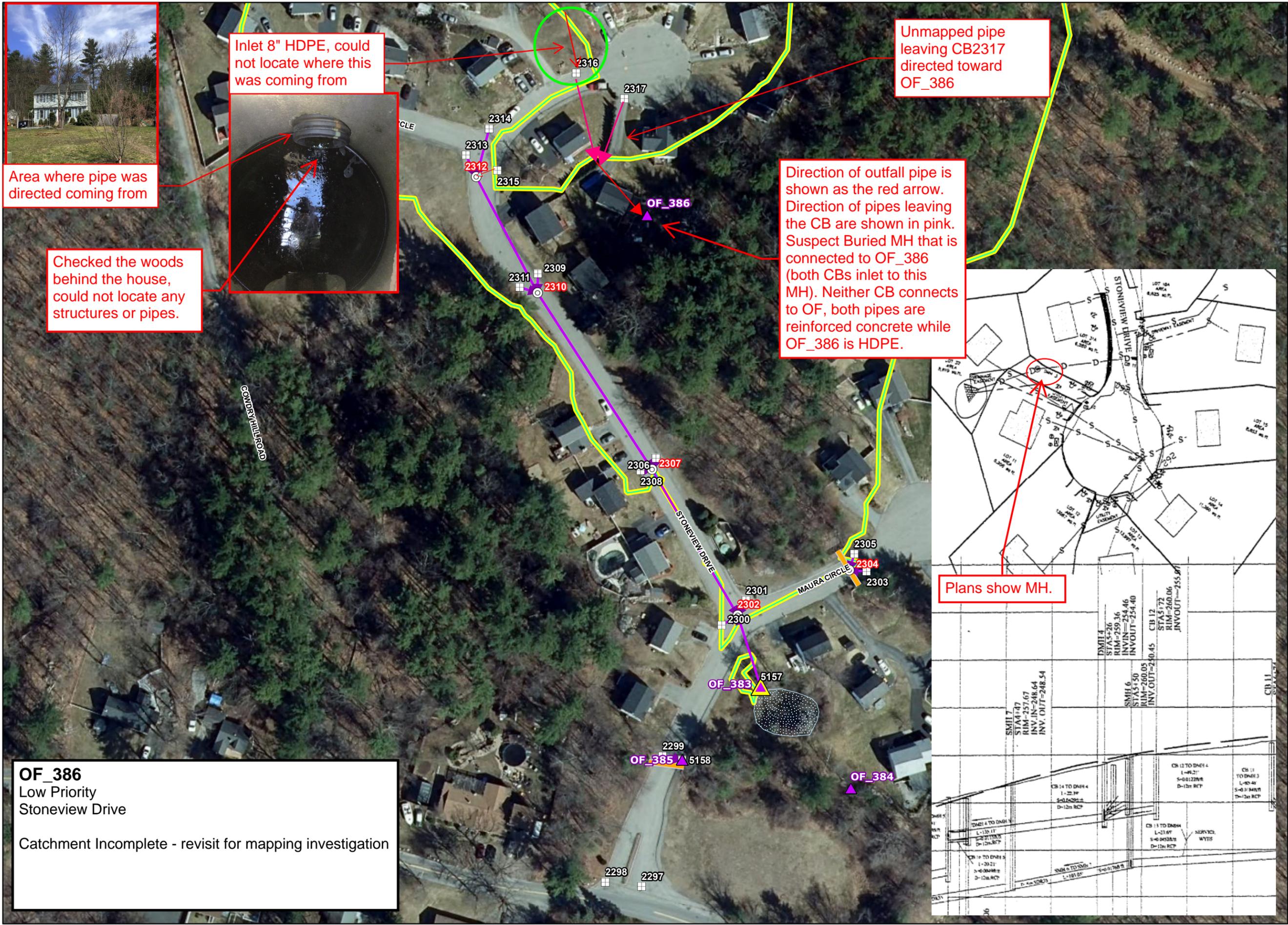


NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_383
Outside Receiving

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Area where pipe was directed coming from

Inlet 8" HDPE, could not locate where this was coming from



Checked the woods behind the house, could not locate any structures or pipes.

Unmapped pipe leaving CB2317 directed toward OF_386

Direction of outfall pipe is shown as the red arrow. Direction of pipes leaving the CB are shown in pink. Suspect Buried MH that is connected to OF_386 (both CBs inlet to this MH). Neither CB connects to OF, both pipes are reinforced concrete while OF_386 is HDPE.

Plans show MH.

OF_386
Low Priority
Stoneview Drive
Catchment Incomplete - revisit for mapping investigation

IC-7 and OF_1033

Low Priority
Nabnasset St

IC-7 is an interconnection that flows into Westford. Therefore not the town's responsibility. This interconnection was removed from the inventory.

Terminal structures were checked for OF_1033 which can be called complete.

CB-1583: Pipe is directed towards outfall OF_1033, presumably buried (CNL outfall).

IC-14 does not exist.

IC-14

Nabnasset St and Westford / Chelmsford Town Line

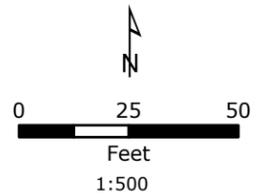
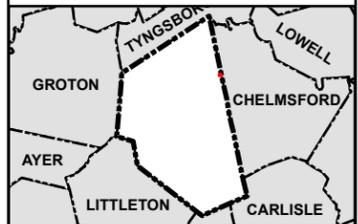
Potential interconnection determined to not exist - not include in Town's MS4 inventory.

CATCHMENT INVESTIGATIONS GROUP 4

LEGEND

- Outfall
- BMP Structure
- Culvert Inlet/Outlet
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Drainage Features**
- Inlet
- Outlet
- Water Quality Inlet
- Flared End
- Leak Off
- Overflow Structure
- Unknown
- Interconnection
- Culvert
- Drain Pipe
- BMP Area
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.

Catchment Area of
IC-7 & IC-14

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New5.8_3
 Low Priority
 Jester Rd
 Catchment Complete

Mapping updates made here, see next page

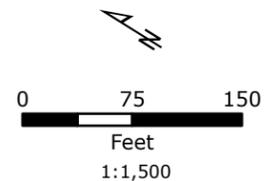
OF_330
 Low Priority
 Palace Rd
 Page 1 of 2
 Catchment Incomplete - revisit for follow-up work on overland farm runoff (see next page)

STORMWATER CATCHMENTS GROUP 6

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- Water Quality Inlet
- Flared End Section
- Overflow Structure
- Other
- ✱ BMP Location
- Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon

LOCUS MAP

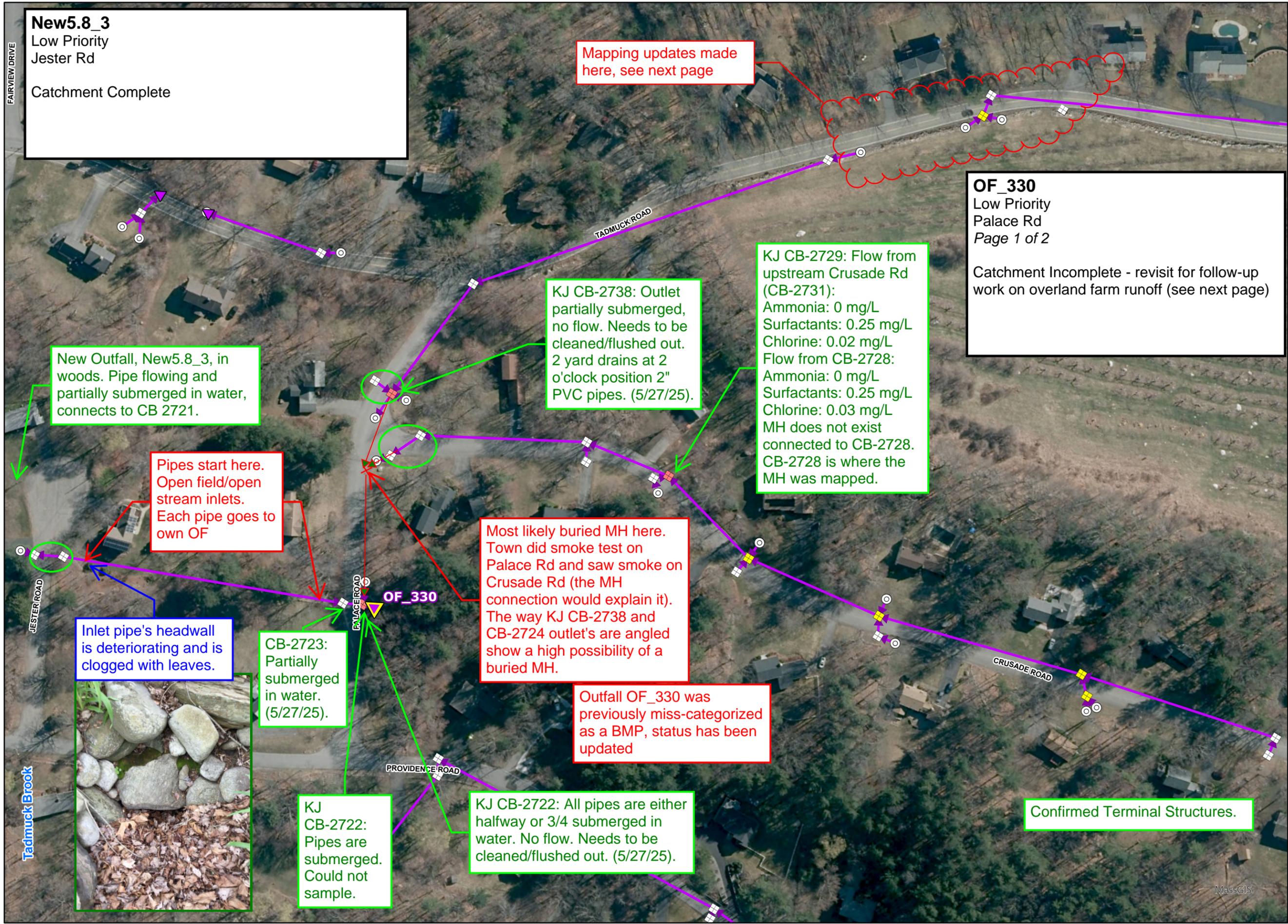


NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

Catchment Area of OF_330

Page 23 of 61



New Outfall, New5.8_3, in woods. Pipe flowing and partially submerged in water, connects to CB 2721.

Pipes start here. Open field/open stream inlets. Each pipe goes to own OF

Inlet pipe's headwall is deteriorating and is clogged with leaves.



CB-2723: Partially submerged in water. (5/27/25).

KJ CB-2722: Pipes are submerged. Could not sample.

KJ CB-2738: Outlet partially submerged, no flow. Needs to be cleaned/flushed out. 2 yard drains at 2 o'clock position 2" PVC pipes. (5/27/25).

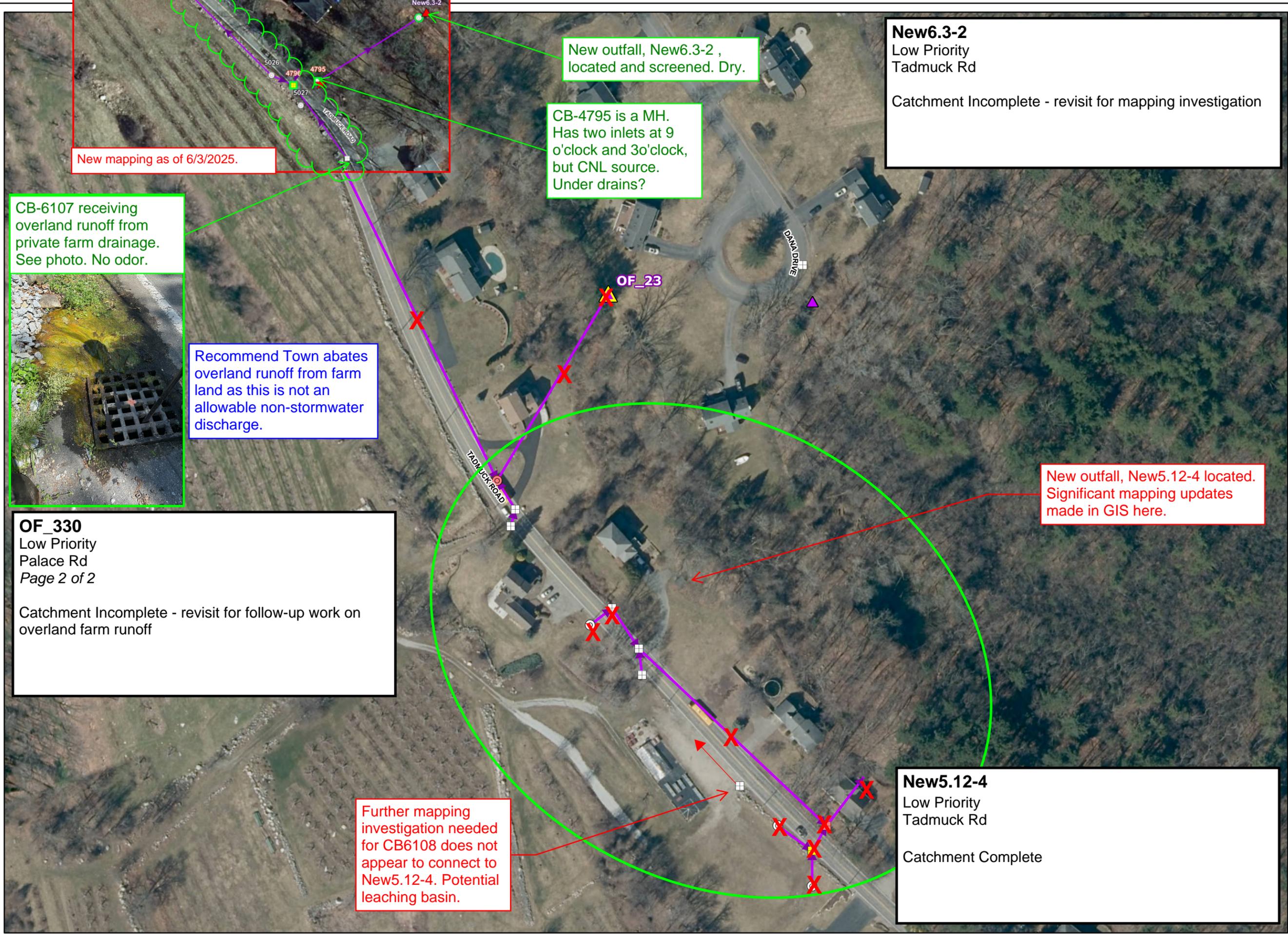
KJ CB-2729: Flow from upstream Crusade Rd (CB-2731):
 Ammonia: 0 mg/L
 Surfactants: 0.25 mg/L
 Chlorine: 0.02 mg/L
 Flow from CB-2728:
 Ammonia: 0 mg/L
 Surfactants: 0.25 mg/L
 Chlorine: 0.03 mg/L
 MH does not exist connected to CB-2728. CB-2728 is where the MH was mapped.

Most likely buried MH here. Town did smoke test on Palace Rd and saw smoke on Crusade Rd (the MH connection would explain it). The way KJ CB-2738 and CB-2724 outlet's are angled show a high possibility of a buried MH.

Outfall OF_330 was previously miss-categorized as a BMP, status has been updated

KJ CB-2722: All pipes are either halfway or 3/4 submerged in water. No flow. Needs to be cleaned/flushed out. (5/27/25).

Confirmed Terminal Structures.



New6.3-2
 Low Priority
 Tadmuck Rd
 Catchment Incomplete - revisit for mapping investigation

New outfall, New6.3-2 ,
 located and screened. Dry.

CB-4795 is a MH.
 Has two inlets at 9
 o'clock and 3o'clock,
 but CNL source.
 Under drains?

New mapping as of 6/3/2025.

CB-6107 receiving
 overland runoff from
 private farm drainage.
 See photo. No odor.



Recommend Town abates
 overland runoff from farm
 land as this is not an
 allowable non-stormwater
 discharge.

OF_330
 Low Priority
 Palace Rd
 Page 2 of 2
 Catchment Incomplete - revisit for follow-up work on
 overland farm runoff

New outfall, New5.12-4 located.
 Significant mapping updates
 made in GIS here.

Further mapping
 investigation needed
 for CB6108 does not
 appear to connect to
 New5.12-4. Potential
 leaching basin.

New5.12-4
 Low Priority
 Tadmuck Rd
 Catchment Complete

STORMWATER CATCHMENTS GROUP 6

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- ⊙ Water Quality Inlet
- ⊙ Flared End Section
- ⊙ Overflow Structure
- ⊙ Other
- ✱ BMP Location
- Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon

LOCUS MAP

0 70 140
 Feet
 1:1,400

NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

Catchment Area of OF_23
 Westford, Massachusetts
 Page 24 of 61





Unknown Outfall (Tadmuck Rd CB5030)

Some mapping updates made in GIS but downstream outfall could not be located. Recommend revisiting this area for further mapping investigations.

Further mapping investigation needed for CB6108 does not appear to connect to New5.12-4. Potential leaching basin.

DNE/CNL.

Missing downstream connectivity

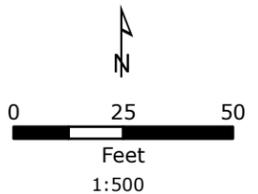
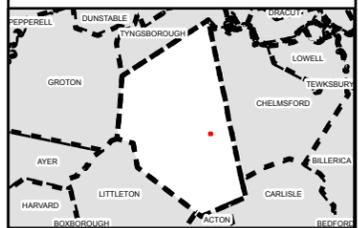
CB 5030

STORMWATER CATCHMENTS GROUP 7

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- Water Quality Inlet
- Flared End Section
- Overflow Structure
- Other
- BMP Location
- Drain Pipe
- Culvert
- BMP Polygon

LOCUS MAP



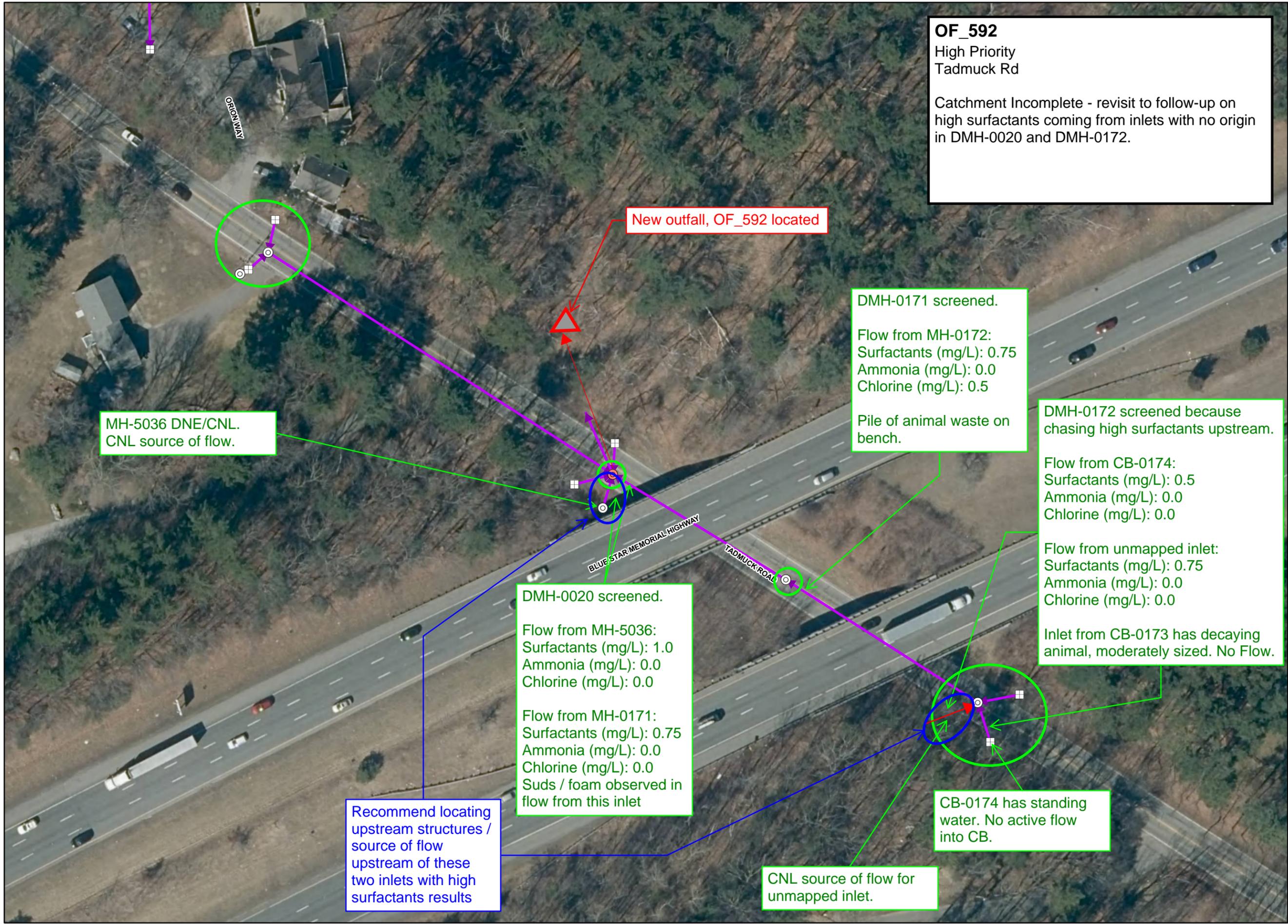
NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

**Catchment Area of No Outfall
Westford, Massachusetts**

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OF_592
 High Priority
 Tadmuck Rd

Catchment Incomplete - revisit to follow-up on high surfactants coming from inlets with no origin in DMH-0020 and DMH-0172.

New outfall, OF_592 located

DMH-0171 screened.
 Flow from MH-0172:
 Surfactants (mg/L): 0.75
 Ammonia (mg/L): 0.0
 Chlorine (mg/L): 0.5

Pile of animal waste on bench.

DMH-0172 screened because chasing high surfactants upstream.

Flow from CB-0174:
 Surfactants (mg/L): 0.5
 Ammonia (mg/L): 0.0
 Chlorine (mg/L): 0.0

Flow from unmapped inlet:
 Surfactants (mg/L): 0.75
 Ammonia (mg/L): 0.0
 Chlorine (mg/L): 0.0

Inlet from CB-0173 has decaying animal, moderately sized. No Flow.

MH-5036 DNE/CNL.
 CNL source of flow.

DMH-0020 screened.
 Flow from MH-5036:
 Surfactants (mg/L): 1.0
 Ammonia (mg/L): 0.0
 Chlorine (mg/L): 0.0

Flow from MH-0171:
 Surfactants (mg/L): 0.75
 Ammonia (mg/L): 0.0
 Chlorine (mg/L): 0.0
 Suds / foam observed in flow from this inlet

Recommend locating upstream structures / source of flow upstream of these two inlets with high surfactants results

CB-0174 has standing water. No active flow into CB.

CNL source of flow for unmapped inlet.

STORMWATER CATCHMENTS GROUP 7

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- ⊙ Water Quality Inlet
- ⊙ Flared End Section
- ⊙ Overflow Structure
- ⊙ Other
- ✱ BMP Location
- Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon

LOCUS MAP

0 40 80
 Feet
 1:800

NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

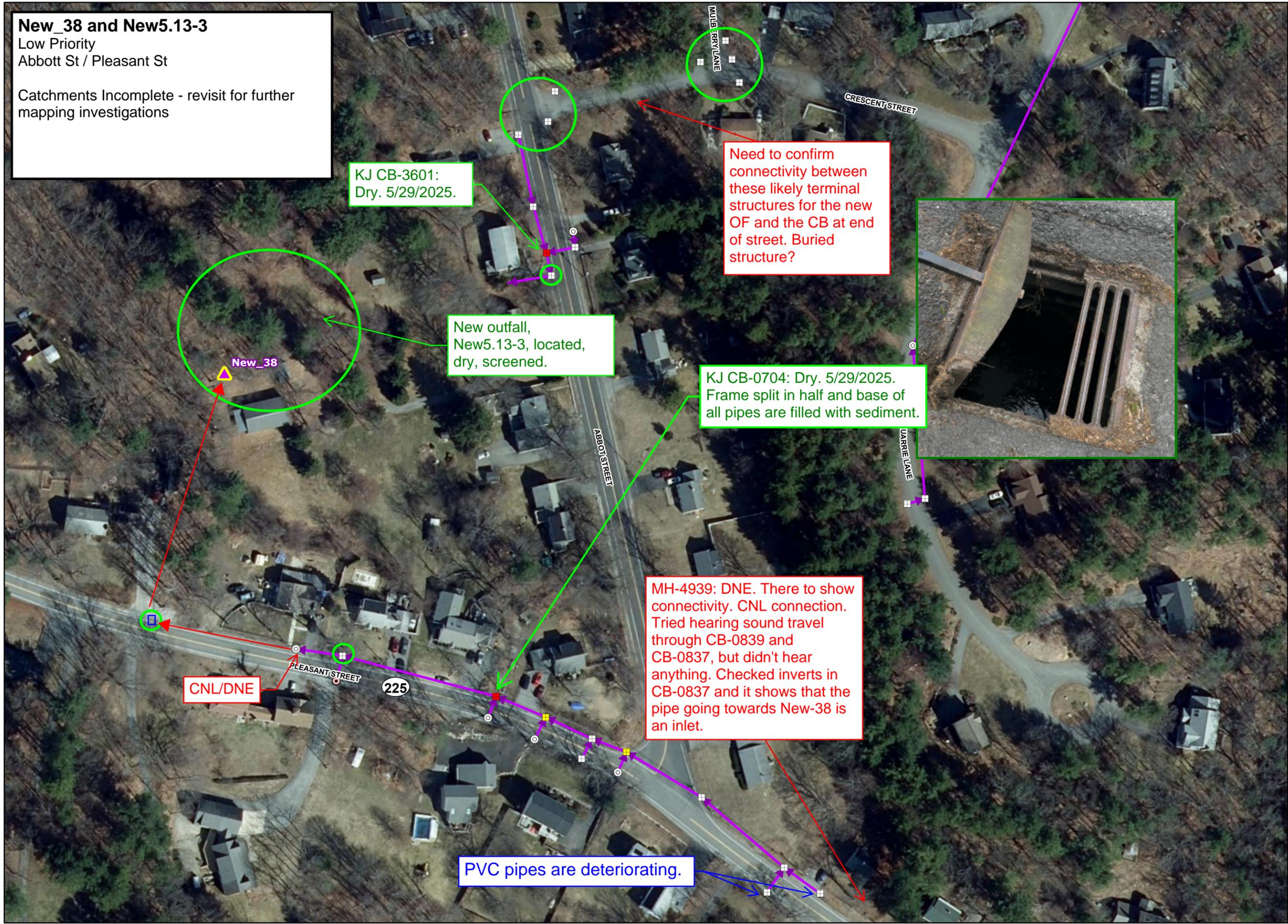
Catchment Area of No Outfall Westford, Massachusetts

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Tighe & Bond

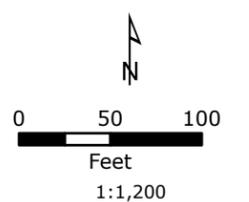
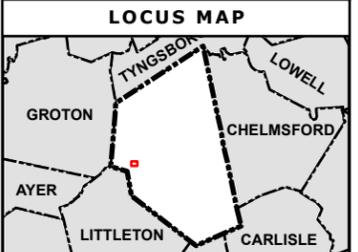
New_38 and New5.13-3
 Low Priority
 Abbott St / Pleasant St

Catchments Incomplete - revisit for further mapping investigations



CATCHMENT INVESTIGATIONS GROUP 3

- LEGEND**
- ▲ Outfall
 - ✱ BMP Structure
 - Culvert Inlet/Outlet
 - Key Junction Manhole
 - Junction Manhole
 - Manhole
 - Key Junction Catch Basin
 - Junction Catch Basin
 - Catch Basin
- Drainage Features**
- Inlet
 - Outlet
 - Water Quality Inlet
 - Flared End
 - Leak Off
 - Overflow Structure
 - Unknown
 - ⊗ Interconnection
 - Culvert
 - Drain Pipe
 - BMP Area
 - Catchment Area
 - Town Boundary



- NOTES**
1. Based on MassGIS Color Orthophotography (2021)
 2. Stormwater data provided by the Town of Westford.

Catchment Area of New_38

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New_53 and OF_BC

Low Priority

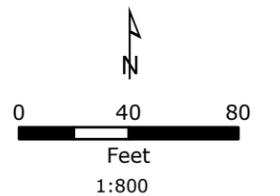
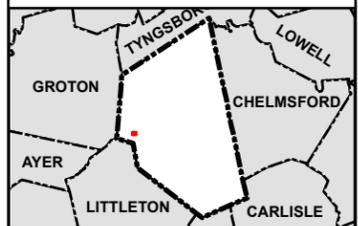
Catchments incomplete - suspected to be private. Town to confirm ownership. If Town owned, mapping investigation is needed.

CATCHMENT INVESTIGATIONS GROUP 3

LEGEND

- Outfall
- BMP Structure
- Culvert Inlet/Outlet
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Drainage Features**
- Inlet
- Outlet
- Water Quality Inlet
- Flared End
- Leak Off
- Overflow Structure
- Unknown
- Interconnection
- Culvert
- Drain Pipe
- BMP Area
- Catchment Area
- Town Boundary

LOCUS MAP

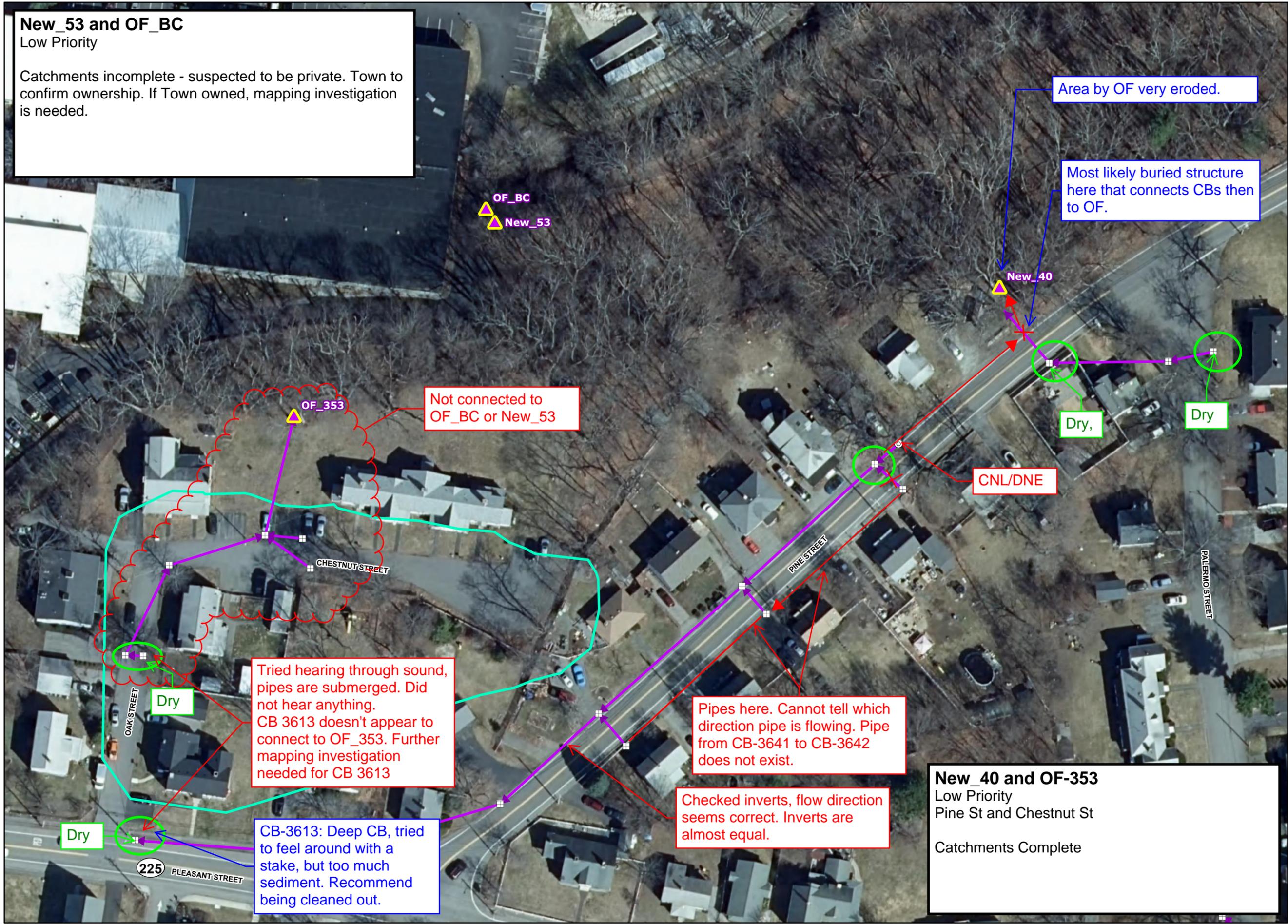


NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.

Catchment Area of OF_BC, New_53, New_40 & OF_353

Page 28 of 61



OF_BC
New_53

Area by OF very eroded.

Most likely buried structure here that connects CBs then to OF.

Not connected to OF_BC or New_53

CNL/DNE

Dry,

Dry

Tried hearing through sound, pipes are submerged. Did not hear anything. CB 3613 doesn't appear to connect to OF_353. Further mapping investigation needed for CB 3613

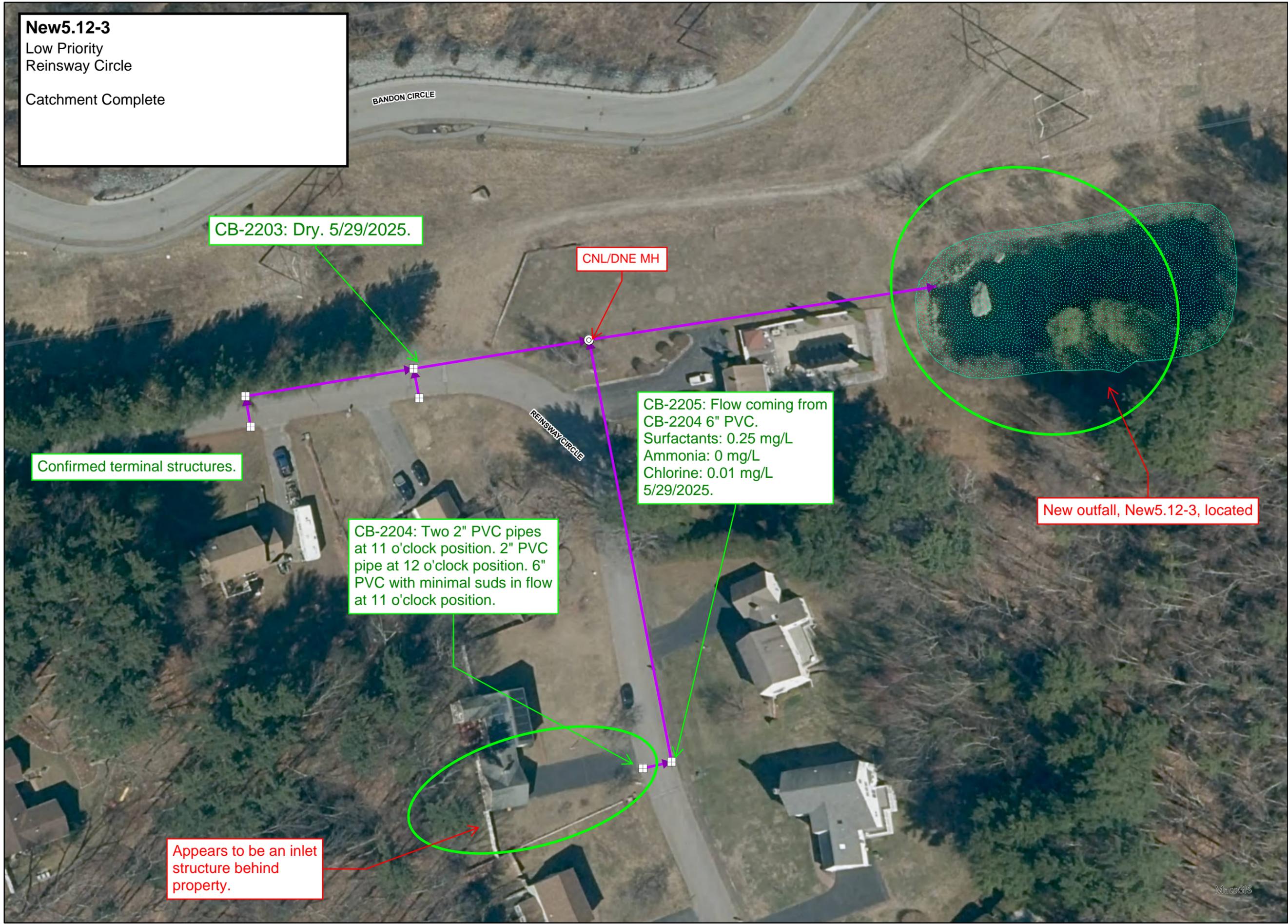
CB-3613: Deep CB, tried to feel around with a stake, but too much sediment. Recommend being cleaned out.

Pipes here. Cannot tell which direction pipe is flowing. Pipe from CB-3641 to CB-3642 does not exist.

Checked inverts, flow direction seems correct. Inverts are almost equal.

New_40 and OF-353
Low Priority
Pine St and Chestnut St
Catchments Complete

New5.12-3
 Low Priority
 Reinsway Circle
 Catchment Complete



CB-2203: Dry. 5/29/2025.

CNL/DNE MH

CB-2205: Flow coming from
 CB-2204 6" PVC.
 Surfactants: 0.25 mg/L
 Ammonia: 0 mg/L
 Chlorine: 0.01 mg/L
 5/29/2025.

Confirmed terminal structures.

CB-2204: Two 2" PVC pipes
 at 11 o'clock position. 2" PVC
 pipe at 12 o'clock position. 6"
 PVC with minimal suds in flow
 at 11 o'clock position.

New outfall, New5.12-3, located

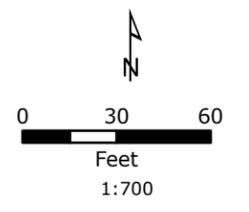
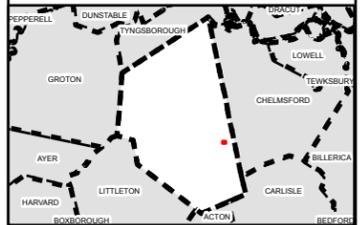
Appears to be an inlet
 structure behind
 property.

**STORMWATER
 CATCHMENTS
 GROUP 5**

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- ⊙ Water Quality Inlet
- ⊙ Flared End Section
- ⊙ Overflow Structure
- ⊙ Other
- ✱ BMP Location
- Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

**Catchment Area of
 No Outfall
 Westford, Massachusetts**

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New_22
 Low Priority
 Concord Rd
 Catchment Complete

Confirmed terminal structures.

Buried structure here. Used metal detector to confirm.

Buried structure here. Used metal detector to confirm.

Phillips Drive and New_22 are not connected. CBs 3741 and 0316 are not connected.

MH DNE.

KJ MH-3745: Dry. Good amount of sediment in MH.

Pipe in this direction, possibly a missing OF, cannot confirm. Does NOT appear to connect to New_22, further mapping investigation needed here

MH DNE.

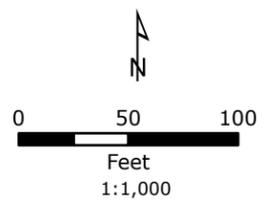
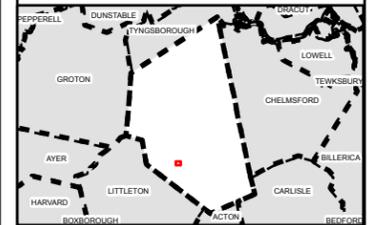
Outlet invert is too high to have this connected to CB 3741. This CB is connect to the OF. See red arrow for connection.

STORMWATER CATCHMENTS GROUP2

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊠ Key Junction Catch Basin
- ⊞ Junction Catch Basin
- ⊡ Catch Basin
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Inlet
- Outlet
- Water Quality Inlet
- Flared End Structure
- Leak Off
- Overflow Structure
- Other
- ✱ BMP Location
- Drain Pipe
- ▬ Culvert
- ▭ BMP Area

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2024)

Catchment Area of New_22 Westford, Massachusetts



Unknown Outfall (Crown Rd CB2122)

Some mapping updates made in GIS but downstream outfall could not be located. Recommend revisiting this area for further mapping investigations.

CB-5010: 2" metal 12 o'clock yard drain.

Confirmed terminal structures.

KJ CB-2122: Flow from CB-5011 and CB-2120. Both had same flow results of:
 Surfactants: 0.25 mg/L
 Ammonia: 0 mg/L
 Chlorine: 0.01 mg/L
 Pipe from CB-5011 almost completely closed off, water still drips out. See picture



Direction checked in upstream CB. CNL outfall.

12" PVC pipe at 3 o'clock position (see red arrow). Possibly connected to Mamie Ln (Private Way) could not confirm connection. Needs further investigation.

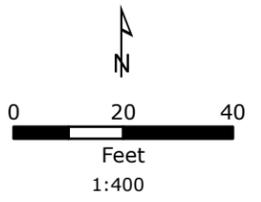
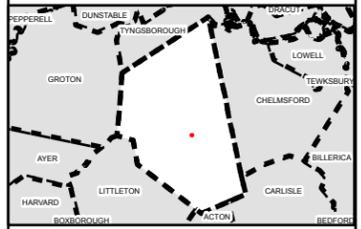
Wet area. No OF located.

STORMWATER CATCHMENTS GROUP 7

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- Water Quality Inlet
- Flared End Section
- Overflow Structure
- Other
- ✱ BMP Location
- ➔ Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

Catchment Area of No Outfall Westford, Massachusetts

OF_27 and OF_28
 Low Priority
 Sterling Lane / Texas Rd

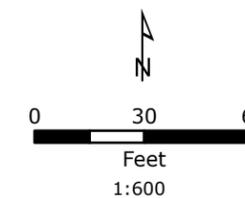
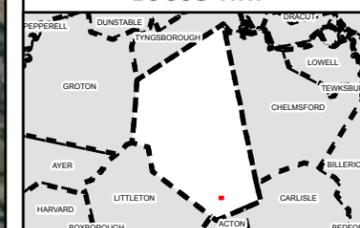
 Catchments Complete

STORMWATER CATCHMENTS GROUP 8

LEGEND

-  Outfall
-  Interconnection
-  Key Junction Manhole
-  Junction Manhole
-  Manhole
-  Key Junction Catch Basin
-  Junction Catch Basin
-  Catch Basin
-  Inlet
-  Outlet
-  Water Quality Inlet
-  Flared End Section
-  Overflow Structure
-  Other
-  BMP Location
-  Drain Pipe
-  Culvert
-  BMP Polygon

LOCUS MAP

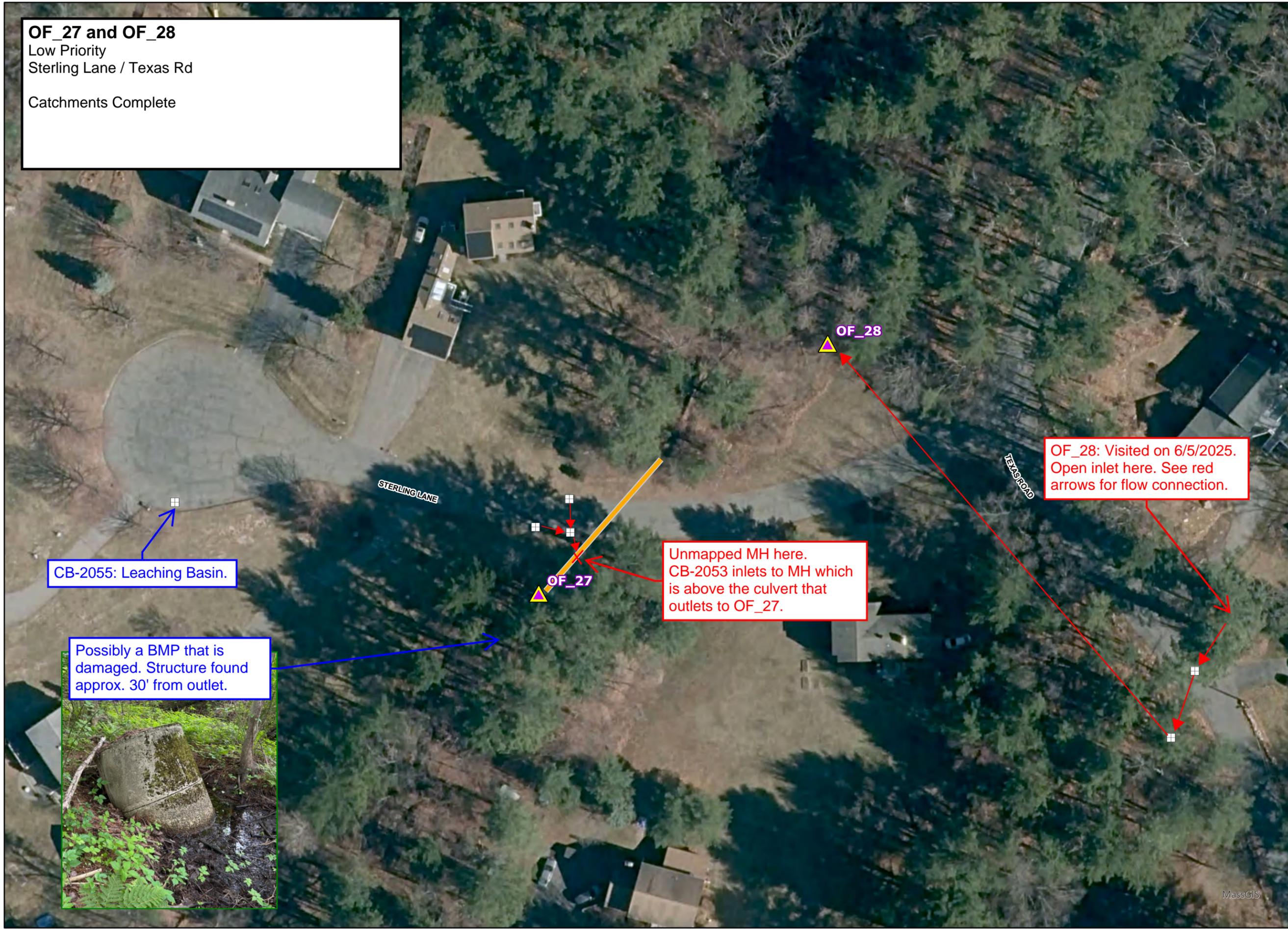


NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

**Catchment Area of OF_27 & OF_28
 Westford, Massachusetts**

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CB-2055: Leaching Basin.

Possibly a BMP that is damaged. Structure found approx. 30' from outlet.



Unmapped MH here. CB-2053 inlets to MH which is above the culvert that outlets to OF_27.

OF_28: Visited on 6/5/2025. Open inlet here. See red arrows for flow connection.

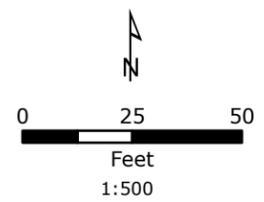
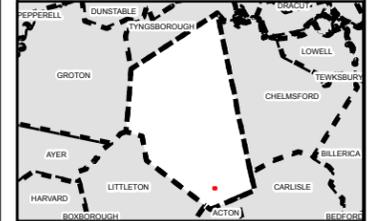
OF_29
 Low Priority
 Autumn Leap Lane
 Catchment Complete

**STORMWATER
 CATCHMENTS
 GROUP 8**

LEGEND

-  Outfall
-  Interconnection
-  Key Junction Manhole
-  Junction Manhole
-  Manhole
-  Key Junction Catch Basin
-  Junction Catch Basin
-  Catch Basin
-  Inlet
-  Outlet
-  Water Quality Inlet
-  Flared End Section
-  Overflow Structure
-  Other
-  BMP Location
-  Drain Pipe
-  Culvert
-  BMP Polygon

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

**Catchment Area of
 OF_29
 Westford, Massachusetts**

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OF_29

Confirmed terminal structures.

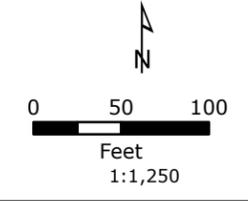
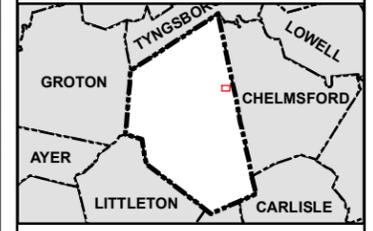
Buried and Unmapped MH here. Outlets to OF_29. See red arrows for pipe direction.

STORMWATER CATCHMENTS GROUP 1

LEGEND

- Outfall
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Key Junction Manhole
- Junction Manhole
- Manhole
- Drain Pipe
- Culvert
- BMP Point
- BMP Area
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.

Catchment Area of Outfall: **OF_1056**

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OF_1056
Low Priority
107 Lowell Rd

Catchment Complete

MH-5394: Dry.
Maintenance recommended for frame and cover being covered in asphalt.

Connects as drawn in pink

CB-2530: No outlet pipe to CB. Only outlets to MH across the street.

CB-2532 has two pipes in CB, but does not inlet/outlet in surrounding structures. CNL sources.

CB-2529: Dry. No inlet pipe from upstream CB.

CNL KJMH- Did see a pipe leaving CB2625 going to this area

Could not open DMH

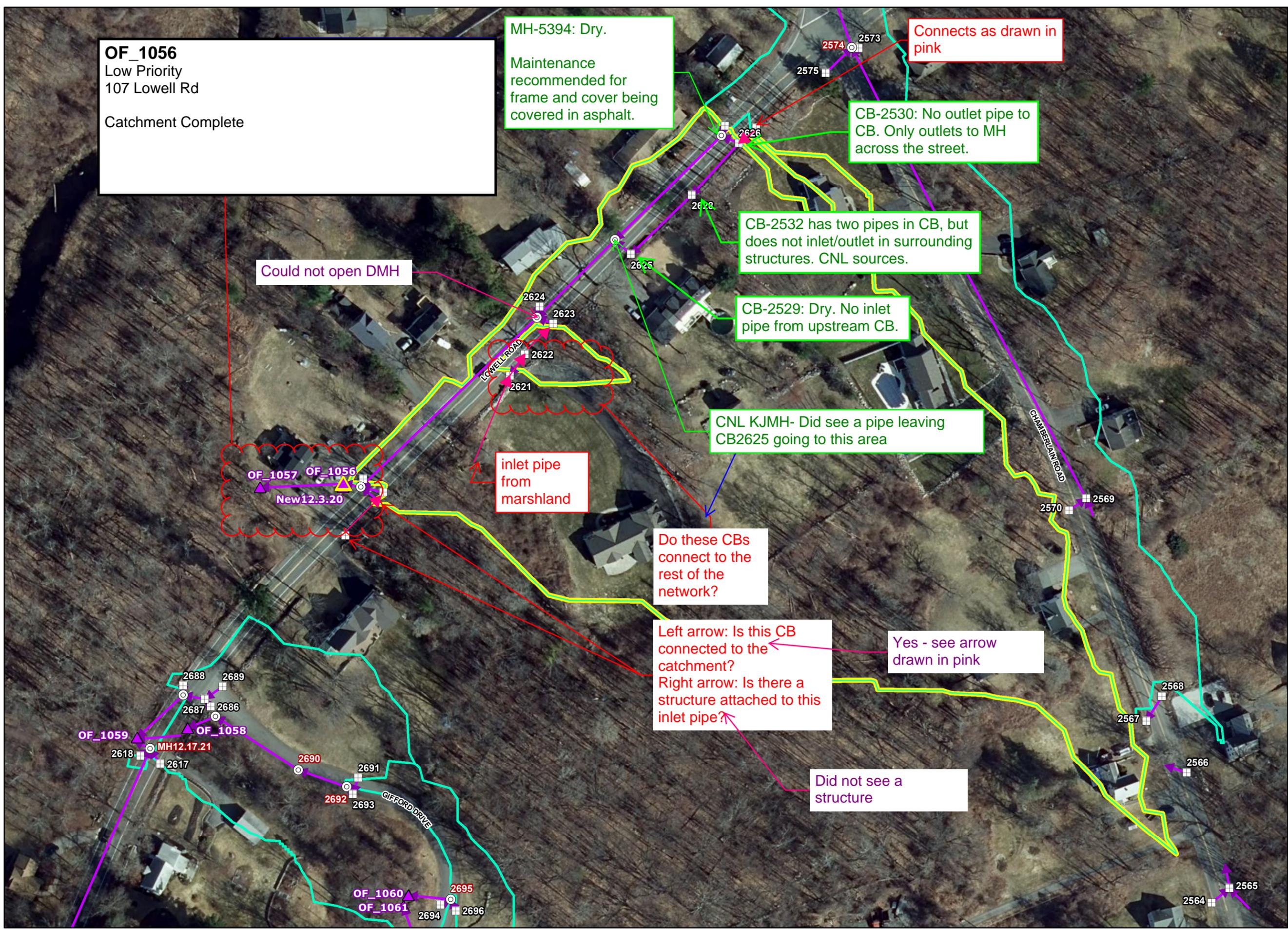
inlet pipe from marshland

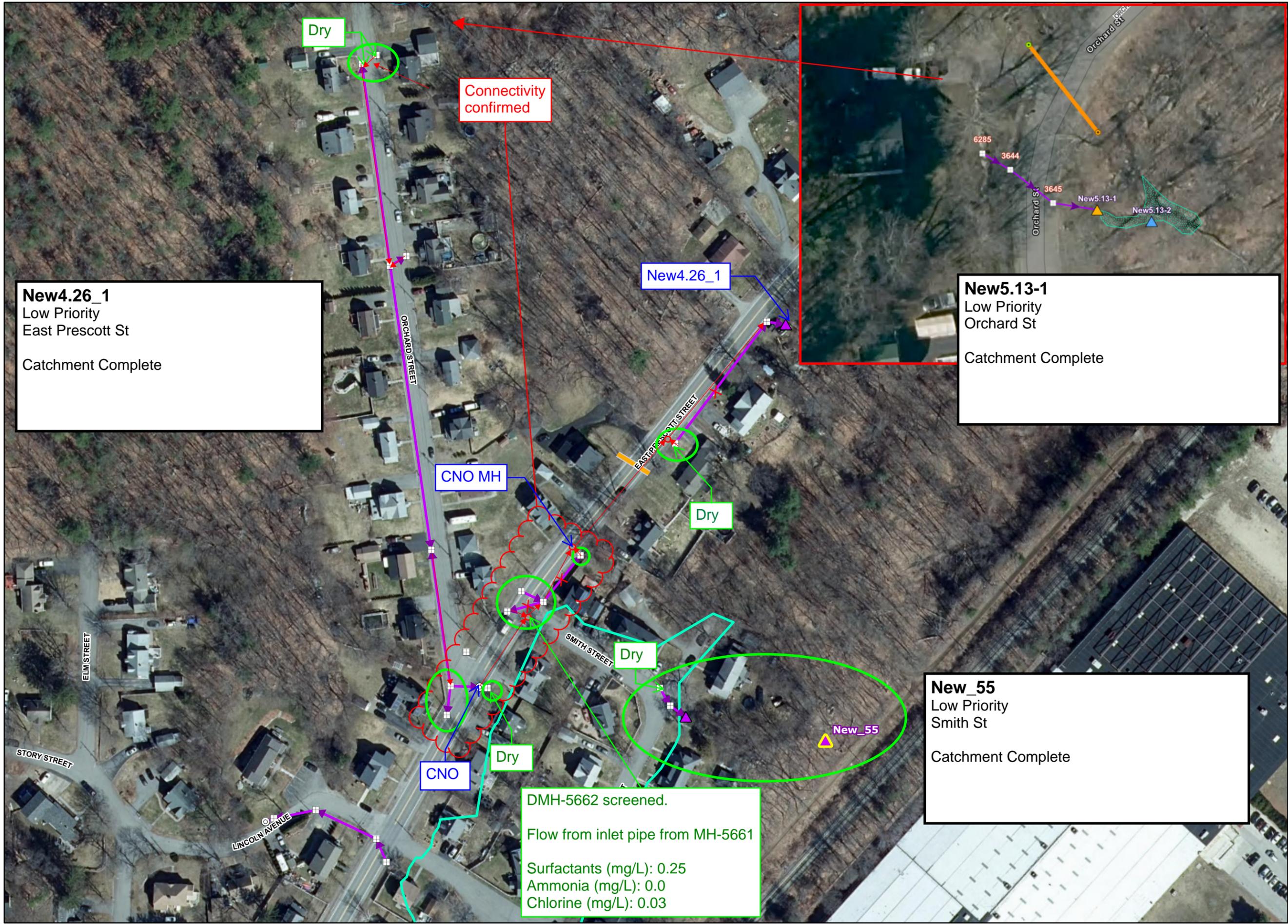
Do these CBs connect to the rest of the network?

Left arrow: Is this CB connected to the catchment?
Right arrow: Is there a structure attached to this inlet pipe?

Yes - see arrow drawn in pink

Did not see a structure





New4.26_1
 Low Priority
 East Prescott St
 Catchment Complete

New5.13-1
 Low Priority
 Orchard St
 Catchment Complete

New_55
 Low Priority
 Smith St
 Catchment Complete

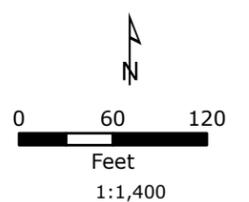
DMH-5662 screened.
 Flow from inlet pipe from MH-5661
 Surfactants (mg/L): 0.25
 Ammonia (mg/L): 0.0
 Chlorine (mg/L): 0.03

CATCHMENT INVESTIGATIONS GROUP 3

LEGEND

- ▲ Outfall
- ✱ BMP Structure
- Culvert Inlet/Outlet
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Drainage Features**
- Inlet
- Outlet
- Water Quality Inlet
- Flared End
- Leak Off
- Overflow Structure
- Unknown
- ⊗ Interconnection
- Culvert
- Drain Pipe
- BMP Area
- Catchment Area
- Town Boundary

LOCUS MAP



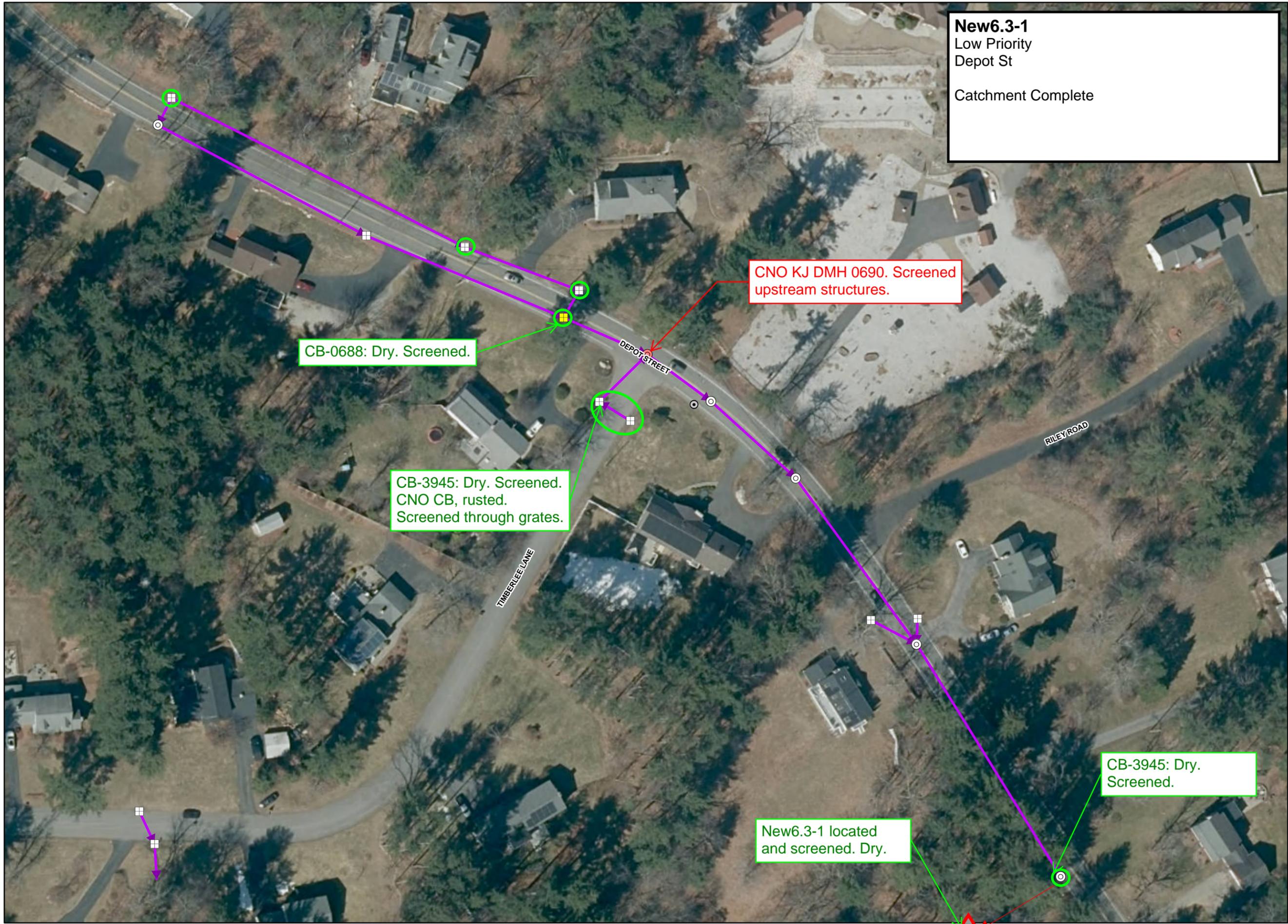
NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.

Catchment Area of
New_55
 New4.26_1

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New6.3-1
 Low Priority
 Depot St
 Catchment Complete

CNO KJ DMH 0690. Screened
 upstream structures.

CB-0688: Dry. Screened.

CB-3945: Dry. Screened.
 CNO CB, rusted.
 Screened through grates.

New6.3-1 located
 and screened. Dry.

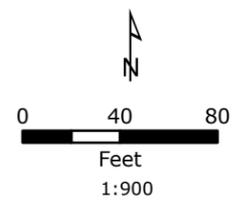
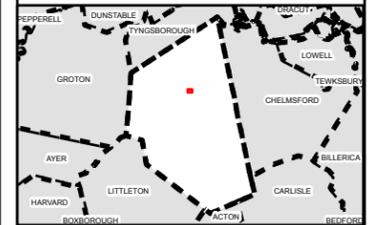
CB-3945: Dry.
 Screened.

**STORMWATER
 CATCHMENTS
 GROUP 7**

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- ⊙ Water Quality Inlet
- ⊙ Flared End Section
- ⊙ Overflow Structure
- ⊙ Other
- ✱ BMP Location
- Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

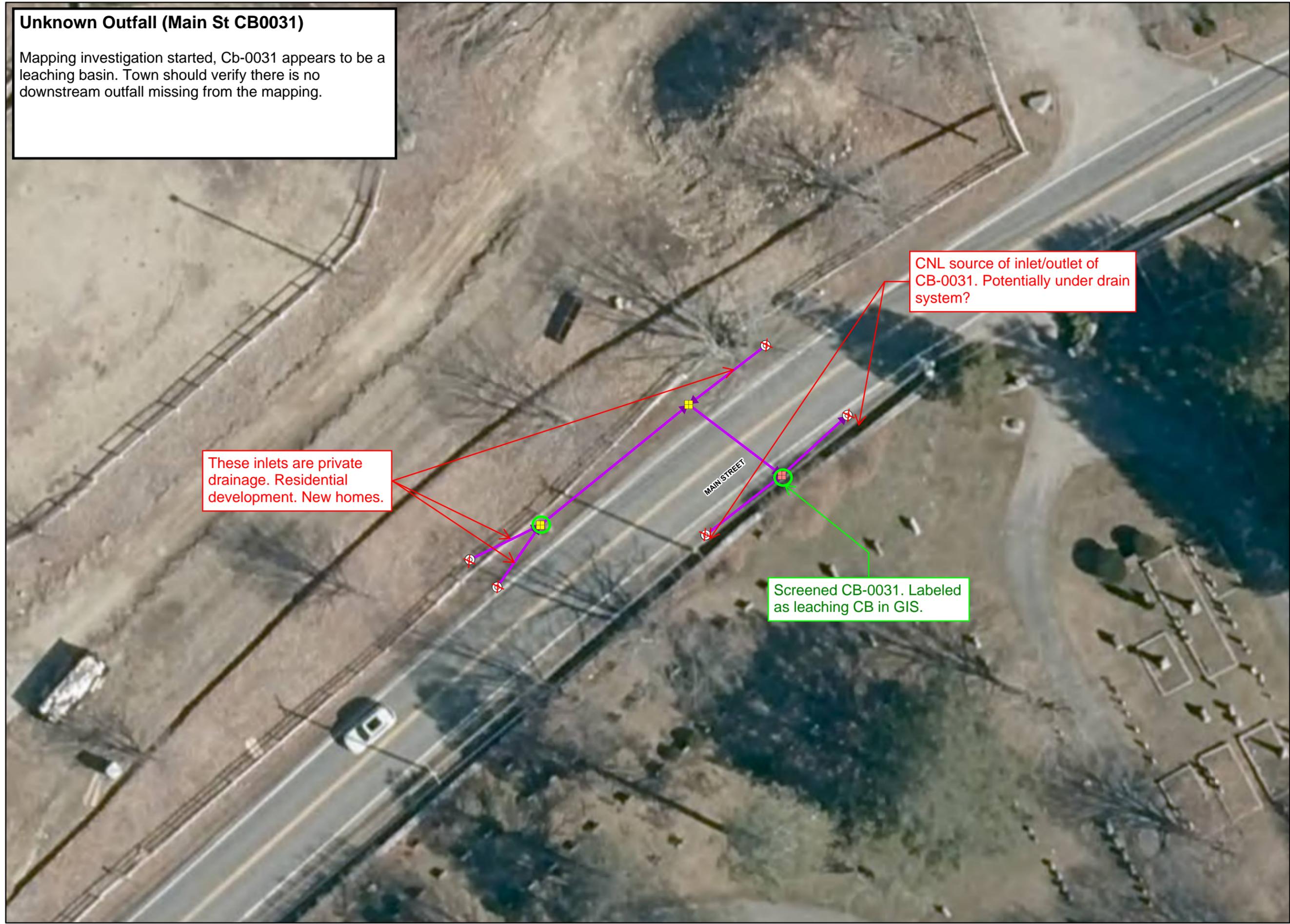
**Catchment Area of
 No Outfall
 Westford, Massachusetts**

Page 36 of 61



Unknown Outfall (Main St CB0031)

Mapping investigation started, Cb-0031 appears to be a leaching basin. Town should verify there is no downstream outfall missing from the mapping.

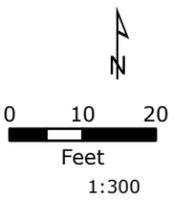
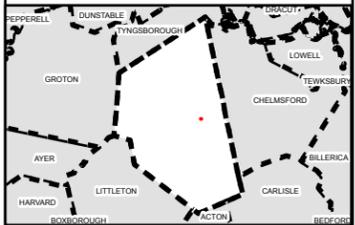


STORMWATER CATCHMENTS GROUP 7

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- Water Quality Inlet
- Flared End Section
- Overflow Structure
- Other
- BMP Location
- Drain Pipe
- Culvert
- BMP Polygon

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

Catchment Area of
No Outfall
Westford, Massachusetts

Page 37 of 61

Unknown Outfall (Carlisle Rd CB0193)

Some mapping updates made in GIS but downstream outfall could not be located. Recommend revisiting this area for further mapping investigations.

OF_180 marked as a culvert

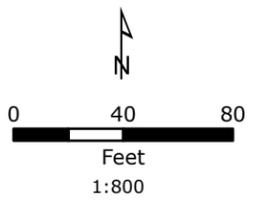
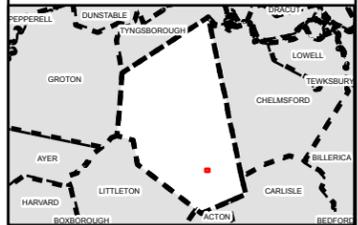
CB-0193: Dry. Screened. CNL source of inlets.

STORMWATER CATCHMENTS GROUP 7

LEGEND

-  Outfall
-  Interconnection
-  Key Junction Manhole
-  Junction Manhole
-  Manhole
-  Key Junction Catch Basin
-  Junction Catch Basin
-  Catch Basin
-  Inlet
-  Outlet
-  Water Quality Inlet
-  Flared End Section
-  Overflow Structure
-  Other
-  BMP Location
-  Drain Pipe
-  Culvert
-  BMP Polygon

LOCUS MAP



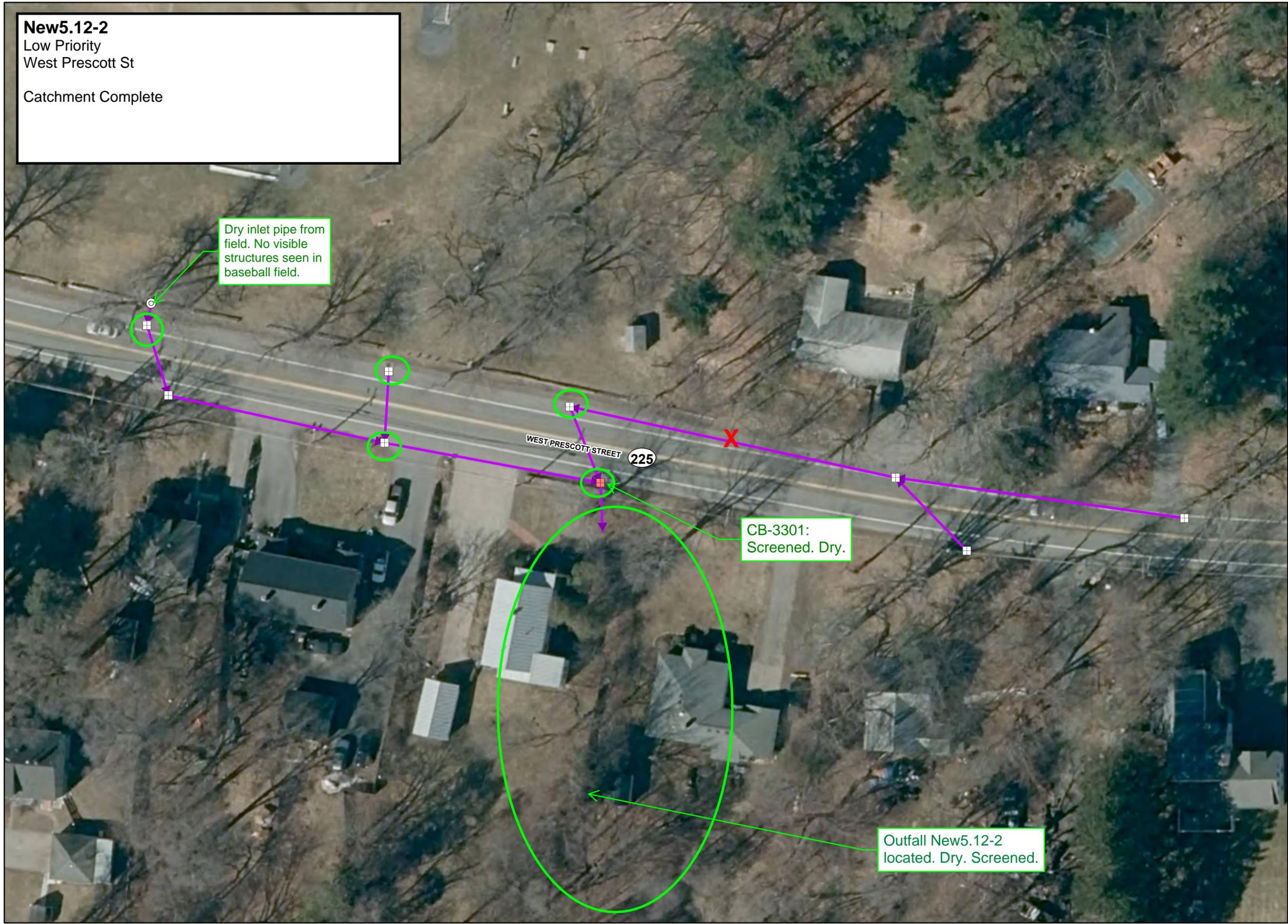
NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

**Catchment Area of No Outfall
Westford, Massachusetts**

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New5.12-2
 Low Priority
 West Prescott St
 Catchment Complete



Dry inlet pipe from field. No visible structures seen in baseball field.

CB-3301:
 Screened. Dry.

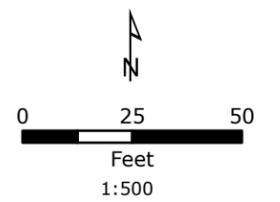
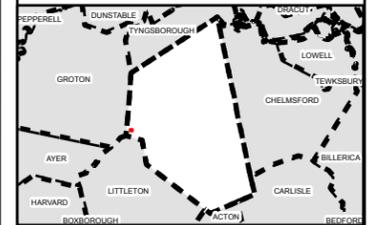
Outfall New5.12-2
 located. Dry. Screened.

**STORMWATER
 CATCHMENTS
 GROUP 7**

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- Water Quality Inlet
- Flared End Section
- Overflow Structure
- Other
- BMP Location
- Drain Pipe
- Culvert
- BMP Polygon

LOCUS MAP



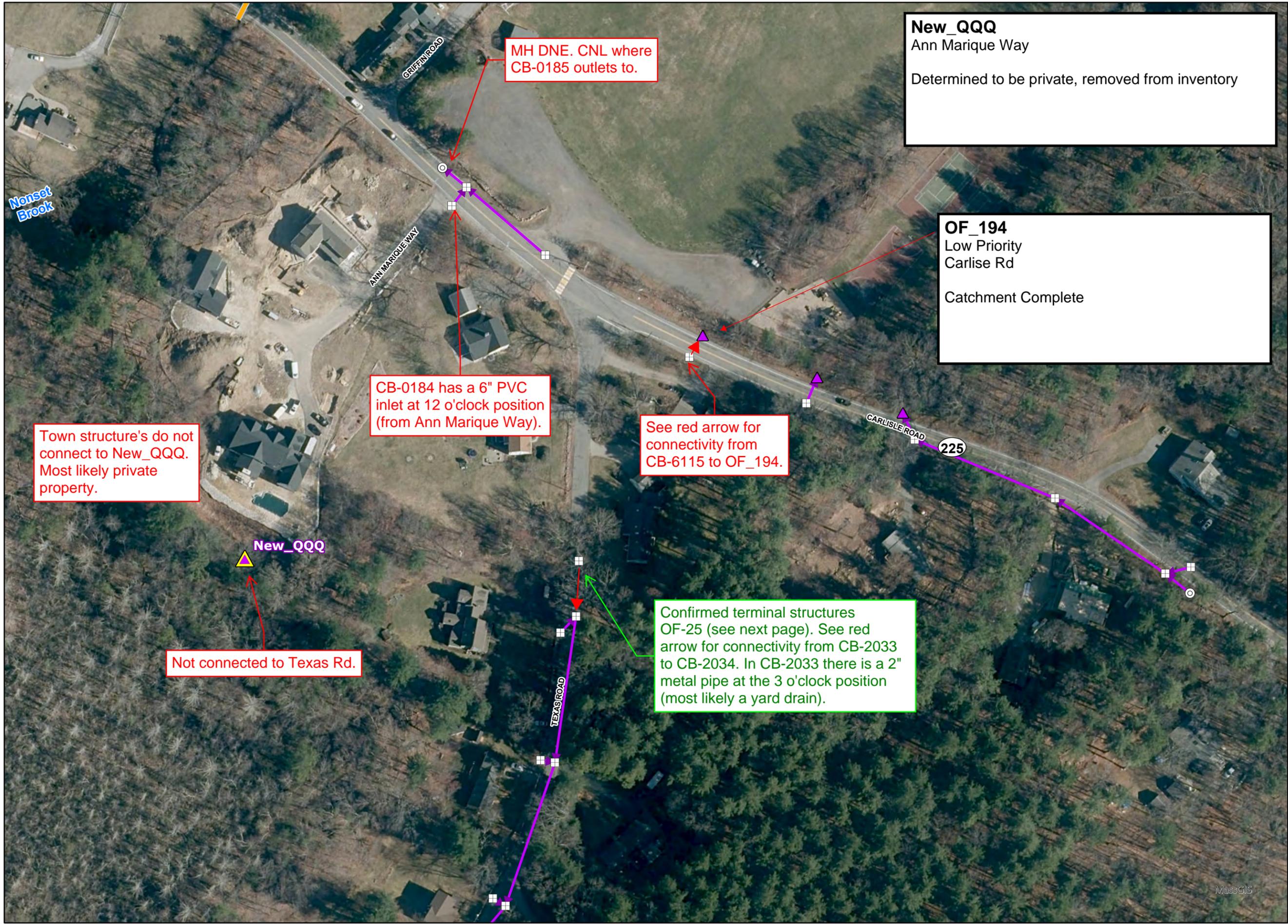
NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

**Catchment Area of
 No Outfall
 Westford, Massachusetts**

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New_QQQ
Ann Marique Way
Determined to be private, removed from inventory

OF_194
Low Priority
Carlise Rd
Catchment Complete

MH DNE. CNL where
CB-0185 outlets to.

CB-0184 has a 6" PVC
inlet at 12 o'clock position
(from Ann Marique Way).

See red arrow for
connectivity from
CB-6115 to OF_194.

Town structure's do not
connect to New_QQQ.
Most likely private
property.

Not connected to Texas Rd.

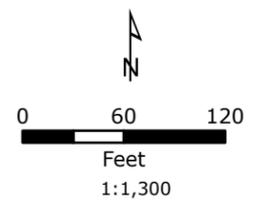
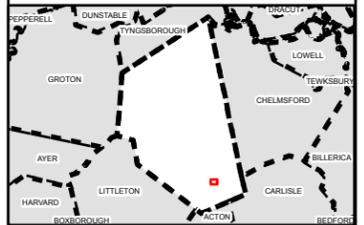
Confirmed terminal structures
OF-25 (see next page). See red
arrow for connectivity from CB-2033
to CB-2034. In CB-2033 there is a 2"
metal pipe at the 3 o'clock position
(most likely a yard drain).

**STORMWATER
CATCHMENTS
GROUP 8**

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- ⊙ Water Quality Inlet
- ⊙ Flared End Section
- ⊙ Overflow Structure
- ⊙ Other
- ✱ BMP Location
- ➔ Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

**Catchment Area of
New_QQQ
Westford, Massachusetts**

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OF_25
 Low Priority
 Texas Rd
 Catchment Complete

OF_24
 Low Priority
 Texas Rd
 Catchment Incomplete - revisit for mapping investigation

CB-2048: 6" PVC pipe about 1.5' deep in the CB from grate. CNL outlet, possibly buried since the area is sloped in a bowl shape.

KJ CB-2041: Flow from upstream CB-20339:
 Ammonia: 0 mg/L
 Surfactants: 0.5 mg/L
 Chlorine: 0 mg/L

Unmapped MH here. CB-2044 and CB-2045 inlet to then this MH connects to OF_25.

OF_24: CNL upstream source, Town thinks it could be private. Needs more investigation. See red arrow for direction of pipe (12" CMP).

CB-2047: 6" PVC inlet at 12 o'clock position from field. This CB is a leaching basin.

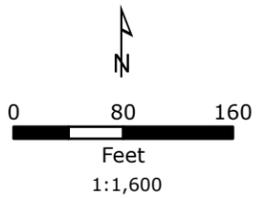
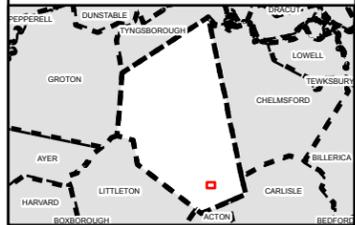
CB-2046: Good amount of sediment/water. Unsure if this is a leaching basin or not. There is a pond directly East of CB, possibly outlets there but could not confirm from basin being full/slope of pond didn't seem likely. This CB connects to CB-2047. Connection very high in basin. Recommend cleaning CB before follow-up mapping investigation.

STORMWATER CATCHMENTS GROUP 8

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- ⊙ Water Quality Inlet
- ⊙ Flared End Section
- ⊙ Overflow Structure
- ⊙ Other
- ✱ BMP Location
- Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

Catchment Area of OF_24 & OF_25 Westford, Massachusetts



OF_26
 Low Priority
 Texas Rd

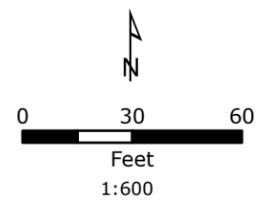
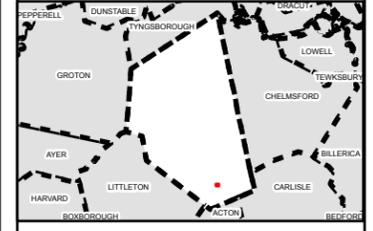
 Catchment Complete

**STORMWATER
 CATCHMENTS
 GROUP 8**

LEGEND

-  Outfall
-  Interconnection
-  Key Junction Manhole
-  Junction Manhole
-  Manhole
-  Key Junction Catch Basin
-  Junction Catch Basin
-  Catch Basin
-  Inlet
-  Outlet
-  Water Quality Inlet
-  Flared End Section
-  Overflow Structure
-  Other
-  BMP Location
-  Drain Pipe
-  Culvert
-  BMP Polygon

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

**Catchment Area of
 OF_26
 Westford, Massachusetts**

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Confirmed terminal structures. See red arrow for connectivity from CB-2050 to OF_26.

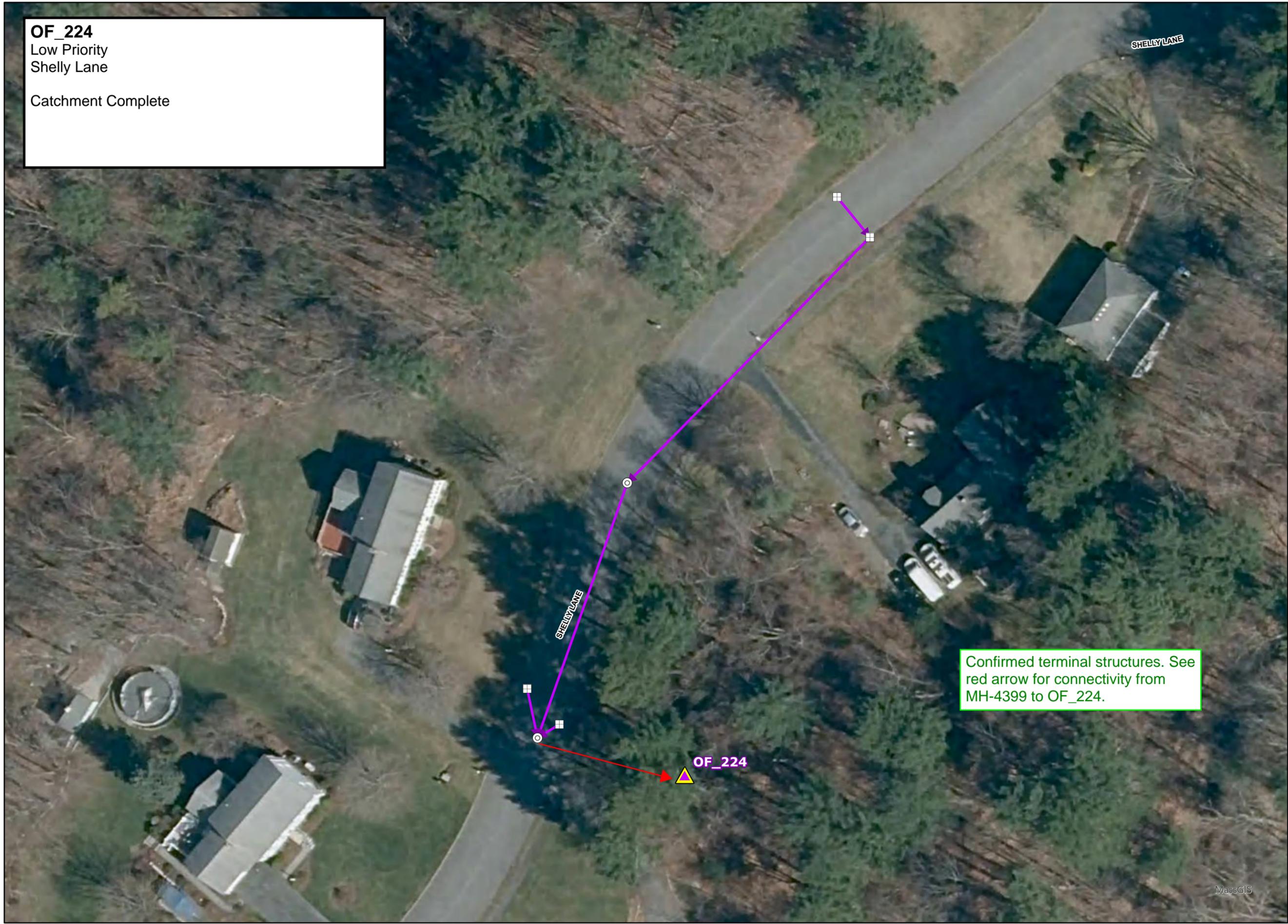


TEXAS ROAD

MassGIS

OF_224
 Low Priority
 Shelly Lane

 Catchment Complete



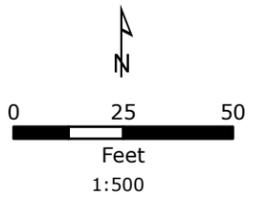
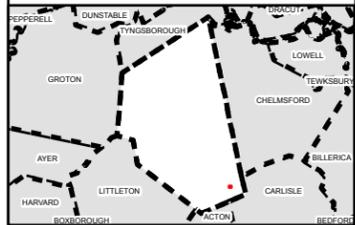
Confirmed terminal structures. See red arrow for connectivity from MH-4399 to OF_224.

STORMWATER CATCHMENTS GROUP 8

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- ⊠ Key Junction Catch Basin
- ⊠ Junction Catch Basin
- ⊠ Catch Basin
- Inlet
- Outlet
- ⊙ Water Quality Inlet
- ⊙ Flared End Section
- ⊙ Overflow Structure
- ⊙ Other
- ✱ BMP Location
- Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

**Catchment Area of OF_224
 Westford, Massachusetts**

Page 44 of 61



New_NNN
 Low Priority
 Shelly Lane

 Catchment Complete

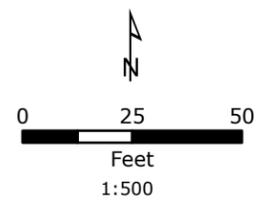
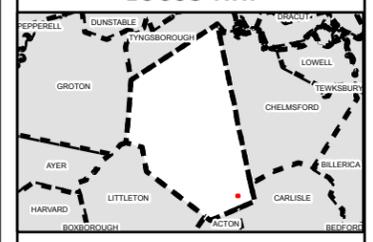


STORMWATER CATCHMENTS GROUP 8

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- Water Quality Inlet
- Flared End Section
- Overflow Structure
- Other
- BMP Location
- Drain Pipe
- Culvert
- BMP Polygon

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

**Catchment Area of New_NNN
 Westford, Massachusetts**

Page 45 of 61



New_III
 Low Priority
 Landmark Rd
 Catchment Complete

Moved outfall New_III to where it was located in the field (here).
 Red arrow shows connection between New_III and MH-1844.

New_III

LANDMARK ROAD

VOSE HILL ROAD

MH-5101: DNE.

CB-1834: The inlet of MH-5101 DNE (it was there to show an inlet into CB-1834). The inlet is more at the 11 o'clock position and is a 3" PVC pipe (most likely yard drain).

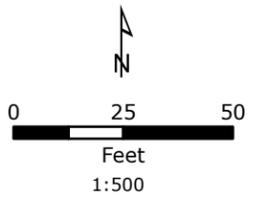
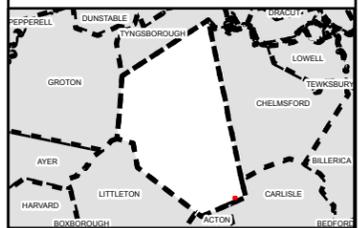
Confirmed terminal structures.

STORMWATER CATCHMENTS GROUP 8

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- ⊙ Water Quality Inlet
- ⊙ Flared End Section
- ⊙ Overflow Structure
- ⊙ Other
- ✱ BMP Location
- ➔ Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

**Catchment Area of New_III
 Westford, Massachusetts**

Page 46 of 61



MassGIS

OF_215
 Low Priority
 Vose Hill Rd
 Catchment Complete
 OF_213 was determined to be a BMP and was removed from town MS4 outfall inventory

Confirmed terminal structures.
 OF_213 is a BMP structure. BMP then outlets to nearby wetlands/woods.

CB-1937: Flow from CB-1938 (dripping flow, very minimal).
 Ammonia: 0 mg/L
 Surfactants: 0.5 mg/L
 Chlorine: 0.04 mg/L

CB-1938: 3" HDPE inlet at 12 o'clock position (most likely yard drain), not flowing.



CB-1936: 3" HDPE collapsed inlet at 12 o'clock position (yard drain most likely) flowing.

KJ MH-5550: Buried in yard decor/mailbox.

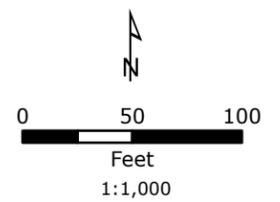
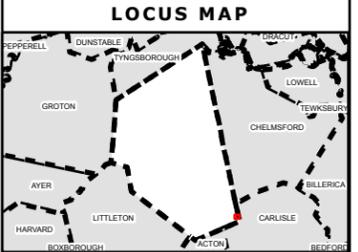
MH-5551: Outlets as OF_213, see red arrow for connectivity.

UNK-11 DNE.

CB-1935: Flow from CB-1936:
 Ammonia: 0 mg/L
 Surfactants: 0.25 mg/L
 Chlorine: 0 mg/L

STORMWATER CATCHMENTS GROUP 8

- LEGEND**
- ▲ Outfall
 - ⊗ Interconnection
 - ⊙ Key Junction Manhole
 - ⊙ Junction Manhole
 - ⊙ Manhole
 - Key Junction Catch Basin
 - Junction Catch Basin
 - Catch Basin
 - Inlet
 - Outlet
 - ⊙ Water Quality Inlet
 - ⊙ Flared End Section
 - ⊙ Overflow Structure
 - ⊙ Other
 - ✱ BMP Location
 - ➔ Drain Pipe
 - Culvert
 - ▭ BMP Polygon



- NOTES**
1. Based on MassGIS Color Orthophotography (2023)
 2. Stormwater Data Provided by the Town of Westford (2025)

Catchment Area of OF-213, OF-215, & UNK-11 Westford, Massachusetts





KJ MH- 1953: Flow from CB-1952:
 Ammonia: 0 mg/L
 Surfactants: 0.25 mg/L
 Chlorine: 0.08 mg/L
 Flow from upstream MH-1951:
 Ammonia: 0 mg/L
 Surfactants: 0.25 mg/L
 Chlorine: 0.06 mg/L

OF_218
 Low Priority
 Abby Rd
 Catchment Complete

CB-1952: 3" HDPE pipe at 12 o'clock position, most likely yard drain (flowing).

Confirmed terminal structures.

CB-1941: 3" HDPE pipe at 1 o'clock position, most likely yard drain.

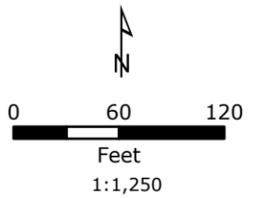
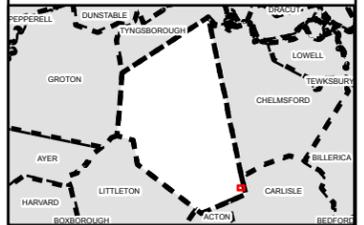
CB-1939: 3" HDPE pipe at 11 o'clock position, most likely yard drain.

STORMWATER CATCHMENTS GROUP 8

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- ⊙ Water Quality Inlet
- ⊙ Flared End Section
- ⊙ Overflow Structure
- ⊙ Other
- ✱ BMP Location
- Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon

LOCUS MAP



NOTES

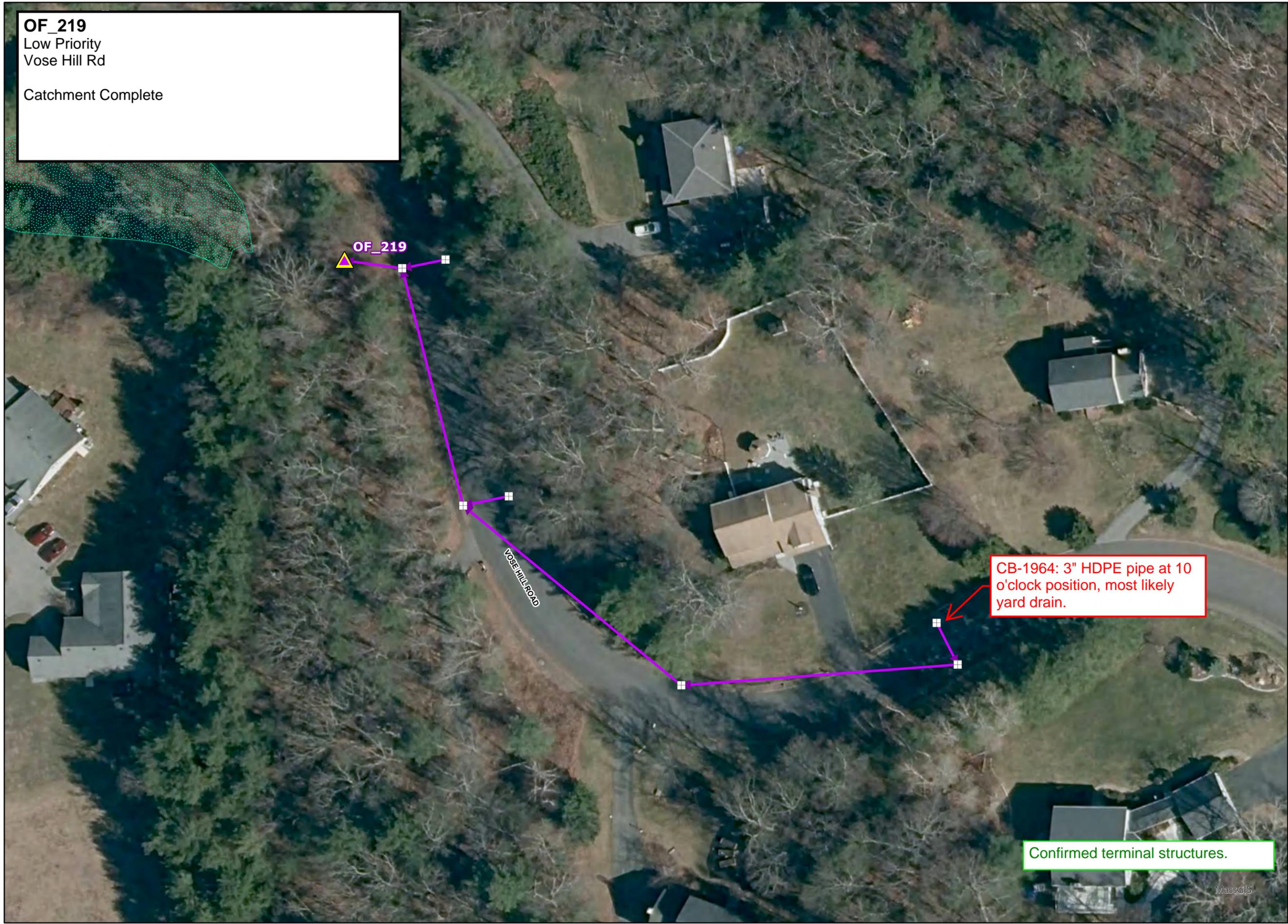
1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

Catchment Area of OF-218 Westford, Massachusetts

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OF_219
 Low Priority
 Vose Hill Rd
 Catchment Complete

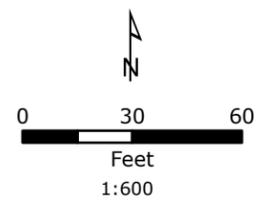
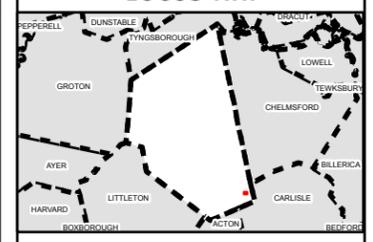


STORMWATER CATCHMENTS GROUP 8

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- Water Quality Inlet
- Flared End Section
- Overflow Structure
- Other
- BMP Location
- Drain Pipe
- Culvert
- BMP Polygon

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

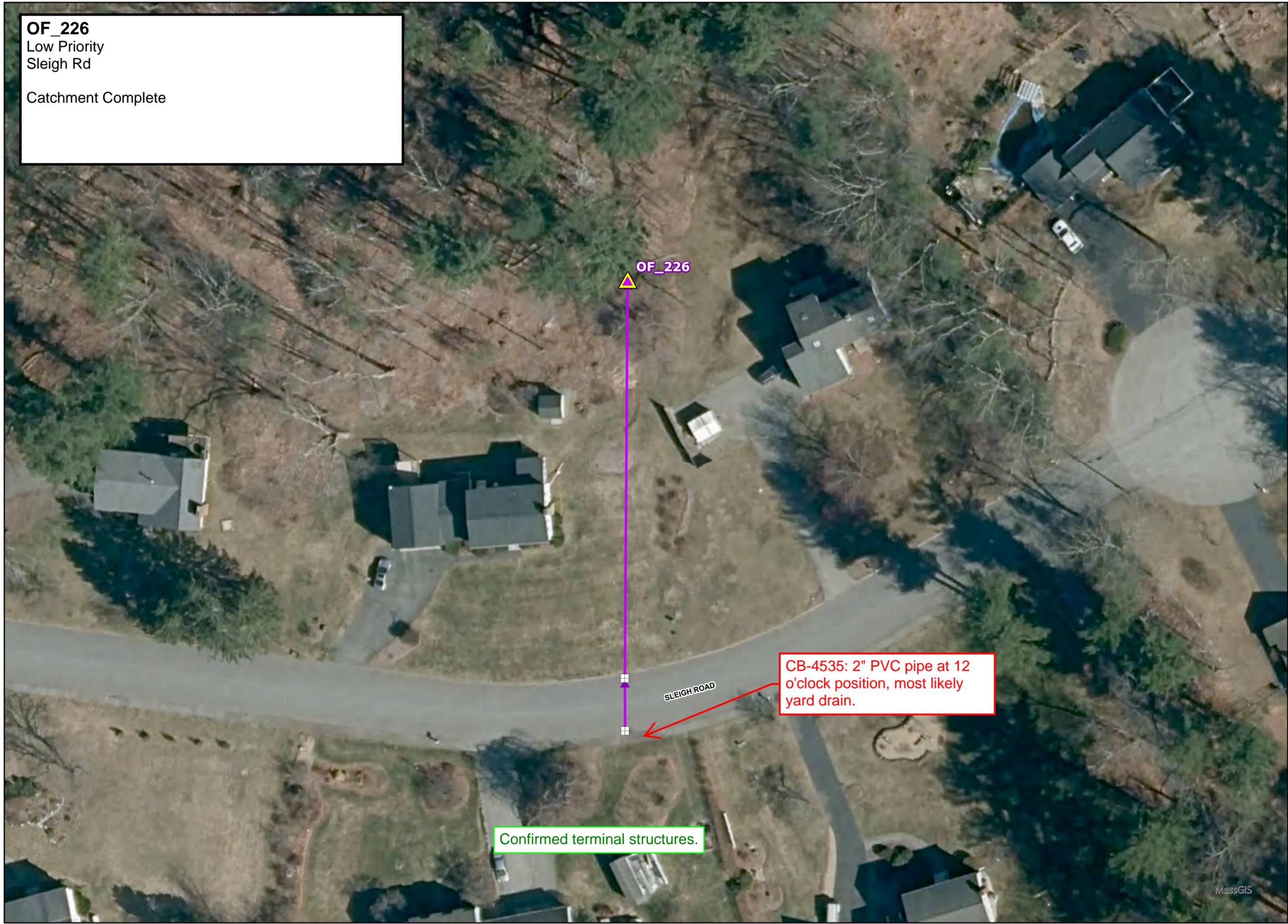
**Catchment Area of OF-219
 Westford, Massachusetts**

Page 49 of 61

Confirmed terminal structures.



OF_226
 Low Priority
 Sleigh Rd
 Catchment Complete

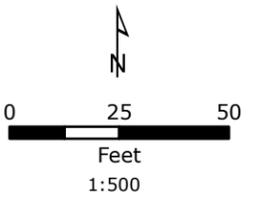
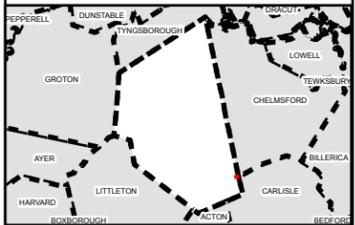


STORMWATER CATCHMENTS GROUP 8

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- Water Quality Inlet
- Flared End Section
- Overflow Structure
- Other
- BMP Location
- Drain Pipe
- Culvert
- BMP Polygon

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

**Catchment Area of OF_226
 Westford, Massachusetts**

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MassGIS



OF_225
 Low Priority
 Sleigh Rd
 Catchment Incomplete - revisit for mapping investigation

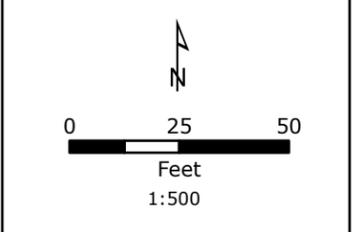
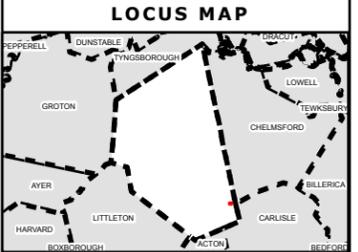
CB-4533: 12" CMP inlet, CNL upstream source. There is a CB in the driveway of 72 Sleigh Rd. Possibly connected (same direction) but the driveway CB is full of sediment, cannot confirm connectivity. See inlet of driveway CB (red arrow).

Inlet into CB driveway, checked Anne Teresa Way (road parallel to this one) and there are no connections from that road. Talked to homeowner, they don't know where it outlets.

STORMWATER CATCHMENTS GROUP 8

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- ⊙ Water Quality Inlet
- ⊙ Flared End Section
- ⊙ Overflow Structure
- ⊙ Other
- ✱ BMP Location
- ➔ Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon



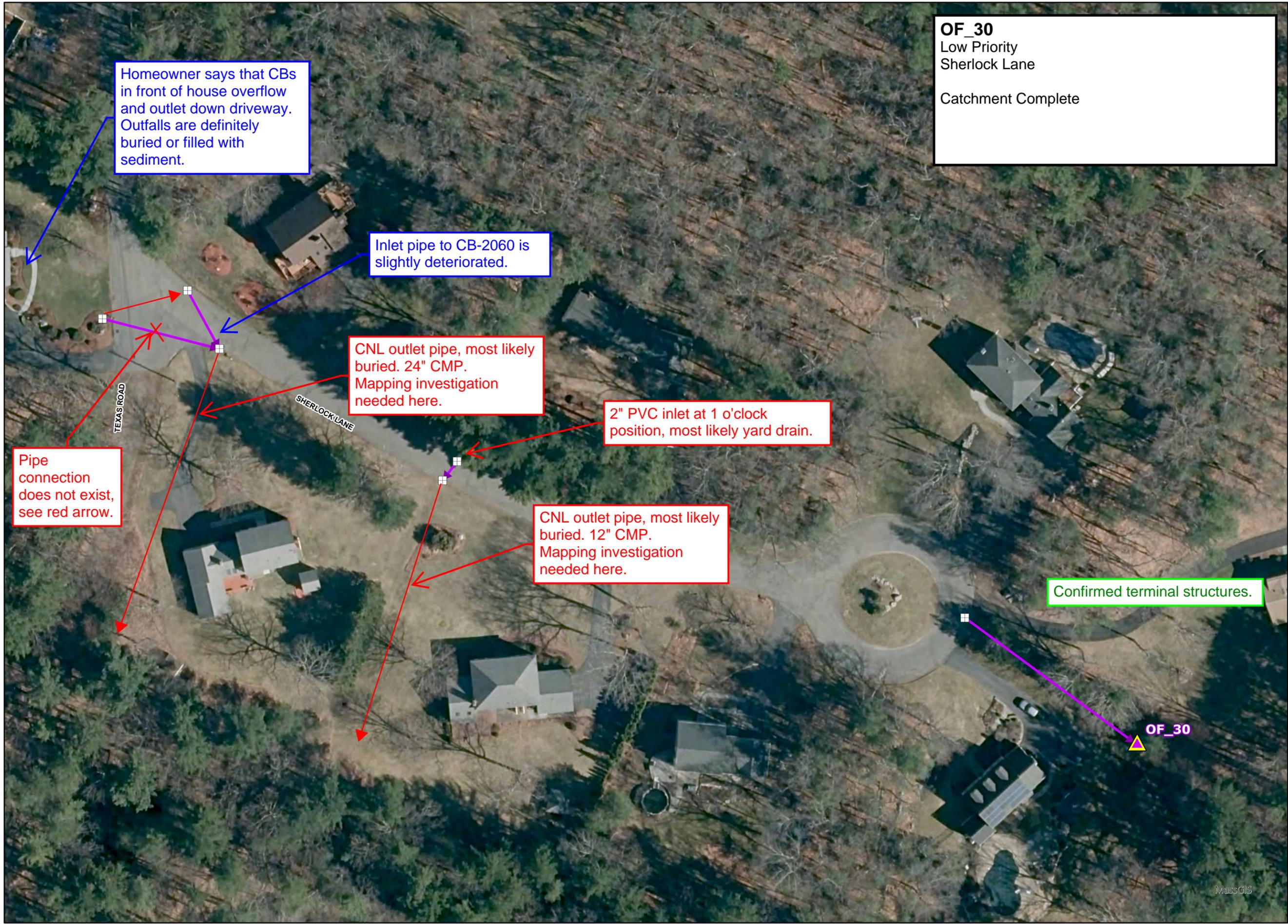
NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

Catchment Area of OF_225 Westford, Massachusetts

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Homeowner says that CBs in front of house overflow and outlet down driveway. Outfalls are definitely buried or filled with sediment.

Inlet pipe to CB-2060 is slightly deteriorated.

CNL outlet pipe, most likely buried. 24" CMP. Mapping investigation needed here.

2" PVC inlet at 1 o'clock position, most likely yard drain.

CNL outlet pipe, most likely buried. 12" CMP. Mapping investigation needed here.

Pipe connection does not exist, see red arrow.

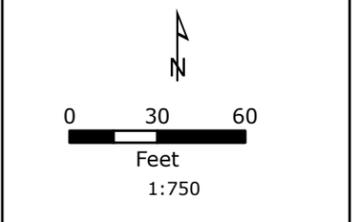
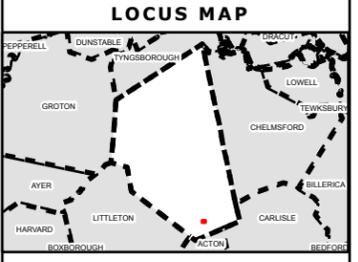
OF_30
Low Priority
Sherlock Lane

Catchment Complete

STORMWATER CATCHMENTS GROUP 8

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- Water Quality Inlet
- Flared End Section
- Overflow Structure
- Other
- ✱ BMP Location
- Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon



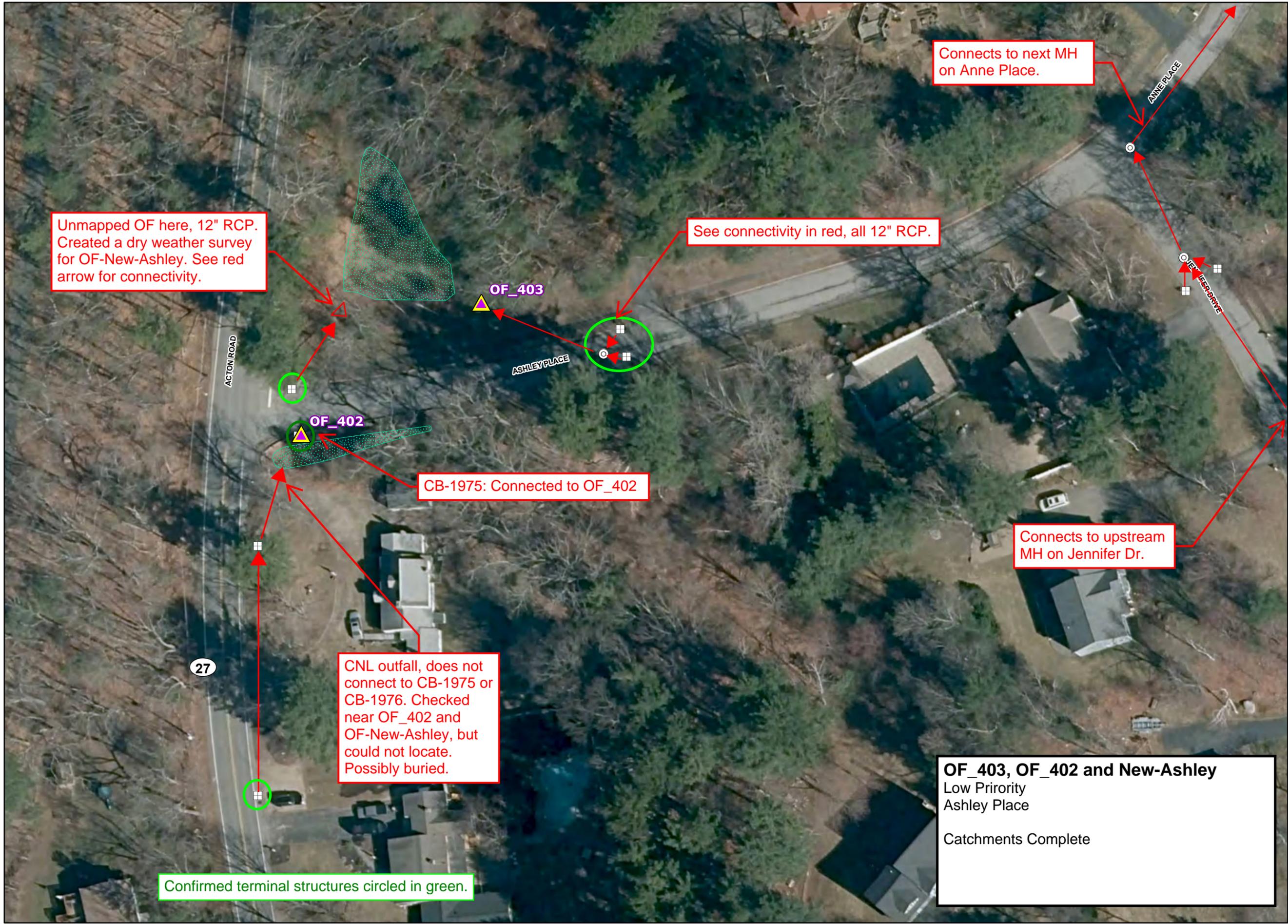
NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

Catchment Area of OF_30 Westford, Massachusetts

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Unmapped OF here, 12" RCP. Created a dry weather survey for OF-New-Ashley. See red arrow for connectivity.

See connectivity in red, all 12" RCP.

Connects to next MH on Anne Place.

CB-1975: Connected to OF_402

Connects to upstream MH on Jennifer Dr.

CNL outfall, does not connect to CB-1975 or CB-1976. Checked near OF_402 and OF-New-Ashley, but could not locate. Possibly buried.

Confirmed terminal structures circled in green.

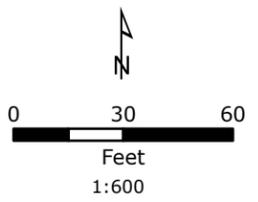
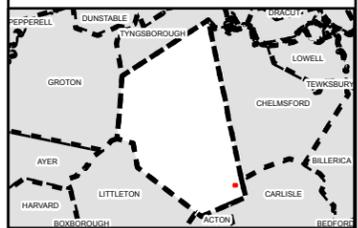
OF_403, OF_402 and New-Ashley
 Low Priority
 Ashley Place
 Catchments Complete

STORMWATER CATCHMENTS GROUP 8

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- Water Quality Inlet
- Flared End Section
- Overflow Structure
- Other
- ✱ BMP Location
- ➔ Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon

LOCUS MAP



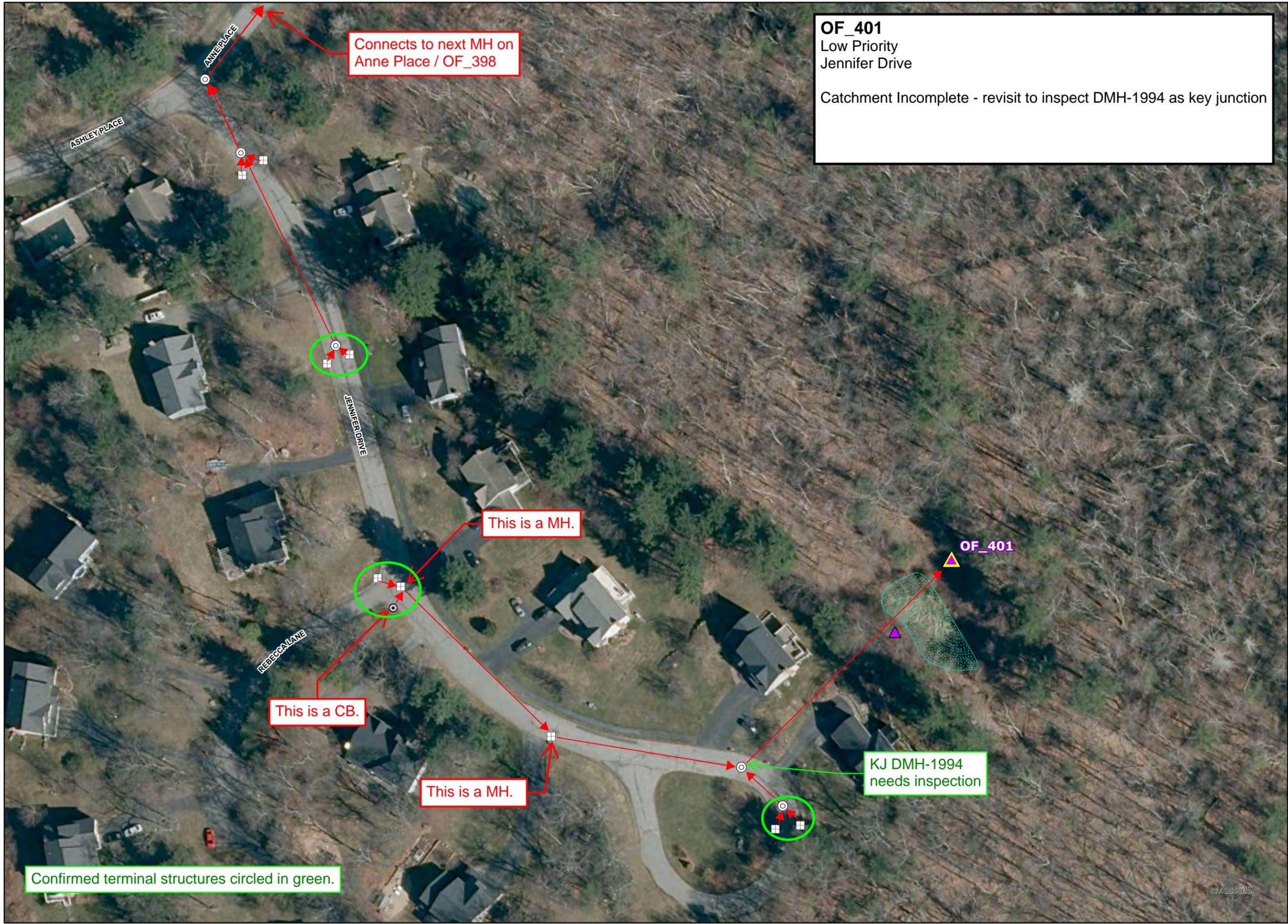
NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

Catchment Area of OF-402 & OF-403
 Westford, Massachusetts

Page 53 of 61





OF_401
 Low Priority
 Jennifer Drive
 Catchment Incomplete - revisit to inspect DMH-1994 as key junction

Connects to next MH on Anne Place / OF_398

This is a MH.

This is a CB.

This is a MH.

KJ DMH-1994 needs inspection

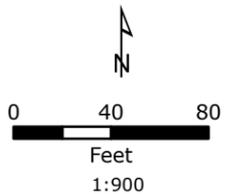
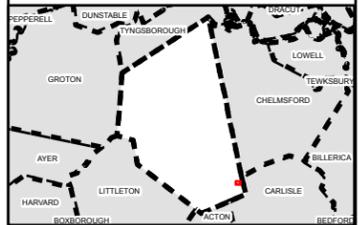
Confirmed terminal structures circled in green.

STORMWATER CATCHMENTS GROUP 8

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- Water Quality Inlet
- Flared End Section
- Overflow Structure
- Other
- BMP Location
- Drain Pipe
- Culvert
- BMP Polygon

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

Catchment Area of OF-401 Westford, Massachusetts



OF_161
 Oak Hill Rd
 Low Priority
 page 1 of 3
 Catchment Complete

Confirmed terminal structures.

KJ MH-5680: Dry.

KJ MH-5679: Flow from Tower Rd CB.
 Ammonia: 0 mg/L
 Surfactants: 0.75 mg/L
 Chlorine: 0.03 mg/L

Filled with sediment, clogged pipes.

CB-1706: Also a 12 o'clock pipe that does not go upstream Wilshire, CNL where outlet goes.

CBs do not connect.

Leaching basins, no pipes.

Unmapped MH here, connects to MH-4752.
 CB-1699 outlets to CB-1698 (no other pipes).
 CB-1698 outlets into new MH.

KJ 5462: Buried. Screened upstream structures of CB-1511 and CB-1654, both dry.

Flow direction is flipped. See red arrow for correct flow path.

See red arrow for correct flow path.

Could not determine outlet. Maybe in buried MH? All structures had a good amount of sediment in them.

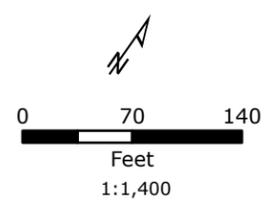
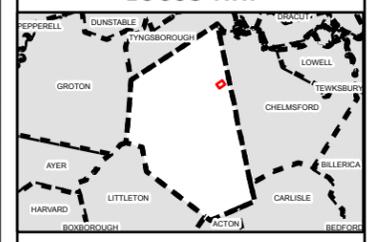
CNL where pipes outlets to. All 12" HDPE pipes. Not connected to further down on York or Hawthorne.

Leaching basin.

STORMWATER CATCHMENTS OF_161

- LEGEND**
- ▲ Outfall
 - ⊗ Interconnection
 - ⊙ Key Junction Manhole
 - ⊙ Junction Manhole
 - ⊙ Manhole
 - Key Junction Catch Basin
 - Junction Catch Basin
 - Catch Basin
 - Inlet
 - Outlet
 - ⊙ Water Quality Inlet
 - ⊙ Flared End Section
 - ⊙ Overflow Structure
 - ⊙ Other
 - ✱ BMP Location
 - Drain Pipe
 - ▬ Culvert
 - ▭ BMP Polygon

LOCUS MAP



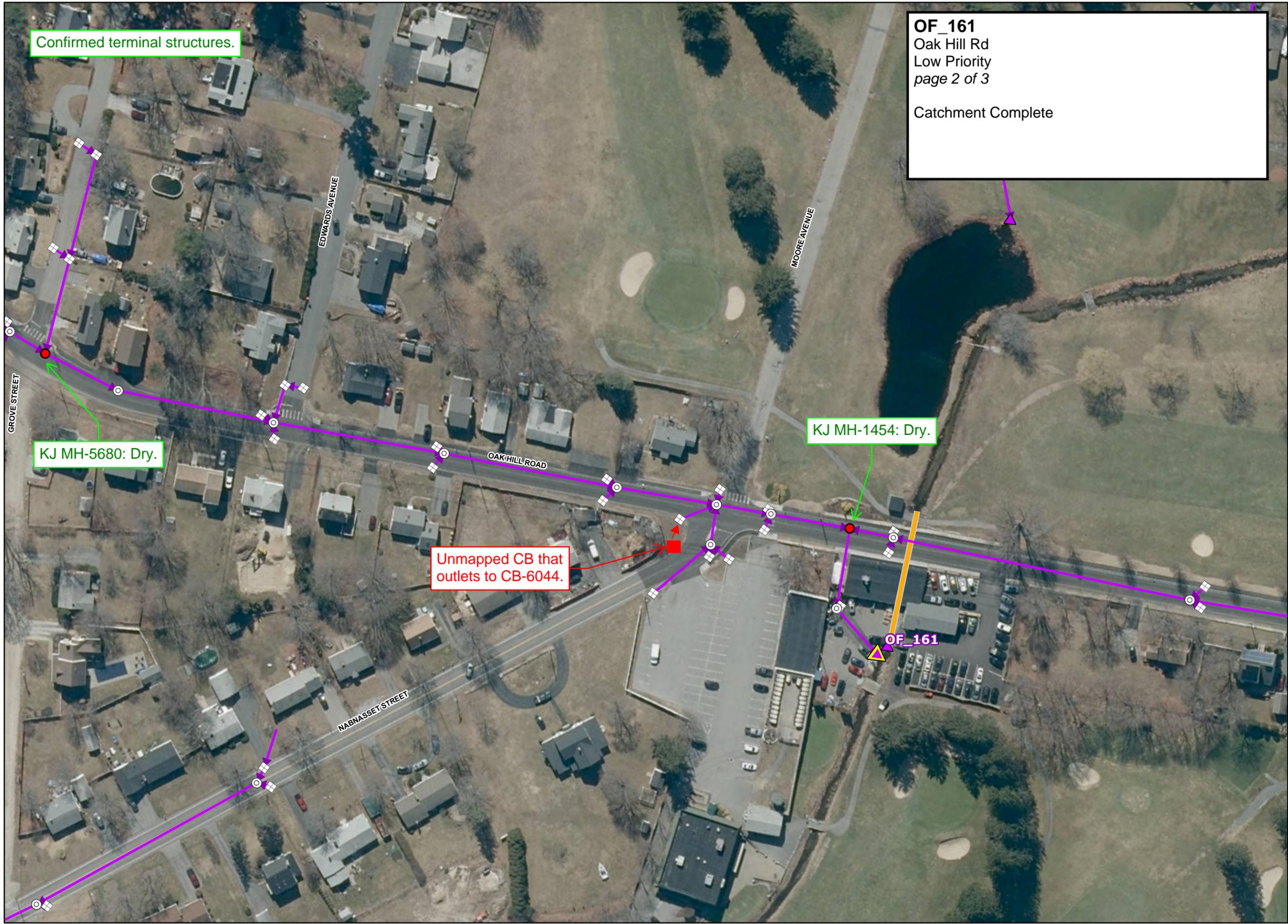
NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

Catchment Area of **OF_161**
 Westford, Massachusetts

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Confirmed terminal structures.

OF_161
 Oak Hill Rd
 Low Priority
 page 2 of 3
 Catchment Complete

KJ MH-5680: Dry.

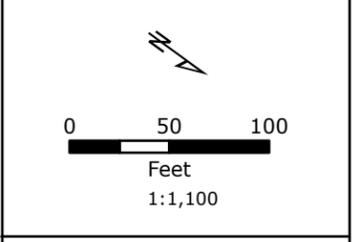
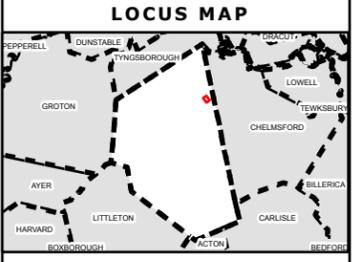
KJ MH-1454: Dry.

Unmapped CB that outlets to CB-6044.

STORMWATER CATCHMENTS OF_161

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet
- Outlet
- Water Quality Inlet
- Flared End Section
- Overflow Structure
- Other
- ✱ BMP Location
- Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon



NOTES

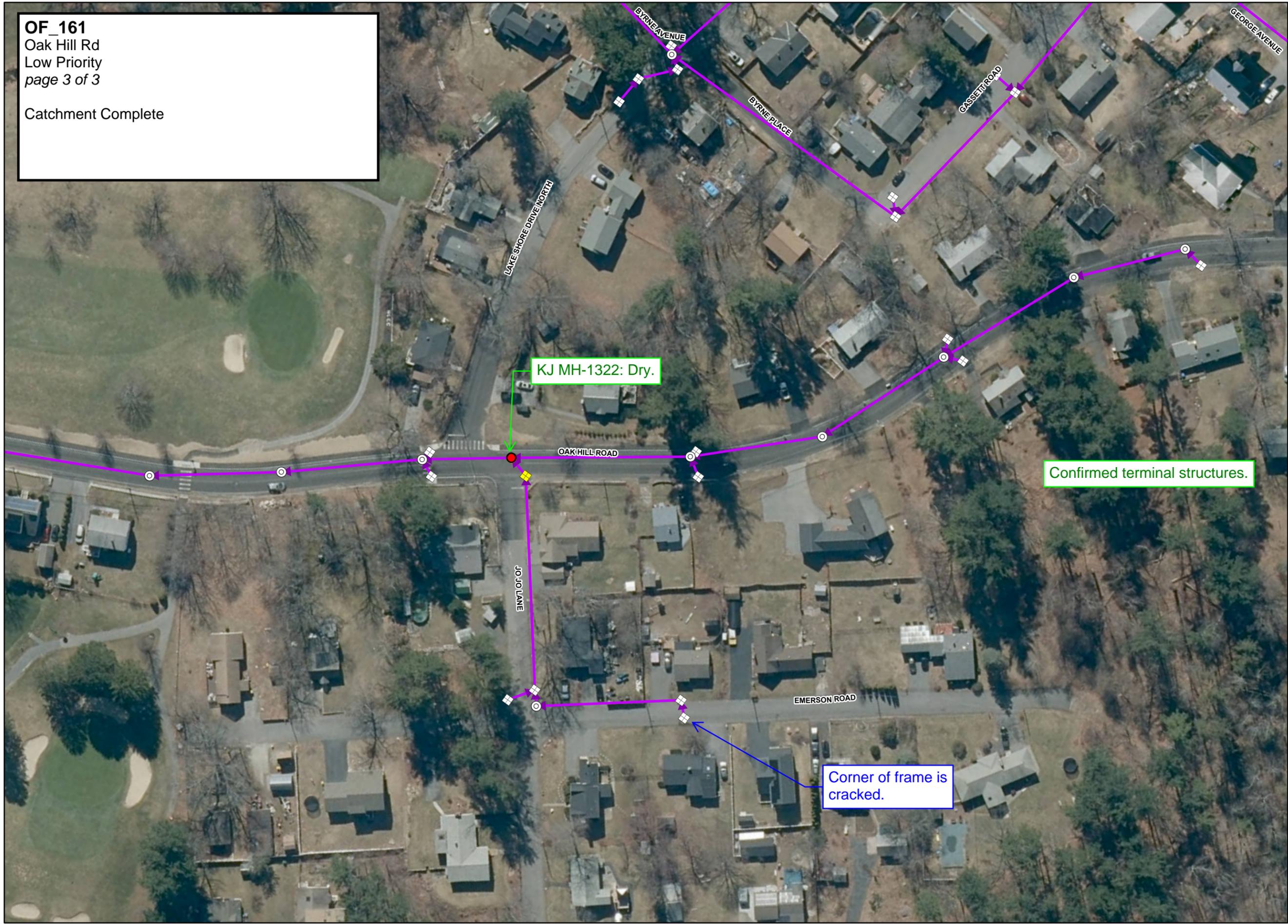
1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

Catchment Area of OF_161
Westford, Massachusetts

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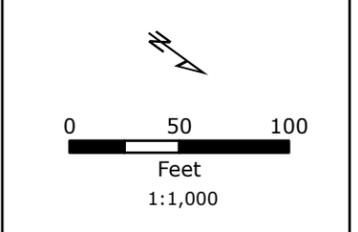
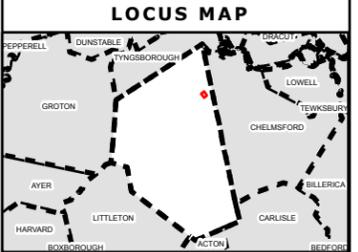
OF_161
 Oak Hill Rd
 Low Priority
 page 3 of 3
 Catchment Complete



STORMWATER CATCHMENTS OF_161

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- ⊙ Key Junction Catch Basin
- ⊙ Junction Catch Basin
- ⊙ Catch Basin
- Inlet
- Outlet
- Water Quality Inlet
- Flared End Section
- Overflow Structure
- Other
- ✱ BMP Location
- ➔ Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon



NOTES

1. Based on MassGIS Color Orthophotography (2023)
2. Stormwater Data Provided by the Town of Westford (2025)

Catchment Area of OF_161
Westford, Massachusetts

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Potential Interconnection IC-13
 Chandler Rd at Joco Dr, Tyngsboro Westford Line

Potential interconnection determined to not exist - not include in Town's MS4 inventory.

IC-6
 Chandler Rd
 Low Priority

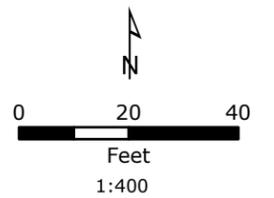
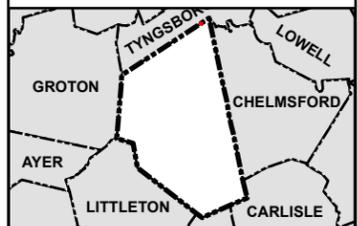
Catchment Complete

CATCHMENT INVESTIGATIONS GROUP 4

LEGEND

- Outfall
- BMP Structure
- Culvert Inlet/Outlet
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Drainage Features**
- Inlet
- Outlet
- Water Quality Inlet
- Flared End
- Leak Off
- Overflow Structure
- Unknown
- Interconnection
- Culvert
- Drain Pipe
- BMP Area
- Catchment Area
- Town Boundary

LOCUS MAP

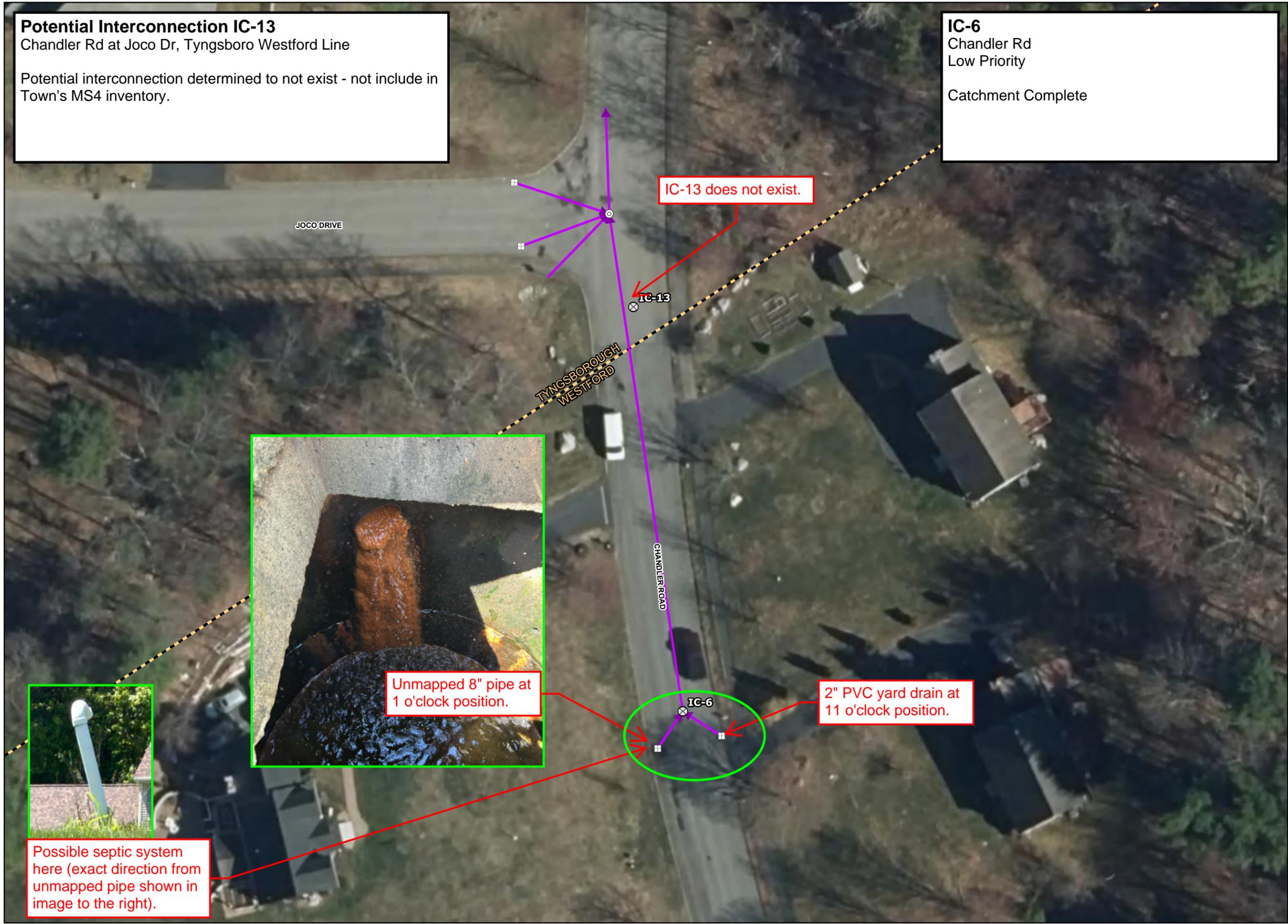


NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.

Catchment Area of IC-6 & IC-13

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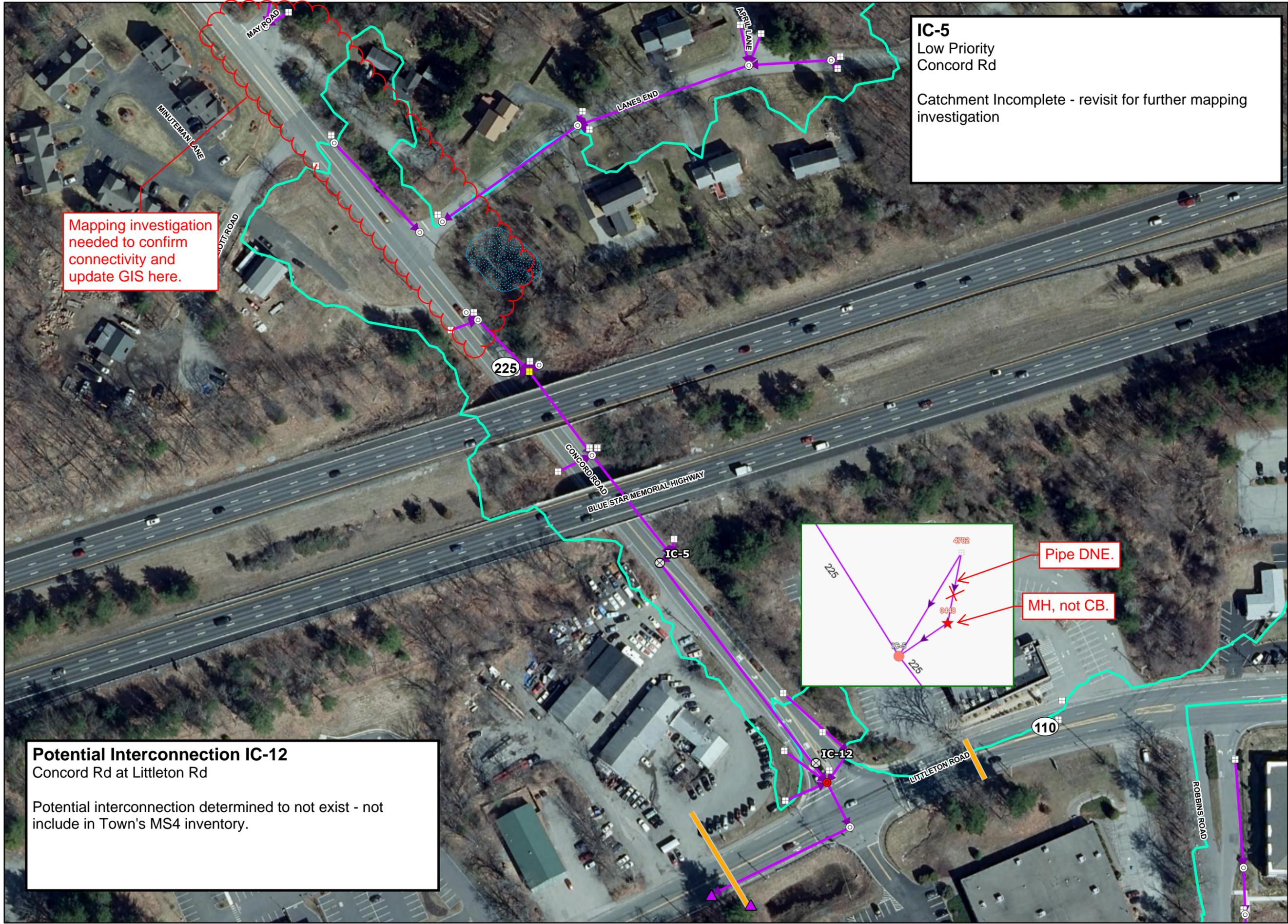
IC-13 does not exist.

Unmapped 8" pipe at 1 o'clock position.

2" PVC yard drain at 11 o'clock position.



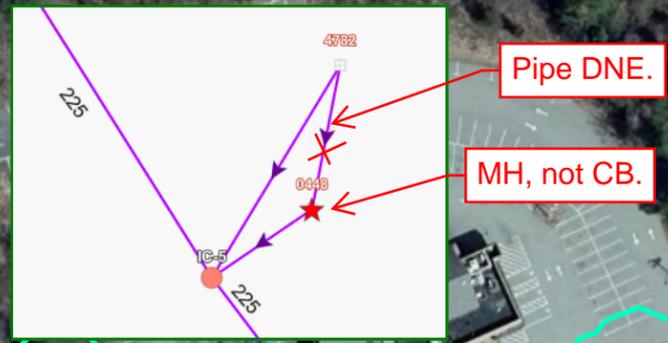
Possible septic system here (exact direction from unmapped pipe shown in image to the right).



IC-5
 Low Priority
 Concord Rd
 Catchment Incomplete - revisit for further mapping investigation

Mapping investigation needed to confirm connectivity and update GIS here.

Potential Interconnection IC-12
 Concord Rd at Littleton Rd
 Potential interconnection determined to not exist - not include in Town's MS4 inventory.

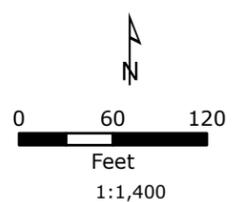
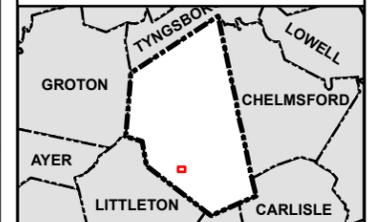


CATCHMENT INVESTIGATIONS GROUP 4

LEGEND

- ▲ Outfall
- ✳ BMP Structure
- Culvert Inlet/Outlet
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Drainage Features**
- Inlet
- Outlet
- Water Quality Inlet
- Flared End
- Leak Off
- Overflow Structure
- Unknown
- ⊗ Interconnection
- Culvert
- Drain Pipe
- BMP Area
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.

Catchment Area of IC-5 & IC-12



IC-3
 Low Priority
 Blakes Hill Rd
 Catchment Complete

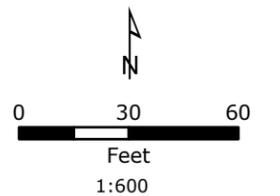
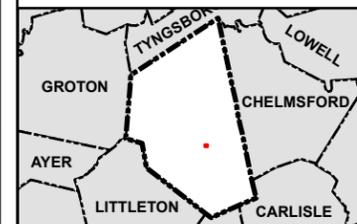
Potential Interconnection IC-10
 Boston Rd at Blakes Hill Rd
 Unconfirmed interconnection construct in area, revisit to investigation mapping after constructions concludes.

CATCHMENT INVESTIGATIONS GROUP 4

LEGEND

- Outfall
- BMP Structure
- Culvert Inlet/Outlet
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Drainage Features**
- Inlet
- Outlet
- Water Quality Inlet
- Flared End
- Leak Off
- Overflow Structure
- Unknown
- Interconnection
- Culvert
- Drain Pipe
- BMP Area
- Catchment Area
- Town Boundary

LOCUS MAP

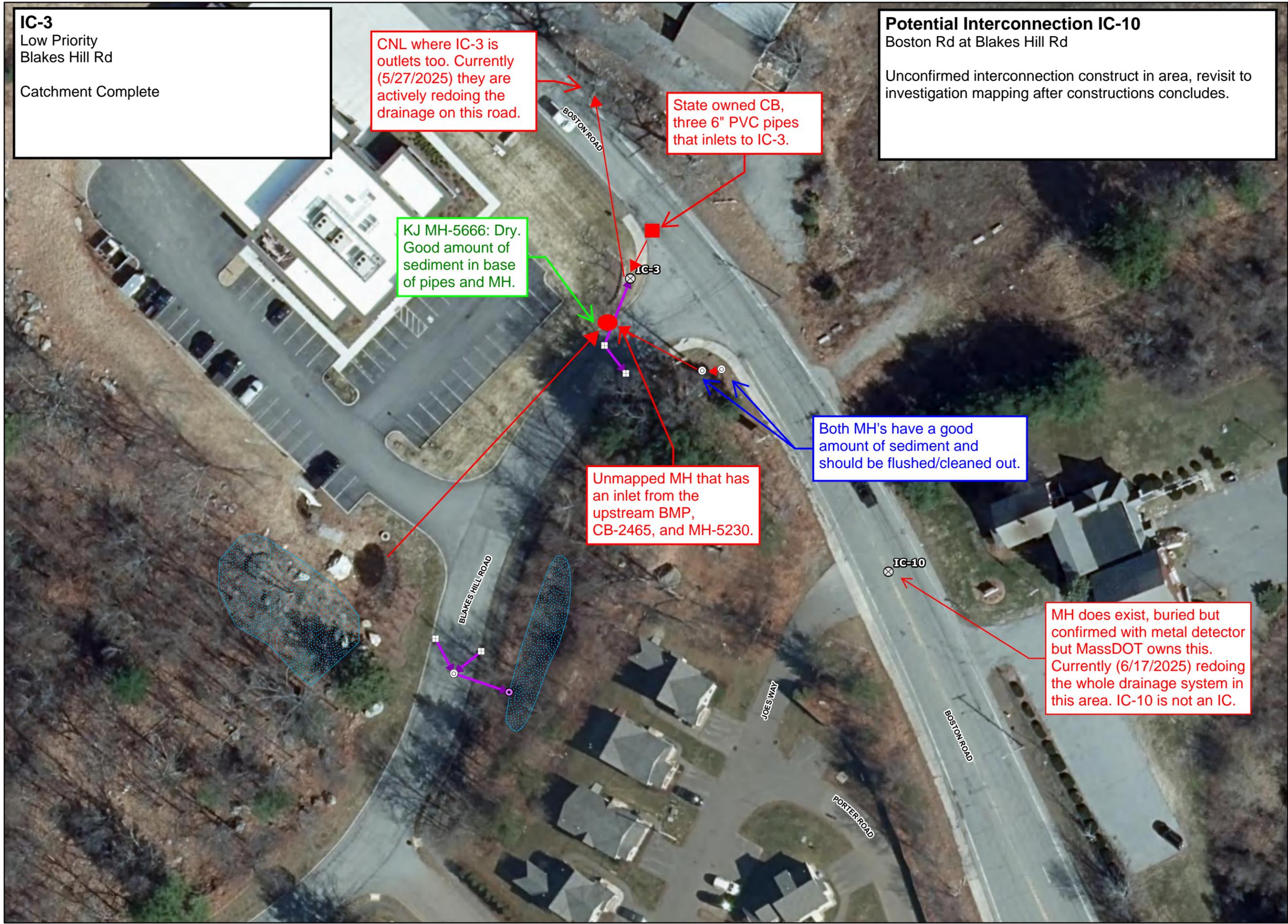


NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.

Catchment Area of IC-3 & IC-10

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CNL where IC-3 is outlets too. Currently (5/27/2025) they are actively redoing the drainage on this road.

State owned CB, three 6" PVC pipes that inlets to IC-3.

KJ MH-5666: Dry. Good amount of sediment in base of pipes and MH.

Both MH's have a good amount of sediment and should be flushed/cleaned out.

Unmapped MH that has an inlet from the upstream BMP, CB-2465, and MH-5230.

MH does exist, buried but confirmed with metal detector but MassDOT owns this. Currently (6/17/2025) redoing the whole drainage system in this area. IC-10 is not an IC.



Potential Interconnection IC-9
 Littleton Rd at Tadmuck Rd

N/A - Investigation Not Needed
 Potential interconnection determined to be not town-owned - not include in Town's MS4 inventory.

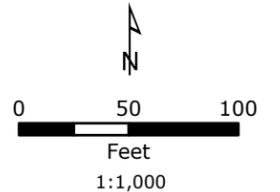
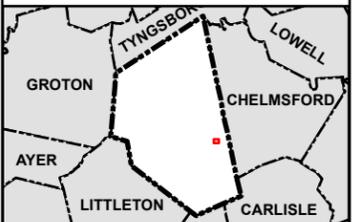
Both IC-9 and IC-2 MH's do exist, but all MassDOT owned. The MH's and CB's are bolted shut. Not maintained/owned by Town.

CATCHMENT INVESTIGATIONS GROUP 4

LEGEND

- ▲ Outfall
- ✱ BMP Structure
- Culvert Inlet/Outlet
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Drainage Features**
- Inlet
- Outlet
- Water Quality Inlet
- Flared End
- Leak Off
- Overflow Structure
- Unknown
- ⊗ Interconnection
- Culvert
- Drain Pipe
- BMP Area
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.

Catchment Area of IC-2 & IC-9

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Attachment E
Wet Weather Outfall Sampling Results Table

Westford PY7 Wet Weather Outfall Sampling Summary Table

Location					Laboratory Analysis ⁽¹⁾			Water Quality Meter/Test Kit ⁽¹⁾				
Date	Time	Outfall ID	Street	Sample Location (Outfall / Upstream MH)	Ammonia	Surfactants	E. coli	Temperature	Temperature	Salinity	Conductivity	Chlorine
					mg/L	mg/L	CFU/100mL	°C	°F	ppt	µS/cm ⁽²⁾	mg/L
3/17/2025	07:46	OF_10	65 Main St (Roudenbush Community Center)	Outfall	ND	0.08	72.27	10.1	50.18	0.35	720	0.07
3/17/2025	08:29	OF_86	65 Main St (Roudenbush Community Center)	Outfall	ND	0.1	123.56	11.8	53.2	0.03	52.3	0.00
3/17/2025	08:38	OF_85	65 Main St (Roudenbush Community Center)	Outfall	ND	0.17	123.56	11.4	52.5	0.07	154.4	0.00
3/17/2025	09:26	FW-5195 (OF_1000)	1 Coakley Circle (Stony Brook School)	Upstream BMP	ND	0.14	1	11.8	53.2	0.19	402.3	0.07
3/17/2025	10:12	OF_41	Vineyard Rd at Mitchell Way (Rita Edwards Miller School)	Outfall	ND	ND	2.02	11.1	52.0	0.20	414.3	0.05
3/17/2025	10:17	FW-5252 (OF_41)	Vineyard Rd at Mitchell Way (Rita Edwards Miller School)	Upstream BMP	ND	ND	726.99	10.8	51.4	0.25	514	0.51
3/17/2025	11:06	OF_317B	25 Depot St (Abbott School / Millennium School)	Outfall	0.098	0.050	8.44	13.1	55.6	0.70	1387	0.23
3/17/2025	10:41	OF_318	25 Depot St (Abbott School / Millennium School)	Outfall	ND	0.05	21.57	7.3	45.1	0.30	613	0.06
3/17/2025	12:38	OF_383	4 Stoneview Dr	Outfall	ND	ND	18.69	10	50.0	0.20	419.5	0.00
3/17/2025	13:06	OF_423	3 Chicory Rd	Outfall	ND	ND	71.16	7.8	46.0	0.23	483.3	0.00
3/17/2025	13:52	UNK-56	18 Casie Lane	Upstream BMP	ND	ND	15.96	8.5	47.3	0.62	1241.0	0.15
3/17/2025	14:16	New4.24	Magnolia Dr near Greenbier Dr	Outfall	ND	ND	4.13	9.0	48.2	0.29	609.0	0.20
5/6/2025	08:42	OF_83	25 Depot St (Abbott School / Millennium School)	Outfall	0.172	ND	8.52	11.3	52.3	0.24	496.3	0.00
5/6/2025	11:20	OF_44	75 East Prescott St (Norman E. Day School)	Upstream MH	0.084	ND	50.39	14.6	58.3	0.02	46.3	0.01
5/6/2025	13:46	OF_45	75 East Prescott St (Norman E. Day School)	Outfall	0.212	0.050	648.82	13.0	55.4	0.01	21.4	0.00
5/6/2025	14:11	OF_424	30 Magnolia Rd	Outfall	0.260	0.140	980.39	14.2	57.6	0.06	128.1	0.06

REPORTING LIMITS

Ammonia = 0.075 mg/L
 Surfactants = 0.050 mg/L
 E. coli = 2 CFU/100mL
 Total Phosphorus = 0.01 mg/L
 "ND" = none detected

COLOR KEY (benchmarks are bold)								
	Ammonia	Surfactants	E. coli		Temperature	Salinity	Conductivity	Chlorine
	mg/L	mg/L	CFU/100 mL		°F	ppt	µS/cm	mg/L
	≥ 6.000	≥ 1.00	≥ 10,000			≥ 1.00	≥ 2,000	≥ 1.00
	≥ 1.000	≥ 0.50	≥ 1,260			≥ 0.75	≥ 1,500	≥ 0.30
	≥ 0.500	≥ 0.25	≥ 410		≥ 83.0	≥ 0.50	≥ 1,000	≥ 0.02
	< 0.5	< 0.25	< 410		< 83	< 0.5	< 1,000	< 0.02

Notes for Results Summary:

(1) "-" means no analysis was completed
 (2) µS/cm is equivalent to µmhos/cm

Benchmark Sources:

Ammonia, Surfactants, and Chlorine - *EPA General Permit for Stormwater Discharges from Small MS4 in Massachusetts*
 Temperature, and Dissolved Oxygen - *314 CMR 4.00: Massachusetts Surface Water Quality Standards*
 E.coli and Fecal Coliform - *MassDEP Surface Water Quality Criteria for Bacteria (CN 563.0)*
 Total Phosphorus - *EPA Ambient Water Quality Criteria Recommendations for Rivers and Streams in Nutrient Ecoregion XIV*
 Salinity - *EPA Volunteer Estuary Monitoring: A Methods Manual*
 Conductivity - *Center for Watershed Protection Illicit discharge Detection and Elimination Guidance Manual*

Attachment F
Laboratory Reports



ANALYTICAL REPORT

Lab Number:	L2515108
Client:	Tighe & Bond, Inc. One University Avenue Suite 100 Westwood, MA 02090
ATTN:	Evelyn Ramos
Phone:	(781) 375-2576
Project Name:	OUTFALL SAMPLING
Project Number:	W5005-0043
Report Date:	03/28/25

The original project report/data package is held by Pace Analytical Services. This report/data package is paginated and should be reproduced only in its entirety. Pace Analytical Services holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930A1).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2515108
Report Date: 03/28/25

Lab Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2515108-01	OF-10	WATER	WESTFORD, MA	03/17/25 08:00	03/17/25
L2515108-02	OF-86	WATER	WESTFORD, MA	03/17/25 08:20	03/17/25
L2515108-03	OF-85	WATER	WESTFORD, MA	03/17/25 08:20	03/17/25
L2515108-04	FW-5195	WATER	WESTFORD, MA	03/17/25 09:30	03/17/25
L2515108-05	OF-41	WATER	WESTFORD, MA	03/17/25 10:05	03/17/25
L2515108-06	FW-5252	WATER	WESTFORD, MA	03/17/25 10:10	03/17/25
L2515108-07	OF-318	WATER	WESTFORD, MA	03/17/25 10:30	03/17/25
L2515108-08	OF-317B	WATER	WESTFORD, MA	03/17/25 11:00	03/17/25

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2515108
Report Date: 03/28/25

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Pace Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments and solids are reported on a dry weight basis unless otherwise noted. Tissues are reported "as received" or on a wet weight basis, unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Pace's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Pace Project Manager and made arrangements for Pace to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2515108
Report Date: 03/28/25

Case Narrative (continued)

Nitrogen, Ammonia

L2515108-03: The sample has an elevated detection limit due to the dilution required by the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 03/28/25

INORGANICS & MISCELLANEOUS

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2515108
Report Date: 03/28/25

SAMPLE RESULTS

Lab ID: L2515108-01
Client ID: OF-10
Sample Location: WESTFORD, MA

Date Collected: 03/17/25 08:00
Date Received: 03/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MPN)	72.27		MPN/100ml	1	NA	1	-	03/17/25 15:34	121,9223B	JRG
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	03/26/25 22:42	03/27/25 10:39	44,350.1	KEM
Surfactants, MBAS	0.080		mg/l	0.050	--	1	03/18/25 05:00	03/18/25 10:14	121,5540C	CAR



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2515108
Report Date: 03/28/25

SAMPLE RESULTS

Lab ID: L2515108-02
Client ID: OF-86
Sample Location: WESTFORD, MA

Date Collected: 03/17/25 08:20
Date Received: 03/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MPN)	123.56		MPN/100ml	1	NA	1	-	03/17/25 15:34	121,9223B	JRG
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	03/26/25 22:42	03/27/25 10:40	44,350.1	KEM
Surfactants, MBAS	0.100		mg/l	0.050	--	1	03/18/25 05:00	03/18/25 10:15	121,5540C	CAR



Project Name: OUTFALL SAMPLING

Lab Number: L2515108

Project Number: W5005-0043

Report Date: 03/28/25

SAMPLE RESULTS

Lab ID: L2515108-03

Date Collected: 03/17/25 08:20

Client ID: OF-85

Date Received: 03/17/25

Sample Location: WESTFORD, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MPN)	123.56		MPN/100ml	1	NA	1	-	03/17/25 15:34	121,9223B	JRG
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	ND		mg/l	0.150	--	2	03/26/25 22:42	03/27/25 10:41	44,350.1	KEM
Surfactants, MBAS	0.170		mg/l	0.050	--	1	03/18/25 05:00	03/18/25 10:15	121,5540C	CAR



Project Name: OUTFALL SAMPLING

Project Number: W5005-0043

Lab Number: L2515108

Report Date: 03/28/25

SAMPLE RESULTS

Lab ID: L2515108-04

Client ID: FW-5195

Sample Location: WESTFORD, MA

Date Collected: 03/17/25 09:30

Date Received: 03/17/25

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MPN)	1		MPN/100ml	1	NA	1	-	03/17/25 15:34	121,9223B	JRG
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	03/26/25 22:42	03/27/25 10:42	44,350.1	KEM
Surfactants, MBAS	0.140		mg/l	0.050	--	1	03/18/25 05:00	03/18/25 10:17	121,5540C	CAR



Project Name: OUTFALL SAMPLING

Lab Number: L2515108

Project Number: W5005-0043

Report Date: 03/28/25

SAMPLE RESULTS

Lab ID: L2515108-05

Date Collected: 03/17/25 10:05

Client ID: OF-41

Date Received: 03/17/25

Sample Location: WESTFORD, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MPN)	2.02		MPN/100ml	1	NA	1	-	03/17/25 17:10	121,9223B	JRG
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	03/26/25 22:42	03/27/25 10:43	44,350.1	KEM
Surfactants, MBAS	ND		mg/l	0.050	--	1	03/18/25 05:00	03/18/25 10:17	121,5540C	CAR



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2515108
Report Date: 03/28/25

SAMPLE RESULTS

Lab ID: L2515108-06
Client ID: FW-5252
Sample Location: WESTFORD, MA

Date Collected: 03/17/25 10:10
Date Received: 03/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MPN)	726.99		MPN/100ml	1	NA	1	-	03/17/25 17:10	121,9223B	JRG
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	03/27/25 22:30	03/28/25 08:30	44,350.1	KEM
Surfactants, MBAS	ND		mg/l	0.050	--	1	03/18/25 05:00	03/18/25 10:17	121,5540C	CAR



Project Name: OUTFALL SAMPLING

Project Number: W5005-0043

Lab Number: L2515108

Report Date: 03/28/25

SAMPLE RESULTS

Lab ID: L2515108-07

Client ID: OF-318

Sample Location: WESTFORD, MA

Date Collected: 03/17/25 10:30

Date Received: 03/17/25

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MPN)	21.57		MPN/100ml	1	NA	1	-	03/17/25 17:10	121,9223B	JRG
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	03/27/25 22:30	03/28/25 08:31	44,350.1	KEM
Surfactants, MBAS	0.050		mg/l	0.050	--	1	03/18/25 05:00	03/18/25 10:18	121,5540C	CAR



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2515108
Report Date: 03/28/25

SAMPLE RESULTS

Lab ID: L2515108-08
Client ID: OF-317B
Sample Location: WESTFORD, MA

Date Collected: 03/17/25 11:00
Date Received: 03/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MPN)	8.44		MPN/100ml	1	NA	1	-	03/17/25 17:10	121,9223B	JRG
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	0.098		mg/l	0.075	--	1	03/27/25 22:30	03/28/25 08:32	44,350.1	KEM
Surfactants, MBAS	0.050		mg/l	0.050	--	1	03/18/25 05:00	03/18/25 10:19	121,5540C	CAR



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2515108
Report Date: 03/28/25

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab for sample(s): 01-04 Batch: WG2041552-1										
E. Coli (MPN)	<1		MPN/100ml	1	NA	1	-	03/17/25 15:34	121,9223B	JRG
Microbiological Analysis - Westborough Lab for sample(s): 05-08 Batch: WG2041587-1										
E. Coli (MPN)	<1		MPN/100ml	1	NA	1	-	03/17/25 17:10	121,9223B	JRG
General Chemistry - Westborough Lab for sample(s): 01-08 Batch: WG2041856-1										
Surfactants, MBAS	ND		mg/l	0.050	--	1	03/18/25 05:00	03/18/25 10:10	121,5540C	CAR
General Chemistry - Westborough Lab for sample(s): 01-05 Batch: WG2045556-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	03/26/25 22:42	03/27/25 10:30	44,350.1	KEM
General Chemistry - Westborough Lab for sample(s): 06-08 Batch: WG2046103-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	03/27/25 22:30	03/28/25 08:26	44,350.1	KEM



Lab Control Sample Analysis Batch Quality Control

Project Name: OUTFALL SAMPLING

Project Number: W5005-0043

Lab Number: L2515108

Report Date: 03/28/25

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
General Chemistry - Westborough Lab Associated sample(s): 01-08 Batch: WG2041856-2								
Surfactants, MBAS	96		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01-05 Batch: WG2045556-2								
Nitrogen, Ammonia	93		-		90-110	-		20
General Chemistry - Westborough Lab Associated sample(s): 06-08 Batch: WG2046103-2								
Nitrogen, Ammonia	100		-		90-110	-		20

Matrix Spike Analysis Batch Quality Control

Project Name: OUTFALL SAMPLING

Lab Number: L2515108

Project Number: W5005-0043

Report Date: 03/28/25

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-08 QC Batch ID: WG2041856-4 QC Sample: L2515108-06 Client ID: FW-5252												
Surfactants, MBAS	ND	0.4	0.440	110	-	-	-	-	52-157	-	-	32
General Chemistry - Westborough Lab Associated sample(s): 01-05 QC Batch ID: WG2045556-4 QC Sample: L2515108-05 Client ID: OF-41												
Nitrogen, Ammonia	ND	4	4.38	110	-	-	-	-	90-110	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 06-08 QC Batch ID: WG2046103-4 QC Sample: L2515232-01 Client ID: MS Sample												
Nitrogen, Ammonia	ND	4	4.65	116	Q	-	-	-	90-110	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 06-08 QC Batch ID: WG2046103-6 QC Sample: L2515382-02 Client ID: MS Sample												
Nitrogen, Ammonia	ND	4	4.16	104	-	-	-	-	90-110	-	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: OUTFALL SAMPLING

Project Number: W5005-0043

Lab Number: L2515108

Report Date: 03/28/25

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-08 QC Batch ID: WG2041856-3 QC Sample: L2515108-06 Client ID: FW-5252						
Surfactants, MBAS	ND	ND	mg/l	NC		32
General Chemistry - Westborough Lab Associated sample(s): 01-05 QC Batch ID: WG2045556-3 QC Sample: L2515108-05 Client ID: OF-41						
Nitrogen, Ammonia	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 06-08 QC Batch ID: WG2046103-3 QC Sample: L2515232-01 Client ID: DUP Sample						
Nitrogen, Ammonia	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 06-08 QC Batch ID: WG2046103-5 QC Sample: L2515382-02 Client ID: DUP Sample						
Nitrogen, Ammonia	ND	ND	mg/l	NC		20

Project Name: OUTFALL SAMPLING**Lab Number:** L2515108**Project Number:** W5005-0043**Report Date:** 03/28/25**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2515108-01A	Bacteria Cup Na2S2O3 preserved	A	NA		4.2	Y	Absent		E-COLI-QT(.33)
L2515108-01B	Plastic 500ml H2SO4 preserved	A	<2	<2	4.2	Y	Absent		NH3-350(28)
L2515108-01C	Plastic 950ml unpreserved	A	6	6	4.2	Y	Absent		MBAS-5540(2)
L2515108-02A	Bacteria Cup Na2S2O3 preserved	A	NA		4.2	Y	Absent		E-COLI-QT(.33)
L2515108-02B	Plastic 500ml H2SO4 preserved	A	<2	<2	4.2	Y	Absent		NH3-350(28)
L2515108-02C	Plastic 950ml unpreserved	A	6	6	4.2	Y	Absent		MBAS-5540(2)
L2515108-03A	Bacteria Cup Na2S2O3 preserved	A	NA		4.2	Y	Absent		E-COLI-QT(.33)
L2515108-03B	Plastic 500ml H2SO4 preserved	A	<2	<2	4.2	Y	Absent		NH3-350(28)
L2515108-03C	Plastic 950ml unpreserved	A	6	6	4.2	Y	Absent		MBAS-5540(2)
L2515108-04A	Bacteria Cup Na2S2O3 preserved	A	NA		4.2	Y	Absent		E-COLI-QT(.33)
L2515108-04B	Plastic 500ml H2SO4 preserved	A	<2	<2	4.2	Y	Absent		NH3-350(28)
L2515108-04C	Plastic 950ml unpreserved	A	6	6	4.2	Y	Absent		MBAS-5540(2)
L2515108-05A	Bacteria Cup Na2S2O3 preserved	A	NA		4.2	Y	Absent		E-COLI-QT(.33)
L2515108-05B	Plastic 500ml H2SO4 preserved	A	<2	<2	4.2	Y	Absent		NH3-350(28)
L2515108-05C	Plastic 950ml unpreserved	A	6	6	4.2	Y	Absent		MBAS-5540(2)
L2515108-06A	Bacteria Cup Na2S2O3 preserved	A	NA		4.2	Y	Absent		E-COLI-QT(.33)
L2515108-06B	Plastic 500ml H2SO4 preserved	A	<2	<2	4.2	Y	Absent		NH3-350(28)
L2515108-06C	Plastic 950ml unpreserved	A	6	6	4.2	Y	Absent		MBAS-5540(2)
L2515108-07A	Bacteria Cup Na2S2O3 preserved	A	NA		4.2	Y	Absent		E-COLI-QT(.33)
L2515108-07B	Plastic 500ml H2SO4 preserved	A	<2	<2	4.2	Y	Absent		NH3-350(28)
L2515108-07C	Plastic 950ml unpreserved	A	6	6	4.2	Y	Absent		MBAS-5540(2)
L2515108-08A	Bacteria Cup Na2S2O3 preserved	A	NA		4.2	Y	Absent		E-COLI-QT(.33)
L2515108-08B	Plastic 500ml H2SO4 preserved	A	<2	<2	4.2	Y	Absent		NH3-350(28)

Project Name: OUTFALL SAMPLING

Project Number: W5005-0043

Serial_No:03282511:59

Lab Number: L2515108

Report Date: 03/28/25

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2515108-08C	Plastic 950ml unpreserved	A	6	6	4.2	Y	Absent		MBAS-5540(2)

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2515108
Report Date: 03/28/25

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2515108
Report Date: 03/28/25

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2515108
Report Date: 03/28/25

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2515108
Report Date: 03/28/25

REFERENCES

- 44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Pace Analytical Services performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Pace Analytical Services shall be to re-perform the work at it's own expense. In no event shall Pace Analytical Services be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Pace Analytical Services.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581

EPA 624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625.1: alpha-Terpineol

EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol, Azobenzene; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

SM 2540D: TSS.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

MADEP-APH.

Nonpotable Water: EPA RSK-175 Dissolved Gases

Biological Tissue Matrix: EPA 3050B

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Nonpotable Water: EPA RSK-175 Dissolved Gases

The following test method is not included in our New Jersey Secondary NELAP Scope of Accreditation:

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

Determination of Selected Perfluorinated Alkyl Substances by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry Isotope Dilution (via Alpha SOP 23528)

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables).

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, EPA 1600, EPA 1603, SM9222D.

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

Pace Analytical Services LLC

ID No.:17873

Facility: **Northeast**

Revision 27

Department: **Quality Assurance**

Published Date: 01/24/2025

Title: **Certificate/Approval Program Summary**

Page 2 of 2

Certification IDs:**Westborough Facility – 8 Walkup Dr. Westborough, MA 01581**

CT PH-0826, IL 200077, IN C-MA-03, KY JY98045, ME MA00086, MD 348, MA M-MA086, NH 2064, NJ MA935, NY 11148, NC (DW) 25700, NC (NPW/SCM) 666, OR MA-1316, PA 68-03671, RI LAO00065, TX T104704476, VT VT-0935, VA 460195

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

CT PH-0825, ANAB/DoD L2474, IL 200081, IN C-MA-04, KY KY98046, LA 3090, ME MA00030, MI 9110, MN 025-999-495, NH 2062, NJ MA015, NY 11627, NC (NPW/SCM) 685, OR MA-0262, PA 68-02089, RI LAO00299, TX T-104704419, VT VT-0015, VA 460194, WA C954

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048

ANAB/DoD L2474, ME MA01156, MN 025-999-498, NH 2249, NJ MA025, NY 12191, OR 4203, TX T104704583, VA 460311, WA C1104.

For a complete listing of analytes and methods, please contact your Project Manager.

L2515108
TIGHE - W



CHAIN OF CUSTODY

PAGE OF

Project Information

Westborough, MA Mansfield, MA
TEL: 508-898-9220 TEL: 508-822-9300
FAX: 508-898-9193 FAX: 508-822-3288

Project Name: Outfall Sampling

Client Information

Client: Tighe & Bond, Attn: Evelyn Ramos
Address: 120 Front Street #700
Worcester, MA 01608
Phone: 781-375-2576
Fax:
Email: ERamos@TigheBond.com

Project Location: Westford, MA

Project #: W5005-0043

Project Manager: Evelyn Ramos

ALPHA Quote #:

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)

These samples have been Previously analyzed by Alpha Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:
Send Results to ERamos@TigheBond.com and eolson@tighebond.com

Date Rec'd in Lab: 3/17/25

Report Information Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed Program: Small MS4 Permit Massachusetts

Criteria: Wet Weather Outfall Screening

ANALYSIS

Surfactants (5540C)	Ammonia (350.1)	E. Coli (9223)	Enterococcus (1600)	Fecal Coliform (9222D)	BOD5 (5210B)	Total Phosphorus (4500P-E)											
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SAMPLE HANDLING
Filtration
 Done
 Not Needed
 Lab to do
Preservation
 Lab to do
(Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
1510801	OF-10	3/17/25	8:00AM		CLG
-02	OF-86	3/17/25	8:20AM		CLG
-63	OF-85	3/17/25	8:20AM		CLG
-04	FW-5195	3/17/25	9:30AM		CLG
-05	OF-41	3/17/25	10:05AM		CLG
-06	FW-5252	3/17/25	10:10AM		CLG
-07	OF-218	3/17/25	10:30AM		CLG
-08	OF-317B	3/17/25	11:00AM		CLG

Container Type	P	P	B	B	B	P	P	-	-	-	-	-
Preservative	A	D	H	H	H	A	D	-	-	-	-	-

Relinquished By: *Rob Mesto* Date/Time: 3/17/25 12:15
 Received By: *Rob Mesto* Date/Time: 3/17/25 10:10

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



ANALYTICAL REPORT

Lab Number:	L2515246
Client:	Tighe & Bond, Inc. One University Avenue Suite 100 Westwood, MA 02090
ATTN:	Evelyn Ramos
Phone:	(781) 375-2576
Project Name:	OUTFALL SAMPLING
Project Number:	W5005-0043
Report Date:	03/28/25

The original project report/data package is held by Pace Analytical Services. This report/data package is paginated and should be reproduced only in its entirety. Pace Analytical Services holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930A1).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2515246
Report Date: 03/28/25

Lab Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2515246-01	OF-383	WATER	WESTFORD, MA	03/17/25 12:30	03/17/25
L2515246-02	OF-423	WATER	WESTFORD, MA	03/17/25 13:00	03/17/25
L2515246-03	UNK-55	WATER	WESTFORD, MA	03/17/25 13:30	03/17/25
L2515246-04	NEW 4.24	WATER	WESTFORD, MA	03/17/25 14:00	03/17/25

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2515246
Report Date: 03/28/25

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Pace Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments and solids are reported on a dry weight basis unless otherwise noted. Tissues are reported "as received" or on a wet weight basis, unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Pace's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Pace Project Manager and made arrangements for Pace to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 03/28/25

INORGANICS & MISCELLANEOUS

Project Name: OUTFALL SAMPLING

Project Number: W5005-0043

Lab Number: L2515246

Report Date: 03/28/25

SAMPLE RESULTS

Lab ID: L2515246-01

Client ID: OF-383

Sample Location: WESTFORD, MA

Date Collected: 03/17/25 12:30

Date Received: 03/17/25

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MPN)	18.69		MPN/100ml	1	NA	1	-	03/17/25 19:24	121,9223B	JRG
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	03/27/25 22:30	03/28/25 08:48	44,350.1	KEM
Surfactants, MBAS	ND		mg/l	0.050	--	1	03/19/25 01:15	03/19/25 06:08	121,5540C	CAR



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2515246
Report Date: 03/28/25

SAMPLE RESULTS

Lab ID: L2515246-02
Client ID: OF-423
Sample Location: WESTFORD, MA

Date Collected: 03/17/25 13:00
Date Received: 03/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MPN)	71.16		MPN/100ml	1	NA	1	-	03/17/25 19:24	121,9223B	JRG
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	03/27/25 22:30	03/28/25 08:49	44,350.1	KEM
Surfactants, MBAS	ND		mg/l	0.050	--	1	03/19/25 01:15	03/19/25 06:08	121,5540C	CAR



Project Name: OUTFALL SAMPLING

Project Number: W5005-0043

Lab Number: L2515246

Report Date: 03/28/25

SAMPLE RESULTS

Lab ID: L2515246-03

Client ID: UNK-55

Sample Location: WESTFORD, MA

Date Collected: 03/17/25 13:30

Date Received: 03/17/25

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MPN)	15.96		MPN/100ml	1	NA	1	-	03/17/25 19:24	121,9223B	JRG
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	03/27/25 22:30	03/28/25 08:50	44,350.1	KEM
Surfactants, MBAS	ND		mg/l	0.050	--	1	03/19/25 01:15	03/19/25 06:09	121,5540C	CAR



Project Name: OUTFALL SAMPLING

Lab Number: L2515246

Project Number: W5005-0043

Report Date: 03/28/25

SAMPLE RESULTS

Lab ID: L2515246-04

Date Collected: 03/17/25 14:00

Client ID: NEW 4.24

Date Received: 03/17/25

Sample Location: WESTFORD, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MPN)	4.13		MPN/100ml	1	NA	1	-	03/17/25 19:24	121,9223B	JRG
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	03/27/25 22:30	03/28/25 08:51	44,350.1	KEM
Surfactants, MBAS	ND		mg/l	0.050	--	1	03/19/25 01:15	03/19/25 06:09	121,5540C	CAR



Project Name: OUTFALL SAMPLING

Lab Number: L2515246

Project Number: W5005-0043

Report Date: 03/28/25

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab for sample(s): 01-04 Batch: WG2041628-1										
E. Coli (MPN)	<1		MPN/100ml	1	NA	1	-	03/17/25 19:24	121,9223B	JRG
General Chemistry - Westborough Lab for sample(s): 01-04 Batch: WG2042276-1										
Surfactants, MBAS	ND		mg/l	0.050	--	1	03/19/25 01:15	03/19/25 06:03	121,5540C	CAR
General Chemistry - Westborough Lab for sample(s): 01-04 Batch: WG2046103-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	03/27/25 22:30	03/28/25 08:26	44,350.1	KEM



Lab Control Sample Analysis Batch Quality Control

Project Name: OUTFALL SAMPLING

Project Number: W5005-0043

Lab Number: L2515246

Report Date: 03/28/25

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
General Chemistry - Westborough Lab Associated sample(s): 01-04 Batch: WG2042276-2								
Surfactants, MBAS	96		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01-04 Batch: WG2046103-2								
Nitrogen, Ammonia	100		-		90-110	-		20

Matrix Spike Analysis Batch Quality Control

Project Name: OUTFALL SAMPLING

Lab Number: L2515246

Project Number: W5005-0043

Report Date: 03/28/25

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG2042276-4 QC Sample: L2515578-01 Client ID: MS Sample												
Surfactants, MBAS	ND	0.4	0.410	102		-	-		52-157	-		32
General Chemistry - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG2046103-4 QC Sample: L2515232-01 Client ID: MS Sample												
Nitrogen, Ammonia	ND	4	4.65	116	Q	-	-		90-110	-		20
General Chemistry - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG2046103-6 QC Sample: L2515382-02 Client ID: MS Sample												
Nitrogen, Ammonia	ND	4	4.16	104		-	-		90-110	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: OUTFALL SAMPLING

Project Number: W5005-0043

Lab Number: L2515246

Report Date: 03/28/25

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG2042276-3 QC Sample: L2515578-01 Client ID: DUP Sample						
Surfactants, MBAS	ND	ND	mg/l	NC		32
General Chemistry - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG2046103-3 QC Sample: L2515232-01 Client ID: DUP Sample						
Nitrogen, Ammonia	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG2046103-5 QC Sample: L2515382-02 Client ID: DUP Sample						
Nitrogen, Ammonia	ND	ND	mg/l	NC		20

Project Name: OUTFALL SAMPLING**Lab Number:** L2515246**Project Number:** W5005-0043**Report Date:** 03/28/25**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2515246-01A	Bacteria Cup Na2S2O3 preserved	A	NA		2.8	Y	Absent		E-COLI-QT(.33)
L2515246-01B	Plastic 500ml H2SO4 preserved	A	<2	<2	2.8	Y	Absent		NH3-350(28)
L2515246-01C	Plastic 950ml unpreserved	A	7	7	2.8	Y	Absent		MBAS-5540(2)
L2515246-02A	Bacteria Cup Na2S2O3 preserved	A	NA		2.8	Y	Absent		E-COLI-QT(.33)
L2515246-02B	Plastic 500ml H2SO4 preserved	A	<2	<2	2.8	Y	Absent		NH3-350(28)
L2515246-02C	Plastic 950ml unpreserved	A	7	7	2.8	Y	Absent		MBAS-5540(2)
L2515246-03A	Bacteria Cup Na2S2O3 preserved	A	NA		2.8	Y	Absent		E-COLI-QT(.33)
L2515246-03B	Plastic 500ml H2SO4 preserved	A	<2	<2	2.8	Y	Absent		NH3-350(28)
L2515246-03C	Plastic 950ml unpreserved	A	7	7	2.8	Y	Absent		MBAS-5540(2)
L2515246-04A	Bacteria Cup Na2S2O3 preserved	A	NA		2.8	Y	Absent		E-COLI-QT(.33)
L2515246-04B	Plastic 500ml H2SO4 preserved	A	<2	<2	2.8	Y	Absent		NH3-350(28)
L2515246-04C	Plastic 950ml unpreserved	A	7	7	2.8	Y	Absent		MBAS-5540(2)

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2515246
Report Date: 03/28/25

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2515246
Report Date: 03/28/25

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2515246
Report Date: 03/28/25

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2515246
Report Date: 03/28/25

REFERENCES

- 44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Pace Analytical Services performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Pace Analytical Services shall be to re-perform the work at it's own expense. In no event shall Pace Analytical Services be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Pace Analytical Services.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581

EPA 624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625.1: alpha-Terpineol

EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol, Azobenzene; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

SM 2540D: TSS.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

MADEP-APH.

Nonpotable Water: EPA RSK-175 Dissolved Gases

Biological Tissue Matrix: EPA 3050B

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Nonpotable Water: EPA RSK-175 Dissolved Gases

The following test method is not included in our New Jersey Secondary NELAP Scope of Accreditation:

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

Determination of Selected Perfluorinated Alkyl Substances by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry Isotope Dilution (via Alpha SOP 23528)

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables).

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, EPA 1600, EPA 1603, SM9222D.

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

Pace Analytical Services LLC

ID No.:17873

Facility: **Northeast**

Revision 27

Department: **Quality Assurance**

Published Date: 01/24/2025

Title: **Certificate/Approval Program Summary**

Page 2 of 2

Certification IDs:**Westborough Facility – 8 Walkup Dr. Westborough, MA 01581**

CT PH-0826, IL 200077, IN C-MA-03, KY JY98045, ME MA00086, MD 348, MA M-MA086, NH 2064, NJ MA935, NY 11148, NC (DW) 25700, NC (NPW/SCM) 666, OR MA-1316, PA 68-03671, RI LAO00065, TX T104704476, VT VT-0935, VA 460195

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

CT PH-0825, ANAB/DoD L2474, IL 200081, IN C-MA-04, KY KY98046, LA 3090, ME MA00030, MI 9110, MN 025-999-495, NH 2062, NJ MA015, NY 11627, NC (NPW/SCM) 685, OR MA-0262, PA 68-02089, RI LAO00299, TX T-104704419, VT VT-0015, VA 460194, WA C954

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048

ANAB/DoD L2474, ME MA01156, MN 025-999-498, NH 2249, NJ MA025, NY 12191, OR 4203, TX T104704583, VA 460311, WA C1104.

For a complete listing of analytes and methods, please contact your Project Manager.



CHAIN OF CUSTODY

PAGE OF

Project Information

Project Name: Outfall Sampling

Project Location: Westford, MA

Project #: W5005-0043

Project Manager: Evelyn Ramos

ALPHA Quote #:

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA
 TEL: 508-898-9220 TEL: 508-822-9300
 FAX: 508-898-9193 FAX: 508-822-3288

Client Information

Client: Tighe & Bond, Attn: Evelyn Ramos

Address: 120 Front Street #700

Worcester, MA 01608

Phone: 781-375-2576

Fax: Standard Rush (ONLY IF PRE-APPROVED)

Email: ERamos@TigheBond.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Send Results to ERamos@TigheBond.com and eolson@tighebond.com

Date Rec'd in Lab: 3/17/25

ALPHA Job #: L2515246

Report Information Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client Info PO #:

Regulatory Requirements/Report Limits

State/Fed Program

Small MS4 Permit Massachusetts

Criteria

Wet Weather Outfall Screening

ANALYSIS

Surfactants (5540C)	Ammonia (350.1)	E. Coli (9223)	Enterococcus (1600)	Fecal Coliform (9222D)	BOD5 (5210B)	Total Phosphorus (4500P-E)									
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SAMPLE HANDLING
Filtration
 Done
 Not Needed
 Lab to do
Preservation
 Lab to do
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
15246-01	OF-383	3/17/25	12:30 PM		CLG
-02	OF-423	3/17/25	1:00 PM		CLG
-03	UNK-55	3/17/25	1:30 PM		CLG
-04	NEW4.24	3/17/25	2:00 PM		CLG

Container Type	P	P	B	B	B	P	P	-	-	-	-	-
Preservative	A	D	H	H	H	A	D	-	-	-	-	-

Relinquished By: *[Signature]* Date/Time: 4:06 PM 3/17/25
 Received By: *[Signature]* Date/Time: 3/17/25 1:06 PM

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



ANALYTICAL REPORT

Lab Number:	L2527754
Client:	Tighe & Bond, Inc. 120 Front Street Suite 700 Worcester, MA 01608
ATTN:	Cassandra LaRochelle
Phone:	(508) 471-9644
Project Name:	OUTFALL SAMPLING
Project Number:	W5005-0043
Report Date:	05/27/25

The original project report/data package is held by Pace Analytical Services. This report/data package is paginated and should be reproduced only in its entirety. Pace Analytical Services holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930A1).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2527754
Report Date: 05/27/25

Lab Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2527754-01	OF-83	WATER	WESTFORD, MA	05/06/25 08:50	05/06/25
L2527754-02	OF-44	WATER	WESTFORD, MA	05/06/25 11:00	05/06/25

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2527754
Report Date: 05/27/25

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Pace Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments and solids are reported on a dry weight basis unless otherwise noted. Tissues are reported "as received" or on a wet weight basis, unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Pace's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Pace Project Manager and made arrangements for Pace to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Melissa Sturgis

Title: Technical Director/Representative

Date: 05/27/25

INORGANICS & MISCELLANEOUS

Project Name: OUTFALL SAMPLING

Lab Number: L2527754

Project Number: W5005-0043

Report Date: 05/27/25

SAMPLE RESULTS

Lab ID: L2527754-01

Date Collected: 05/06/25 08:50

Client ID: OF-83

Date Received: 05/06/25

Sample Location: WESTFORD, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MPN)	8.52		MPN/100ml	1	NA	1	-	05/06/25 14:55	121,9223B	MEF
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	0.172		mg/l	0.075	--	1	05/24/25 09:10	05/26/25 17:23	44,350.1	AT
Surfactants, MBAS	ND		mg/l	0.050	--	1	05/07/25 03:00	05/07/25 06:54	121,5540C	CAR



Project Name: OUTFALL SAMPLING

Project Number: W5005-0043

Lab Number: L2527754

Report Date: 05/27/25

SAMPLE RESULTS

Lab ID: L2527754-02

Client ID: OF-44

Sample Location: WESTFORD, MA

Date Collected: 05/06/25 11:00

Date Received: 05/06/25

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MPN)	50.39		MPN/100ml	1	NA	1	-	05/06/25 14:55	121,9223B	MEF
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	0.084		mg/l	0.075	--	1	05/24/25 09:10	05/26/25 17:27	44,350.1	AT
Surfactants, MBAS	ND		mg/l	0.050	--	1	05/07/25 03:00	05/07/25 06:54	121,5540C	CAR



Project Name: OUTFALL SAMPLING

Lab Number: L2527754

Project Number: W5005-0043

Report Date: 05/27/25

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab for sample(s): 01-02 Batch: WG2063080-1										
E. Coli (MPN)	<1		MPN/100ml	1	NA	1	-	05/06/25 14:55	121,9223B	MEF
General Chemistry - Westborough Lab for sample(s): 01-02 Batch: WG2063305-1										
Surfactants, MBAS	ND		mg/l	0.050	--	1	05/07/25 03:00	05/07/25 06:49	121,5540C	CAR
General Chemistry - Westborough Lab for sample(s): 01-02 Batch: WG2070728-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	05/24/25 09:10	05/26/25 17:14	44,350.1	AT



Lab Control Sample Analysis Batch Quality Control

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2527754
Report Date: 05/27/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG2063305-2								
Surfactants, MBAS	104		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG2070728-2								
Nitrogen, Ammonia	96		-		90-110	-		20



Matrix Spike Analysis Batch Quality Control

Project Name: OUTFALL SAMPLING

Lab Number: L2527754

Project Number: W5005-0043

Report Date: 05/27/25

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG2063305-4 QC Sample: L2527723-02 Client ID: MS Sample												
Surfactants, MBAS	ND	0.4	0.410	102	-	-	-	-	52-157	-	-	32
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG2070728-4 QC Sample: L2527134-02 Client ID: MS Sample												
Nitrogen, Ammonia	0.129	4	4.21	102	-	-	-	-	90-110	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG2070728-6 QC Sample: L2527606-01 Client ID: MS Sample												
Nitrogen, Ammonia	ND	4	4.23	106	-	-	-	-	90-110	-	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: OUTFALL SAMPLING

Project Number: W5005-0043

Lab Number: L2527754

Report Date: 05/27/25

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG2063305-3 QC Sample: L2527723-02 Client ID: DUP Sample						
Surfactants, MBAS	ND	ND	mg/l	NC		32
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG2070728-3 QC Sample: L2527134-02 Client ID: DUP Sample						
Nitrogen, Ammonia	0.129	0.186	mg/l	36	Q	20
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG2070728-5 QC Sample: L2527606-01 Client ID: DUP Sample						
Nitrogen, Ammonia	ND	0.151	mg/l	NC		20

Project Name: OUTFALL SAMPLING**Lab Number:** L2527754**Project Number:** W5005-0043**Report Date:** 05/27/25**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2527754-01A	Bacteria Cup Na2S2O3 preserved	A	NA		2.7	Y	Absent		E-COLI-QT(.33)
L2527754-01B	Bacteria Cup Na2S2O3 preserved	A	NA		2.7	Y	Absent		E-COLI-QT(.33)
L2527754-01C	Plastic 500ml H2SO4 preserved	A	<2	<2	2.7	Y	Absent		NH3-350(28)
L2527754-01D	Plastic 60ml unpreserved	A	7	7	2.7	Y	Absent		MBAS-5540(2)
L2527754-01E	Plastic 950ml unpreserved	A	7	7	2.7	Y	Absent		MBAS-5540(2)
L2527754-02A	Bacteria Cup Na2S2O3 preserved	A	NA		2.7	Y	Absent		E-COLI-QT(.33)
L2527754-02B	Bacteria Cup Na2S2O3 preserved	A	NA		2.7	Y	Absent		E-COLI-QT(.33)
L2527754-02C	Plastic 500ml H2SO4 preserved	A	<2	<2	2.7	Y	Absent		NH3-350(28)
L2527754-02D	Plastic 60ml unpreserved	A	7	7	2.7	Y	Absent		MBAS-5540(2)
L2527754-02E	Plastic 950ml unpreserved	A	7	7	2.7	Y	Absent		MBAS-5540(2)

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2527754
Report Date: 05/27/25

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2527754
Report Date: 05/27/25

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2527754
Report Date: 05/27/25

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2527754
Report Date: 05/27/25

REFERENCES

- 44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Pace Analytical Services performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Pace Analytical Services shall be to re-perform the work at it's own expense. In no event shall Pace Analytical Services be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Pace Analytical Services.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581

EPA 624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625.1: alpha-Terpineol

EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol, Azobenzene; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

SM 2540D: TSS.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

MADEP-APH.

Nonpotable Water: EPA RSK-175 Dissolved Gases

Biological Tissue Matrix: EPA 3050B

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Nonpotable Water: EPA RSK-175 Dissolved Gases

The following test method is not included in our New Jersey Secondary NELAP Scope of Accreditation:

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

Determination of Selected Perfluorinated Alkyl Substances by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry Isotope Dilution (via Alpha SOP 23528)

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables).

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, EPA 1600, EPA 1603, SM9222D.

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

Pace Analytical Services LLC

ID No.:17873

Facility: **Northeast**

Revision 27

Department: **Quality Assurance**

Published Date: 01/24/2025

Title: **Certificate/Approval Program Summary**

Page 2 of 2

Certification IDs:**Westborough Facility – 8 Walkup Dr. Westborough, MA 01581**

CT PH-0826, IL 200077, IN C-MA-03, KY JY98045, ME MA00086, MD 348, MA M-MA086, NH 2064, NJ MA935, NY 11148, NC (DW) 25700, NC (NPW/SCM) 666, OR MA-1316, PA 68-03671, RI LAO00065, TX T104704476, VT VT-0935, VA 460195

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

CT PH-0825, ANAB/DoD L2474, IL 200081, IN C-MA-04, KY KY98046, LA 3090, ME MA00030, MI 9110, MN 025-999-495, NH 2062, NJ MA015, NY 11627, NC (NPW/SCM) 685, OR MA-0262, PA 68-02089, RI LAO00299, TX T-104704419, VT VT-0015, VA 460194, WA C954

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048

ANAB/DoD L2474, ME MA01156, MN 025-999-498, NH 2249, NJ MA025, NY 12191, OR 4203, TX T104704583, VA 460311, WA C1104.

For a complete listing of analytes and methods, please contact your Project Manager.



CHAIN OF CUSTODY

PAGE OF

Westborough, MA Mansfield, MA
 TEL: 508-898-9220 TEL: 508-822-9300
 FAX: 508-898-9193 FAX: 508-822-3288

Client Information

Client: Tighe & Bond, Attn: Elizabeth Olson
 Address: 120 Front Street #700
 Worcester, MA 01608
 Phone: 781-375-2576
 Fax: _____
 Email: eolson@tighebond.com
 These samples have been Previously analyzed by Alpha

Project Information

Project Name: Outfall Sampling
 Project Location: Westford, MA
 Project #: W5005-0043
 Project Manager: Elizabeth Olson
 ALPHA Quote #:

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)
 Due Date: _____ Time: _____

Other Project Specific Requirements/Comments/Detection Limits:
 Send Results to eolson@tighebond.com and CLaRochelle@tigheBond.com

Date Rec'd in Lab: 5/6/25 ALPHA Job #: 22527784

Report Information	Data Deliverables	Billing Information	
<input type="checkbox"/> FAX	<input checked="" type="checkbox"/> EMAIL	<input checked="" type="checkbox"/> Same as Client info	PO #:
<input type="checkbox"/> ADEx	<input type="checkbox"/> Add'l Deliverables		

Regulatory Requirements/Report Limits

State/Fed Program	Criteria
Small MS4 Permit Massachusetts	Wet Weather Outfall Screening

ANALYSIS

Surfactants (5540C)	Ammonia (350.1)	E. Coll (9223)	Enterococcus (1600)	Fecal Coliform (9222D)	BOD5 (5210B)	Total Phosphorus (4500P-E)													
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ANALYTICAL REPORT

Lab Number:	L2527924
Client:	Tighe & Bond, Inc. 120 Front Street Suite 700 Worcester, MA 01608
ATTN:	Cassandra LaRochelle
Phone:	(508) 471-9644
Project Name:	OUTFALL SAMPLING
Project Number:	W5005-0043
Report Date:	05/27/25

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Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2527924
Report Date: 05/27/25

Lab Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2527924-01	OF-45	WATER	WESTFORD, MA	05/06/25 13:45	05/06/25
L2527924-02	OF-424	WATER	WESTFORD, MA	05/06/25 14:00	05/06/25

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2527924
Report Date: 05/27/25

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Pace Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments and solids are reported on a dry weight basis unless otherwise noted. Tissues are reported "as received" or on a wet weight basis, unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Pace's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Pace Project Manager and made arrangements for Pace to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Melissa Sturgis

Title: Technical Director/Representative

Date: 05/27/25

INORGANICS & MISCELLANEOUS

Project Name: OUTFALL SAMPLING

Lab Number: L2527924

Project Number: W5005-0043

Report Date: 05/27/25

SAMPLE RESULTS

Lab ID: L2527924-01

Date Collected: 05/06/25 13:45

Client ID: OF-45

Date Received: 05/06/25

Sample Location: WESTFORD, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MPN)	648.82		MPN/100ml	1	NA	1	-	05/06/25 19:07	121,9223B	MAW
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	0.212		mg/l	0.075	--	1	05/24/25 09:10	05/26/25 17:55	44,350.1	AT
Surfactants, MBAS	0.050		mg/l	0.050	--	1	05/07/25 03:00	05/07/25 06:56	121,5540C	CAR



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2527924
Report Date: 05/27/25

SAMPLE RESULTS

Lab ID: L2527924-02
Client ID: OF-424
Sample Location: WESTFORD, MA

Date Collected: 05/06/25 14:00
Date Received: 05/06/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MPN)	980.39		MPN/100ml	1	NA	1	-	05/06/25 19:07	121,9223B	MAW
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	0.260		mg/l	0.075	--	1	05/24/25 09:10	05/26/25 17:42	44,350.1	AT
Surfactants, MBAS	0.140		mg/l	0.050	--	1	05/07/25 03:00	05/07/25 06:57	121,5540C	CAR



Project Name: OUTFALL SAMPLING

Lab Number: L2527924

Project Number: W5005-0043

Report Date: 05/27/25

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab for sample(s): 01-02 Batch: WG2063192-1										
E. Coli (MPN)	<1		MPN/100ml	1	NA	1	-	05/06/25 19:07	121,9223B	MAW
General Chemistry - Westborough Lab for sample(s): 01-02 Batch: WG2063305-1										
Surfactants, MBAS	ND		mg/l	0.050	--	1	05/07/25 03:00	05/07/25 06:49	121,5540C	CAR
General Chemistry - Westborough Lab for sample(s): 01-02 Batch: WG2070728-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	05/24/25 09:10	05/26/25 17:14	44,350.1	AT



Lab Control Sample Analysis Batch Quality Control

Project Name: OUTFALL SAMPLING

Project Number: W5005-0043

Lab Number: L2527924

Report Date: 05/27/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG2063305-2								
Surfactants, MBAS	104		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG2070728-2								
Nitrogen, Ammonia	96		-		90-110	-		20

Matrix Spike Analysis Batch Quality Control

Project Name: OUTFALL SAMPLING

Lab Number: L2527924

Project Number: W5005-0043

Report Date: 05/27/25

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG2063305-4 QC Sample: L2527723-02 Client ID: MS Sample												
Surfactants, MBAS	ND	0.4	0.410	102	-	-	-	-	52-157	-	-	32
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG2070728-4 QC Sample: L2527134-02 Client ID: MS Sample												
Nitrogen, Ammonia	0.129	4	4.21	102	-	-	-	-	90-110	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG2070728-6 QC Sample: L2527606-01 Client ID: MS Sample												
Nitrogen, Ammonia	ND	4	4.23	106	-	-	-	-	90-110	-	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: OUTFALL SAMPLING

Project Number: W5005-0043

Lab Number: L2527924

Report Date: 05/27/25

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG2063305-3 QC Sample: L2527723-02 Client ID: DUP Sample						
Surfactants, MBAS	ND	ND	mg/l	NC		32
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG2070728-3 QC Sample: L2527134-02 Client ID: DUP Sample						
Nitrogen, Ammonia	0.129	0.186	mg/l	36	Q	20
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG2070728-5 QC Sample: L2527606-01 Client ID: DUP Sample						
Nitrogen, Ammonia	ND	0.151	mg/l	NC		20

Project Name: OUTFALL SAMPLING**Lab Number:** L2527924**Project Number:** W5005-0043**Report Date:** 05/27/25**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2527924-01A	Bacteria Cup Na2S2O3 preserved	A	NA		3.3	Y	Absent		E-COLI-QT(.33)
L2527924-01B	Bacteria Cup Na2S2O3 preserved	A	NA		3.3	Y	Absent		E-COLI-QT(.33)
L2527924-01C	Plastic 500ml H2SO4 preserved	A	<2	<2	3.3	Y	Absent		NH3-350(28)
L2527924-01D	Plastic 60ml unpreserved	A	6	6	3.3	Y	Absent		MBAS-5540(2)
L2527924-01E	Plastic 950ml unpreserved	A	6	6	3.3	Y	Absent		MBAS-5540(2)
L2527924-02A	Bacteria Cup Na2S2O3 preserved	A	NA		3.3	Y	Absent		E-COLI-QT(.33)
L2527924-02B	Bacteria Cup Na2S2O3 preserved	A	NA		3.3	Y	Absent		E-COLI-QT(.33)
L2527924-02C	Plastic 500ml H2SO4 preserved	A	<2	<2	3.3	Y	Absent		NH3-350(28)
L2527924-02D	Plastic 60ml unpreserved	A	6	6	3.3	Y	Absent		MBAS-5540(2)
L2527924-02E	Plastic 950ml unpreserved	A	6	6	3.3	Y	Absent		MBAS-5540(2)

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2527924
Report Date: 05/27/25

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2527924
Report Date: 05/27/25

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2527924
Report Date: 05/27/25

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2527924
Report Date: 05/27/25

REFERENCES

- 44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Pace Analytical Services performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Pace Analytical Services shall be to re-perform the work at it's own expense. In no event shall Pace Analytical Services be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Pace Analytical Services.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581

EPA 624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625.1: alpha-Terpineol

EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol, Azobenzene; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

SM 2540D: TSS.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

MADEP-APH.

Nonpotable Water: EPA RSK-175 Dissolved Gases

Biological Tissue Matrix: EPA 3050B

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Nonpotable Water: EPA RSK-175 Dissolved Gases

The following test method is not included in our New Jersey Secondary NELAP Scope of Accreditation:

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

Determination of Selected Perfluorinated Alkyl Substances by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry Isotope Dilution (via Alpha SOP 23528)

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables).

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, EPA 1600, EPA 1603, SM9222D.

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

Pace Analytical Services LLC

ID No.:17873

Facility: **Northeast**

Revision 27

Department: **Quality Assurance**

Published Date: 01/24/2025

Title: **Certificate/Approval Program Summary**

Page 2 of 2

Certification IDs:**Westborough Facility – 8 Walkup Dr. Westborough, MA 01581**

CT PH-0826, IL 200077, IN C-MA-03, KY JY98045, ME MA00086, MD 348, MA M-MA086, NH 2064, NJ MA935, NY 11148, NC (DW) 25700, NC (NPW/SCM) 666, OR MA-1316, PA 68-03671, RI LAO00065, TX T104704476, VT VT-0935, VA 460195

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

CT PH-0825, ANAB/DoD L2474, IL 200081, IN C-MA-04, KY KY98046, LA 3090, ME MA00030, MI 9110, MN 025-999-495, NH 2062, NJ MA015, NY 11627, NC (NPW/SCM) 685, OR MA-0262, PA 68-02089, RI LAO00299, TX T-104704419, VT VT-0015, VA 460194, WA C954

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048

ANAB/DoD L2474, ME MA01156, MN 025-999-498, NH 2249, NJ MA025, NY 12191, OR 4203, TX T104704583, VA 460311, WA C1104.

For a complete listing of analytes and methods, please contact your Project Manager.



ANALYTICAL REPORT

Lab Number:	L2537565
Client:	Tighe & Bond, Inc. 120 Front Street Suite 700 Worcester, MA 01608
ATTN:	Cassandra LaRochelle
Phone:	(508) 471-9644
Project Name:	OUTFALL SAMPLING
Project Number:	W5005-0043
Report Date:	07/09/25

The original project report/data package is held by Pace Analytical Services. This report/data package is paginated and should be reproduced only in its entirety. Pace Analytical Services holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930A1).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2537565
Report Date: 07/09/25

Lab Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2537565-01	NEW 5.8-2	WATER	WESTFORD, MA	06/16/25 08:20	06/16/25
L2537565-02	OF-592	WATER	WESTFORD, MA	06/16/25 09:40	06/16/25
L2537565-03	NEW 5.12-4	WATER	WESTFORD, MA	06/16/25 09:55	06/16/25

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2537565
Report Date: 07/09/25

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Pace Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments and solids are reported on a dry weight basis unless otherwise noted. Tissues are reported "as received" or on a wet weight basis, unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Pace's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Pace Project Manager and made arrangements for Pace to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Cristin Walker

Title: Technical Director/Representative

Date: 07/09/25

INORGANICS & MISCELLANEOUS

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2537565
Report Date: 07/09/25

SAMPLE RESULTS

Lab ID: L2537565-01
Client ID: NEW 5.8-2
Sample Location: WESTFORD, MA

Date Collected: 06/16/25 08:20
Date Received: 06/16/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MPN)	38.39		MPN/100ml	1	NA	1	-	06/16/25 16:03	121,9223B	MEF
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	0.077		mg/l	0.075	--	1	07/08/25 20:32	07/09/25 15:20	44,350.1	KEM
Surfactants, MBAS	ND		mg/l	0.050	--	1	06/18/25 02:00	06/18/25 05:04	121,5540C	CAR



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2537565
Report Date: 07/09/25

SAMPLE RESULTS

Lab ID: L2537565-02
Client ID: OF-592
Sample Location: WESTFORD, MA

Date Collected: 06/16/25 09:40
Date Received: 06/16/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MPN)	2419.57		MPN/100ml	1	NA	1	-	06/16/25 16:03	121,9223B	MEF
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	07/08/25 20:32	07/09/25 15:28	44,350.1	KEM
Phosphorus, Total	0.044		mg/l	0.010	--	1	06/29/25 15:36	06/29/25 17:27	121,4500P-E	MEF
Surfactants, MBAS	0.070		mg/l	0.050	--	1	06/18/25 02:00	06/18/25 05:04	121,5540C	CAR



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2537565
Report Date: 07/09/25

SAMPLE RESULTS

Lab ID: L2537565-03
Client ID: NEW 5.12-4
Sample Location: WESTFORD, MA

Date Collected: 06/16/25 09:55
Date Received: 06/16/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MPN)	28.82		MPN/100ml	1	NA	1	-	06/16/25 16:03	121,9223B	MEF
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	07/08/25 20:32	07/09/25 15:29	44,350.1	KEM
Phosphorus, Total	0.017		mg/l	0.010	--	1	06/29/25 15:36	06/29/25 17:30	121,4500P-E	MEF
Surfactants, MBAS	ND		mg/l	0.050	--	1	06/18/25 02:00	06/18/25 05:05	121,5540C	CAR



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2537565
Report Date: 07/09/25

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab for sample(s): 01-03 Batch: WG2079503-1										
E. Coli (MPN)	<1		MPN/100ml	1	NA	1	-	06/16/25 16:03	121,9223B	MEF
General Chemistry - Westborough Lab for sample(s): 01-03 Batch: WG2080185-1										
Surfactants, MBAS	ND		mg/l	0.050	--	1	06/18/25 02:00	06/18/25 05:03	121,5540C	CAR
General Chemistry - Westborough Lab for sample(s): 02-03 Batch: WG2084949-1										
Phosphorus, Total	ND		mg/l	0.010	--	1	06/29/25 15:36	06/29/25 17:22	121,4500P-E	MEF
General Chemistry - Westborough Lab for sample(s): 01-03 Batch: WG2088157-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	07/08/25 20:32	07/09/25 15:00	44,350.1	KEM



Lab Control Sample Analysis Batch Quality Control

Project Name: OUTFALL SAMPLING

Project Number: W5005-0043

Lab Number: L2537565

Report Date: 07/09/25

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
General Chemistry - Westborough Lab Associated sample(s): 01-03 Batch: WG2080185-2								
Surfactants, MBAS	92		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 02-03 Batch: WG2084949-2								
Phosphorus, Total	101		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01-03 Batch: WG2088157-2								
Nitrogen, Ammonia	93		-		90-110	-		20

Matrix Spike Analysis Batch Quality Control

Project Name: OUTFALL SAMPLING

Lab Number: L2537565

Project Number: W5005-0043

Report Date: 07/09/25

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG2080185-4 QC Sample: L2537565-03 Client ID: NEW 5.12-4												
Surfactants, MBAS	ND	0.4	0.410	102	-	-	-	-	52-157	-	-	32
General Chemistry - Westborough Lab Associated sample(s): 02-03 QC Batch ID: WG2084949-4 QC Sample: L2536073-05 Client ID: MS Sample												
Phosphorus, Total	0.030	0.5	0.562	106	-	-	-	-	75-125	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG2088157-4 QC Sample: L2537107-01 Client ID: MS Sample												
Nitrogen, Ammonia	0.121	4	4.04	98	-	-	-	-	90-110	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG2088157-6 QC Sample: L2537107-02 Client ID: MS Sample												
Nitrogen, Ammonia	0.091	4	4.39	107	-	-	-	-	90-110	-	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: OUTFALL SAMPLING

Project Number: W5005-0043

Lab Number: L2537565

Report Date: 07/09/25

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG2080185-3 QC Sample: L2537565-03 Client ID: NEW 5.12-4						
Surfactants, MBAS	ND	ND	mg/l	NC		32
General Chemistry - Westborough Lab Associated sample(s): 02-03 QC Batch ID: WG2084949-3 QC Sample: L2536073-05 Client ID: DUP Sample						
Phosphorus, Total	0.030	0.030	mg/l	0		20
General Chemistry - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG2088157-3 QC Sample: L2537107-01 Client ID: DUP Sample						
Nitrogen, Ammonia	0.121	0.106	mg/l	13		20
General Chemistry - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG2088157-5 QC Sample: L2537107-02 Client ID: DUP Sample						
Nitrogen, Ammonia	0.091	0.080	mg/l	13		20

Project Name: OUTFALL SAMPLING**Lab Number:** L2537565**Project Number:** W5005-0043**Report Date:** 07/09/25**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2537565-01A	Bacteria Cup Na2S2O3 preserved	A	NA		5.5	Y	Absent		E-COLI-QT(.33)
L2537565-01B	Bacteria Cup Na2S2O3 preserved	A	NA		5.5	Y	Absent		E-COLI-QT(.33)
L2537565-01C	Plastic 500ml H2SO4 preserved	A	<2	<2	5.5	Y	Absent		NH3-350(28)
L2537565-01D	Plastic 60ml unpreserved	A	7	7	5.5	Y	Absent		MBAS-5540(2)
L2537565-01E	Plastic 950ml unpreserved	A	7	7	5.5	Y	Absent		MBAS-5540(2)
L2537565-02A	Bacteria Cup Na2S2O3 preserved	A	NA		5.5	Y	Absent		E-COLI-QT(.33)
L2537565-02B	Bacteria Cup Na2S2O3 preserved	A	NA		5.5	Y	Absent		E-COLI-QT(.33)
L2537565-02C	Plastic 250ml H2SO4 preserved	A	<2	<2	5.5	Y	Absent		TPHOS-4500(28),NH3-350(28)
L2537565-02D	Plastic 500ml H2SO4 preserved	A	<2	<2	5.5	Y	Absent		TPHOS-4500(28),NH3-350(28)
L2537565-02E	Plastic 60ml unpreserved	A	7	7	5.5	Y	Absent		MBAS-5540(2)
L2537565-02F	Plastic 950ml unpreserved	A	7	7	5.5	Y	Absent		MBAS-5540(2)
L2537565-03A	Bacteria Cup Na2S2O3 preserved	A	NA		5.5	Y	Absent		E-COLI-QT(.33)
L2537565-03B	Bacteria Cup Na2S2O3 preserved	A	NA		5.5	Y	Absent		E-COLI-QT(.33)
L2537565-03C	Plastic 250ml H2SO4 preserved	A	<2	<2	5.5	Y	Absent		TPHOS-4500(28),NH3-350(28)
L2537565-03D	Plastic 500ml H2SO4 preserved	A	<2	<2	5.5	Y	Absent		TPHOS-4500(28),NH3-350(28)
L2537565-03E	Plastic 60ml unpreserved	A	7	7	5.5	Y	Absent		MBAS-5540(2)
L2537565-03F	Plastic 950ml unpreserved	A	7	7	5.5	Y	Absent		MBAS-5540(2)

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2537565
Report Date: 07/09/25

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2537565
Report Date: 07/09/25

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2537565
Report Date: 07/09/25

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2537565
Report Date: 07/09/25

REFERENCES

- 44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Pace Analytical Services performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Pace Analytical Services shall be to re-perform the work at it's own expense. In no event shall Pace Analytical Services be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Pace Analytical Services.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581

EPA 624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625.1: alpha-Terpineol

EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol, Azobenzene; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

SM 2540D: TSS.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

MADEP-APH.

Nonpotable Water: EPA RSK-175 Dissolved Gases

Biological Tissue Matrix: EPA 3050B

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Nonpotable Water: EPA RSK-175 Dissolved Gases

The following test method is not included in our New Jersey Secondary NELAP Scope of Accreditation:

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

Determination of Selected Perfluorinated Alkyl Substances by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry Isotope Dilution (via Alpha SOP 23528)

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables).

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, EPA 1600, EPA 1603, SM9222D.

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

Pace Analytical Services LLC

ID No.:17873

Facility: **Northeast**

Revision 27

Department: **Quality Assurance**

Published Date: 01/24/2025

Title: **Certificate/Approval Program Summary**

Page 2 of 2

Certification IDs:**Westborough Facility – 8 Walkup Dr. Westborough, MA 01581**

CT PH-0826, IL 200077, IN C-MA-03, KY JY98045, ME MA00086, MD 348, MA M-MA086, NH 2064, NJ MA935, NY 11148, NC (DW) 25700, NC (NPW/SCM) 666, OR MA-1316, PA 68-03671, RI LAO00065, TX T104704476, VT VT-0935, VA 460195

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

CT PH-0825, ANAB/DoD L2474, IL 200081, IN C-MA-04, KY KY98046, LA 3090, ME MA00030, MI 9110, MN 025-999-495, NH 2062, NJ MA015, NY 11627, NC (NPW/SCM) 685, OR MA-0262, PA 68-02089, RI LAO00299, TX T-104704419, VT VT-0015, VA 460194, WA C954

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048

ANAB/DoD L2474, ME MA01156, MN 025-999-498, NH 2249, NJ MA025, NY 12191, OR 4203, TX T104704583, VA 460311, WA C1104.

For a complete listing of analytes and methods, please contact your Project Manager.



Sample Delivery Group Summary

Pace Job Number : L2537565

Received : 16-JUN-2025

Reviewer : Geoffry Grace

Account Name : Tighe & Bond, Inc.

Project Number : W5005-0043

Project Name : OUTFALL SAMPLING

Delivery Information

Samples Delivered By : Pace Courier

Chain of Custody : Present

Cooler Information

Cooler	Seal/Seal#	Preservation	Temperature(°C)	Additional Information
A	Absent/	Ice	5.5	

Condition Information

- | | |
|--|------------|
| 1) All samples on COC received? | YES |
| 2) Extra samples received? | NO |
| 3) Are there any sample container discrepancies? | NO |
| 4) Are there any discrepancies between COC & sample labels? | NO |
| 5) Are samples in appropriate containers for requested analysis? | YES |
| 6) Are samples properly preserved for requested analysis? | YES |
| 7) Are samples within holding time for requested analysis? | YES |
| 8) All sampling equipment returned? | NA |

Volatile Organics/VPH

- | | |
|--|-----------|
| 1) Reagent Water Vials Frozen by Client? | NA |
|--|-----------|



ANALYTICAL REPORT

Lab Number:	L2537684
Client:	Tighe & Bond, Inc. 120 Front Street Suite 700 Worcester, MA 01608
ATTN:	Cassandra LaRochelle
Phone:	(508) 471-9644
Project Name:	OUTFALL SAMPLING
Project Number:	W5005-0043
Report Date:	07/09/25

The original project report/data package is held by Pace Analytical Services. This report/data package is paginated and should be reproduced only in its entirety. Pace Analytical Services holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930A1).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2537684
Report Date: 07/09/25

Lab Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2537684-01	NEW 4.24	WATER	WESTFORD, MA	06/16/25 12:55	06/16/25

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2537684
Report Date: 07/09/25

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Pace Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments and solids are reported on a dry weight basis unless otherwise noted. Tissues are reported "as received" or on a wet weight basis, unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Pace's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Pace Project Manager and made arrangements for Pace to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 07/09/25

INORGANICS & MISCELLANEOUS

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2537684
Report Date: 07/09/25

SAMPLE RESULTS

Lab ID: L2537684-01
Client ID: NEW 4.24
Sample Location: WESTFORD, MA

Date Collected: 06/16/25 12:55
Date Received: 06/16/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MPN)	866.44		MPN/100ml	1	NA	1	-	06/16/25 19:16	121,9223B	MEF
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	07/08/25 20:32	07/09/25 15:30	44,350.1	KEM
Phosphorus, Total	0.018		mg/l	0.010	--	1	06/29/25 15:36	06/29/25 17:31	121,4500P-E	MEF
Surfactants, MBAS	ND		mg/l	0.050	--	1	06/18/25 02:00	06/18/25 05:06	121,5540C	CAR



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2537684
Report Date: 07/09/25

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab for sample(s): 01 Batch: WG2079572-1										
E. Coli (MPN)	<1		MPN/100ml	1	NA	1	-	06/16/25 19:16	121,9223B	MEF
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG2080185-1										
Surfactants, MBAS	ND		mg/l	0.050	--	1	06/18/25 02:00	06/18/25 05:03	121,5540C	CAR
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG2084949-1										
Phosphorus, Total	ND		mg/l	0.010	--	1	06/29/25 15:36	06/29/25 17:22	121,4500P-E	MEF
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG2088157-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	07/08/25 20:32	07/09/25 15:00	44,350.1	KEM



Lab Control Sample Analysis
Batch Quality Control

Project Name: OUTFALL SAMPLING

Project Number: W5005-0043

Lab Number: L2537684

Report Date: 07/09/25

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG2080185-2								
Surfactants, MBAS	92		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG2084949-2								
Phosphorus, Total	101		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG2088157-2								
Nitrogen, Ammonia	93		-		90-110	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2537684
Report Date: 07/09/25

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG2080185-4 QC Sample: L2537565-03 Client ID: MS Sample												
Surfactants, MBAS	ND	0.4	0.410	102	-	-	-	-	52-157	-	-	32
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG2084949-4 QC Sample: L2536073-05 Client ID: MS Sample												
Phosphorus, Total	0.030	0.5	0.562	106	-	-	-	-	75-125	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG2088157-4 QC Sample: L2537107-01 Client ID: MS Sample												
Nitrogen, Ammonia	0.121	4	4.04	98	-	-	-	-	90-110	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG2088157-6 QC Sample: L2537107-02 Client ID: MS Sample												
Nitrogen, Ammonia	0.091	4	4.39	107	-	-	-	-	90-110	-	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2537684
Report Date: 07/09/25

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG2080185-3 QC Sample: L2537565-03 Client ID: DUP Sample						
Surfactants, MBAS	ND	ND	mg/l	NC		32
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG2084949-3 QC Sample: L2536073-05 Client ID: DUP Sample						
Phosphorus, Total	0.030	0.030	mg/l	0		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG2088157-3 QC Sample: L2537107-01 Client ID: DUP Sample						
Nitrogen, Ammonia	0.121	0.106	mg/l	13		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG2088157-5 QC Sample: L2537107-02 Client ID: DUP Sample						
Nitrogen, Ammonia	0.091	0.080	mg/l	13		20

Project Name: OUTFALL SAMPLING**Lab Number:** L2537684**Project Number:** W5005-0043**Report Date:** 07/09/25**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2537684-01A	Bacteria Cup Na2S2O3 preserved	A	NA		4.2	Y	Absent		E-COLI-QT(.33)
L2537684-01B	Bacteria Cup Na2S2O3 preserved	A	NA		4.2	Y	Absent		E-COLI-QT(.33)
L2537684-01C	Plastic 250ml H2SO4 preserved	A	<2	<2	4.2	Y	Absent		TPHOS-4500(28)
L2537684-01D	Plastic 500ml H2SO4 preserved	A	<2	<2	4.2	Y	Absent		NH3-350(28)
L2537684-01E	Plastic 60ml unpreserved	A	6	6	4.2	Y	Absent		MBAS-5540(2)
L2537684-01F	Plastic 950ml unpreserved	A	6	6	4.2	Y	Absent		MBAS-5540(2)

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2537684
Report Date: 07/09/25

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2537684
Report Date: 07/09/25

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report



Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2537684
Report Date: 07/09/25

Data Qualifiers

- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: OUTFALL SAMPLING
Project Number: W5005-0043

Lab Number: L2537684
Report Date: 07/09/25

REFERENCES

- 44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Pace Analytical Services performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Pace Analytical Services shall be to re-perform the work at it's own expense. In no event shall Pace Analytical Services be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Pace Analytical Services.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581

EPA 624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625.1: alpha-Terpineol

EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol, Azobenzene; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

SM 2540D: TSS.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

MADEP-APH.

Nonpotable Water: EPA RSK-175 Dissolved Gases

Biological Tissue Matrix: EPA 3050B

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Nonpotable Water: EPA RSK-175 Dissolved Gases

The following test method is not included in our New Jersey Secondary NELAP Scope of Accreditation:

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

Determination of Selected Perfluorinated Alkyl Substances by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry Isotope Dilution (via Alpha SOP 23528)

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables).

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

Pace Analytical Services LLC

ID No.:17873

Facility: **Northeast**

Revision 27

Department: **Quality Assurance**

Published Date: 01/24/2025

Title: **Certificate/Approval Program Summary**

Page 2 of 2

Certification IDs:**Westborough Facility – 8 Walkup Dr. Westborough, MA 01581**

CT PH-0826, IL 200077, IN C-MA-03, KY JY98045, ME MA00086, MD 348, MA M-MA086, NH 2064, NJ MA935, NY 11148, NC (DW) 25700, NC (NPW/SCM) 666, OR MA-1316, PA 68-03671, RI LAO00065, TX T104704476, VT VT-0935, VA 460195

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

CT PH-0825, ANAB/DoD L2474, IL 200081, IN C-MA-04, KY KY98046, LA 3090, ME MA00030, MI 9110, MN 025-999-495, NH 2062, NJ MA015, NY 11627, NC (NPW/SCM) 685, OR MA-0262, PA 68-02089, RI LAO00299, TX T-104704419, VT VT-0015, VA 460194, WA C954

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048

ANAB/DoD L2474, ME MA01156, MN 025-999-498, NH 2249, NJ MA025, NY 12191, OR 4203, TX T104704583, VA 460311, WA C1104.

For a complete listing of analytes and methods, please contact your Project Manager.



Sample Delivery Group Summary

Pace Job Number : L2537684

Received : 16-JUN-2025

Reviewer : Majid Abdul

Account Name : Tighe & Bond, Inc.

Project Number : W5005-0043

Project Name : OUTFALL SAMPLING

Delivery Information

Samples Delivered By : Pace Courier

Chain of Custody : Present

Cooler Information

Cooler	Seal/Seal#	Preservation	Temperature(°C)	Additional Information
A	Absent/	Ice	4.2	

Condition Information

- | | |
|--|------------|
| 1) All samples on COC received? | YES |
| 2) Extra samples received? | NO |
| 3) Are there any sample container discrepancies? | NO |
| 4) Are there any discrepancies between COC & sample labels? | NO |
| 5) Are samples in appropriate containers for requested analysis? | YES |
| 6) Are samples properly preserved for requested analysis? | YES |
| 7) Are samples within holding time for requested analysis? | YES |
| 8) All sampling equipment returned? | NA |

Volatile Organics/VPH

- | | |
|--|-----------|
| 1) Reagent Water Vials Frozen by Client? | NA |
|--|-----------|