

MEMORANDUM



TO: Lucica Hiller, City of Somerville, Stormwater Manager

CC: Todd Prokop, Woodard & Curran
Colin Brown, SDE

FROM: Garrett Bergey, James Sherrard Jr, and Emily Nealon – Woodard & Curran

DATE: July 25, 2024

RE: Somerville IDDE Investigation – Permit Year 6 Catchment Inspection Memo

This Catchment Memo summarizes the key findings of inspections and recommendations for Task 1, Illicit Discharge, Detection, and Elimination (IDDE) Investigation: Data Management and Reporting. Woodard & Curran, along with their subcontractor, Stacey DePasquale Engineering, Inc (SDE), organized and performed the inspections described in this report. The inspection results summarized in this report, unless otherwise noted, took place between July 1, 2023 through June 30, 2024.

Investigation Approach

Field crews completed catchment investigations in the following catchments:

- Catchment 7
- Catchment 9
- Catchment 10
- Catchment 11
- Catchment 14
- Catchment 21
- Catchment 25
- Catchment 26
- Catchment 28
- Catchment 31
- Catchment 32

Woodard & Curran conducted follow-up investigations of the pipe segments with high levels of contamination via building inspections, dye flushing of private infrastructure, dye flushing of public infrastructure, and mapping related field investigations. The areas for further investigation were identified during Permit Year 3 (July 1, 2020, through June 30, 2021) since this is when original pipe inspections were completed. The PY3 inspections resulted in contamination findings that the City is still working to address.

In most areas, buildings adjacent to contaminated pipes were targeted for building inspections. In areas with high rise or large commercial buildings, like Assembly Square, SDE performed



dye flushing of public infrastructure in efforts to rule out issues within the City's infrastructure before attempting large-scale building inspections.

The building inspection effort is detailed in Appendix A (Somerville IDDE Investigation – Permit Year 6 Building Inspection Memo). Results from the building inspection effort are also included in this memo.

A summary of the investigations completed during Permit Year 6 and the recommendations for next steps are provided in the following sections.

CATCHMENT 7

Catchment 7 is located along Broadway from Clarendon Avenue, including Weston Avenue, to the Alewife Brook. The outfall for this catchment discharges into the Alewife Brook. Contaminated storm drain manholes identified during Permit Year 3 are presented in Table 1.

TABLE 1: CONTAMINATED STORM DRAIN MANHOLES IN CATCHMENT 7

Manhole	Pipe	Street	Ammonia (mg/L)	Surfactants (mg/L)	Chlorine (mg/L)
7-5827	7-5828 : 7-5827	Broadway at Farragut Street	1	0.25	Not detected
7-6377	7-6376 : 7-6377	Broadway at Belknap Street	10	0.25	0.8
7-5833	UNK : 7-5833	Weston Avenue	2	3	0.61

Permit Year 6 Investigation

The City attempted building inspections/dye testing at buildings adjacent to storm drain manholes and associated pipes from Table 1. The inspection results are presented in Table 2.

TABLE 2: BUILDING INVESTIGATION RESULTS IN CATCHMENT 7

Catchment	Address	Contaminated MH	Status
7	1196 Broadway	7-5827	Legal
7	11 Clarendon Ave	7-5827	Legal
7	14 Belknap Street	7-6377	Legal
7	18 Belknap Street	7-6377	Legal

The City determined the source of illicit connection at storm drain manhole 7-6377 was located at 1241 Broadway in June 2022. The City provided the property owner with next steps to remove the illicit connection, however a three-alarm fire broke out at the property and the three-apartment house has been inhabitable since. The City flagged this address in the permitting system so a new sewer connection will be required before a Certificate of Occupancy is issued. For these reasons the City considers this illicit connection to have been removed as of July 4, 2022. As of June 2024, the property has a new building permit. The conditions for the Certificate of Occupancy are as follows: *"The illicit sanitary connection must be cut and capped at the drain main, and a new connection made to the sanitary main."* The City plans to conduct confirmatory dye testing at this location at the time the Certificate of Occupancy is issued and resample storm drains to confirm that no additional illicit connections exist in that segment of the pipe.



A post-correction manhole inspection was completed at manhole 7-6377 on May 9, 2023 and the manhole was still found to be contaminated with an ammonia concentration of 3.00 milligrams per liter (mg/L) and a chlorine concentration of 0.05 mg/L. The results are below the likely sewer indicator thresholds however, the ammonia concentration is high enough to warrant additional follow up. Woodard & Curran reviewed closed-circuit television (CCTV) footage of the storm drain and sanitary sewer pipes on Belknap Street and Broadway to look for possible sources of contamination and noticed several structural defects which may allow wastewater to infiltrate into the storm drain. Additionally, SMH A-61 at the intersection of Belknap Street and Broadway is likely contributing to the contamination by wastewater spilling over the weir or infiltration through old bricks. SMH A-61 is shown in Figure 1 below.



FIGURE 1: SMH A-61 (BROADWAY AND BELKNAP STREET)

Sanitary sewer rehabilitation in the Belknap Street area is included in the City's ongoing West Somerville Sewer and Storm Rehabilitation project. The project scope includes full replacement of SMH A-61 and cured-in-place pipe lining of the sanitary sewer on Belknap Street. This project is currently under construction and is anticipated to be completed by July 2025. Post-construction sampling will be completed to ensure the problem is resolved.

The source of contamination at storm drain manholes 7-5827 has continued to be investigated, however field investigations have focused on 7-5833 since this contamination is upstream of 7-5827 and may be causing the downstream contamination. During PY6 field investigations, an



additional inlet into DMH 7-5831 was found. Additional manhole sampling also resulted in narrowing down the contamination starting point to be within pipe segment 7-6459 : 7-5831.

Woodard & Curran completed a pole camera inspection of sanitary sewer and storm drain pipes on Weston Ave in May 2024. The footage from DMH 7-5831 shows possible infiltration in the contaminated drain segment (7-6459 : 7-5381), although it is difficult to confirm based on limited footage. It was also observed that flow increases around mid-point of the pipe, which is approximately where the sewer pipe crosses over the storm pipe. The footage from SMH A-3076 also shows a possible offset joint around the point where the sewer crosses over the drainage pipe. There are two additional inlets into SMH A-3076 not included in the City's GIS since they are privately-owned. One of these two segments comes from the direction of 15 Weston Ave, which has not yet been dye tested.

SDE dye tested the sanitary sewer infrastructure on Weston Ave in June 2024, but no dye was seen in the storm drain after an hour and a half. Every condo unit at 16-42 Weston Ave has been dye tested.

Next Steps

There are two remaining areas in Catchment 7, related to storm drain manholes 7-5827 and 7-5833, where the source of contamination is still not confirmed. Investigations at 7-5833 will be prioritized since this may be causing the contamination at 7-5827. Dye testing the apartment complex at 15 Weston Ave will be coordinated with the property owner. Additional heavy cleaning and CCTV of the sanitary sewer and storm drains may also be warranted if the dye test does not provide conclusive results.

CATCHMENT 9

Catchment 9 is located in West Somerville and is bound by Power House Boulevard, Conwell Av, Curtis Street, and Upland Road. The previous outfall inspections at Outfall 9 did not meet likely sewer indicator criteria. SDE revisited DMH 9-5875 on November 6, 2023 to confirm this catchment can be closed. However, it was observed that this manhole cover is severely cracked. SDE was unable to open the manhole due to the cracking since opening the manhole would cause the cover to fall into the manhole. The City has been informed and will replace this manhole cover.

CATCHMENT 10

Field investigations were completed with DCR in April 2024 to confirm DCR-Somerville interconnections. The catchment drainage area was updated to include Sterling Street in Catchment 10. Refer to Appendix B for additional information regarding the field investigations.

CATCHMENT 11

Catchment 11 is located in West Somerville and includes Woods Ave and Fairfax Street. The original Permit Year 3 catchment investigation showed presence of E.coli and surfactants at Outfall 11, but the results did not meet the likely sewer indicator criteria. Follow-up inspections were conducted in November 2023 to confirm Catchment 11 can be closed out, however manhole inspections on Woods Ave resulted in positive test kits. The sampling results from



November 2023 showed the presence of ammonia, chlorine, surfactants, and E.coli. Lab samples were also analyzed for total and human bacteriodes to conclude if the bacteria contamination is human sourced. A summary of the sampling results is shown in Table 3.

TABLE 3: WOODS AVE MANHOLE SAMPLING RESULTS

Pipe ID	Inspection Date	E. Coli (cfu/100mL)	Total Bacteriodes (Cell Equivalents/100 mL)	Human Bacteriodes (Cell Equivalents/100 mL)
11-5865 : 11-5494	11/6/2023	547.5	-	-
11-5865 : 11-5494	11/20/2023	-	-	42,238
11-5865 : 11-5494	11/29/2023	-	49,712	-
11-5864 : 11-5865	11/29/2023	-	68,670	-
FIT-55 : 11-5864	11/6/2023	5,833	-	-
FIT-55 : 11-5864	11/21/2023	-	-	125

Dye tests have been completed at 13 properties on Woods Ave and all tests have been Legal. There are seven properties not yet inspected.

Additionally, field investigations were completed with DCR in April 2024 to confirm DCR-Somerville interconnections. The catchment drainage area was updated to include Fairfax Street in Catchment 11. Refer to Appendix B for additional information regarding the field investigations.

Next Steps

There are seven properties planned for dye testing. The City has distributed notices to these properties and will continue to follow up until all properties have been inspected.

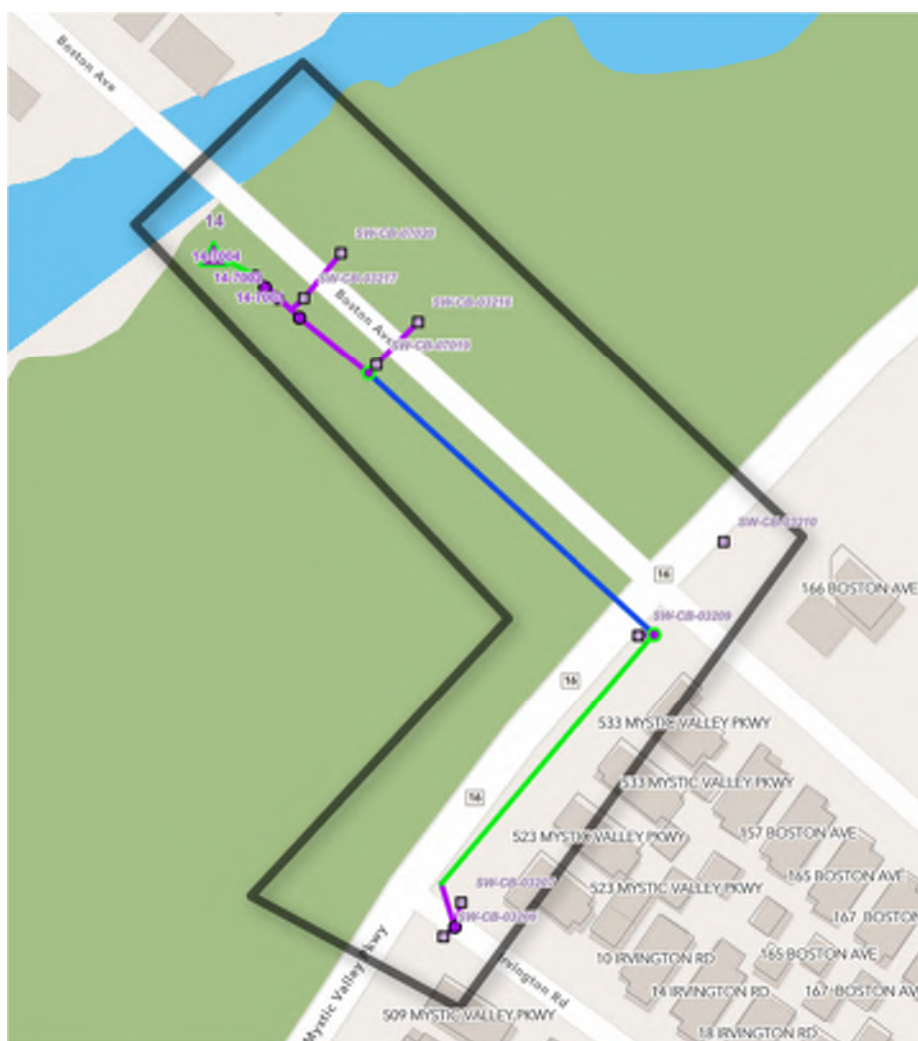
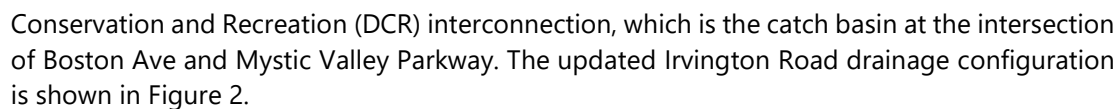
CATCHMENT 14

The City's storm drain mapping previously showed two catch basins and one drainage manhole (A-5947) near the intersection of Irvington Road and Mystic Valley Parkway. However, the previous mapping did not illustrate this drainage pipe's downstream connectivity.

During a field investigation in April 2024, it was confirmed there is no drainage pipe on Irvington Road. The field crew walked the street and verified there are no additional catch basins or other drainage structures present on Irvington Road.

The two catch basins at the intersection of Irvington Road and Mystic Valley Parkway connect directly to drainage manhole (DMH) A-5947. Dye was added to DMH A-5947 and it was seen at the manhole at the intersection of Boston Ave and Mystic Valley Parkway followed by the downstream manholes on Boston Ave. There are four manholes in series on Boston Ave which act as a stormwater control measure.

Both the drainage line on Boston Ave and the newly discovered outfall the line contributes to were determined to be owned by the City. This line includes one Massachusetts Department of



This new MS4 outfall will be referred to as Outfall 14. It was screened during dry weather on May 21, 2024 and was found to be dry. Wet weather screening will take place as weather allows. Refer to Appendix B for additional information regarding the field investigations.

Catchment 21 is located along Mystic Avenue. The sampling completed in Permit Year 3 did not show any contamination meeting the likely sewer indicators, however sampling results from January 2021 showed a presence of surfactants at DMH 21-6140 and DMH 21-6144. Follow-up sampling was completed in April 2024 to determine if this was a false positive collected by the field test kit. On April 8, 2024, a field test kit showed a surfactant concentration of 1.00 mg/L. A



laboratory sample was taken and resulted in no detection of surfactants, indicating that the field test result was a false positive. Based on the inspections completed to date, Catchment 21 investigations have been completed and the catchment is considered to be closed.

CATCHMENT 25

Catchment 25 is located on the southwest side of I-93 and includes Butler Drive, Mystic Ave, and Bailey Road. During PY6, investigations were completed in this catchment to determine connectivity of the drainage infrastructure on Bailey Road. Through dye testing of public infrastructure, it was determined that former DMH 26-5449 was incorrectly mapped as part of Catchment 26. Dye testing proved this manhole connects to 25-5445. The City's GIS has been updated to show this as DMH 25-7002. The two upstream manholes (25-7000 and 25-7001) on Bailey Road have also been renumbered to reflect that they fall in Catchment 25.

CATCHMENT 26

Manholes in Catchment 26 were dye tested as part of the drainage investigations explained in the Catchment 25 section above. These inspections were completed due to an unknown inlet to DMH 26-5447. CCTV was attempted on this segment in PY5, however there is a sharp bend that prevents the camera from accessing the pipe. During PY6, dye testing of public infrastructure was completed in attempts to determine the endpoint of this pipe segment. SDE inspected and dye tested all surrounding manholes and catch basins with no dye visible from the unknown inlet. After further review, it was assumed that this pipe carries drainage directly from I-93.

CATCHMENT 28

Catchment 28 is located at the Ten Hills neighborhood, including parts of Shore Drive, Melvin Road, Crest Hill Road, and Ten Hills Road. The outfall for this catchment discharges into the Mystic River. Contaminated storm drain manholes identified during Permit Year 3 are presented in Table 4.

TABLE 4: CONTAMINATED STORM MANHOLES IN CATCHMENT 28

Manhole	Pipe	Street	Ammonia (mg/L)	Surfactants (mg/L)	Chlorine (mg/L)
28-5105	28-5555:28-5105	Shore Drive	5	0.5	0.81
28-5105	28-5517:28-5105	Crest Hill Road	0.6	0.25	0.04
28-5105	28-5551:28-5105	Shore Drive	4	0.5	0.41

Permit Year 6 Investigation

SDE completed a dry-weather inspection at DMH 28-5105 in August and September 2023. On August 21, 2023, SDE completed a dry weather inspection and observed both the west and southeast inlets to be flowing. SDE sandbagged the southwest inlet at this time but the sandbag was fouled. SDE returned on September 1, 2023 to place another sandbag at the southwest inlet, and it was observed to be dry when picked up on September 5, 2023.



Previous investigations showed significant structural defects in the sewer and storm pipes on Crest Hill Road, therefore the City has included sewer and storm pipe rehabilitation on Crest Hill Road and Shore Drive in the West Somerville Sewer and Storm Rehabilitation project. This project is currently under construction and is anticipated to be completed by July 2025. Post-construction sampling will be completed to ensure the problem is resolved.

CATCHMENT 31

Catchment 31 is located along Broadway from Boston Avenue to Bay State Avenue, it extends up Pearson Road, and covers the neighborhood and a portion of Tufts University campus west of Pearson Road. The “outfall” for this catchment is an interconnection manhole with the City of Medford, located on Pearson Road. Contaminated storm drain manholes identified during Permit Year 3 are presented in Table 5.

TABLE 5: CONTAMINATED STORM DRAIN MANHOLES IN CATCHMENT 31

Manhole	Pipe	Street	Ammonia (mg/L)	Surfactants (mg/L)	Chlorine (mg/L)
31-6455	31-5005:31-6455	Broadway	10	0.75	0.54

Permit Year 6 Investigation

The City has attempted building inspections, dye testing, and mapping investigations in areas adjacent to the manhole and associated pipe from Table 5 during previous permit years. During PY6, SDE completed follow-up manhole sampling on Mallet Street and Willow Ave. An inspection of DMH 31-5144 in November 2023 showed the presence of chlorine and lab surfactants. A previously unmapped drainage manhole, DMH-7000, was discovered during field investigations. Sampling of this manhole showed the presence of chlorine, lab surfactants, and E. coli. In attempts to determine the contamination source, building inspections were attempted on Willow Ave. 20 properties along pipe segment 31-7000 : 31-5144 were inspected and all results were Legal.

Based on the building inspections completed during previous permit years, the City has not found the source of the suspected illicit connections in Catchment 31. The source of contamination at storm drain manhole 31-6455 is not known as all completed building inspections and dye testing has yielded Legal results.

Next Steps

To address the contamination at DMH 31-5144, additional building inspections will be attempted at properties further upstream. Woodard & Curran prepared a plan for dye testing and CCTV in Catchment 31 to determine whether the drains in several areas of the Tufts campus are connected to the City’s MS4.



CATCHMENT 32

Catchment 32 is located at the Assembly Square neighborhood. The catchment is bordered by the Mystic River, the Massachusetts Bay Transportation Authority (MBTA) railroad, Mystic Avenue, Revolution Drive, and Grand Union Boulevard. The outfall for this catchment discharges to the Mystic River. Contaminated storm drain manholes identified during Permit Years 3 and 5 are presented in Table 6.

TABLE 6: CONTAMINATED STORM DRAIN MANHOLES IN CATCHMENT 32

Manhole	Pipe	Street	Ammonia (mg/L)	Surfactants (mg/L)	Chlorine (mg/L)
32-6265¹	32-6267:32-6265	Revolution Drive	3	0.25	0.26
32-6425²	32-6425:32-6424	Revolution Drive	3	0.75	0.82
32-6424²	32-6424:32-6423	Revolution Drive	3	0.75	1.28
32-6389¹	32-6124:32-6389	Foley Street	0.8	0.25	0.09
32-6122¹	UNK:32-6122	Canal Street	10	1.5	Not Detected
UNK¹	UNK:S2-6179	Grand Union Blvd	0.2	Not Detected	1.51
1 – Identified During Permit Year 3 2 – Identified During Permit Year 5					

Permit Year 6 Investigation

The City has made a significant effort to determine the sources of contamination in Catchment 32 during PY6. A summary memo of Catchment 32 investigations as of January 2024 is included in Appendix C.

The City attempted additional investigations near 290 Revolution Drive in PY6 to identify the source of contamination, however the field crew was unable to locate CB-03622 to continue investigations. CCTV inspections were completed in September 2023. During CCTV inspections, it appeared that the catch basins upstream of SW-CB-03622 are part of the rain gardens in the area, but pipe inspections could not be completed due to a drop connection. Dye that was poured into SW-CB-03622 was observed during the CCTV inspection for pipe segment SW-CB-03622 : 32-6425. The inspection crew could not figure out where FIT-7014 : 32-6434 connects to the system, however since there were no additional inlets at 32-6428 or at 32-6427 and 32-6426, it is suspected that FIT-7014 : 32-6434 may also be part of the rain gardens. It was also observed that pipe segment FIT-7009 : 32-6425 was observed to be wet. This suggests that the flow sampled on June 22, 2023, was FIT-7009 : 32-6425. Refer to Appendix D for the 290 Revolution Drive summary memo. Follow up dye tests were completed at 290 Revolution Drive on November 29, 2023, and December 6, 2023. A total of ten dye tests were conducted throughout the building and all tests were legal. Since all tests were legal, W&C recommended laboratory sampling for surfactants and human/total Bacteroides to verify if there is sewage present. SDE visited DMH 32-6425 on December 20, 2023, to collect the lab samples, however



there was not enough flow to sample. The crew placed a sandbag and returned on December 26, 2023, there was still not enough flow to sample. This was put on hold to account for a possible air conditioning unit connection. SDE will make another attempt in July or August 2024.

The sampling results from December 2020 showed that pipe segment 32-7001 : 32-6122 has ammonia, surfactants, and chlorine values above the permit threshold. This segment is located downstream of 445 Artisan Way, which is a large retail/commercial/apartment complex. The pipe segment (32-7000 : 32-6443) had a sewage odor and visual evidence of sewage present during an April 2023 inspection.

Additional sampling was completed in August 2023 during dry weather and low tide. The sample results for 32-7001 : 32-6122 resulted in a positive test kit (Chlorine = 1.67 mg/L, Ammonia = 10.0 mg/L, Surfactants = 3.00 mg/L).

CCTV was completed on Canal Street on September 5th, 2023 of pipes on the eastern side of DMH 31-6122. The CCTV inspections showed an unmapped inlet in DMH 32-6442. The inlet was observed to have waste and toilet paper entering the drainage manhole. The camera went 54.8' into the property of 445 Artisan Way (property is an apartment complex also known as 450 Canal Street) and could not move around the bend, however more toilet paper was seen coming from that direction. This is a suspected illicit connection from the apartment complex. As mentioned previously, there was also potential waste/visual evidence observed in DMH 32-7000 in April 2023. There could potentially be multiple issues here as this is not in line with the unmapped inlet to 32-6442.

In attempts to verify the suspected illicit connection, SDE completed dye tests at the AVA Apartments located at 445 Artisan Way on October 23, 2023. A total of eight dye tests were completed in vacant units and public spaces, but all tests were legal. Throughout PY6, SDE has completed 17 additional dye tests at the retail spaces connected to this property and all tests were legal.

Next Steps

Based on the investigations completed during Permit Year 6, the City did not verify any infrastructural issues or illicit connections in the City's infrastructure in the previously identified contaminated areas. However, there is a suspected illicit connection at 445 Artisan Way. The City is working to obtain internal plumbing drawings of the apartment complex that will be used to develop a comprehensive dye testing plan. The contaminated storm pipe on Canal Street is the highest priority pipe for investigations in Catchment 32, so field efforts will focus on this area before completing further inspections at 32-6389 (Foley Street) and S2-6179/S2-6203 (near Home Depot).



APPENDIX A: PERMIT YEAR 6 BUILDING INSPECTION MEMO

MEMORANDUM



TO: Lucica Hiller, City of Somerville, Stormwater Manager

CC: Todd Prokop, Woodard & Curran
Colin Brown, SDE

FROM: Garrett Bergey, James Sherrard Jr, and Emily Nealon – Woodard & Curran

DATE: July 19, 2024

RE: Somerville IDDE Investigation – Permit Year 6 Building Inspection Memo

This Building Inspection Memo summarizes the key findings of inspections and recommendations for Task 1, Illicit Discharge, Detection, and Elimination (IDDE) Investigation: Building Inspections. Woodard & Curran, along with their subcontractor, Stacey DePasquale Engineering, Inc (SDE), organized and performed the inspections described in this report. The inspection results summarized in this report took place between July 1, 2023 through June 30, 2024.

Investigation Approach

Field crews completed building inspections in the following catchments:

- Catchment 7
- Catchment 11
- Catchment 31
- Catchment 32

Woodard & Curran conducted follow-up investigations of the pipe segments with high levels of contamination identified during Permit Year 3 via building inspections and dye flushing. Where continued contamination was identified, additional investigations were completed to isolate the origin of the contamination. Buildings adjacent to these newly identified pipes were targeted for building inspections. Woodard & Curran assisted the City with letter generation and distribution to the building addresses. Further description of these activities and results are presented in the next section.

Dye testing and visual inspection of private sewer infrastructure was part of the building inspection procedure. After the dye test was completed, a crew member looked for confirmation of dye in both sewer and stormwater manholes to determine which system the building sewer service is connected to. The crew also performed a visual inspection of the services leaving the building to determine if there are one or two discharges and decide on the number of necessary dye tests. The results of the building inspections can be categorized as the types described below. Inspection data for all inspected properties can be found in Attachment 1.

- *Legal:* Dye test result is Legal if dye is observed in sewer system only. This result confirms that an illicit connection does not exist at this property.



- *Not Legal:* Dye test result is Not Legal if dye is observed in stormwater system only. This result confirms that an illicit connection does exist at this property.
- *Dye in Both:* Dye test result is Dye in Both if dye is observed in sewer system and storm drain. This result is considered inconclusive, but typically occurs when there is a leaking sewer lateral.
- *No Dye Found:* Dye test result is No Dye Found if dye is neither observed in sewer system nor the storm drain. This result is inconclusive and further inspection of the infrastructure in the area should be completed.

Building Investigation Results

79 building inspections were attempted during this reporting period. One building inspection was a re-inspection of 445 Artisan Way which has been previously inspected. Of the 79 buildings, the City was able to access and complete inspections at 57 locations and completed 149 dye tests. Table 1 shows the building inspection results and current building status. Attachment 2 includes maps of the building locations and the building status.

All 57 buildings inspected were found to be legally connected to the City's sewer system. Attachment 3 provides a list of the verified illicit connections and action items associated with the notification and abatement schedule. No additional illicit connections were verified between July 1, 2023 and June 30, 2024.



TABLE 1: BUILDING INSPECTION RESULTS

Catchment	Building Address	Contaminated Manhole	Status
7	1180 Broadway	7-5829	Legal
7	1196 Broadway	7-5829	Legal
7	16 Weston Ave	7-5831	Legal
7	1 Watson St	7-6377	Legal
7	11 Russell Rd	7-6377	Legal
7	14 Belknap St	7-6377	Legal
7	15 Belknap St	7-6377	Legal
7	17 Belknap St	7-6377	Legal
7	18 Belknap St	7-6377	Legal
7	2 Watson St	7-6377	Legal
7	22-24 Belknap St	7-6377	Legal
7	29 Belknap St	7-6377	Legal
7	30-32 Belknap St	7-6377	Legal
7	31 Belknap St	7-6377	Legal
7	34 Belknap St	7-6377	Legal
7	5 Russell Rd	7-6377	Legal
7	6 Russell Rd	7-6377	Legal
7	7 Belknap St	7-6377	Legal
7	7 Russell Rd	7-6377	Legal
7	8 Russell Rd	7-6377	Legal
7	1269 Broadway	7-6377	Legal
11	30 Woods Ave	11-5494	Legal
11	31 Woods Ave	11-5494	Legal
11	32 Woods Ave	11-5494	Legal
11	38 Woods Ave	11-5494	Legal
11	44 Woods Ave	11-5494	Legal
11	50 Woods Ave	11-5494	Legal
11	54 Woods Ave	11-5494	Legal
11	58 Woods Ave	11-5494	Legal
11	62 Woods Ave	11-5494	Legal
31	675 Broadway	31-5005	Legal
31	221 Willow Ave	31-5144	Legal
31	222 Willow Ave	31-5144	Legal
31	227 Willow Ave	31-5144	Legal
31	231 Willow Ave	31-5144	Legal
31	232 Willow Ave	31-5144	Legal
31	233 Willow Ave	31-5144	Legal
31	234 Willow Ave	31-5144	Legal



Catchment	Building Address	Contaminated Manhole	Status
31	235 Willow Ave	31-5144	Legal
31	237 Willow Ave	31-5144	Legal
31	241 Willow Ave	31-5144	Legal
31	242 Willow Ave	31-5144	Legal
31	243 Willow Ave	31-5144	Legal
31	246 Willow Ave	31-5144	Legal
31	247 Willow Ave	31-5144	Legal
31	249 Willow Ave	31-5144	Legal
31	250 Willow Ave	31-5144	Legal
31	251 Willow Ave	31-5144	Legal
31	253 Willow Ave	31-5144	Legal
32	411 Artisan Way	32-6122	Legal
32	421 Artisan Way	32-6122	Legal
32	445 Artisan Way	32-6122	Legal
32	481 Artisan Way	32-6122	Legal
32	501 Assembly Row	32-6122	Legal
32	541 Assembly Row	32-6122	Legal
32	562 Assembly Row	32-6122	Legal
32	275 Foley St	32-6389	Legal

Next Steps



There are 31 remaining buildings planned for inspection. These properties are located in Catchment 7, Catchment 11, Catchment 10, and Catchment 31.

The dye test in Catchment 7 at 15 Weston Ave is an apartment complex along the contaminated drainage pipe that has not yet been inspected. It should also be noted that the properties to be inspected in Catchment 10 are not a result of contamination from PY3. In June 2024, active suds were observed in a storm drain on Sterling Street while completing a spot repair as part of the West Somerville Sewer Rehab project. The suds were seen upstream of DMH A-5504. Closed-circuit television (CCTV) footage shows multiple active taps in DMH A-5503 : DMH A-5504, which are likely roof drain connections, however this allows for the possibility of a washing machine or basement fixture being plumbed into the storm drain. Dye tests are recommended to investigate the source of suds on Sterling Street. Refer to Table 2 for a list of the newly identified properties planned for inspection.

TABLE 2: NEWLY IDENTIFIED BUILDING INSPECTIONS

Catchment	Building Address	Contaminated Manhole
7	15 Weston Ave	7-5831
10	17 Sterling Street	A-5504
10	18 Sterling Street	A-5504
10	16 Sterling Street	A-5504
10	11 Sterling Street	A-5504
10	7 Sterling Street	A-5504
10	12 Sterling Street	A-5504
10	10 Sterling Street	A-5504

The remaining inspections in Catchment 11 and Catchment 31 are located on Woods Ave and Willow Ave, respectively. Building inspections at these properties have been attempted but not yet completed. The City is making additional calls to property owners and mailing a more strongly worded letter to the homeowners to enforce inspections at the properties listed in Table 3.



TABLE 3: PLANNED BUILDING INSPECTIONS

Catchment	Building Address	Contaminated Manhole
11	30 Woods Ave	11-5494
11	31 Woods Ave	11-5494
11	35 Woods Ave	11-5494
11	38 Woods Ave	11-5494
11	39 Woods Ave	11-5494
11	42 Woods Ave	11-5494
11	43 Woods Ave	11-5494
11	47 Woods Ave	11-5494
11	51 Woods Ave	11-5494
11	55 Woods Ave	11-5494
11	58 Woods Ave	11-5494
11	61 Woods Ave	11-5494
11	63 Woods Ave	11-5494
11	66 Woods Ave	11-5494
11	71 Woods Ave	11-5494
31	224 Willow Ave	31-5144
31	225 Willow Ave	31-5144
31	228 Willow Ave #1	31-5144
31	228 Willow Ave #2	31-5144
31	238 Willow Ave	31-5144
31	249 Willow Ave	31-5144
31	251 Willow Ave	31-5144

Additional building inspections are expected to be completed in Permit Year 7. Background on these inspections can be found in the City's Permit Year 6 Catchment Investigation Summary.



ATTACHMENT 1: BUILDING INSPECTION DATA

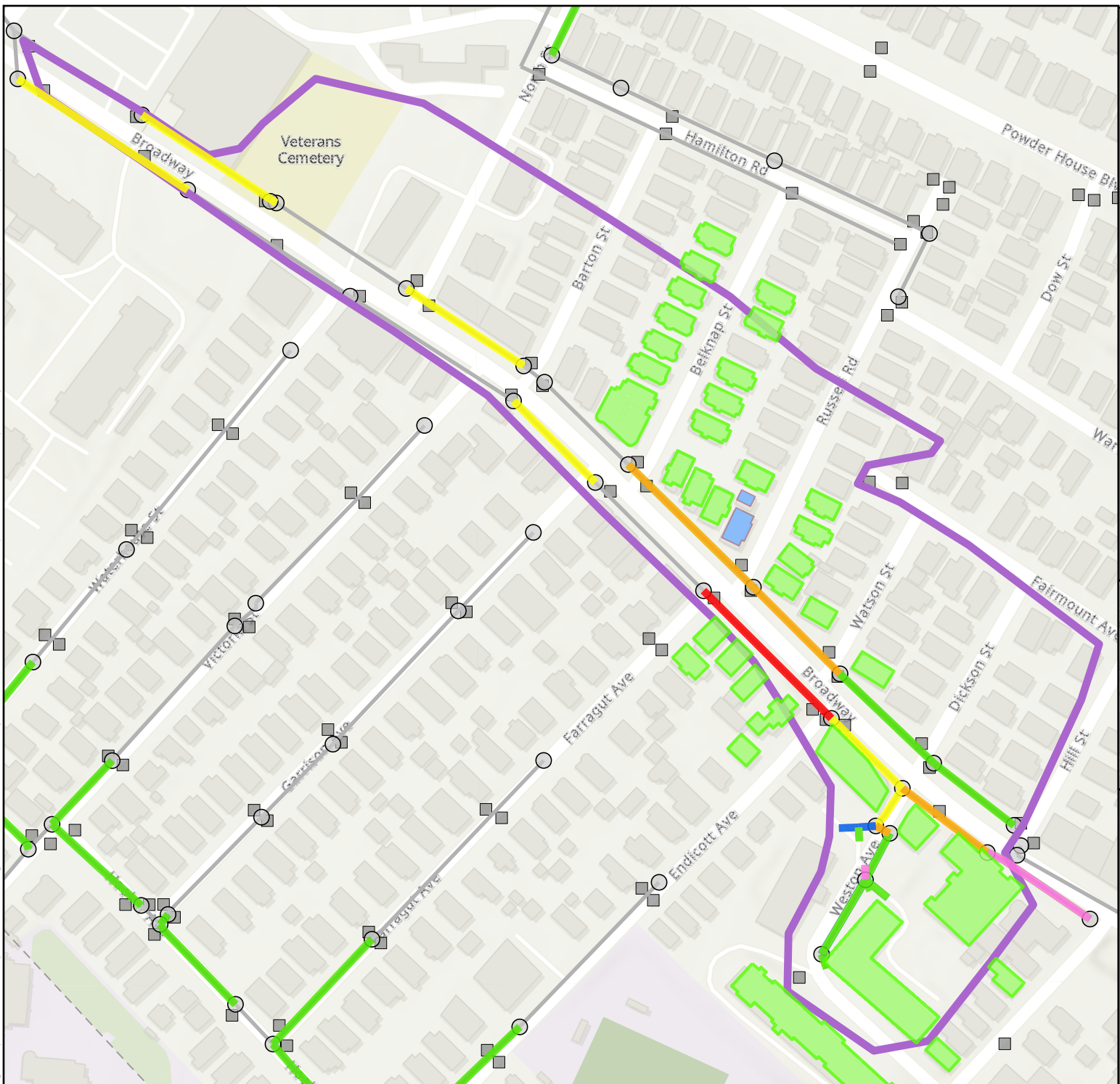
DYE TEST RESULT	Best Contact Name	Contact Phone	Access By:	Address	Parcel ID	Unit Suite Apartment Number	Owner	Inspection Date	Building Address	Number of Floors	Building Type:	Flat Roof:	Downspouts:	IEWER Manhole ID Number	RAIN MH Dye Observed	RAIN Manhole ID Number	MH 3 Inspected	MH 3 Type	MH 3 ID Number	MH 3 Dye Observed	MH 4 Inspected	MH 4 ID Number	MH 4 Type	MH 4 Dye Observed	Comments
Legal			Resident	54 WOODS AVE	F_756206_2975419		KARTSO RINCHEN & TENZING	1/11/2024	54 WOODS AVE	2	2-Family Residential	No	To Ground Surface		No	11-5494	No							Only had basement access, unable to enter any units. One more test required for the rest of the building.	
Legal	Sarah Connolly	+1 781-223-6507	Sarah Connolly	48 WOODS AVE	F_756237_2975394		EVANS RYAN W	1/30/2024	50 WOODS AVE	3	2-Family Residential	No	To Ground Surface	A-3092	No	11-5494	No				No				
Legal	Carl Svahn	+1 512-751-7898	Carl	62 WOODS AVE	F_756144_2975470		LIU KELLY	2/27/2024	62 WOODS AVE	2	2-Family Residential	No	To Ground Surface	A-3093	No	11-5494	No				No			62 and 60 share the same basement	
Legal	Carl Svahn	+1 512-751-7898	Carl	62 WOODS AVE	F_756144_2975470		LIU KELLY	2/27/2024	62 WOODS AVE	2	2-Family Residential	No	To Ground Surface	A-3093	No	11-5494	No				No			62 and 60 share the same basement	
Legal			Resident in 34 side	32 WOODS AVE	F_756361_2975293		MODOONO & MCCABE TRUSTEES	2/28/2024	32 WOODS AVE	2	2-Family Residential	No	To Ground Surface	A-3092	No	11-5494	No				No			32 and 34 share the same basement.	
Legal	Tenzing	617-913-1845	Tenzing Kartso	54 WOODS AVE	F_756206_2975419	2	KARTSO RINCHEN & TENZING	4/9/2024	54 WOODS AVE	2	2-Family Residential	No	To Ground Surface	A-3092	No	11-5494	No				No			Washing machine drain enters a hole in the floor covered by a cone. Otherwise One main stack into floor.	
Legal	Tenzing Kartso	617-913-1845	Tenzing	54 WOODS AVE	F_756206_2975419	2	KARTSO RINCHEN & TENZING	4/9/2024	54 WOODS AVE	2	2-Family Residential	No	To Ground Surface	A-3092	No	11-5494	No				No			One main stack into floor. Basement shared fir whole house so no need to test #52	
Legal	Harry Agritha	617-320-5462	Harry	58 WOODS AVE	F_756175_2975445	58	AGRITHA HAROLD E	6/12/2024	58 WOODS AVE	2	2-Family Residential	No	To Ground Surface	A-3092	No	11-5494	No				No			Resident did not have access to basement, 56 may have access and still needs to be tested.	
Legal	Harry Agritha	617-320-5462	Harry	58 WOODS AVE	F_756175_2975445	58	AGRITHA HAROLD E	6/12/2024	58 WOODS AVE	2	2-Family Residential	No	To Ground Surface	A-3092	No	11-5494	No				No			Resident did not have access to basement, 56 may have access and still needs to be tested.	
Legal	Renee Santangelo	1+ 617-620-3915	Renee	31 WOODS AVE	F_756458_2975369		SANTANGELO MICHAEL	6/17/2024	31 WOODS AVE	2	2-Family Residential	No	To Ground Surface	A-3092	No	11-5494	No								
Legal	Lori	617-592-0212		30 WOODS AVE	F_756392_2975267		DIFUSCO ANTONIETTA FOR LIFE	6/17/2024	30 WOODS AVE	2	2-Family Residential	No	To Ground Surface	A-3092	No	11-5494	No								
Legal	Lori	617-592-0212		30 WOODS AVE	F_756392_2975267		DIFUSCO ANTONIETTA FOR LIFE	6/17/2024	30 WOODS AVE	2	2-Family Residential	No	To Ground Surface	A-3092	No	11-5494	No								
Legal				38 WOODS AVE	F_756330_2975318		NOLAN MICHAEL F	6/17/2024	38 WOODS AVE	2	2-Family Residential	No	To Ground Surface	A-3092	No	11-5494	No								
Legal	Sylvania			1196 BROADWAY	F_756451_2972358		MIDDLESEX FEDERAL SAVINGS	1/11/2024	1196 BROADWAY	1	1-Family Residential	Yes	None	CA-50	No	7-5829	No				No				
Legal				1196 BROADWAY	F_756451_2972358		MIDDLESEX FEDERAL SAVINGS	1/11/2024	1196 BROADWAY	1	1-Family Residential	Yes	None	CA-50	No	7-5829	No				No				
Legal	Sylvania			1196 BROADWAY	F_756451_2972358		MIDDLESEX FEDERAL SAVINGS	1/11/2024	1196 BROADWAY	1	1-Family Residential	Yes	None	CA-50	No	7-5829	No				No				
Legal				11 CLARENDON AVE	F_756570_2972179	1180 Broadway St.	WAGNER LEAH J & JOHN B	1/25/2024	1180 BROADWAY ST	1	Retail/Commercial	Yes	None	CA-50	No	7-5829	No				No			1180 Broadway, Somerville shown as 11 Clarendon Ave. on the map	
Legal				11 CLARENDON AVE	F_756570_2972179	1180 Broadway St.	WAGNER LEAH J & JOHN B	1/25/2024	1180 BROADWAY ST	1	Retail/Commercial	Yes	None	CA-50	No	7-5829	No				No			1180 Broadway, Somerville shown as 11 Clarendon Ave. on the map	
Legal				11 CLARENDON AVE	F_756570_2972179	1180 Broadway St.	WAGNER LEAH J & JOHN B	1/25/2024	1180 BROADWAY ST	1	Retail/Commercial	Yes	None	CA-50	No	7-5829	No				No			1180 Broadway shown as 11 Clarendon Ave on map.	
Legal				11 CLARENDON AVE	F_756570_2972179	1180 Broadway St.	WAGNER LEAH J & JOHN B	1/25/2024	1180 BROADWAY ST	1	Retail/Commercial	Yes	None	CA-50	No	7-5829	No				No			1180 Broadway shown as 11 Clarendon Ave on map.	
Legal	Joel Dungan	9702277129	Joel	15 BELKNAP ST #1	F_756180_2972992		HARRISON BRYAN & DAVA	10/11/2023	15 Belknap st.	3	3-Family Residential	Yes	None	A-61	No	7-6377	No								
Legal		857-259-9418	Kristin Sieminski	1 WATSON ST	F_756395_2972604	1	KLEINMAN ALEXANDER & NAYDICH MARSH	10/9/2023	1 Watson St.	3	2-Family Residential	No	To Ground Surface	A-57	No	7-6377	No				No			Two stacks going into floor, one stack is for kitchen sink only.	
Legal		857-259-9418	Kristin Sieminski	1 WATSON ST	F_756395_2972604	1	KLEINMAN ALEXANDER & NAYDICH MARSH	10/9/2023	1 Watson St.	3	2-Family Residential	No	To Ground Surface	A-57	No	7-6377	No				No			Two stacks going into floor, one stack is for kitchen sink only.	
Legal	Robert Nice	617-921-8749	Robert Nice	2 WATSON ST	F_756317_2972685		NICE R KEVIN	10/11/2023	2 Watson st.	3	2-Family Residential	No	To Ground Surface	A-57	No	7-6377	No				No				
Legal				14 BELKNAP ST	F_756072_2973041	14 Belknap St	CRANLEY DONALD WARD	1/25/2024	14 BELKNAP ST	3	3-Family Residential	Yes	None	A-61	No	7-6377	No				No				
Legal				14 BELKNAP ST	F_756072_2973041	14 Belknap St	CRANLEY DONALD WARD	1/25/2024	14 BELKNAP ST	3	3-Family Residential	Yes	None	A-61	No	7-6377	No				No				
Legal				14 BELKNAP ST	F_756072_2973041	14 Belknap St	CRANLEY DONALD WARD	1/25/2024	14 BELKNAP ST	3	3-Family Residential	Yes	None	A-61	No	7-6377	No				No				
Legal	Nicole Bertucci		Nicole Bertucci	18 BELKNAP ST	F_756110_2973115	18 Belknap St.	24 BELKNAP STREET LLC	1/25/2024	18 BELKNAP ST	3	3-Family Residential	Yes	None	A-61	No	7-6377	No				No				
																								Mapped as 24 Belknap, dye test for 18 Belknap.	
Legal	Tanya Lopes	+1 617-625-4400	Tanya Lopes	1269 BROADWAY	F_756044_2972980		PRIVATERA JENNIE TRUSTEE	10/10/2023	1269 Broadway	3	Retail/Commercial	Yes	None	A-72	No	7-6377	No				No			Test and basement access was just for 1259. Mixed use building, commerical on ground level and apartments on upper floors. Numbers 1261-1269 are attached to building but appear to have a separate basement, no access at this time.	
Legal	Sonica	857-500-9015	Sonica	1269 BROADWAY	F_756044_2972980	1261- laser hair removal place	PRIVATERA JENNIE TRUSTEE	10/18/2023	1269 BROADWAY	3	Apartments	Yes	None	A-72	No	7-6377	No				No			1269 portion of building up for rent/not currently occupied	
No Fixtures	MBTA		N/a	647 BROADWAY	F_761380_2970857		MBTA	10/9/2023	675 Broadway St															This parcel corresponds to the Ball Square green line station. There are no fixtures to test	
Legal	Beth		Beth	241 WILLOW AVE #F	F_760581_2970535	2- upstairs	SLOBODA LARA	1/8/2024	241 WILLOW AVE	2	2-Family Residential	No	To Ground Surface	M-266	No	31-5144	No				No			Need to access unit 1 to test basement washing machine, which has own stack going into floor amd is owned by unit 1 resident. Also test more fixtures on right side building- there is a old foundation downspout/ potential sump pump into floor on right	
Legal	Beth		Beth	241 WILLOW AVE #F	F_760581_2970535	2- upstairs	SLOBODA LARA	1/8/2024	241 WILLOW AVE	2	2-Family Residential	No	To Ground Surface	M-266	No	31-5144	No				No			Need to access unit 1 to test basement washing machine, which has own stack going into floor amd is owned by unit 1 resident. Also test more fixtures on right side building- there is a old foundation downspout/ potential sump pump into floor on right	
Legal	Zeid Barakat	917 363 3438	Zeid	250 WILLOW AVE	F_760493_2970670	1	WAREHAM ELLINOR P	1/8/2024	250 WILLOW AVE	2	Apartments	No	To Ground Surface	M-266	No	31-5144	No				No			Finished basement, tested kitchen sink	
Legal	Zeid	917 363 3438	Zeid	250 WILLOW AVE	F_760493_2970670	1	WAREHAM ELLINOR P	1/8/2024	250 WILLOW AVE	2	Apartments	No	To Ground Surface	M-266	No	31-5144	No				No			Finished basement	
Legal	Zeid	917 363 3438	Zeid	250 WILLOW AVE	F_760493_2970670	1	WAREHAM ELLINOR P	1/8/2024	250 WILLOW AVE	2	Apartments	No	To Ground Surface	M-266	No	31-5144	No				No			Finished basement	
Legal	Kyra Seevers	859 537 9917	Kyra	242 WILLOW AVE	F_760456_2970597	1	MAMO WILLOW VENTURE LLC	1/8/2024	242 WILLOW AVE	2	Apartments	No	To Ground Surface	M-266	No	31-5144	No				No			Unit 2 has access to basement- left flyer for them	
Legal	Ellen	7813670943	Ellen	235 WILLOW AVE	F_760562_2970498		TEWARI SIDDHARTH & LAWSON JULIA	1/9/2024	237 WILLOW AVE	3	2-Family Residential	No	To Ground Surface	M-266	No	31-5144	No				No				
Legal	Ellen	7813670943	Ellen	235 WILLOW AVE	F_760562_2970498		TEWARI SIDDHARTH & LAWSON JULIA	1/9/2024	237 WILLOW AVE	3	2-Family Residential	No	To Ground Surface	M-266	No	31-5144	No				No				
Legal	Angela		Angela	232 WILLOW AVE	F_760402_2970485	1	KITMIRIDIS KONSTANTIA & SOULA TRUSTEES	1/9/2024	232 WILLOW AVE	3	2-Family Residential	No	To Ground Surface	M-266	No	31-5144	No				No				
Legal	Angela		Angela	232 WILLOW AVE	F_760402_2970485	1	KITMIRIDIS KONSTANTIA & SOULA TRUSTEES	1/9/2024	232 WILLOW AVE	3	2-Family Residential	No	To Ground Surface	M-266	No	31-5144	No				No				
Legal	Angela		Angela	232 WILLOW AVE	F_760402_2970485	1	KITMIRIDIS KONSTANTIA & SOULA TRUSTEES	1/9/2024	232 WILLOW AVE	3	2-Family Residential	No	To Ground Surface	M-266	No	31-5144	No				No				
Legal	Angela		Angela	232 WILLOW AVE	F_760402_2970485	1	KITMIRIDIS KONSTANTIA & SOULA TRUSTEES	1/9/2024	232 WILLOW AVE	3	2-Family Residential	No	To Ground Surface	M-266	No	31-5144	No				No				
Legal	Angela		Angela	232 WILLOW AVE	F_760402_2970485	1	KITMIRIDIS KONSTANTIA & SOULA TRUSTEES	1/9/2024	232 WILLOW AVE	3	2-Family Residential	No	To Ground Surface	M-266	No	31-5144	No				No				
Legal	Resident		Resident	243 WILLOW AVE	F_760599_2970573		BERKOWITZ BETHANY & LIVINGSTON JASON	1/15/2024	243 WILLOW AVE	3	2-Family Residential	No	To Ground Surface	M-266	No	31-5144	No				No			Washer machine drains into sink. Only one stack	
Legal	Dave Green	+1 617-823-3153	Dave Green	247 WILLOW AVE	F_760618_2970610		GREEN FUSAKO FOR LIFE & ET AL	1/15/2024	247 WILLOW AVE	3	2-Family Residential	No	To Ground Surface	M-266	No	31-5144	No				No			Washer machine is connected to this stack.	
Legal	Dave Green	+1 617-823-3153	Dave Green	247 WILLOW AVE	F_760618_2970610		GREEN FUSAKO FOR LIFE & ET AL	1/15/2024	247 WILLOW AVE	3	2-Family Residential	No	To Ground Surface	M-266	No	31-5144	No				No				
Legal	Siddharth Tewari	+1 202-251-1022	Siddharth Tewari	235 WILLOW AVE	F_760562_2970498		TEWARI SIDDHARTH & LAWSON JULIA	1/15/2024	235 WILLOW AVE	3	2-Family Residential	No	To Ground Surface	M-266	No	31-5144	No				No				
Legal	Siddharth Tewari	+1 202-251-1022	Siddharth Tewari	235 WILLOW AVE	F_760562_2970498		TEWARI SIDDHARTH & LAWSON JULIA	1/15/2024	235 WILLOW AVE	3	2-Family Residential	No	To Ground Surface	M-266	No	31-5144	No				No				
Legal	Siddharth Tewari	+1 202-251-1022	Siddharth Tewari	235 WILLOW AVE	F_760562_2970498		TEWARI SIDDHARTH & LAWSON JULIA	1/15/2024	235 WILLOW AVE	3	2-Family Residential	No	To Ground Surface	M-266	No	31-5144	No				No				
Legal	Alexandra krol	8148800063	Alexandra	227 WILLOW AVE #1F	F_760505_2970384	1	BARRIGAN HUGH & KROL ALEXANDRA	1/15/2024	227 WILLOW AVE	3	2-Family Residential	No	To Ground Surface	M-266	No	31-5144	No				No			Washer machine connects to same stack.	
Legal	Alexandra krol	8148800063	Alexandra	227 WILLOW AVE #1F	F_760505_2970384	1	BARRIGAN HUGH & KROL ALEXANDRA	1/15/2024	227 WILLOW AVE	3	2-Family Residential	No	To Ground Surface	M-266	No	31-5144	No				No			Washer machine connects to same stack.	
Legal	Benjamin	7815728222	Benjamin	222 WILLOW AVE #F	F_760345_2970371		BRIGHTMAN BENJAMIN & CHO PATRICIA	1/15/2024	222 WILLOW AVE	3	2-Family Residential	No	To Ground Surface	M-266	No	31-5144	No				No			Everything is connected to one center stack	
Legal	Elissa Hult	585-613-1459	Elissa	231 WILLOW AVE	F_760524_2970422	1	ESTABROOKS CALEB M	1/29/2024	231 WILLOW AVE	3	2-Family Residential	No	To Ground Surface	M-266	No	31-5144	No				No			Two stacks into ground in basement.	
Legal	Elissa Hult	585-613-1459	Elissa	231 WILLOW AVE	F_760524_2970422	1	ESTABROOKS CALEB M	1/29/2024	231 WILLOW AVE	3	2-Family Residential	No	To Ground Surface	M-266	No	31-5144	No				No			Two stacks into ground in basement.	
Legal	Elissa Hult	585-613-1459	Elissa	231 WILLOW AVE	F_760524_2970422	1	ESTABROOKS CALEB M	1/29/2024	231 WILLOW AVE	3</															

DYE TEST RESULT	Best Contact Name	Contact Phone	Access By:	Address	Parcel ID	Unit Suite Apartment Number	Owner	Inspection Date	Building Address	Number of Floors	Building Type	Flat Roof	Downspouts:	IEWER Manhole ID Number	RAIN MH Dye Observed	RAIN Manhole ID Number	MH 3 Inspected	MH 3 Type	MH 3 ID Number	MH 3 Dye Observed	MH 4 Inspected	MH 4 ID Number	MH 4 Type	MH 4 Dye Observed	Comments	
No Dye Observed	American Eagle	+1 617-616-1070	Manager	445 ARTISAN WAY	F.770063, 2969175			12/19/2023	541 Assembly Row	5	Retail/Commercial	Yes	None		No		32-5931	Yes		33-6442	No					
Legal	Le Macron French Pastry	+1 617-764-2084	Employee	445 ARTISAN WAY	F.770063, 2969175			12/19/2023	411 ARTISAN WAY	5	Retail/Commercial	Yes	None		No		32-5931	Yes		33-6442	No					
Legal	Le Macron French Pastry	+1 617-764-2084	Employee	445 ARTISAN WAY	F.770063, 2969175			12/19/2023	445 ARTISAN WAY	5	Retail/Commercial	Yes	None		No		32-5931	Yes		33-6442	No					
Legal	Le Macron French Pastry	+1 617-764-2084	Employee	445 ARTISAN WAY	F.770063, 2969175			12/19/2023	411 ARTISAN WAY	5	Retail/Commercial	Yes	None		No		32-5931	Yes		33-6442	No					
Legal	Ten One Tea House	+1 617-744-3048	Jamie	445 ARTISAN WAY	F.770063, 2969175			12/19/2023	421 ARTISAN WAY	5	Retail/Commercial	Yes	None		No		32-5931	Yes		33-6442	No					
Legal	Ten One Tea House	+1 617-744-3048	Jamie	445 ARTISAN WAY	F.770063, 2969175			12/19/2023	421 ARTISAN WAY	5	Retail/Commercial	Yes	None		No		32-5932	Yes		32-6442	No					
Legal	Bliss nails	+1 617-616-5587	Employee	445 ARTISAN WAY	F.770063, 2969175			1/9/2024	481 ARTISAN WAY	5	Retail/Commercial	Yes	None		No		32-6088	Yes		32-6442	No	No				
Legal	Bliss Nails	+1 617-616-5587	Employee	445 ARTISAN WAY	F.770063, 2969175			1/9/2024	481 ARTISAN WAY	5	Retail/Commercial	Yes	None		No		32-6088	Yes		32-6442	No	No				
Legal	Martin -facilities	+1 857-523-5918	Martin	275 FOLEY ST	F.769407, 2968328		CDNV LAND LLC	12/6/2023	275 Foley st	8	Apartments	Yes	None		No		32-6424	No			No				Tested janitorial 1st floor	
Legal	Martin -facilities	+1 857-523-5918	Martin	275 FOLEY ST	F.769407, 2968328		CDNV LAND LLC	12/6/2023	275 Foley st	8	Apartments	Yes	None		No		32-6424	No			No				Tested janitorial 1st floor	
Legal	Martin	857-523-5918	Martin	275 FOLEY ST	F.769407, 2968328		CDNV LAND LLC	12/6/2023	275 FOLEY ST	8	Apartments	Yes	None		No		32-6424	No			No					
Legal	Martin	857-523-5918	Martin	275 FOLEY ST	F.769407, 2968328		CDNV LAND LLC	12/6/2023	275 FOLEY ST	8	Apartments	Yes	None		No		32-6424	No			No					
Legal	Martin	+1 857-523-5918	Martin	275 FOLEY ST	F.769407, 2968328	319	CDNV LAND LLC	12/6/2023	275 FOLEY ST	8	Apartments	Yes	None		No		32-6424	No			No					
Legal	Martin	+1 857-523-5918	Martin	275 FOLEY ST	F.769407, 2968328	319	CDNV LAND LLC	12/6/2023	275 FOLEY ST	8	Apartments	Yes	None		No		32-6424	No			No					
Legal	Martin	+1 857-523-5918	Martin	275 FOLEY ST	F.769407, 2968328		CDNV LAND LLC	12/6/2023	275 FOLEY ST	8	Apartments	Yes	None		No		32-6424	No			No					
Legal	Martin	+1 857-523-5918	Martin	275 FOLEY ST	F.769407, 2968328		CDNV LAND LLC	12/6/2023	275 FOLEY ST	8	Apartments	Yes	None		No		32-6424	No			No				Tested mechanical closet	
Legal	Martin	+1 857-523-5918	Martin	275 FOLEY ST	F.769407, 2968328		CDNV LAND LLC	12/6/2023	275 FOLEY ST	8	Apartments	Yes	None		No		32-6424	No			No				Tested mechanical closet	
Legal	Martin	+1 857-523-5918	Martin	275 FOLEY ST	F.769407, 2968328	850	CDNV LAND LLC	12/6/2023	275 FOLEY ST	8	Apartments	Yes	None		No		32-6424	No			No					
Legal	Martin	+1 857-523-5918	Martin	275 FOLEY ST	F.769407, 2968328	850	CDNV LAND LLC	12/6/2023	275 FOLEY ST	8	Apartments	Yes	None		No		32-6424	No			No					
Legal	Martin -facilities	857-523-5918	David (at front desk)	275 FOLEY ST	F.769407, 2968328		CDNV LAND LLC	11/29/2023	275 FOLEY ST	8	Apartments	Yes	None		No		32-6425	Yes		32-6265	No	No			Public restroom near concierge desk. Facilities manager said storm and sewer stacks connect in a pit in floor but could not access pit	
Legal	Martin -facilities	857-523-5918	David (at front desk)	275 FOLEY ST	F.769407, 2968328		CDNV LAND LLC	11/29/2023	275 FOLEY ST	8	Apartments	Yes	None		No		32-6425	Yes		32-6265	No	No			Public restroom near concierge desk. Facilities manager said storm and sewer stacks connect in a pit in floor but could not access pit	
Legal	Martin -facilities	857-523-5918	Martin/ David (concierge desk)	275 FOLEY ST	F.769407, 2968328	618	CDNV LAND LLC	11/29/2023	275 FOLEY ST	8	Apartments	Yes	None		No		32-6425	Yes		32-6265	No	No			Martin says all storm and sewer stacks connect under floor in a pit but no access to pit given	
Legal	Martin -facilities	857-523-5918	Martin/ David (concierge desk)	275 FOLEY ST	F.769407, 2968328	618	CDNV LAND LLC	11/29/2023	275 FOLEY ST	8	Apartments	Yes	None		No		32-6425	Yes		32-6265	No	No			Martin says all storm and sewer stacks connect under floor in a pit but no access to pit given	
Legal	Martin facilities	857-523-5918	David/ Martin	275 FOLEY ST	F.769407, 2968328	329	CDNV LAND LLC	11/29/2023	275 FOLEY ST	8	Apartments	Yes	None		No		32-6425	Yes		32-6265	No	No			Show room	
Legal	Martin facilities	857-523-5918	David/ Martin	275 FOLEY ST	F.769407, 2968328	329	CDNV LAND LLC	11/29/2023	275 FOLEY ST	8	Apartments	Yes	None		No		32-6425	Yes		32-6265	No	No			Show room	
Legal	Martin- facilities	857-523-5918	David/ martin	275 FOLEY ST	F.769407, 2968328	Social club- 335	CDNV LAND LLC	11/29/2023	275 FOLEY ST	8	Apartments	Yes	None		No		32-6425	Yes		32-6265	No	No			Womens restroom social club room	
Legal	Martin- facilities	857-523-5918	David/ martin	275 FOLEY ST	F.769407, 2968328	Social club- 335	CDNV LAND LLC	11/29/2023	275 FOLEY ST	8	Apartments	Yes	None		No		32-6425	Yes		32-6265	No	No			Womens restroom social club room	
Legal	Martin -facilities	857-523-5918	Martin and david	275 FOLEY ST	F.769407, 2968328		CDNV LAND LLC	11/29/2023	275 FOLEY ST	8	Apartments	Yes	None		No		32-6425	Yes		32-6265	No	No			1st floor single public restroom near elevators	
Legal	Martin -facilities	857-523-5918	Martin and david	275 FOLEY ST	F.769407, 2968328		CDNV LAND LLC	11/29/2023	275 FOLEY ST	8	Apartments	Yes	None		No		32-6425	Yes		32-6265	No	No			1st floor single public restroom near elevators	
Legal	Athleta	+1 857-239-1900	Employee	445 ARTISAN WAY	F.770063, 2969175			1/9/2024	501 Assembly Row	5	Retail/Commercial	Yes	None		No		32-6442	Yes		32-6122	No					
Legal	Athleta	+1 857-239-1900	Employee	445 ARTISAN WAY	F.770063, 2969175			1/9/2024	501 Assembly Row	5	Retail/Commercial	Yes	None		No		32-6442	Yes		32-6122	No					
No Dye Observed	Steve Madden	(617) 623-0150	Manager	445 ARTISAN WAY	F.770063, 2969175			1/9/2024	541 Assembly Row	5	Retail/Commercial	Yes	None		No		32-6442	Yes		32-6122	No				Dye may be going to s2-3217	
Legal	Steve Maddon Shoe Store	(617) 623-0150	Manager	445 ARTISAN WAY	F.770063, 2969175			1/11/2024	445 ARTISAN WAY		Retail/Commercial	Yes	None		No		32-6442	Yes		32-6122	No	Yes	32-6122	Storm Drain	No	Dye tested previously NDF fixture. Dye appeared in sewer after 10 minutes. Fixture tested NDF previously because crew was at a different sewer.
Legal	John	617-388-2998	John	445 ARTISAN WAY	F.770063, 2969175	269		10/23/2023	445 ARTISAN WAY	5	Apartments	Yes	None		No		32-7000	Yes		32-7002	No	Yes	32-6088	Storm Drain	No	Multiple stacks into floor of parking garage
Legal	John	617-388-2998	John	445 ARTISAN WAY	F.770063, 2969175	437		10/23/2023	445 ARTISAN WAY	5	Apartments	Yes	None		No		32-7000	Yes		32-7002	No	Yes	32-6088	Storm Drain	No	Multiple stacks into floor of parking garage
Legal	John	617-388-2998	John	445 ARTISAN WAY	F.770063, 2969175	490		10/23/2023	445 ARTISAN WAY	5	Apartments	Yes	None		No		32-7000	Yes		32-7002	No	Yes	32-6088	Storm Drain	No	Multiple stacks into floor of parking garage
Legal	John	617-388-2998	John	445 ARTISAN WAY	F.770063, 2969175	221		10/23/2023	445 ARTISAN WAY	5	Apartments	Yes	None		No		32-7000	Yes		32-7002	No	Yes	32-6088	Storm Drain	No	Multiple stacks into floor of parking garage
Legal	John	617-388-2998	John	445 ARTISAN WAY	F.770063, 2969175	NA		10/23/2023	445 ARTISAN WAY	5	Apartments	Yes	None		No		32-7000	Yes		32-7002	No	Yes	32-6088	Storm Drain	No	Multiple stacks into floor of parking garage. Public womens restroom within garage tested here
Legal	John	617-388-2998	John	445 ARTISAN WAY	F.770063, 2969175	NA		10/23/2023	445 ARTISAN WAY	5	Apartments	Yes	None		No		32-7000	Yes		32-7002	No	Yes	32-6088	Storm Drain	No	Multiple stacks into floor of parking garage. Locked solitary bathroom in parking garage
Legal	John	617-388-2998	John	445 ARTISAN WAY	F.770063, 2969175	NA		10/23/2023	445 ARTISAN WAY	5	Apartments	Yes	None		No		32-7000	Yes		32-7002	No	Yes	32-6088	Storm Drain	No	Multiple stacks into floor of parking garage. Leasing office sink through parking garage
Legal	John	617-388-2998	John	445 ARTISAN WAY	F.770063, 2969175	NA		10/23/2023	445 ARTISAN WAY	5	Apartments	Yes	None		No		32-7000	Yes		32-7002	No	Yes	32-6088	Storm Drain	No	Multiple stacks into floor of parking garage. Gym restroom
Legal	Pandora Jewelry	617-702-4345	Brittany	445 ARTISAN WAY	F.770063, 2969175			1/8/2024	445 ARTISAN WAY	6	Retail/Commercial	Yes	None		No		32-7000	No		32-3222	No	Yes	32-6088	Storm Drain	No	
Legal	Le Macron ferench pastry	+1 617-764-2084	Employee	445 ARTISAN WAY	F.770063, 2969175			12/19/2023	445 ARTISAN WAY	5	Retail/Commercial	Yes	None		No		33-5931	Yes		32-6442	No					
No Dye Observed	Ten One Tea House	+1 617-744-3048	Jamie	445 ARTISAN WAY	F.770063, 2969175			12/19/2023	445 ARTISAN WAY	5	Retail/Commercial	Yes	None		No		33-5931	Yes		33-6442	No					Waited 1 hr and no dye found. Kitchen sink
No Dye Observed	N/a	N/a	N/a	16 WESTON AVE	F.756430, 2972169		ROESSEL MARK C & DANA H TRUSTEES	8/31/2023	16 WESTON AVE	3	Retail/Commercial	No	Into Ground		A-497	No	7-5833	Yes							Conducted two dye tests in the exterior of 16 weston ave. Tested a french drain which resulted in a no dye found after an hour and a half. Only used two gallons of water. Also tested a downspout into ground, which appeared in the drain after ten minutes. It was raining during the dye test, but porch roofs covered the french drain. Manhole 7-37000, SW- CB-03076 and SW-CB-03074 were also investigated during the dye test, but dye was not observed there.	
Legal	N/a	N/a	N/a	16 WESTON AVE	F.756430, 2972169		ROESSEL MARK C & DANA H TRUSTEES	9/12/2023	16 Weston Ave	3	Apartments	Yes	Into Ground		Jul-32	Yes	7-5833								Dye tested french drain in front of building. Dye appeared in lowest inlet of drain manhole. Used 5-10 gallons of water, and the dye arrived after 15 minutes. Multiple services likely do not connect. The dye placed on the french drain did not appear in the sewer. Did not go into basement for this dye test, cannot be certain there are not other storm discharge pipes.	
			Resident in 7	7 BELKNAP ST	F.756163, 2972955	1	MAHER PATRICK W TRSTEE	10/9/2023	7 Belknap St	3	3-Family Residential	Yes	None		A-61	No	7-6377	No			No					
Legal			Leila	8 RUSSELL RD	F.756220, 2972890		LOWE NICHOLAS J & JULIA MOTL TRUSTEES	10/9/2023	8 Russell Rd	3	3-Family Residential	Yes	To Ground Surface		A-61	No	7-6377	No			No				Could not see discharge piping in basement, prssumably on left side of basement. Need access to #6 side of building.	
Legal			Leila	8 RUSSELL RD	F.756220, 2972890		LOWE NICHOLAS J & JULIA MOTL TRUSTEES	10/9/2023	8 Russell Rd	3	3-Family Residential	Yes	To Ground Surface		A-61	No	7-6377	No			No				Could not see discharge piping in basement, prssumably on left side of basement. Need access to #6 side of building.	
Legal			Resident in 6	8 RUSSELL RD	F.756220, 2972890		LOWE NICHOLAS J & JULIA MOTL TRUSTEES	10/9/2023	6 Russell Rd	3	3-Family Residential	Yes	To Ground Surface		A-61	No	7-6377	No			No				#6 side of building has finished basement, no access to discharge piping.	
Legal			Resident in 6	8 RUSSELL RD	F.756220, 2972890		LOWE NICHOLAS J & JULIA MOTL TRUSTEES	10/9/2023	6 Russell Rd	3	3-Family Residential	Yes	To Ground Surface		A-61	No	7-6377	No			No				#6 side of building has finished basement, no access to discharge piping.	
Legal	Vincent Jung (owner)	6178949072	Maggie (renter)	31 BELKNAP ST	F.756257, 2973141		MI SHA & JUNG VINCENT	10/11/2023	29 Belknap St	3	3-Family Residential	Yes	None		A-61	No	7-6377	No			No					
Legal	Vincent Jung (owner)	6178949072	Maggie (renter)	31 BELKNAP ST	F.756257, 2973141		MI SHA & JUNG VINCENT	10/11/2023	31 Belknap St	3	3-Family Residential	Yes	None		A-61	No	7-6377	No			No				Renter from apartment 29 allowed access to shared basement. Tested the sink on the 31 side	
Legal	Vincent Jung (owner)	6178949072	Maggie (renter)	29 BELKNAP ST	F.756257, 2973141		MI SHA & JUNG VINCENT	10/11/2023	29 Belknap St	3	3-Family Residential	Yes	None		A-61	No	7-6377	No			No					
Legal	Vincent Jung (owner)	6178949072	Maggie (renter)	29 BELKNAP ST	F.756257, 2973141		MI SHA & JUNG VINCENT	10/11/2023	31 Belknap St	3	3-Family Residential	Yes	None		A-61	No	7-6377	No			No					

ATTACHMENT 2: BUILDING INSPECTION STATUS MAP



Figure Exported: 6/25/2024 By: aechuier Using: WoodardCurran.net\shared\Projects\0234621.08 Somerville, MA - IDDE Implementation Services\wpGIS\Projects\PV4 Catchment Maps - Updated 2024.06.25.aprx



Catchment Investigation Status Map

Somerville, Massachusetts
Permit Year 6
Catchment 7



Legend

IDDE Building Investigation Status

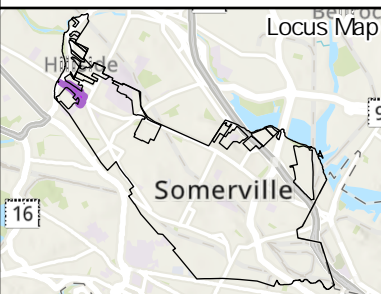
- Legal
- No dye observed
- Illicit removed

IDDE Pipe Investigation Status

- Cleared
- Partial Inspection
- Suspected Low Priority
- Standing Water
- Suspected
- Upstream Contamination

Somerville

- Storm Catchments
- Storm Manholes
- Storm Gravity Mains
- Catch Basins



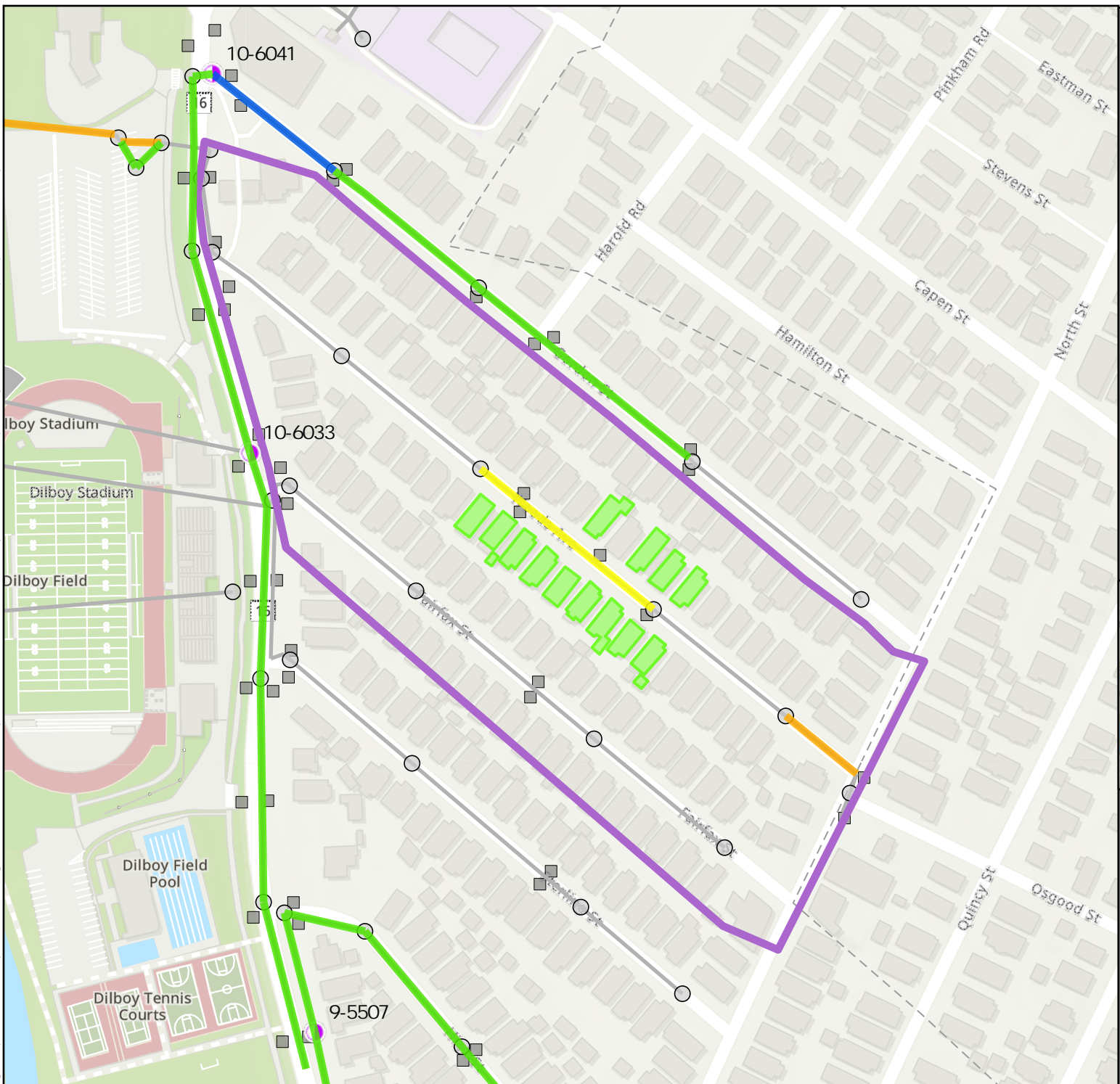
0 200 US Feet



Project #: 0234621.08
Map Created: June 2024

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data Sources:**

Figure Exported: 6/25/2024 By: achuesler Using: \\woodardcurran.net\shared\Projects\0234621.08 Somerville, MA - IDDE Implementation Services\MapGIS\Projects\PV4 Catchment Maps - Updated 2024.06.25.aprx



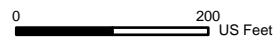
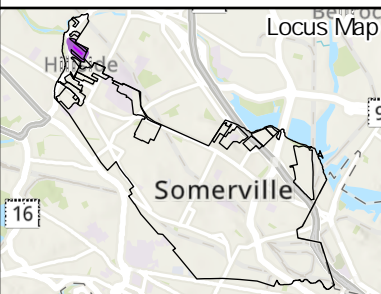
Catchment Investigation Status Map

Somerville, Massachusetts
Permit Year 6
Catchment 11



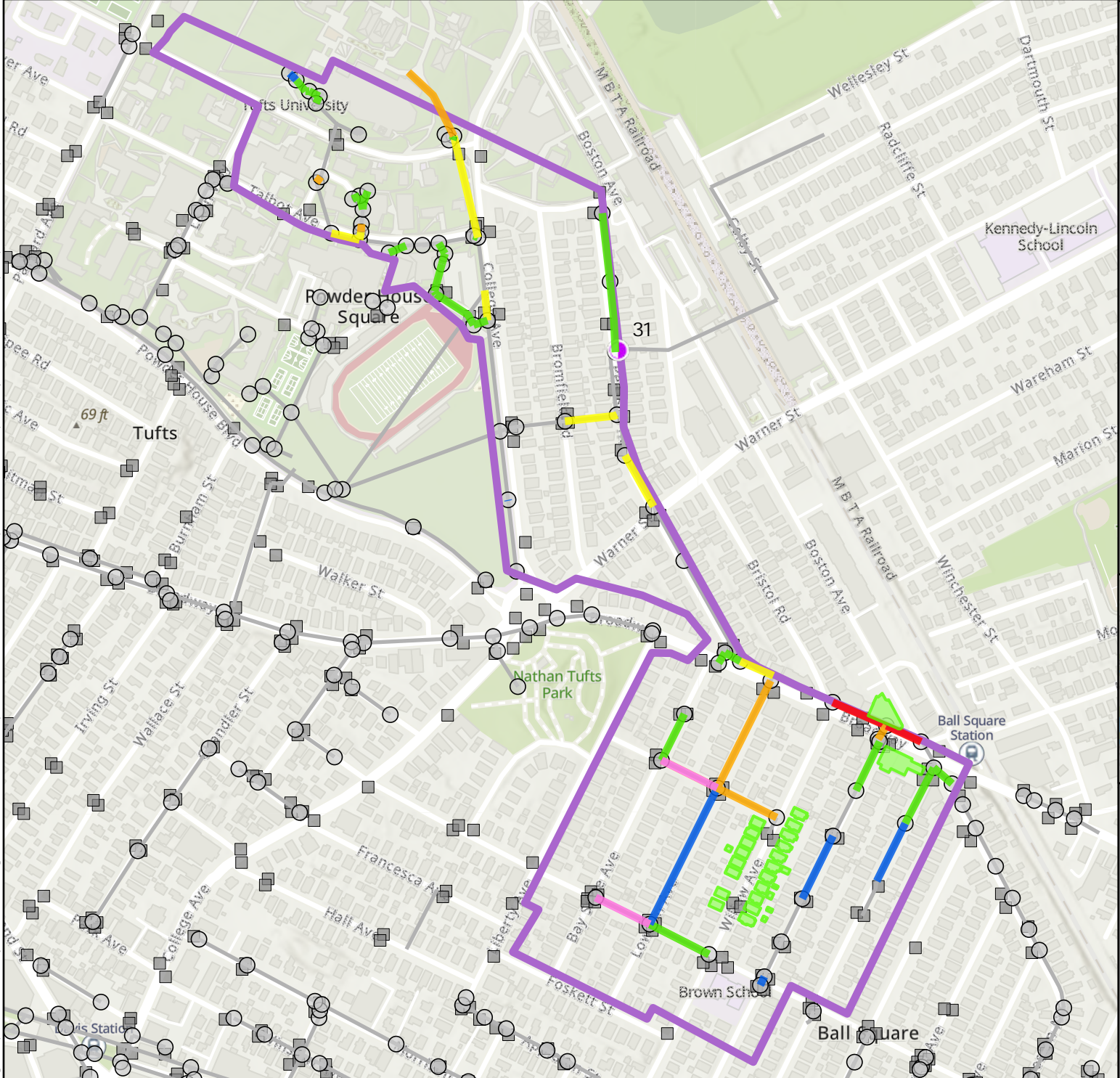
Legend

- IDDE Building Inspection Status
 - Legal
- IDDE Pipe Investigation Status
 - Cleared
 - Partial Inspection
 - Suspected Low Priority
 - Standing Water
 - Upstream Contamination
- Somerville
 - Outfall
 - Storm Catchments
 - Storm Manholes
 - Storm Gravity Mains
 - Catch Basins



Project #: 0234621.08
Map Created: June 2024
Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data Sources:**

Figure Exported: 6/25/2024 By: archesler Using: WoodardCurran.net\shared\Projects\0234621.04 Somerville MA - IDDE Implementation Services\wp\GIS\Projects\0234621.04 Catchment Maps - Updated 2024.06.25.aprx



Catchment Investigation Status Map

Somerville, Massachusetts
Permit Year 6
Catchment 31



Legend

IDDE Building Inspection Status

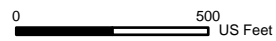
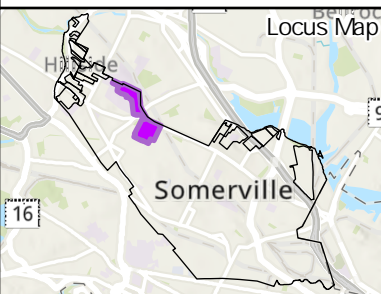
- Legal

IDDE Pipe Investigation Status

- Cleared
- Partial Inspection
- Suspected Low Priority
- Standing Water
- Suspected
- Upstream Contamination

Somerville

- Outfall
- Storm Catchments
- Storm Manholes
- Storm Gravity Mains
- Catch Basins



Project #: 0234621.08
Map Created: June 2024

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data Sources:**

ATTACHMENT 3: SUMMARY OF ILLICIT CONNECTIONS



Verified Direct Illicit Connections

Illicit Discharge Unique ID	Code	Illicit Discharge Status	Type of Discharge	Street Name	Street No.	Catchment Area	Watershed	Estimated Flow (gpd)	Verification Date	Verification Method	1st Notice Date	2nd Notice Date	3rd Notice Date	Removal Date	# Days from Verification to Removal	# Days Outstanding (if not removed)	Date Confirmatory Sampling Completed	Comments	Abatement Notice Date
1	AC-SP		3-Family Residential - Leaking Lateral	Broadway	1241	7	Alewife Brook	165	6/6/2022	Dye Test	6/14/2022	6/24/2022		7/4/2022	28	0		SDE completed dye test in Unit 2 on 6/6/2022. The result was dye in both storm and sewer. The dye was first seen in the sewer and then seen in the drain about 10 minutes later. Two notices were sent to the owner. On July 4, 2022, a three-alarm fire broke out at the property and the three-apartment house has been uninhabitable since. The City has flagged this address in the permitting system: when a demolition permit comes through the conditions on that permit will be to cut and cap all existing utilities at their respective mains; when a building permit comes through the applicant will be required to create a new sewer connection before a Certificate of Occupancy is issued. For these reasons, the City considers that this illicit connection has been removed as of July 4th, 2022. As of June 2024, the property has a new building permit. The conditions for the Certificate of Occupancy are as follows: "The illicit sanitary connection must be cut and capped at the drain main, and a new connection made to the sanitary main." The City plans to conduct confirmatory dye testing at this location at the time the Certificate of Occupancy is issued, additional dye testing in the upstream and downstream sewer manholes and resample storm drains to confirm that no additional illicit connections exist in that segment of the pipe.	
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
Notes:																			
1) DoV = Date of Verification																			
2) For residential properties, flow is estimated based on 310 CMR 15.203 "System Sewage Flow Design Criteria" of 110 gallons per day per bedroom																			
Codes:																			
V = Illicit Connection Verified, Responsible Party to be Notified																			
P = Responsible Party Notified, Abatement Pending																			
P-OD = One or More Abatement Deadlines is Overdue																			
AC-SP = Abatement Complete, Confirmatory Sampling Pending																			
AC = Abatement Complete, Confirmatory Sampling Complete or Not Required																			
AS = Responsible Party Notified, Abatement on Alternate Schedule																			



**APPENDIX B: ALEWIFE BROOK PARKWAY DRAINAGE
INVESTIGATION MEMO**

MEMORANDUM



TO: Lucia Hiller, City of Somerville
FROM: Emily Nealon and Garrett Bergey, Woodard & Curran
DATE: June 6, 2024
RE: Alewife Brook Parkway Drainage Investigation Findings

This memorandum summarizes the findings from storm drain investigations completed in Somerville, MA on April 21, 2024, by the City of Somerville (City), Department of Conversation and Recreation (DCR), National Water Main Cleaning Co. (NWM) and Woodard & Curran (W&C). Prior to the investigation, the City and DCR were unsure of storm drain connectivity and ownership in West Somerville.

Irvington Road

The City's storm drain mapping previously showed one drainage pipe on Irvington Road, as shown in **Figure 1**. The mapping included two catch basins and a drainage manhole (A-5947) near the intersection of Irvington Road and Mystic Valley Parkway. However, the previous mapping did not illustrate this drainage pipes downstream connectivity.

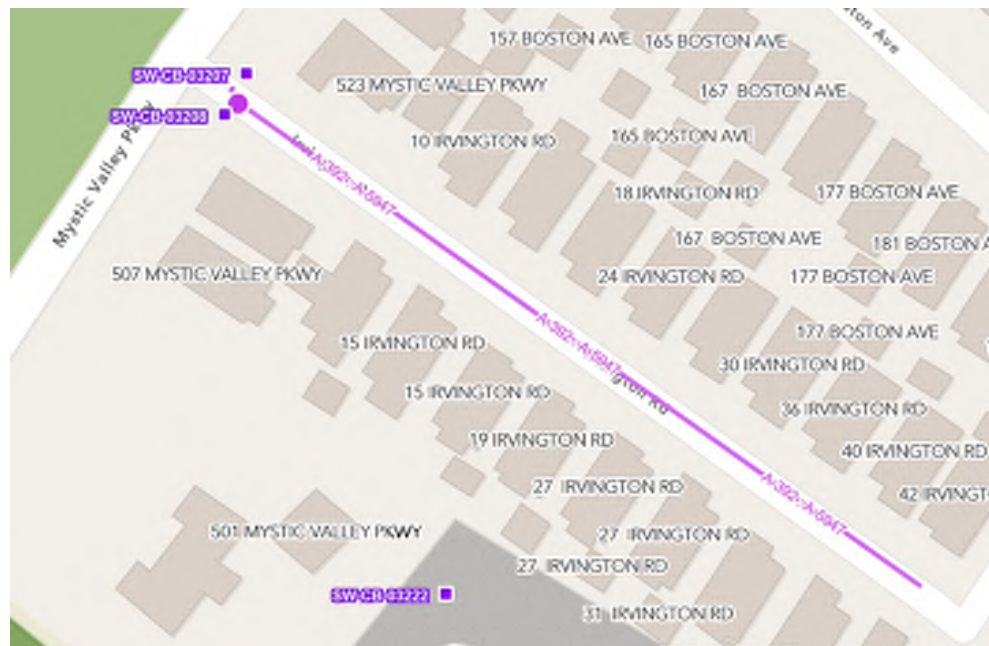


FIGURE 1: ORIGINAL IRVINGTON ROAD DRAINAGE MAPPING



During the field investigation, it was confirmed there is no drainage pipe on Irvington Road. The field crew walked the street and verified there are no additional catch basins or other drainage structures on Irvington Road.

The two catch basins at the intersection of Irvington Road and Mystic Valley Parkway connect directly to drainage manhole (DMH) A-5947. Dye was added to DMH A-5947 and it was seen at the manhole at the intersection of Boston Ave and Mystic Valley Parkway followed by the downstream manholes on Boston Ave. There are four manholes in series on Boston Ave which act as a stormwater control measure. Drainages manholes 14-7002, 14-7003, and 14-7004 are shown in **Figure 2**.



FIGURE 2: DRAINAGE MANHOLES ON BOSTON AVE

Both the drainage line on Boston Ave and the newly discovered outfall the line contributes to were determined to be owned by the City. This line includes one DCR interconnection, which is the catch basin at the intersection of Boston Ave and Mystic Valley Parkway. The updated Irvington Road drainage configuration is shown in **Figure 3**.

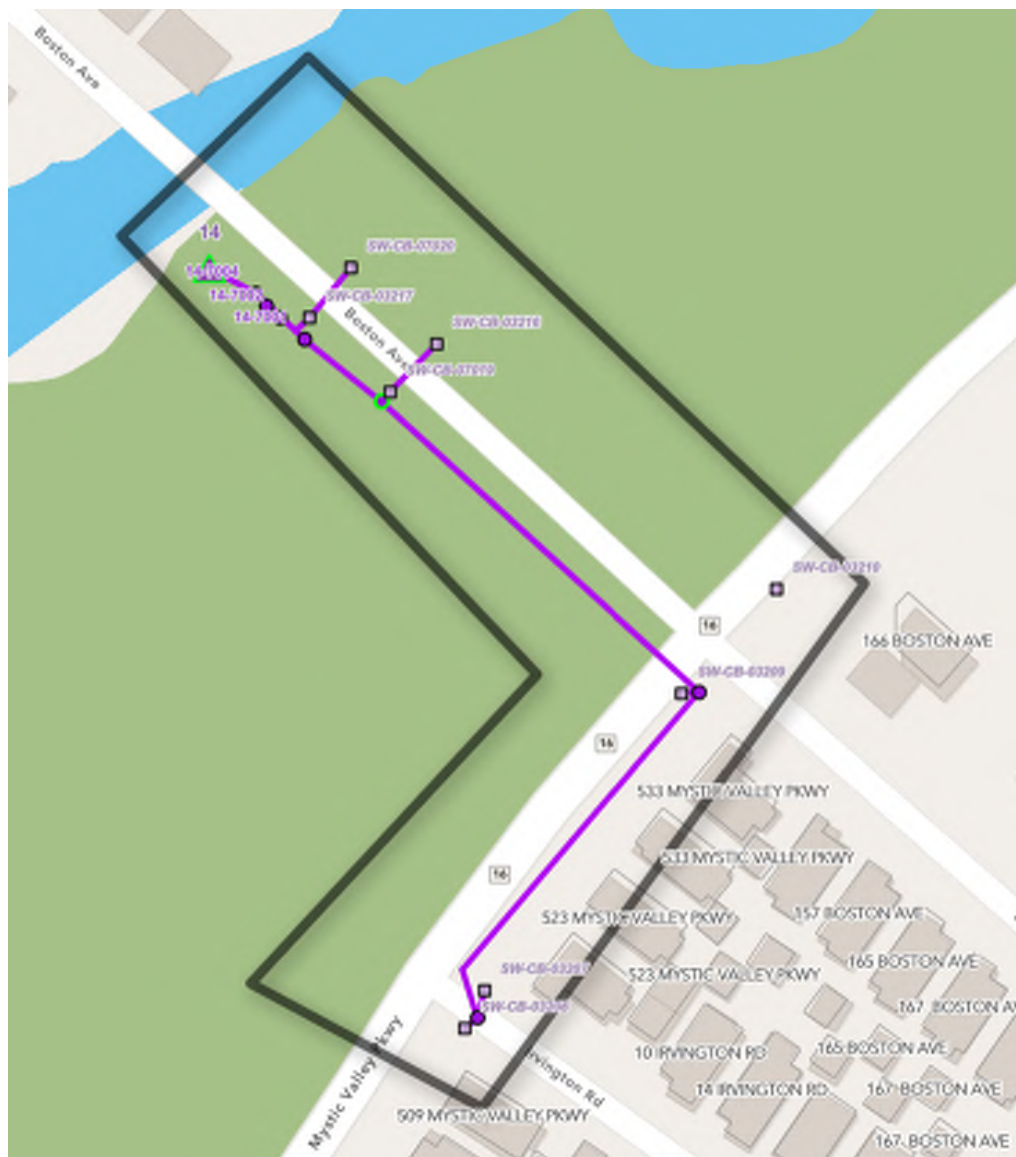


FIGURE 3: UPDATED IRVINGTON ROAD DRAINAGE CONFIGURATION

This new MS4 outfall will be referred to as Outfall 14 (**Figure 4**). It was screened during dry weather on May 21, 2024 and was found to be dry. Wet weather screening will take place as weather allows. .



FIGURE 4: OUTFALL 14



Fairfax Street

It was not previously known which outfall (10 or 11) Fairfax Street was connected to, so to determine connectivity a dye test was completed. Dye was added to DMH A-5502 while NWM completed CCTV investigations of the DCR drainage along Alewife Brook Parkway and DCR/W&C opened manholes to locate and follow the dye.

The field investigations confirmed that the City's drain line on Fairfax Street turns north at the intersection with Alewife Brook Parkway (ABP) and runs along the eastern edge of the road in a drainage pipe that was not previously mapped in the City's GIS. This pipe does not have any DCR connections, as confirmed with CCTV footage. The CCTV reports are included in **Attachment A**.

This drainage pipe ends up in DMH 11-6035 at the intersection of Woods Ave and Alewife Brook Parkway. Flow then travels to DMH 11-6039, which is located near 379 Alewife Brook Parkway. It should be noted that this manhole has a BWSC cover which should be replaced with the City's standard drainage manhole cover. The dye in DMH 11-6039 is shown in **Figure 5**.



FIGURE 5: DYE IN DMH 11-6039

This drain line then crosses the street into the Dillboy Stadium parking lot and flow is diverted into a stormwater control measure (SCM), which is made up of multiple manholes. If the SCM fills up, an overflow pipe allows flow to discharge directly to DMH 11-5871. The SCM configuration is shown in **Figure 6**.

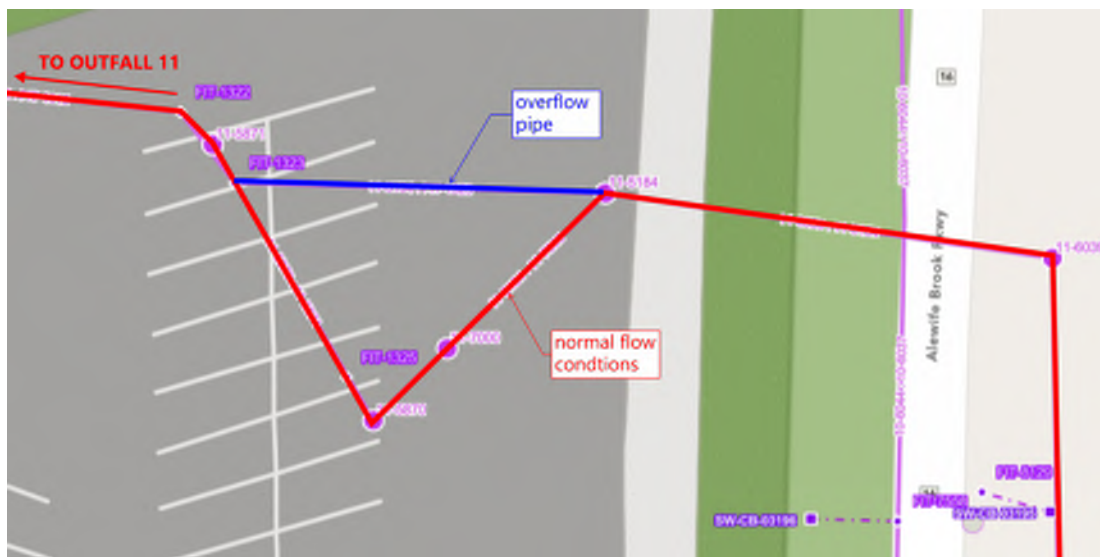


FIGURE 6: OUTFALL 11 SCM CONFIGURATION

Following the SCM, the flow ends up at Outfall 11. The dye from Fairfax Street seen in Outfall 11 is shown in **Figure 7**. The confirmed Fairfax Street drainage configuration is shown in **Figure 8**.



FIGURE 7: FAIRFAX STREET DYE IN ALEWIFE BROOK FROM OUTFALL 11

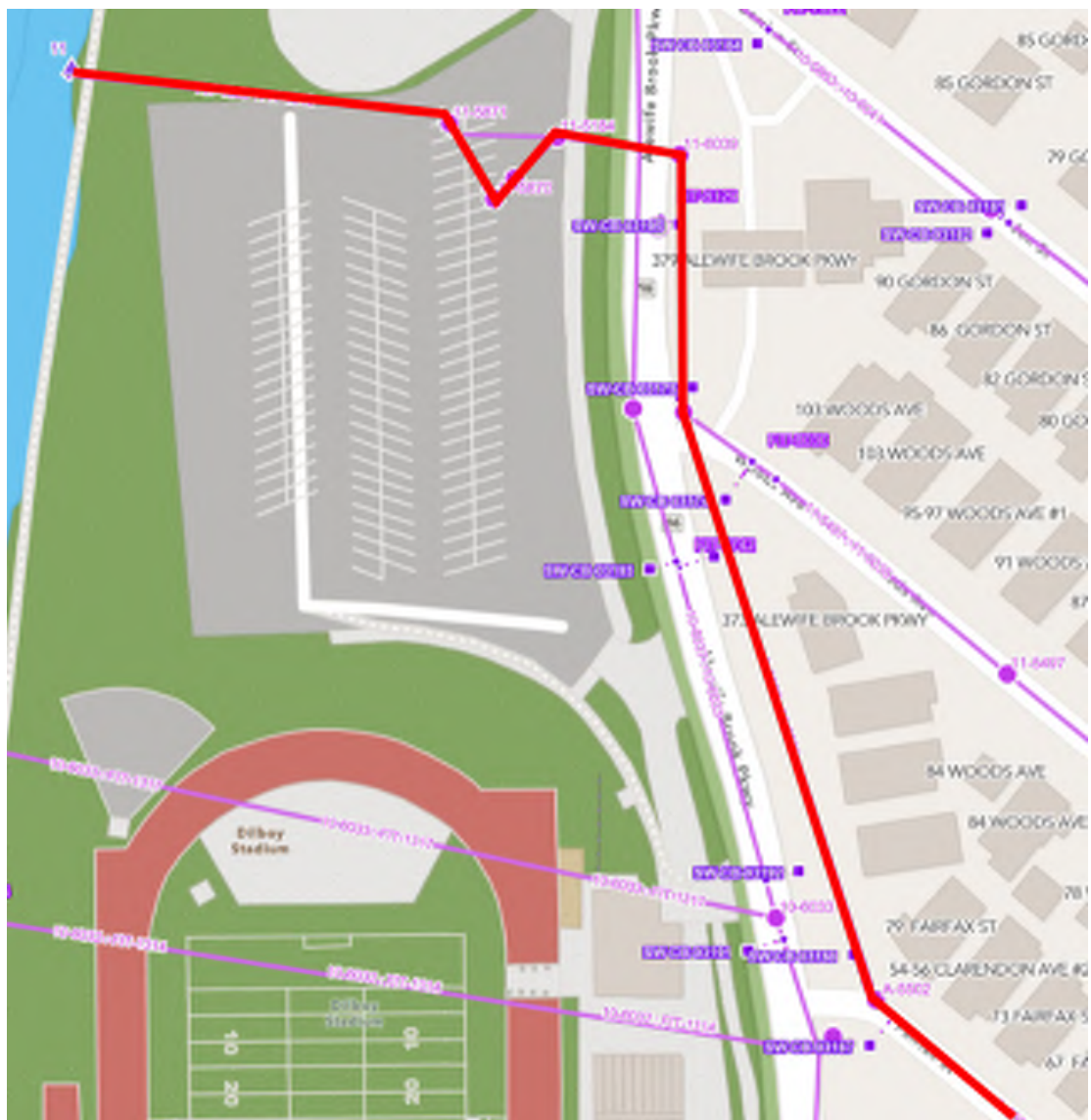


FIGURE 8: CONFIRMED FAIRFAX STREET DRAINAGE CONFIGURATION



Sterling Street

To determine the drainage configuration of Sterling Street, NWM completed a CCTV inspection starting at DMH A-5506. The CCTV reports are included in **Attachment A**.

The CCTV investigation showed that the drain on Sterling Street connects to the DCR drain pipe 10-6031 : 10-6033 via a blind connection. The flow in 10-6031 : 10-6033 travels north on ABP. At DMH 10-6033, the flow turns west and flows directly to Outfall 10. When DCR/W&C opened DMH 10-6033, it was confirmed that drainage pipe 10-6037 : 10-6033 travels south on ABP and also discharges to Outfall 10. DMH 10-6033 is shown in **Figure 9**.

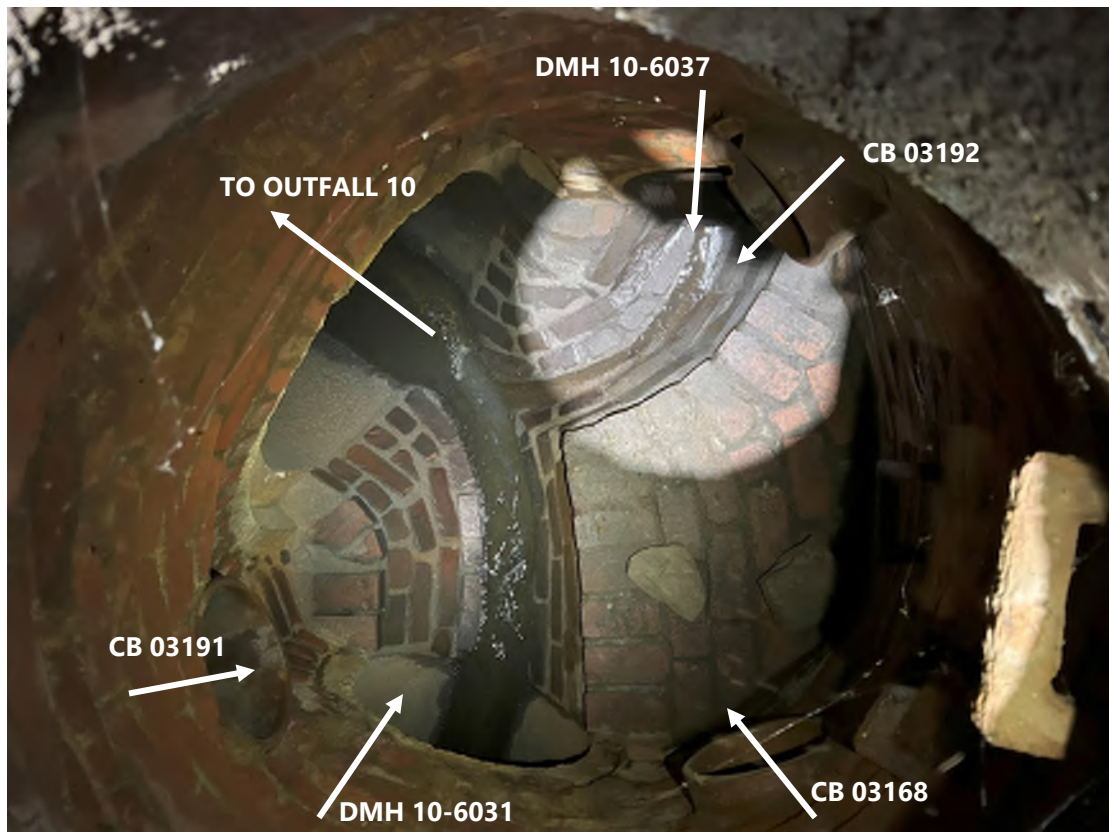


FIGURE 9: DMH 10-6033

Outfall 10 is shown in **Figure 10** and the confirmed drainage configuration for Sterling Street is shown in **Figure 11**.



FIGURE 10: OUTFALL 10

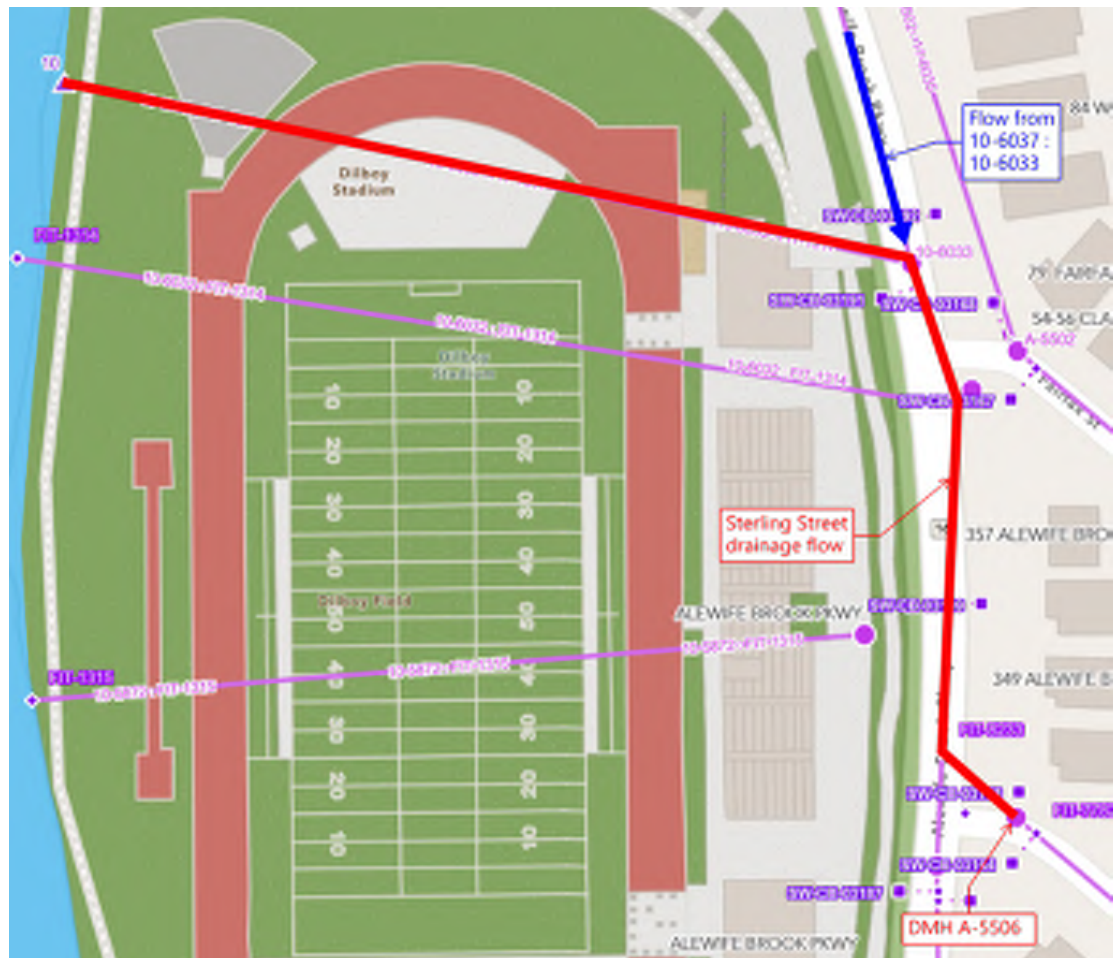


FIGURE 11: CONFIRMED STERLING STREET DRAINAGE CONFIGURATION

Conclusion and Next Steps

Outfall 14 is a newly identified Somerville-owned outfall; therefore, it requires dry and wet weather screening. Dry weather screening was completed on May 21, 2024, and the outfall was found to be dry. Wet weather screening will take place when the weather allows. This new catchment will be included in the next MS4 compliance report.

The City's GIS has been updated with the confirmed Catchment 10 and Catchment 11 boundaries found during the field investigation. The City should work with DCR to finalize all related interconnection locations.

ATTACHMENT A: CCTV REPORTS



NWMCC INSPECTION REPORT

PACP Rating Description

1: Excellent Condition

Minor Defects - Failure unlikely in the foreseeable future

2: Good Condition

Defects that have not begun to deteriorate - Pipe unlikely to fail for at least 20 years.

3: Fair Condition

Moderate defects that will continue to deteriorate - Pipe may fail in 10-20 years.

4: Poor Condition

Severe Defects that will become Grade 5 defects within the foreseeable future - Pipe will probably fail in 5-10 years.

5: Immediate Attention

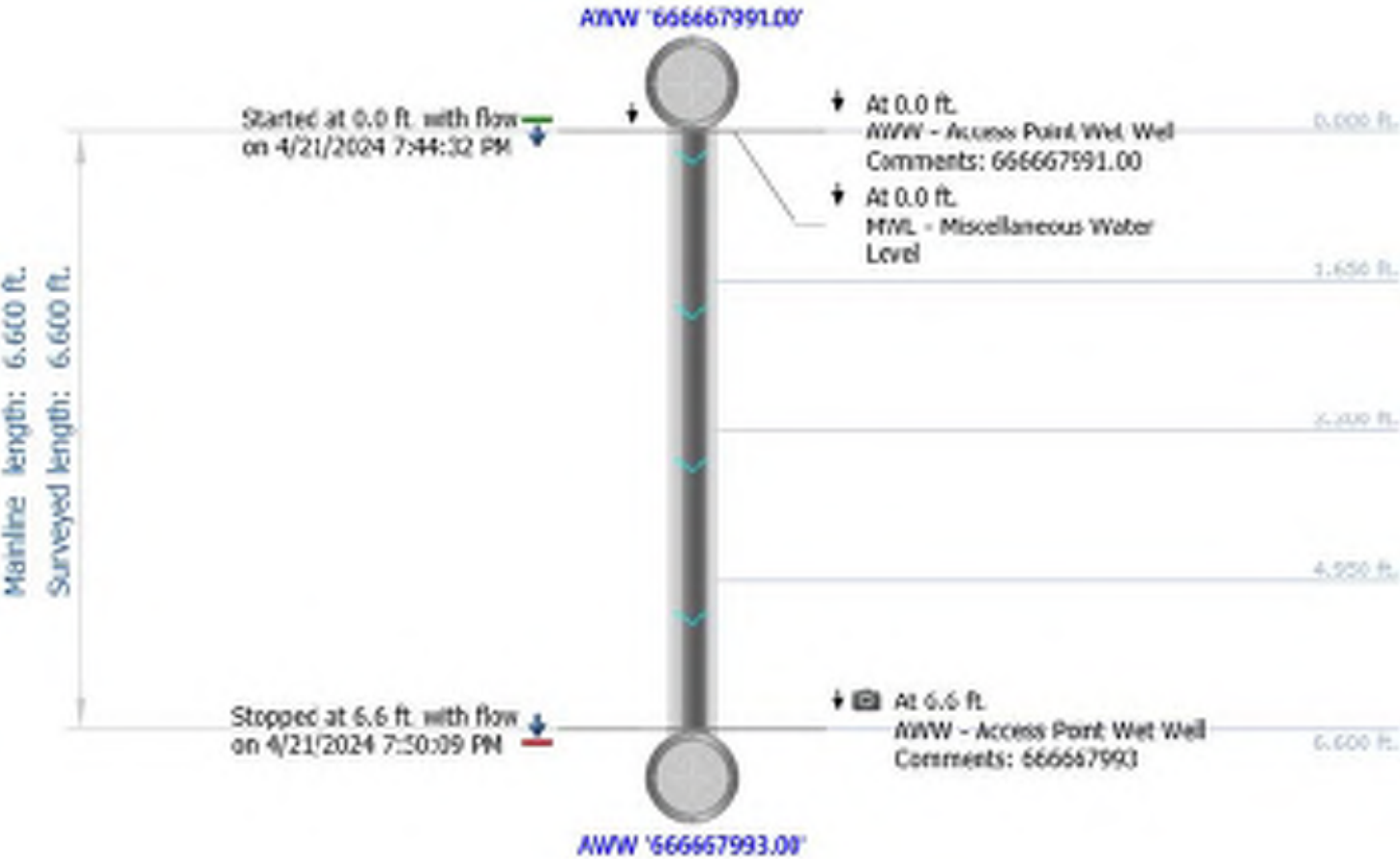
Defects require immediate attention - Pipe has failed or will likely fail within the next 5 years or sooner.

NWMCC INSPECTION REPORT

Start date/time: 20240421 19:44	Weather: Dry - No precipitation during survey	Surveyed by: M. Teixeira	Certificate number: 1234	Pipe segment ref.: 66670455.00	
Owner:	Customer:	Pre-cleaning: No Pre-Cleaning	Date cleaned:	Project name: COM002-9	
City: SOMERVILLE	Street: MYSTIC VALLEY PKWY	Location code:	Pipe use: Stormwater Pipe	Drainage area:	Flow control:
Upstream MH No: 666667991.00		Downstream MH No: 666667993.00		Direction: D	Total length: 6.600 ft.
				Length surveyed: 6.600 ft.	
Purpose: Maintenance Related	Pipe joint length:	Height: 8 in.	Material: Reinforced Concrete Pipe	LateralsCounter:	Additional info: VIDEO TO SHOW INSIDE OF CHAMBER

Pipe Ratings

Grade	Defects	Segment Grade	Structural:			Defects	Segment Grade	O&M:			Pipe Rating	Overall:		
			Pipe Rating	Quick Rating	Pipe Rating Index			Pipe Rating	Quick Rating	Pipe Rating Index		Pipe Rating	Pipe Rating Index	LoF
1	0	0	0	0000	0.0	0	0	0	0000	0.0	0	0.0	1.0	
2	0	0				0	0							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							



NWMCC INSPECTION REPORT

Inspection Photos

City:	Street:	Start date/time:	Pipe segment ref.:
SOMERVILLE	MYSTIC VALLEY PKWY	20240421 20:51	66670455.00



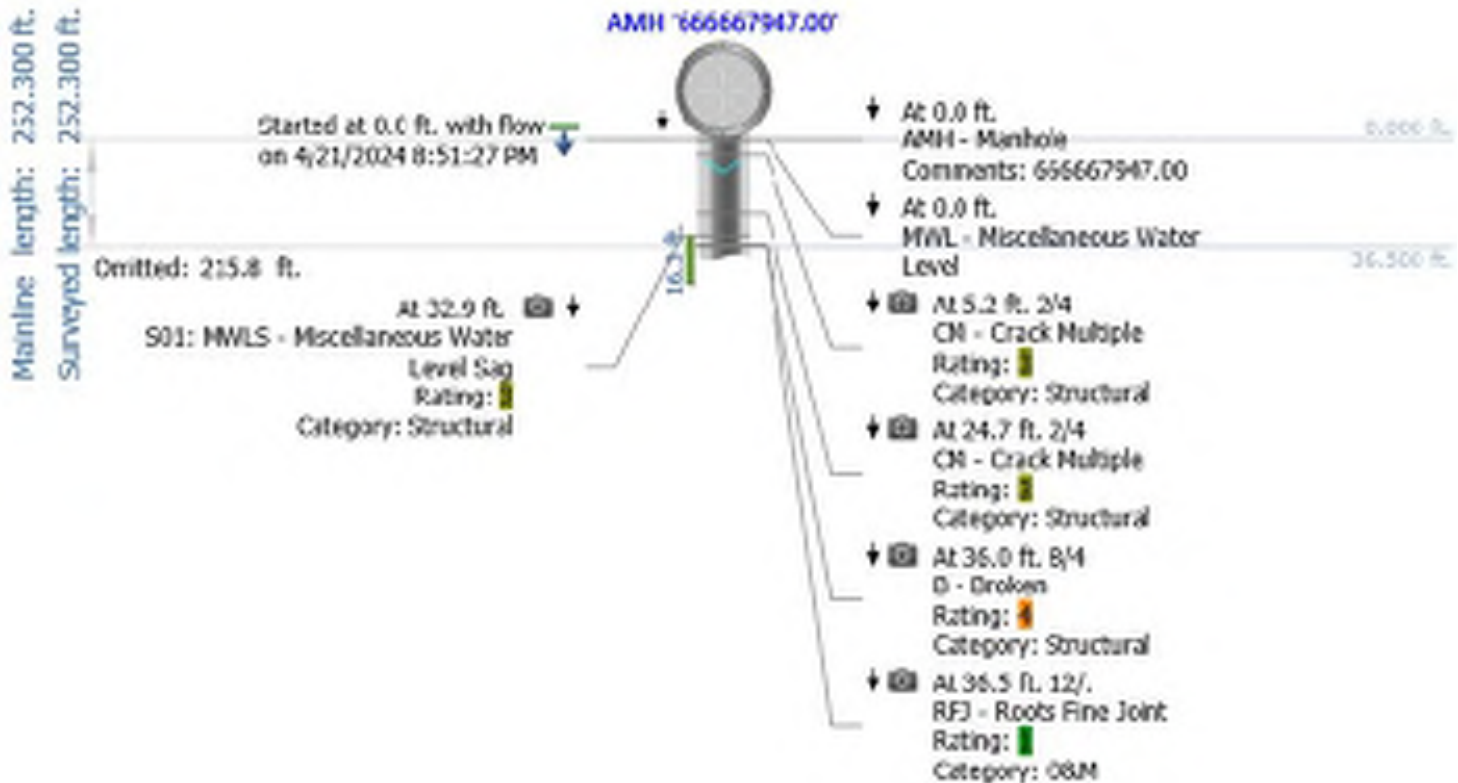
Photo: 666667991.00-666667993.
00-20240421-194432-194949.JPG
At: 6.6 ft. AWW - Access Point Wet Well
Joint: No 666667993

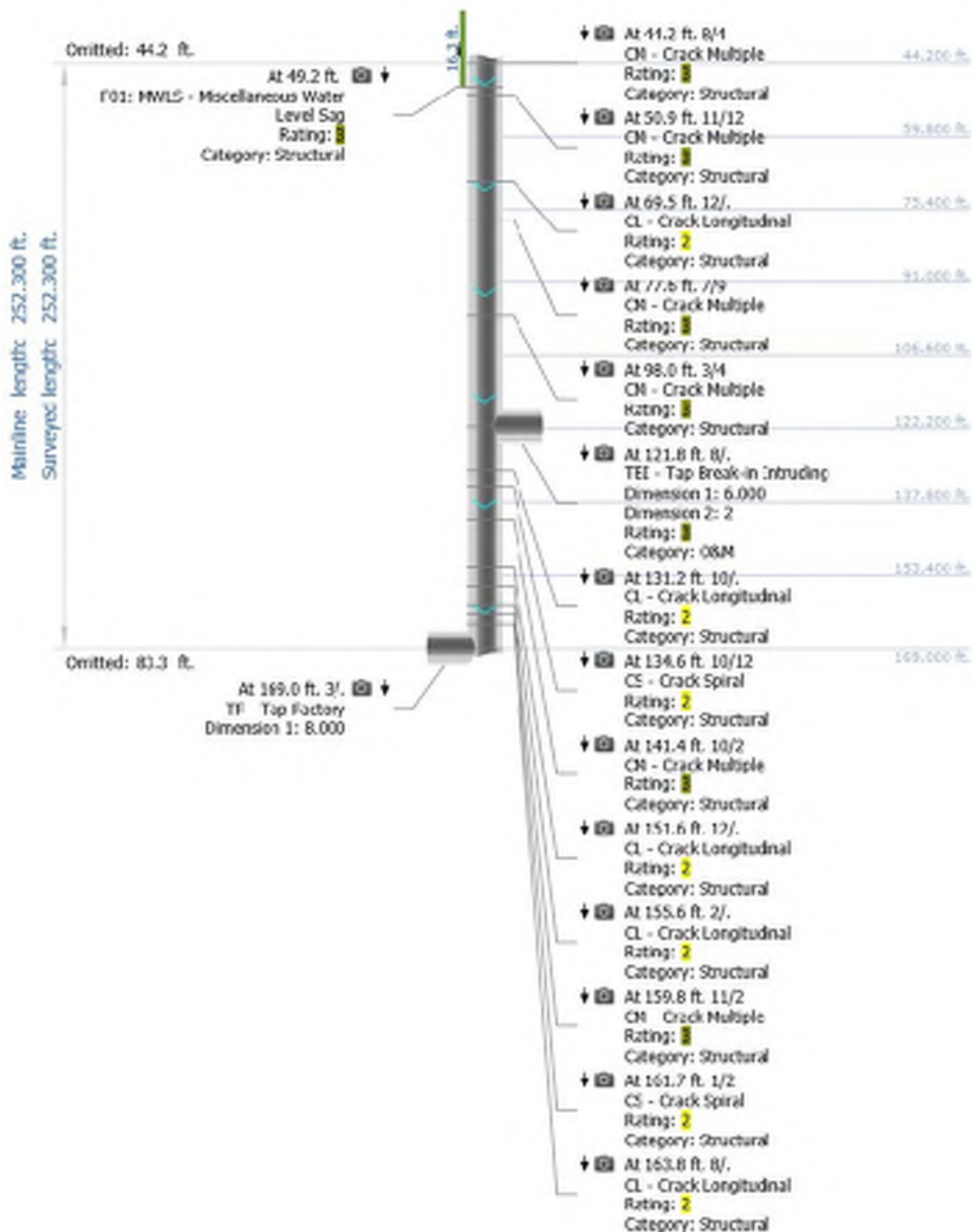
NWMCC INSPECTION REPORT

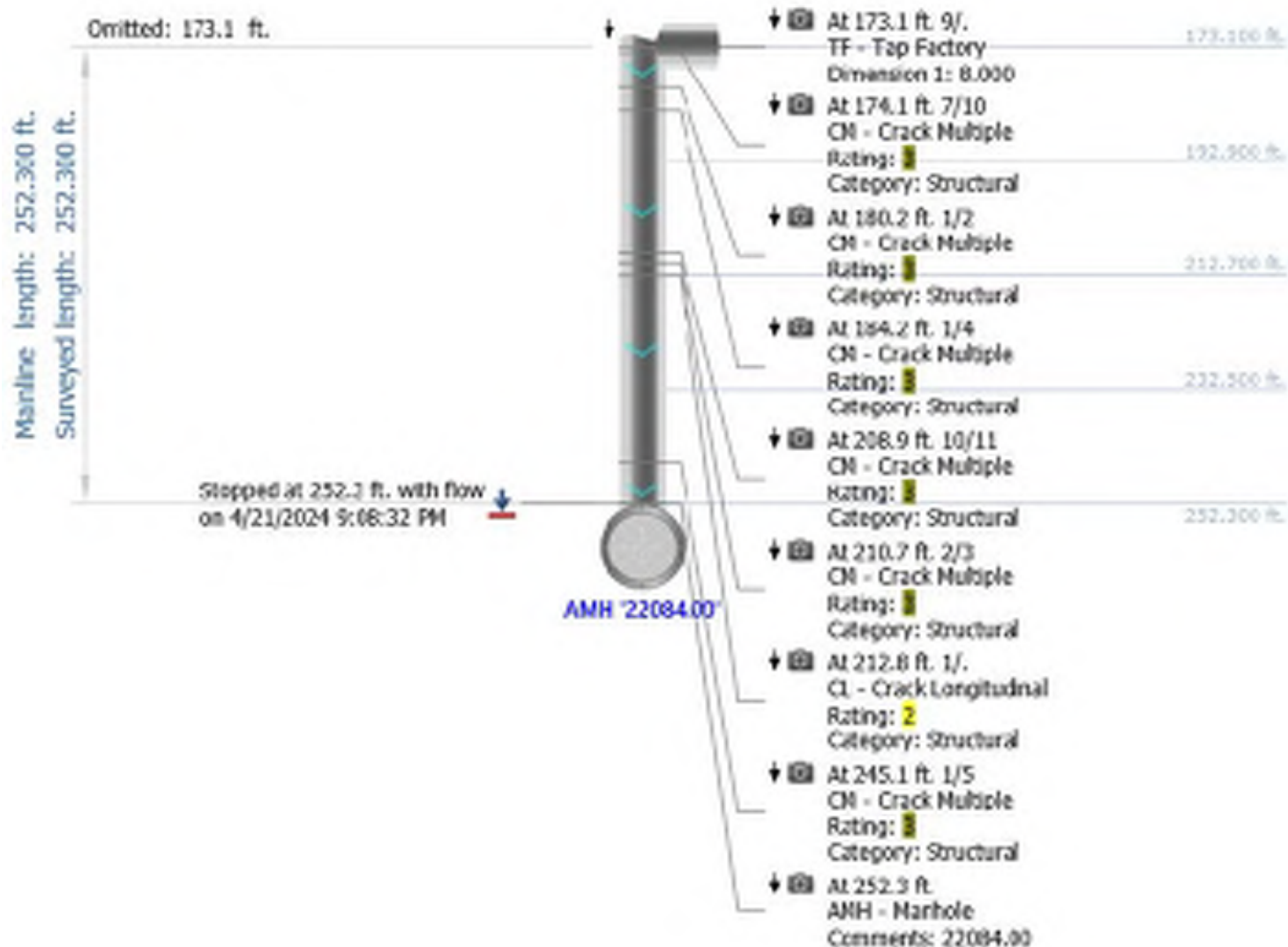
Start date/time: 20240421 20:51	Weather: Dry - No precipitation during survey	Surveyed by: M. Teixeira	Certificate number: 1234	Pipe segment ref.: 363.00	
Owner:	Customer:	Pre-cleaning: No Pre-Cleaning	Date cleaned:	Project name: COM002-9	
City: SOMERVILLE	Street: ALEWIFE BROOK PKWY	Location code:	Pipe use: Stormwater Pipe	Drainage area:	Flow control:
Upstream MH No: 666667947.00	Downstream MH No: 22084.00	Direction: D	Total length: 252.300 ft.	Length surveyed: 252.300 ft.	
Purpose: Maintenance Related	Pipe joint length:	Height: 15 in.	Material: Vitrified Clay Pipe	LateralsCounter:	Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	71	413B	2.7	0	1	4	3111	2.0	75	2.7	4.1	
2	0	16				0	0							
3	0	51				0	3							
4	0	4				0	0							
5	0	0				0	0							







NWMCC INSPECTION REPORT

Inspection Photos

City:

SOMERVILLE

Street:

ALEWIFE BROOK PKWY

Start date/time:

20240421 21:13

Pipe segment ref.:

363.00



Photo: 666667947.00-22084.00-20240421-205127-205327.JPG

At: 5.2 ft. 2/4 CM - Crack Multiple

Joint: No



Photo: 666667947.00-22084.00-20240421-205127-205429.JPG

At: 24.7 ft. 2/4 CM - Crack Multiple

Joint: No



Photo: 666667947.00-22084.00-20240421-205127-205456.JPG

At: 32.9 ft. MWLS - Miscellaneous Water Level Sag

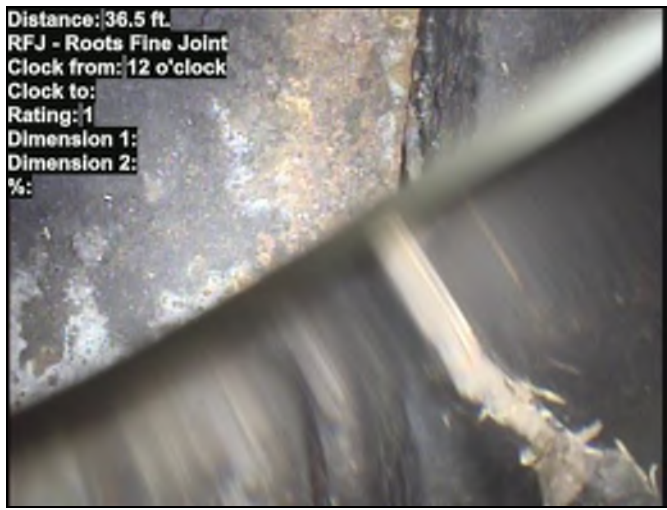
Joint: No 50 %



Photo: 666667947.00-22084.00-20240421-205127-205524.JPG

At: 36 ft. 8/4 B - Broken

Joint: No



Distance: 36.5 ft.
RFJ - Roots Fine Joint
Clock from: 12 o'clock
Clock to:
Rating: 1
Dimension 1:
Dimension 2:
%:
Photo: 666667947.00-22084.00-20240421-205127-205537.JPG
At: 36.5 ft. 12/. RFJ - Roots Fine Joint
Joint: Yes



Distance: 44.2 ft.
CM - Crack Multiple
Clock from: 8 o'clock
Clock to: 4 o'clock
Rating: 3
Dimension 1:
Dimension 2:
%:
Photo: 666667947.00-22084.00-20240421-205127-205608.JPG
At: 44.2 ft. 8/4 CM - Crack Multiple
Joint: No



Distance: 49.2 ft.
MWLS - Miscellaneous Water Level Sag
Clock from:
Clock to:
Rating: 3
Dimension 1:
Dimension 2:
%: 50 %
Photo: 666667947.00-22084.00-20240421-205127-205641.JPG
At: 49.2 ft. MWLS - Miscellaneous Water Level Sag
Joint: No 50 %



Distance: 50.9 ft.
CM - Crack Multiple
Clock from: 11 o'clock
Clock to: 12 o'clock
Rating: 3
Dimension 1:
Dimension 2:
%:
Photo: 666667947.00-22084.00-20240421-205127-205651.JPG
At: 50.9 ft. CM - Crack Multiple
11/12
Joint: No



Distance: 69.5 ft.
CL - Crack Longitudinal
Clock from: 12 o'clock
Clock to:
Rating: 2
Dimension 1:
Dimension 2:
%:
Photo: 666667947.00-22084.00-20240421-205127-205743.JPG
At: 69.5 ft. 12/. CL - Crack Longitudinal
Joint: No



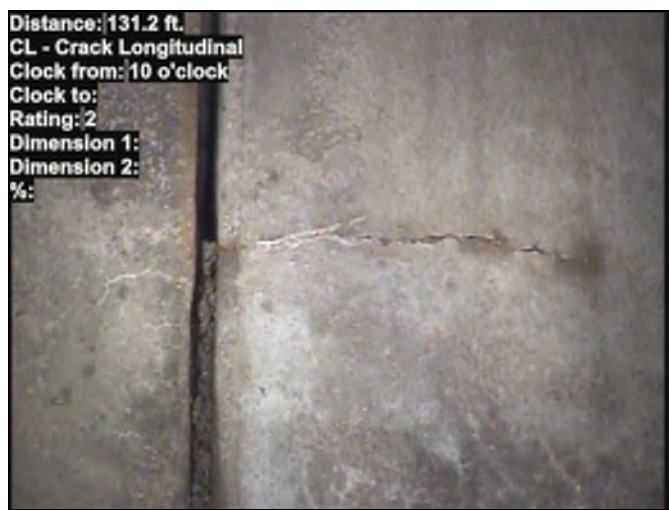
Distance: 77.6 ft.
CM - Crack Multiple
Clock from: 7 o'clock
Clock to: 9 o'clock
Rating: 3
Dimension 1:
Dimension 2:
%:
Photo: 666667947.00-22084.00-20240421-205127-205821.JPG
At: 77.6 ft. 7/9 CM - Crack Multiple
Joint: No



Distance: 98.0 ft.
 CM - Crack Multiple
 Clock from: 3 o'clock
 Clock to: 4 o'clock
 Rating: 3
 Dimension 1:
 Dimension 2:
 %:
 Photo: 666667947.00-22084.00-20240421-205127-205907.JPG
 At: 98 ft. 3/4 CM - Crack Multiple
 Joint: No



Distance: 121.8 ft.
 TBI - Tap Break-in Intruding
 Clock from: 8 o'clock
 Clock to:
 Rating: 3
 Dimension 1: 6
 Dimension 2: 2
 %:
 Photo: 666667947.00-22084.00-20240421-205127-210016.JPG
 At: 121.8 ft. 8/. TBI - Tap Break-in Intruding
 Joint: No



Distance: 131.2 ft.
 CL - Crack Longitudinal
 Clock from: 10 o'clock
 Clock to:
 Rating: 2
 Dimension 1:
 Dimension 2:
 %:
 Photo: 666667947.00-22084.00-20240421-205127-210048.JPG
 At: 131.2 ft. 10/. CL - Crack Longitudinal
 Joint: No



Distance: 134.6 ft.
 CS - Crack Spiral
 Clock from: 10 o'clock
 Clock to: 12 o'clock
 Rating: 2
 Dimension 1:
 Dimension 2:
 %:
 Photo: 666667947.00-22084.00-20240421-205127-210108.JPG
 At: 134.6 ft. CS - Crack Spiral
 10/12
 Joint: No



Distance: 141.4 ft.
 CM - Crack Multiple
 Clock from: 10 o'clock
 Clock to: 2 o'clock
 Rating: 3
 Dimension 1:
 Dimension 2:
 %:
 Photo: 666667947.00-22084.00-20240421-205127-210133.JPG
 At: 141.4 ft. CM - Crack Multiple
 10/2
 Joint: No



Distance: 151.6 ft.
 CL - Crack Longitudinal
 Clock from: 12 o'clock
 Clock to:
 Rating: 2
 Dimension 1:
 Dimension 2:
 %:
 Photo: 666667947.00-22084.00-20240421-205127-210208.JPG
 At: 151.6 ft. 12/. CL - Crack Longitudinal
 Joint: No

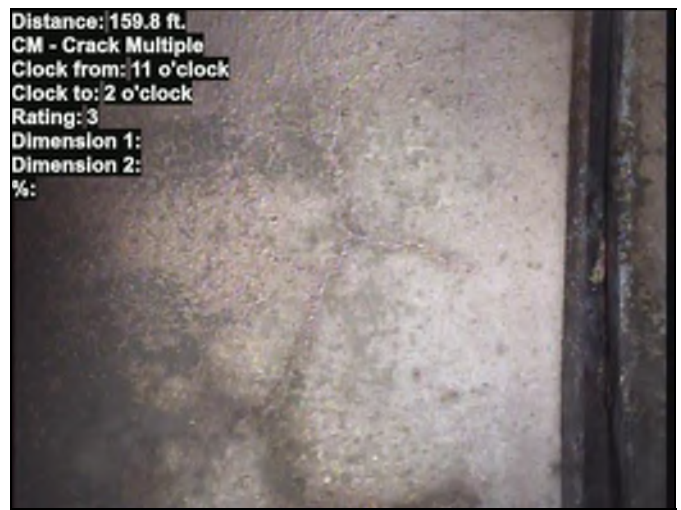


Distance: 155.6 ft.
CL - Crack Longitudinal
Clock from: 2 o'clock
Clock to:
Rating: 2
Dimension 1:
Dimension 2:
%:

Photo: 666667947.00-22084.00-20240421-205127-210226.JPG

At: 155.6 ft. 2/. CL - Crack Longitudinal

Joint: No



Distance: 159.8 ft.
CM - Crack Multiple
Clock from: 11 o'clock
Clock to: 2 o'clock
Rating: 3
Dimension 1:
Dimension 2:
%:

Photo: 666667947.00-22084.00-20240421-205127-210247.JPG

At: 159.8 ft. CM - Crack Multiple

11/2

Joint: No



Distance: 161.7 ft.
CS - Crack Spiral
Clock from: 1 o'clock
Clock to: 2 o'clock
Rating: 2
Dimension 1:
Dimension 2:
%:

Photo: 666667947.00-22084.00-20240421-205127-210307.JPG

At: 161.7 ft. 1/2 CS - Crack Spiral

Joint: No



Distance: 163.8 ft.
CL - Crack Longitudinal
Clock from: 8 o'clock
Clock to:
Rating: 2
Dimension 1:
Dimension 2:
%:

Photo: 666667947.00-22084.00-20240421-205127-210322.JPG

At: 163.8 ft. 8/. CL - Crack Longitudinal

Joint: No



Distance: 169.0 ft.
TF - Tap Factory
Clock from: 3 o'clock
Clock to:
Rating:
Dimension 1: 8
Dimension 2:
%:

Photo: 666667947.00-22084.00-20240421-205127-210342.JPG

At: 169 ft. 3/. TF - Tap Factory

Joint: No



Distance: 173.1 ft.
TF - Tap Factory
Clock from: 9 o'clock
Clock to:
Rating:
Dimension 1: 8
Dimension 2:
%:

Photo: 666667947.00-22084.00-20240421-205127-210406.JPG

At: 173.1 ft. 9/. TF - Tap Factory

Joint: No



Photo: 666667947.00-22084.00-20240421-205127-210429.JPG

At: 174.1 ft. CM - Crack Multiple
7/10

Joint: No



Photo: 666667947.00-22084.00-20240421-205127-210450.JPG

At: 180.2 ft. 1/2 CM - Crack Multiple
Joint: No

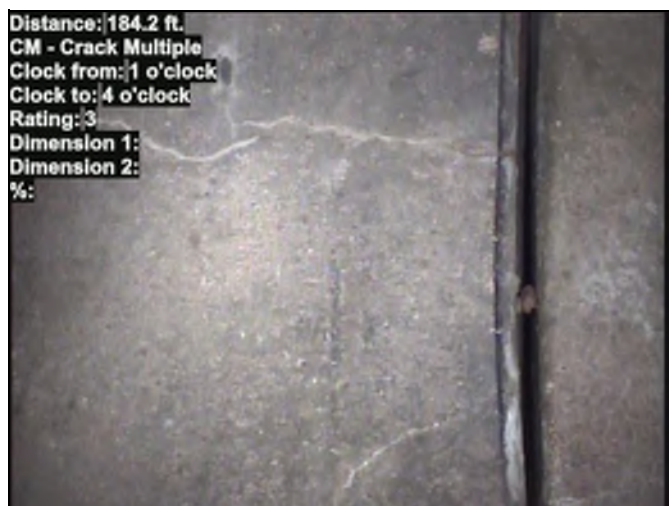


Photo: 666667947.00-22084.00-20240421-205127-210515.JPG

At: 184.2 ft. 1/4 CM - Crack Multiple
Joint: No



Photo: 666667947.00-22084.00-20240421-205127-210611.JPG

At: 208.9 ft. CM - Crack Multiple
10/11
Joint: No



Photo: 666667947.00-22084.00-20240421-205127-210625.JPG

At: 210.7 ft. 2/3 CM - Crack Multiple
Joint: No



Photo: 666667947.00-22084.00-20240421-205127-210640.JPG

At: 212.8 ft. 1/ CL - Crack Longitudinal
Joint: No



Photo: 666667947.00-22084.00-20240421-205127-210744.JPG

At: 245.1 ft. 1/5 CM - Crack Multiple

Joint: No



Photo: 666667947.00-22084.00-20240421-205127-210813.JPG

At: 252.3 ft. AMH - Manhole

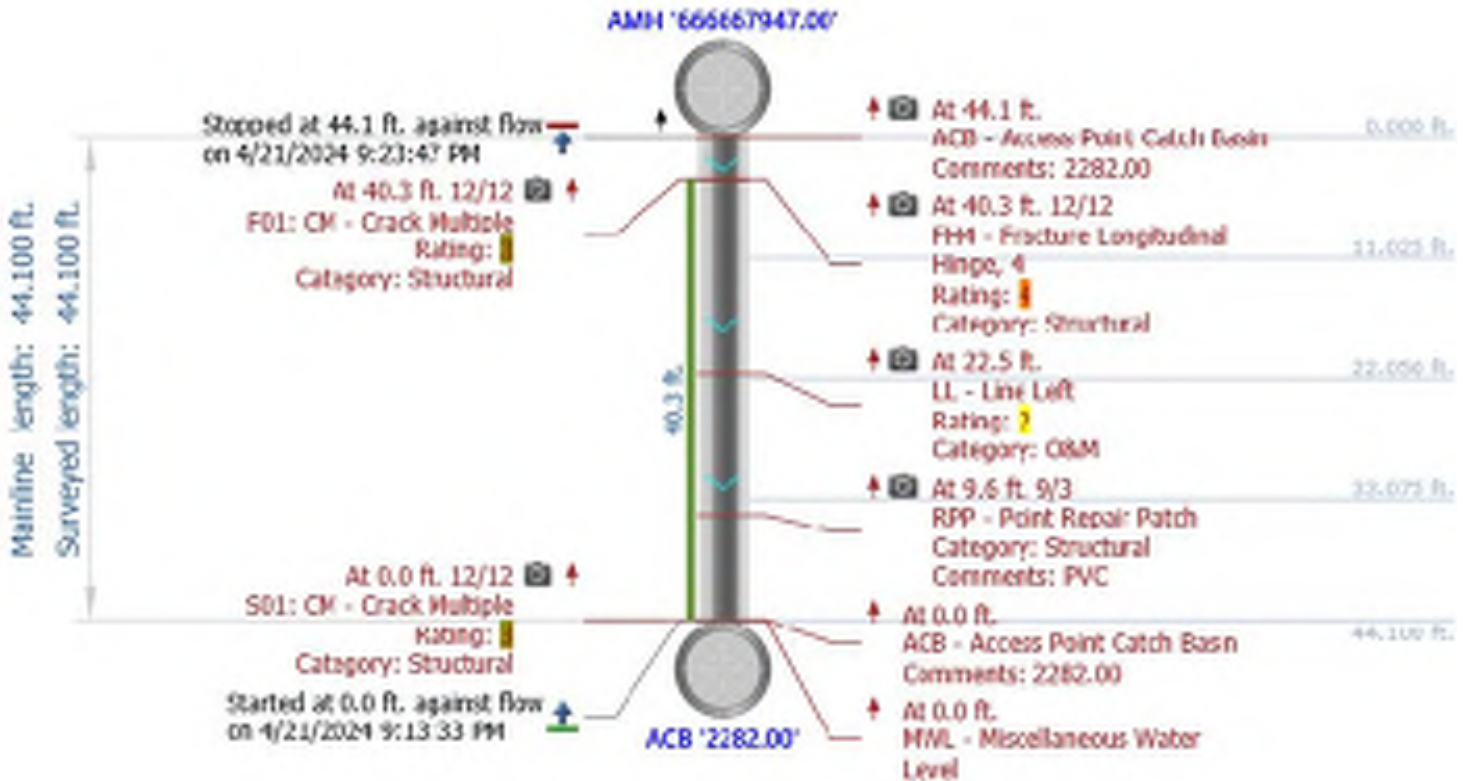
Joint: No 22084.00

NWMCC INSPECTION REPORT

Start date/time: 20240421 21:13	Weather: Dry - No precipitation during survey	Surveyed by: M. Teixeira	Certificate number: 1234	Pipe segment ref.: 2079.00
Owner:	Customer:	Pre-cleaning: No Pre-Cleaning	Date cleaned:	Project name: COM002-9
City: SOMERVILLE	Street: ALEWIFE BROOK PKWY	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: 666667947.00	Downstream MH No: 2282.00	Direction: U	Total length: 44.100 ft.	Length surveyed: 44.100 ft.
Purpose: Maintenance Related	Pipe joint length:	Height: 8 in.	Material: Vitrified Clay Pipe	LateralsCounter: Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	28	4138	3.1	0	0	2	2100	2.0	30	3.0	4.1	
2	0	0				0	2							
3	0	24				0	0							
4	0	4				0	0							
5	0	0				0	0							



NWMCC INSPECTION REPORT

Inspection Photos

City:

SOMERVILLE

Street:

ALEWIFE BROOK PKWY

Start date/time:

20240421 22:28

Pipe segment ref.:

2079.00



Photo: 666667947.00-2282.00-20240421-211333-211946.JPG

At: 0 ft. 12/12 CM - Crack Multiple

Joint: No



Photo: 666667947.00-2282.00-20240421-211333-212035.JPG

At: 9.6 ft. 9/3 RPP - Point Repair Patch

Joint: No PVC



Photo: 666667947.00-2282.00-20240421-211333-212144.JPG

At: 22.5 ft. LL - Line Left

Joint: No 15 %



Photo: 666667947.00-2282.00-20240421-211333-212245.JPG

At: 40.3 ft. FH4 - Fracture Longitudinal Hinge, 4
12/12

Joint: No



Photo: 666667947.00-2282.00-20240421-211333-212222.JPG

At: 40.3 ft. CM - Crack Multiple
12/12

Joint: No



Photo: 666667947.00-2282.00-20240421-211333-212329.JPG

At: 44.1 ft. ACB - Access Point Catch Basin

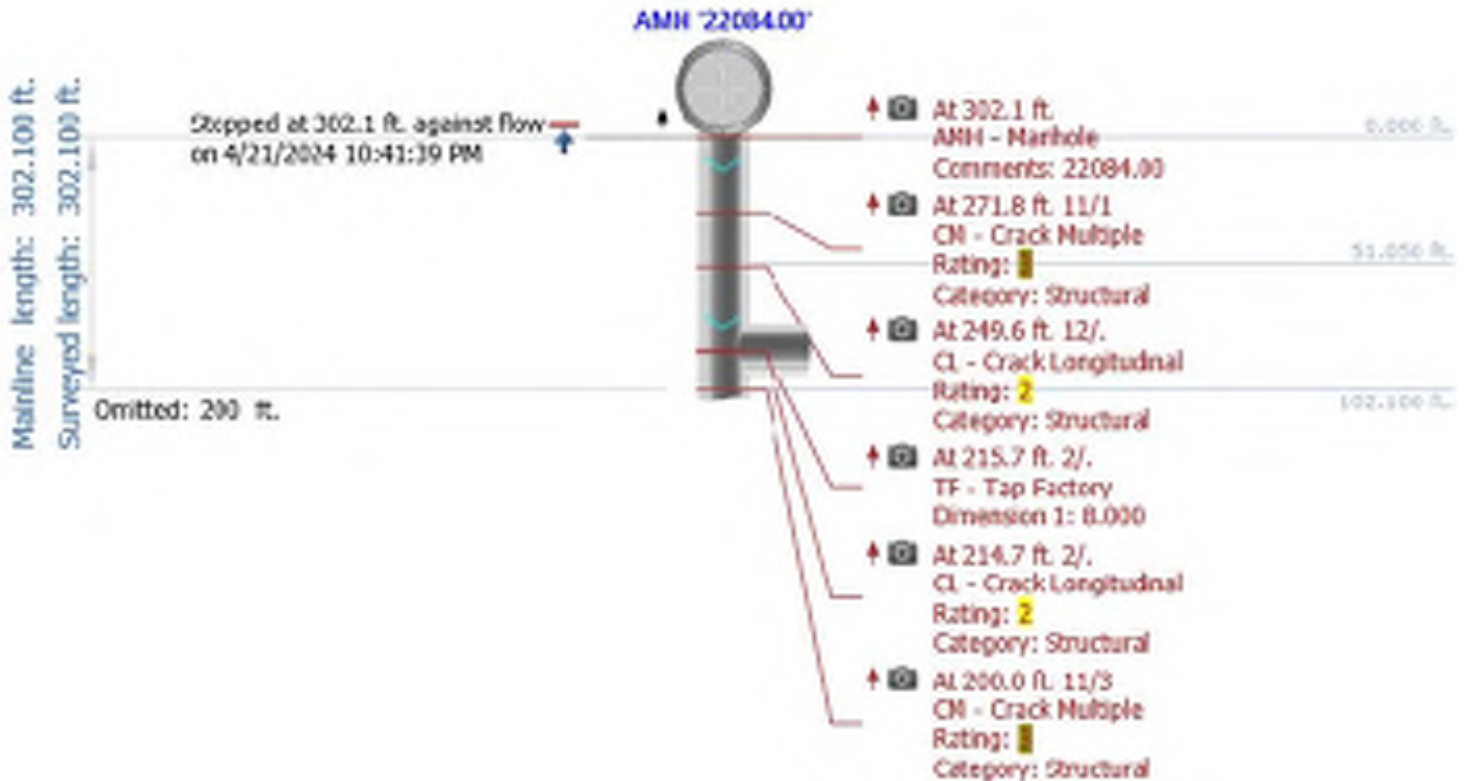
Joint: No 2282.00

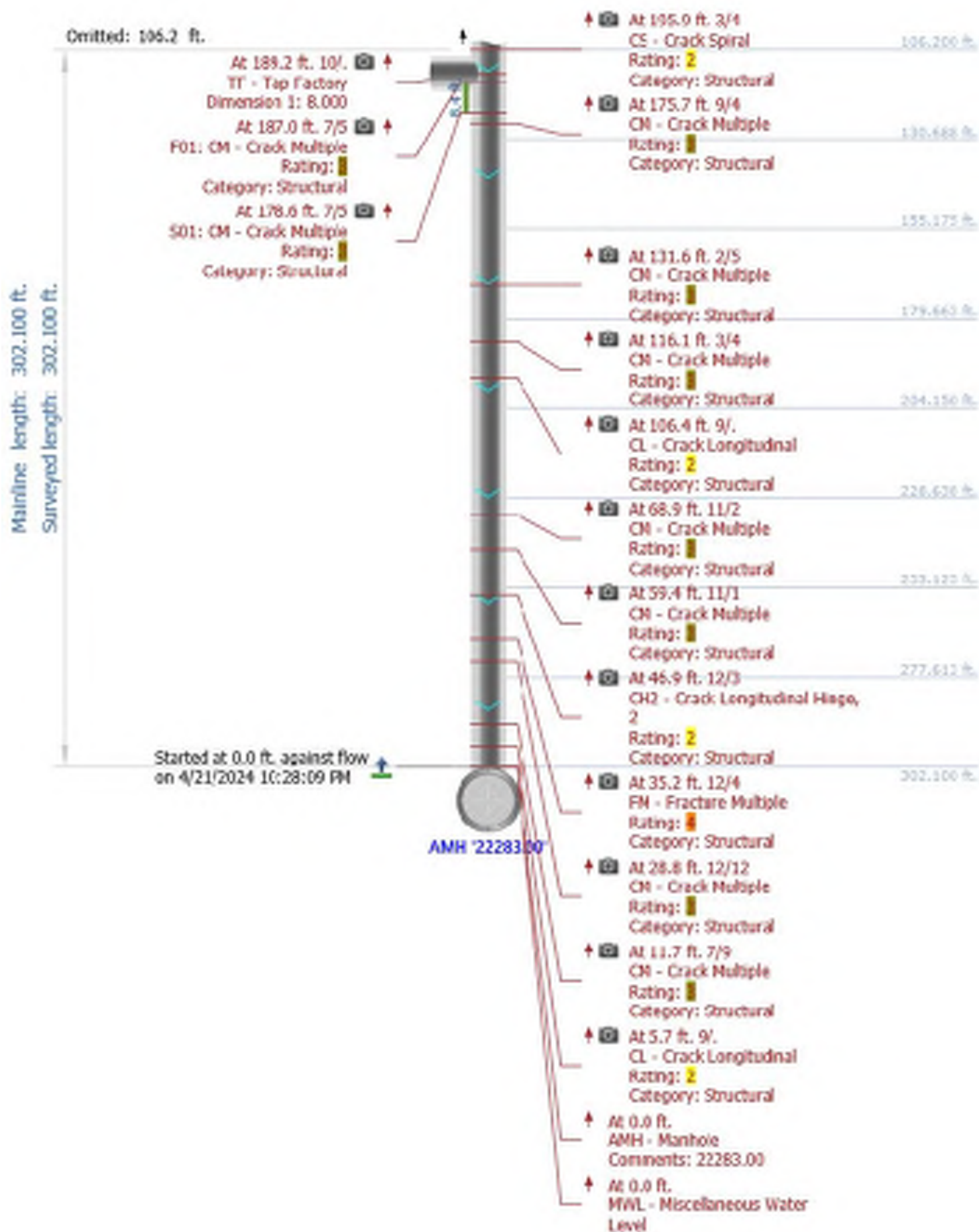
NWMCC INSPECTION REPORT

Start date/time: 20240421 22:28	Weather: Dry - No precipitation during survey	Surveyed by: M. Teixeira	Certificate number: 1234	Pipe segment ref.: 366.00	
Owner:	Customer:	Pre-cleaning: No Pre-Cleaning	Date cleaned:	Project name: COM002-9	
City: SOMERVILLE	Street: ALEWIFE BROOK PKWY	Location code:	Pipe use: Stormwater Pipe	Drainage area:	Flow control:
Upstream MH No: 22084.00	Downstream MH No: 22283.00	Direction: U	Total length: 302.100 ft.	Length surveyed: 302.100 ft.	
Purpose: Maintenance Related	Pipe joint length:	Height: 15 in.	Material: Vitrified Clay Pipe	LateralsCounter:	Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	49	413A	2.7	0	0	0	0000	0.0	49	2.7	4.1	
2	0	12				0	0							
3	0	33				0	0							
4	0	4				0	0							
5	0	0				0	0							





NWMCC INSPECTION REPORT

Inspection Photos

City:

SOMERVILLE

Street:

ALEWIFE BROOK PKWY

Start date/time:

20240421 22:49

Pipe segment ref.:

366.00



Photo: 22084.00-22283.00-20240421-222809-222859.JPG

At: 5.7 ft. 9/. CL - Crack Longitudinal

Joint: No

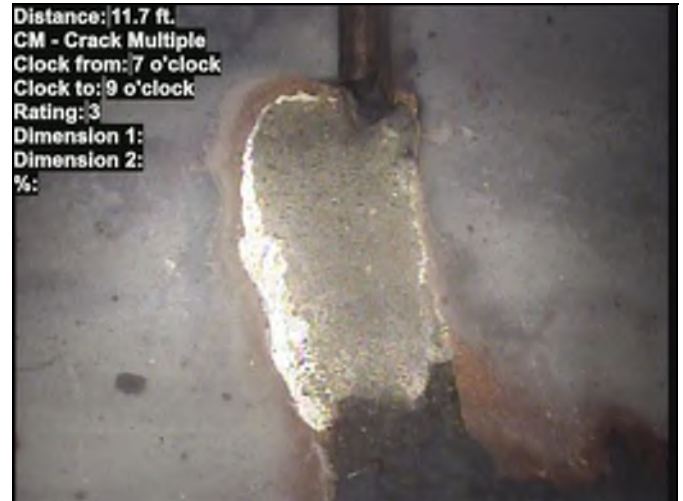


Photo: 22084.00-22283.00-20240421-222809-222930.JPG

At: 11.7 ft. 7/9 CM - Crack Multiple

Joint: No



Photo: 22084.00-22283.00-20240421-222809-223012.JPG

At: 28.8 ft. CM - Crack Multiple

12/12

Joint: No



Photo: 22084.00-22283.00-20240421-222809-223039.JPG

At: 35.2 ft. 12/4 FM - Fracture Multiple

Joint: No



Photo: 22084.00-22283.00-20240421-222809-223140.JPG
At: 46.9 ft. 12/3 CH2 - Crack Longitudinal Hinge, 2
Joint: No



Photo: 22084.00-22283.00-20240421-222809-223210.JPG
At: 59.4 ft. 11/1 CM - Crack Multiple
Joint: No



Photo: 22084.00-22283.00-20240421-222809-223236.JPG
At: 68.9 ft. 11/2 CM - Crack Multiple
Joint: No



Photo: 22084.00-22283.00-20240421-222809-223403.JPG
At: 106.4 ft. 9/. CL - Crack Longitudinal
Joint: No



Photo: 22084.00-22283.00-20240421-222809-223430.JPG
At: 116.1 ft. 3/4 CM - Crack Multiple
Joint: No



Photo: 22084.00-22283.00-20240421-222809-223504.JPG
At: 131.6 ft. 2/5 CM - Crack Multiple
Joint: No



Photo: 22084.00-22283.00-20240421-222809-223625.JPG

At: 175.7 ft. 9/4 CM - Crack Multiple

Joint: No

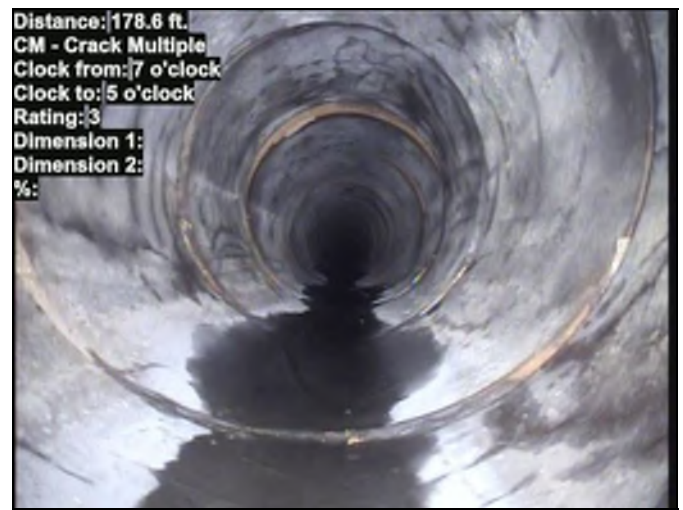


Photo: 22084.00-22283.00-20240421-222809-223640.JPG

At: 178.6 ft. 7/5 CM - Crack Multiple

Joint: No

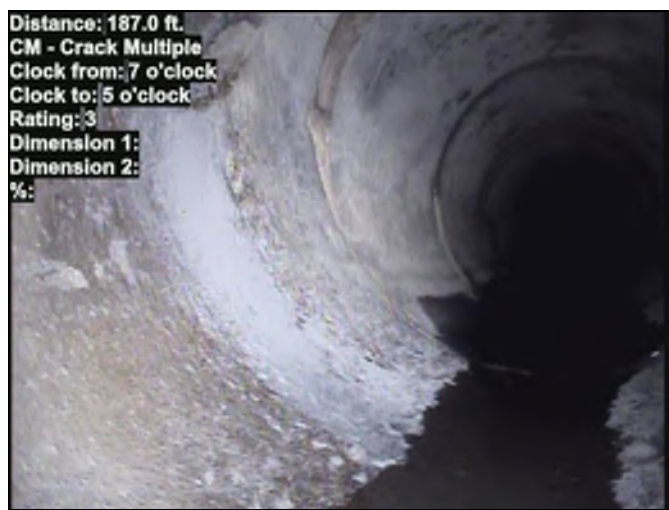


Photo: 22084.00-22283.00-20240421-222809-223704.JPG

At: 187 ft. 7/5 CM - Crack Multiple

Joint: No



Photo: 22084.00-22283.00-20240421-222809-223719.JPG

At: 189.2 ft. 10/ TF - Tap Factory

Joint: No



Photo: 22084.00-22283.00-20240421-222809-223743.JPG

At: 195.9 ft. 3/4 CS - Crack Spiral

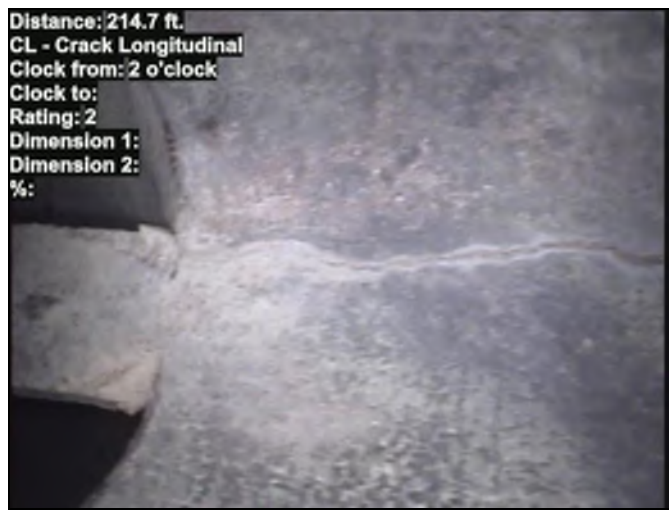
Joint: No



Photo: 22084.00-22283.00-20240421-222809-223801.JPG

At: 200 ft. 11/3 CM - Crack Multiple

Joint: No



Distance: 214.7 ft.
CL - Crack Longitudinal
Clock from: 2 o'clock
Clock to:
Rating: 2
Dimension 1:
Dimension 2:
%:
Photo: 22084.00-22283.00-20240421-222809-223836.JPG
At: 214.7 ft. 2/. CL - Crack Longitudinal
Joint: No



Distance: 215.7 ft.
TF - Tap Factory
Clock from: 2 o'clock
Clock to:
Rating:
Dimension 1: 8
Dimension 2:
%:
Photo: 22084.00-22283.00-20240421-222809-223845.JPG
At: 215.7 ft. 2/. TF - Tap Factory
Joint: No



Distance: 249.6 ft.
CL - Crack Longitudinal
Clock from: 12 o'clock
Clock to:
Rating: 2
Dimension 1:
Dimension 2:
%:
Photo: 22084.00-22283.00-20240421-222809-223944.JPG
At: 249.6 ft. 12/. CL - Crack Longitudinal
Joint: No



Distance: 271.8 ft.
CM - Crack Multiple
Clock from: 11 o'clock
Clock to: 1 o'clock
Rating: 3
Dimension 1:
Dimension 2:
%:
Photo: 22084.00-22283.00-20240421-222809-224031.JPG
At: 271.8 ft. CM - Crack Multiple
11/1
Joint: No



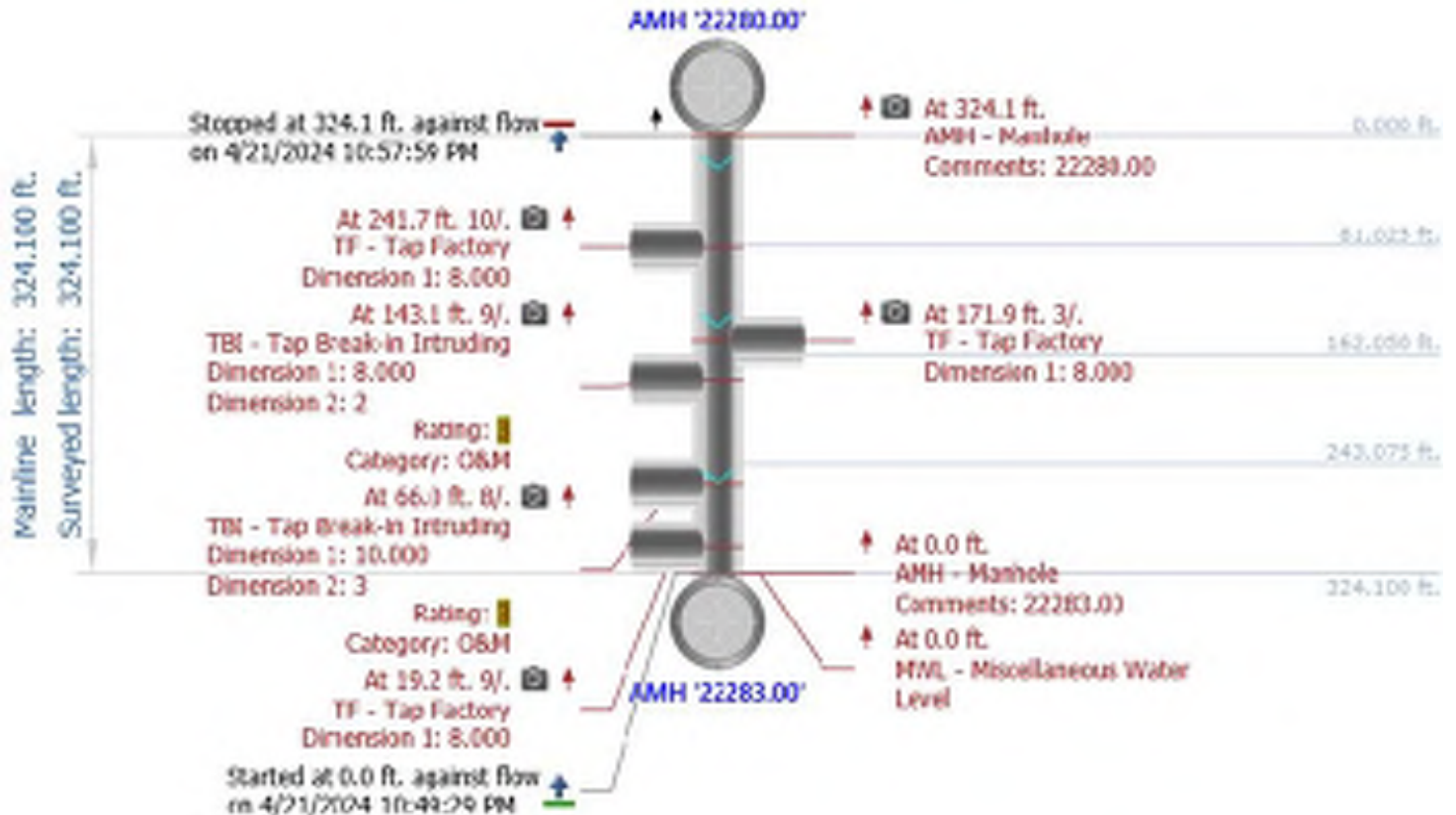
Distance: 302.1 ft.
AMH - Manhole
Clock from:
Clock to:
Rating:
Dimension 1:
Dimension 2:
%:
22084.00
Photo: 22084.00-22283.00-20240421-222809-224122.JPG
At: 302.1 ft. AMH - Manhole
Joint: No 22084.00

NWMCC INSPECTION REPORT

Start date/time: 20240421 22:49	Weather: Dry - No precipitation during survey	Surveyed by: M. Teixeira	Certificate number: 1234	Pipe segment ref.: 2068.00	
Owner:	Customer:	Pre-cleaning: No Pre-Cleaning	Date cleaned:	Project name: COM002-9	
City: SOMERVILLE	Street: ALEWIFE BROOK PKWY	Location code:	Pipe use: Stormwater Pipe	Drainage area:	Flow control:
Upstream MH No: 22280.00	Downstream MH No: 22283.00	Direction: U	Total length: 324.100 ft.	Length surveyed: 324.100 ft.	
Purpose: Maintenance Related	Pipe joint length:	Height: 18 in.	Material: Reinforced Concrete Pipe	LateralsCounter:	Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	6	3200	3.0	6	3.0	3.2	
2	0	0				0	0							
3	0	0				0	6							
4	0	0				0	0							
5	0	0				0	0							



NWMCC INSPECTION REPORT

Inspection Photos

City:

SOMERVILLE

Street:

ALEWIFE BROOK PKWY

Start date/time:

20240422 01:07

Pipe segment ref.:

2068.00



Photo: 22280.00-22283.00-20240421-224929-225043.JPG

At: 19.2 ft. 9/. TF - Tap Factory

Joint: No



Photo: 22280.00-22283.00-20240421-224929-225154.JPG

At: 66 ft. 8/. TBI - Tap Break-in Intruding

Joint: No



Photo: 22280.00-22283.00-20240421-224929-225341.JPG

At: 143.1 ft. 9/. TBI - Tap Break-in Intruding

Joint: No



Photo: 22280.00-22283.00-20240421-224929-225426.JPG

At: 171.9 ft. 3/. TF - Tap Factory

Joint: No



Distance: 241.7 ft.
TF - Tap Factory
Clock from: 10 o'clock
Clock to:
Rating:
Dimension 1: 8
Dimension 2:
%:

Photo: 22280.00-22283.00-20240421-224929-225551.JPG

At: 241.7 ft. 10/. TF - Tap Factory

Joint: No



Distance: 324.1 ft.
AMH - Manhole
Clock from:
Clock to:
Rating:
Dimension 1:
Dimension 2:
%:

22280.00

Photo: 22280.00-22283.00-20240421-224929-225742.JPG

At: 324.1 ft. AMH - Manhole

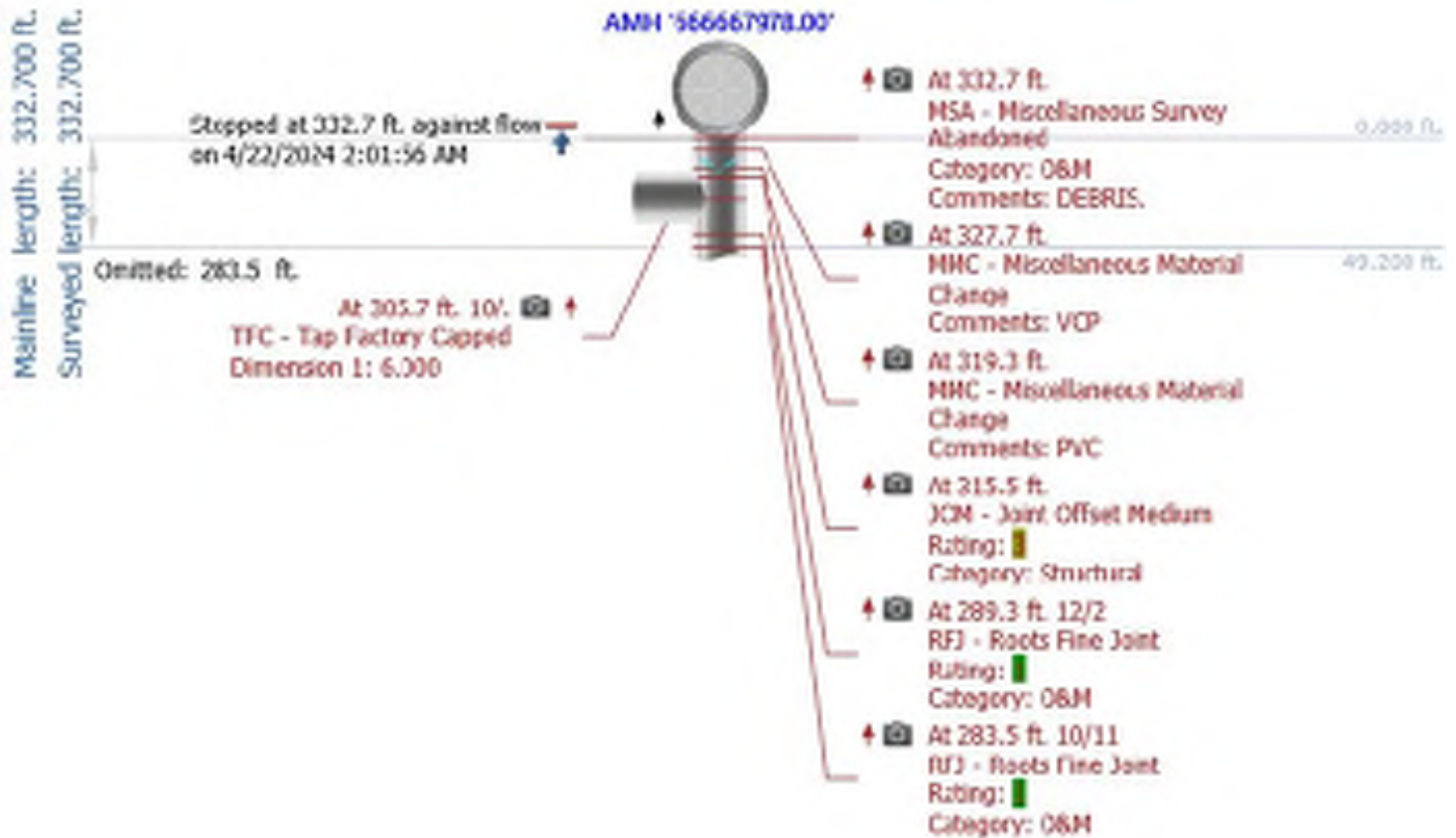
Joint: No 22280.00

NWMCC INSPECTION REPORT

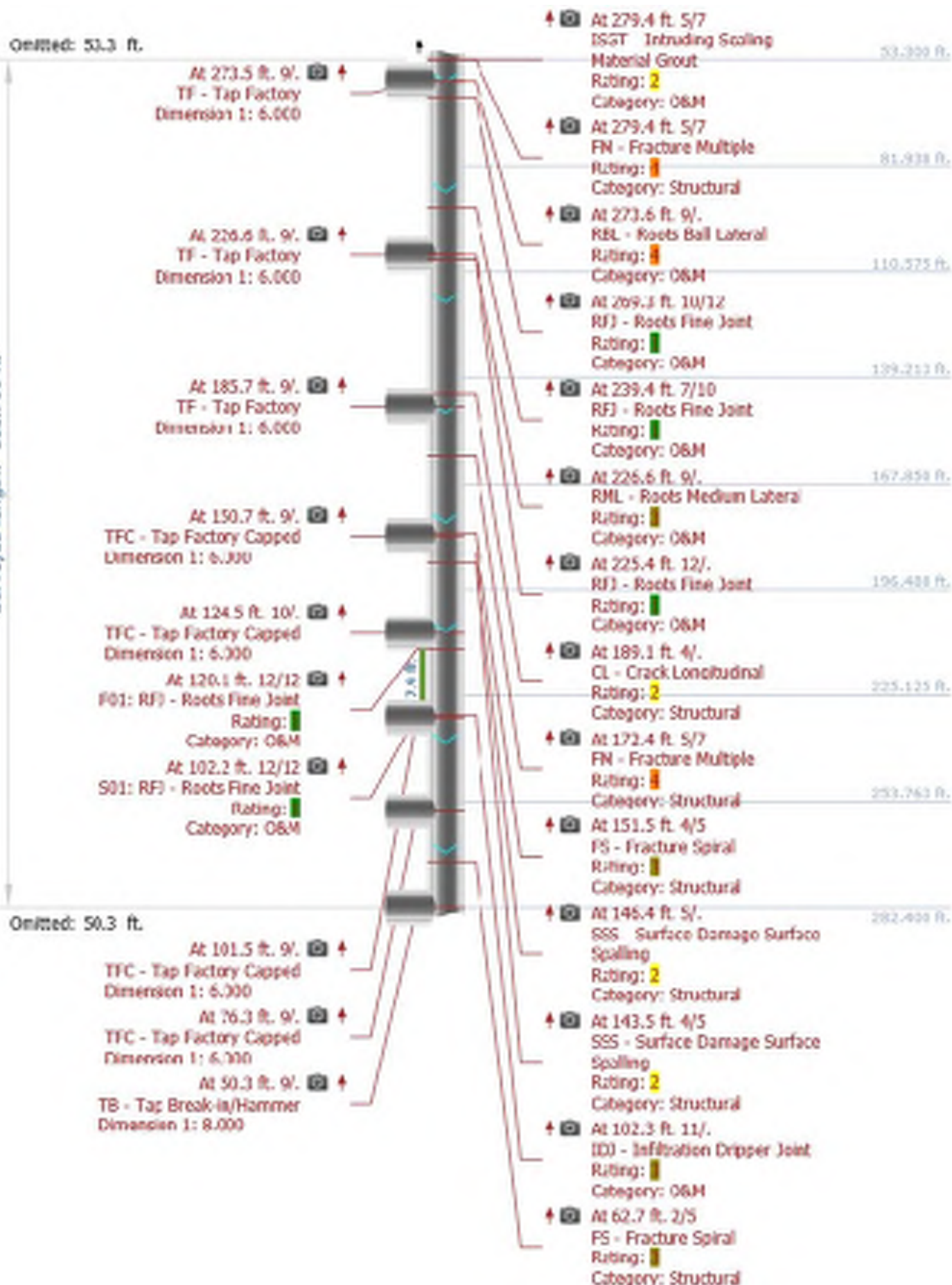
Start date/time: 20240422 01:07	Weather: Dry - No precipitation during survey	Surveyed by: M. Teixeira	Certificate number: 1234	Pipe segment ref.: 66674930.00
Owner:	Customer:	Pre-cleaning: Heavy Cleaning	Date cleaned: 20240422	Project name: COM002-9
City: SOMERVILLE	Street: ALEWIFE BROOK PKWY	Location code:	Pipe use: Sanitary Sewage Pipe	Drainage area: Flow control:
Upstream MH No: 666667978.00	Downstream MH No: 30328.00	Direction: U	Total length: 332.700 ft.	Length surveyed: 332.700 ft.
Purpose: Maintenance Related	Pipe joint length:	Height: 8 in.	Material: Vitrified Clay Pipe	LateralsCounter: Additional info:

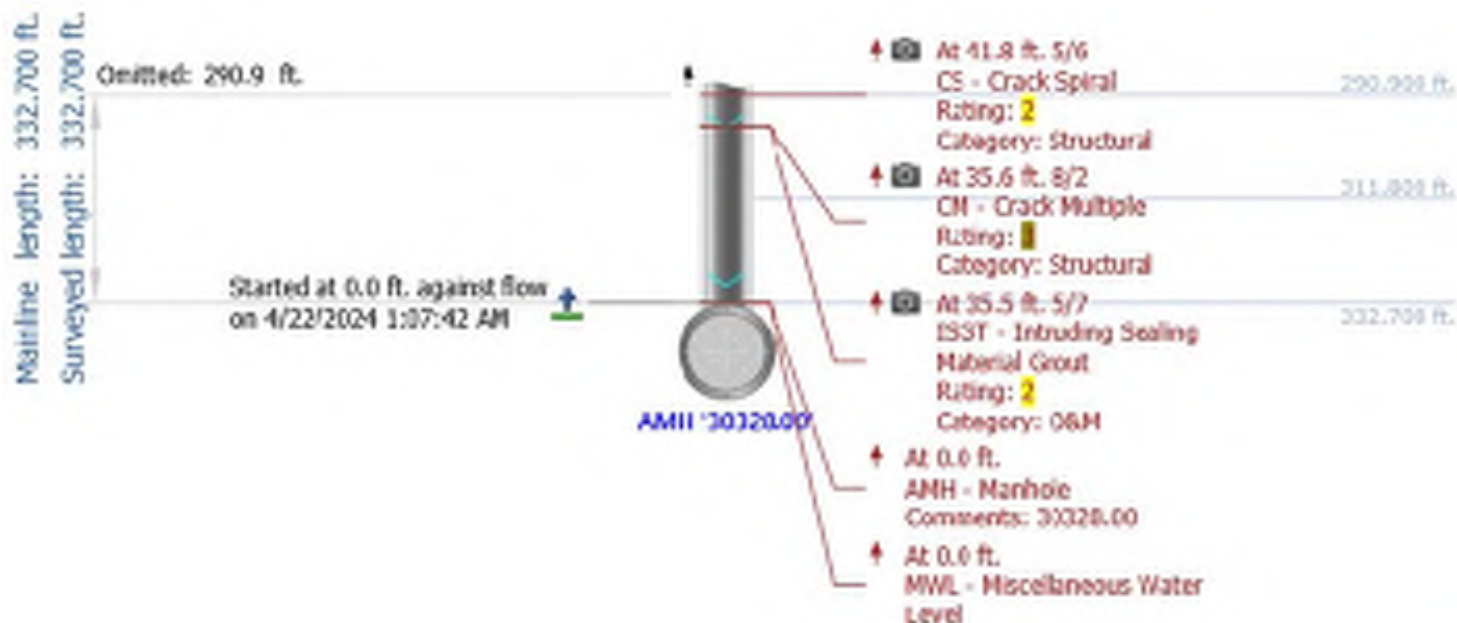
Pipe Ratings

Grade	Defects	Segment Grade	Structural:			Defects	Segment Grade	O&M:			Pipe Rating	Overall:		
			Pipe Rating	Quick Rating	Pipe Rating Index			Pipe Rating	Quick Rating	Pipe Rating Index		Pipe Rating	Pipe Rating Index	LoF
1	0	0	28	4234	2.8	0	9	23	4132	1.6	51	2.1	4.3	
2	0	8				0	4							
3	0	12				0	6							
4	0	8				0	4							
5	0	0				0	0							



Mainline length: 332,700 ft.
Surveyed length: 332,700 ft.





NWMCC INSPECTION REPORT

Inspection Photos

City:

SOMERVILLE

Street:

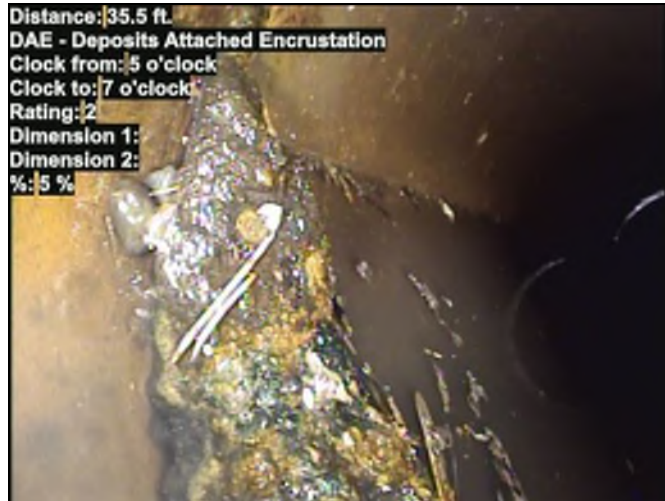
ALEWIFE BROOK PKWY

Start date/time:

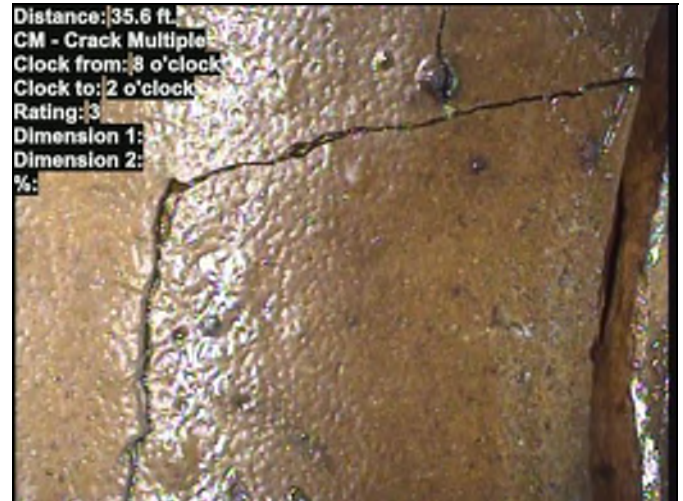
20240422 10:36

Pipe segment ref.:

66674930.00



Distance: 35.5 ft.
DAE - Deposits Attached Encrustation
Clock from: 5 o'clock
Clock to: 7 o'clock
Rating: 2
Dimension 1:
Dimension 2:
%: 5 %
Photo: 666667978.00-30328.00-20240422-010742-010945.JPG
At: 35.5 ft. 5/7 ISGT - Intruding Sealing Material Grout
Joint: No 5 %



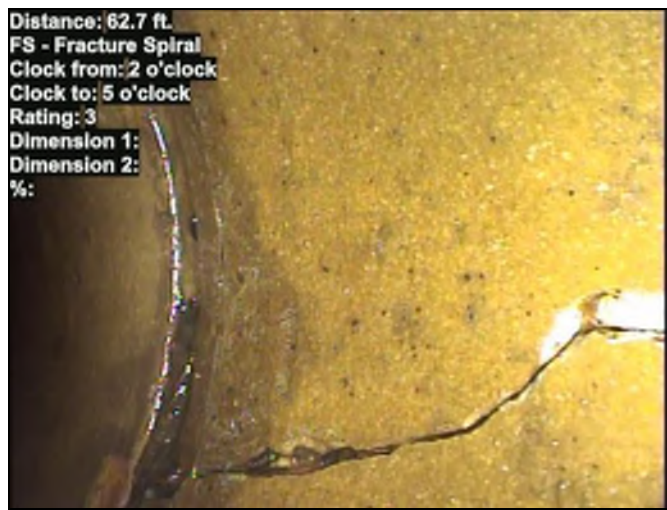
Distance: 35.6 ft.
CM - Crack Multiple
Clock from: 8 o'clock
Clock to: 2 o'clock
Rating: 3
Dimension 1:
Dimension 2:
%:
Photo: 666667978.00-30328.00-20240422-010742-011007.JPG
At: 35.6 ft. 8/2 CM - Crack Multiple
Joint: No



Distance: 41.8 ft.
CS - Crack Spiral
Clock from: 5 o'clock
Clock to: 6 o'clock
Rating: 2
Dimension 1:
Dimension 2:
%:
Photo: 666667978.00-30328.00-20240422-010742-011148.JPG
At: 41.8 ft. 5/6 CS - Crack Spiral
Joint: No



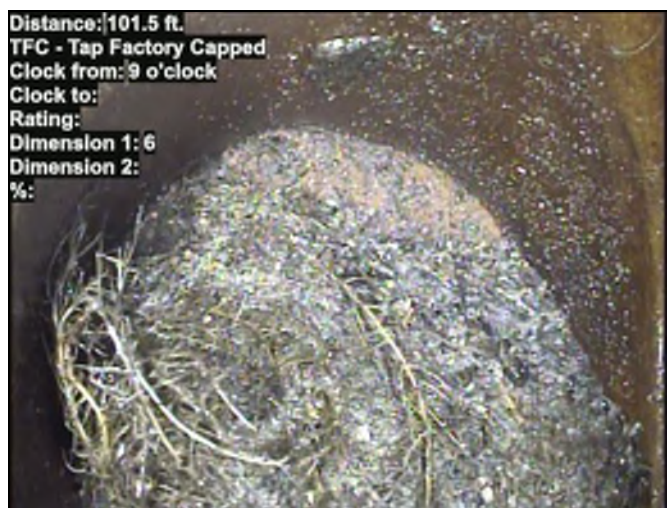
Distance: 50.3 ft.
TB - Tap Break-in/Hammer
Clock from: 9 o'clock
Clock to:
Rating:
Dimension 1: 8
Dimension 2:
%:
Photo: 666667978.00-30328.00-20240422-010742-011218.JPG
At: 50.3 ft. 9/. TB - Tap Break-in/Hammer
Joint: No



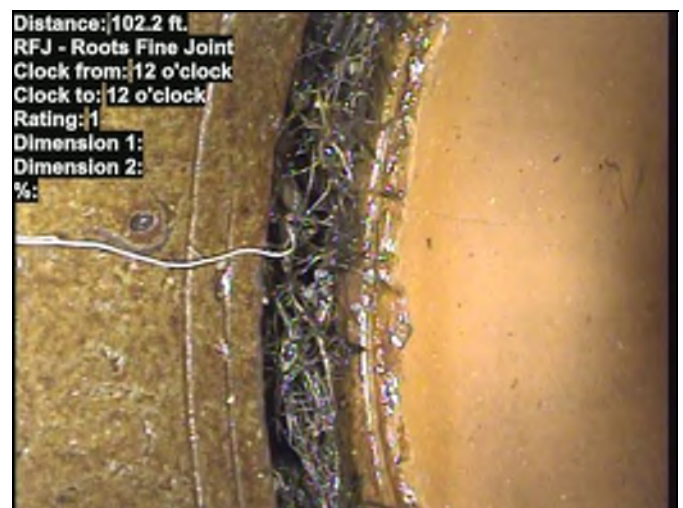
Distance: 62.7 ft.
FS - Fracture Spiral
Clock from: 2 o'clock
Clock to: 5 o'clock
Rating: 3
Dimension 1:
Dimension 2:
%:
Photo: 666667978.00-30328.00-20240422-010742-011311.JPG
At: 62.7 ft. 2/5 FS - Fracture Spiral
Joint: No



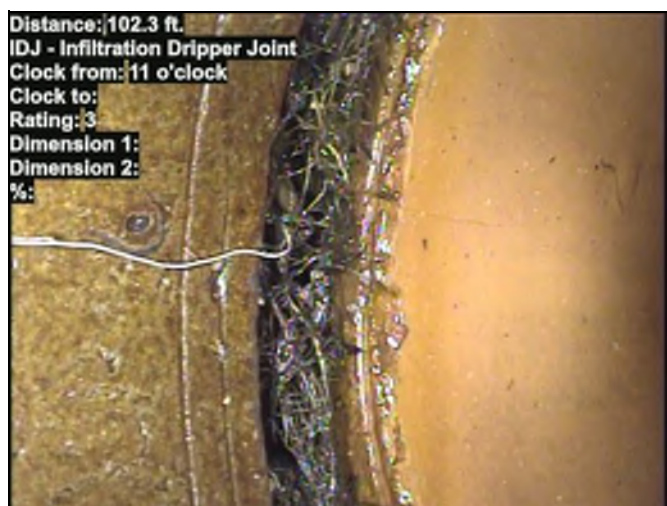
Distance: 76.3 ft.
TFC - Tap Factory Capped
Clock from: 9 o'clock
Clock to:
Rating:
Dimension 1: 8
Dimension 2:
%:
Photo: 666667978.00-30328.00-20240422-010742-011408.JPG
At: 76.3 ft. 9/. TFC - Tap Factory Capped
Joint: No



Distance: 101.5 ft.
TFC - Tap Factory Capped
Clock from: 9 o'clock
Clock to:
Rating:
Dimension 1: 6
Dimension 2:
%:
Photo: 666667978.00-30328.00-20240422-010742-011515.JPG
At: 101.5 ft. 9/. TFC - Tap Factory Capped
Joint: No



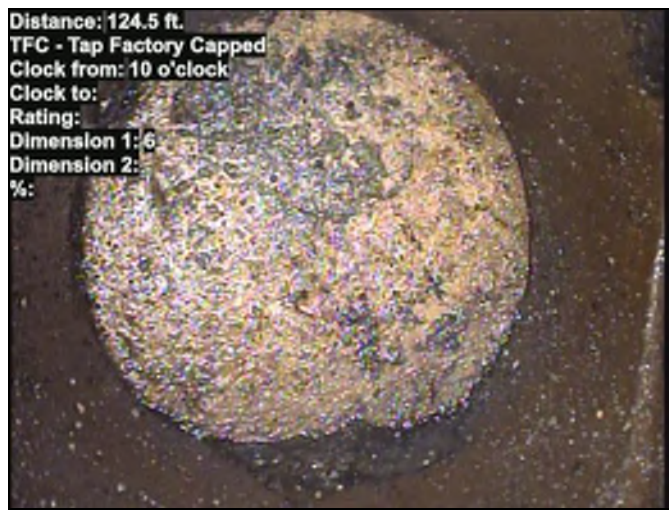
Distance: 102.2 ft.
RFJ - Roots Fine Joint
Clock from: 12 o'clock
Clock to: 12 o'clock
Rating: 1
Dimension 1:
Dimension 2:
%:
Photo: 666667978.00-30328.00-20240422-010742-011532.JPG
At: 102.2 ft. RFJ - Roots Fine Joint
12/12
Joint: Yes



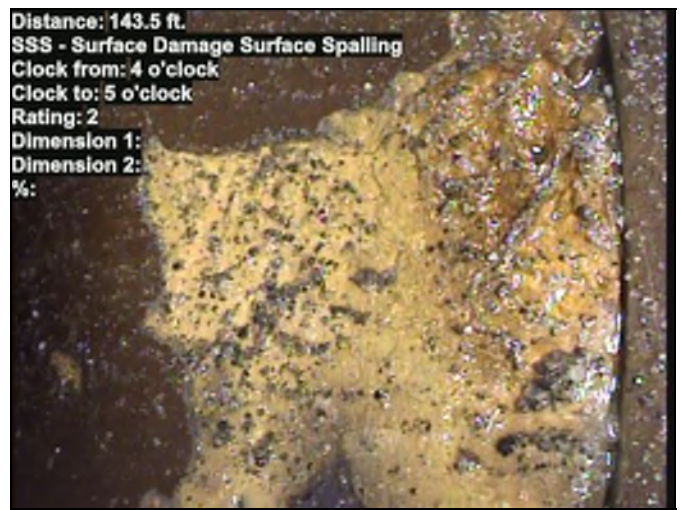
Distance: 102.3 ft.
IDJ - Infiltration Dripper Joint
Clock from: 11 o'clock
Clock to:
Rating: 3
Dimension 1:
Dimension 2:
%:
Photo: 666667978.00-30328.00-20240422-010742-011539.JPG
At: 102.3 ft. 11/. IDJ - Infiltration Dripper Joint
Joint: Yes



4/22/2024 1:16:47 AM
Upstream MH No: AMH '666667978.00'
Downstream MH No: AMH '30328.00'
Photo: 666667978.00-30328.00-20240422-010742-011645.JPG
At: 120.1 ft. RFJ - Roots Fine Joint
12/12
Joint: Yes



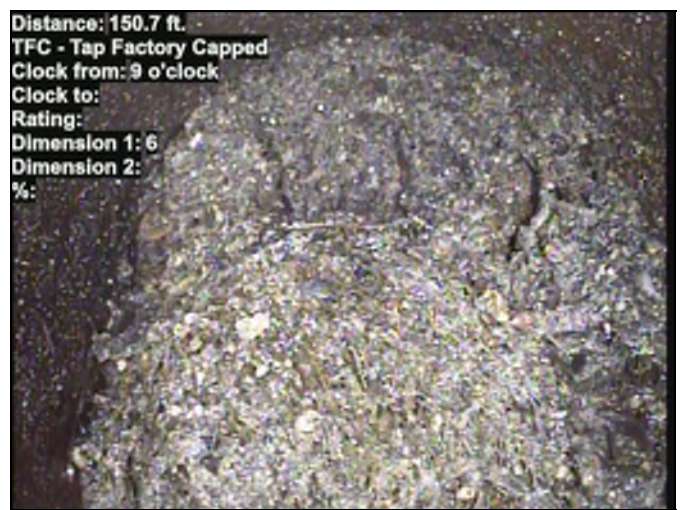
Distance: 124.5 ft.
TFC - Tap Factory Capped
Clock from: 10 o'clock
Clock to:
Rating:
Dimension 1: 6
Dimension 2:
%:
Photo: 666667978.00-30328.00-20240422-010742-011657.JPG
At: 124.5 ft. 10/. TFC - Tap Factory Capped
Joint: No



Distance: 143.5 ft.
SSS - Surface Damage Surface Spalling
Clock from: 4 o'clock
Clock to: 5 o'clock
Rating: 2
Dimension 1:
Dimension 2:
%:
Photo: 666667978.00-30328.00-20240422-010742-011823.JPG
At: 143.5 ft. 4/5 SSS - Surface Damage Surface Spalling
Joint: No



Distance: 146.4 ft.
SSS - Surface Damage Surface Spalling
Clock from: 5 o'clock
Clock to:
Rating: 2
Dimension 1:
Dimension 2:
%:
Photo: 666667978.00-30328.00-20240422-010742-011853.JPG
At: 146.4 ft. 5/. SSS - Surface Damage Surface Spalling
Joint: No



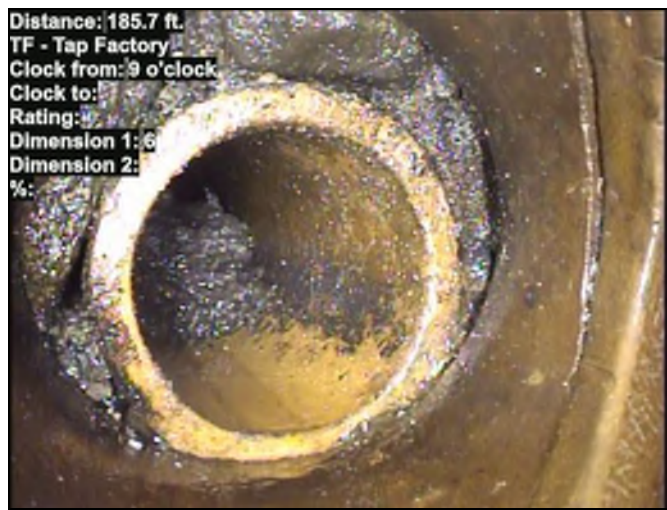
Distance: 150.7 ft.
TFC - Tap Factory Capped
Clock from: 9 o'clock
Clock to:
Rating:
Dimension 1: 6
Dimension 2:
%:
Photo: 666667978.00-30328.00-20240422-010742-011913.JPG
At: 150.7 ft. 9/. TFC - Tap Factory Capped
Joint: No



Distance: 151.5 ft.
FS - Fracture Spiral
Clock from: 4 o'clock
Clock to: 5 o'clock
Rating: 3
Dimension 1:
Dimension 2:
%:
Photo: 666667978.00-30328.00-20240422-010742-011932.JPG
At: 151.5 ft. 4/5 FS - Fracture Spiral
Joint: No



Distance: 172.4 ft.
FM - Fracture Multiple
Clock from: 5 o'clock
Clock to: 7 o'clock
Rating: 4
Dimension 1:
Dimension 2:
%:
Photo: 666667978.00-30328.00-20240422-010742-012041.JPG
At: 172.4 ft. 5/7 FM - Fracture Multiple
Joint: No



Distance: 185.7 ft.
 TF - Tap Factory
 Clock from: 9 o'clock
 Clock to:
 Rating:
 Dimension 1: 6
 Dimension 2:
 %:
 Photo: 666667978.00-30328.00-20240422-010742-012122.JPG
 At: 185.7 ft. 9/. TF - Tap Factory
 Joint: No



Distance: 189.1 ft.
 CL - Crack Longitudinal
 Clock from: 4 o'clock
 Clock to:
 Rating: 2
 Dimension 1:
 Dimension 2:
 %:
 Photo: 666667978.00-30328.00-20240422-010742-012141.JPG
 At: 189.1 ft. 4/. CL - Crack Longitudinal
 Joint: No



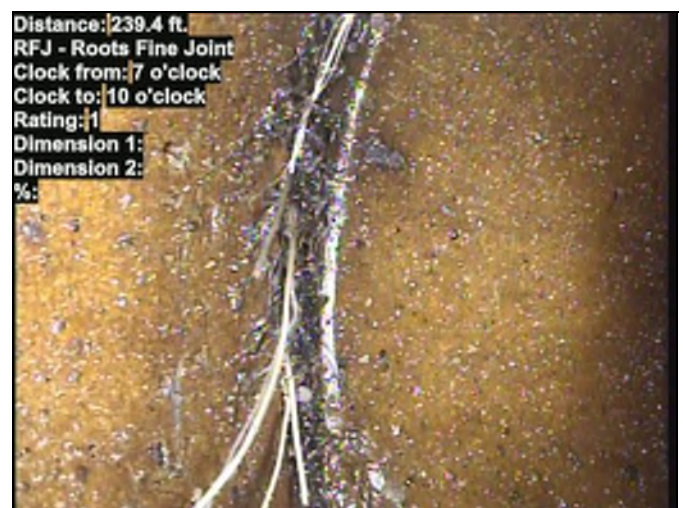
Distance: 225.4 ft.
 RFJ - Roots Fine Joint
 Clock from: 12 o'clock
 Clock to:
 Rating: 1
 Dimension 1:
 Dimension 2:
 %:
 Photo: 666667978.00-30328.00-20240422-010742-012312.JPG
 At: 225.4 ft. 12/. RFJ - Roots Fine Joint
 Joint: Yes



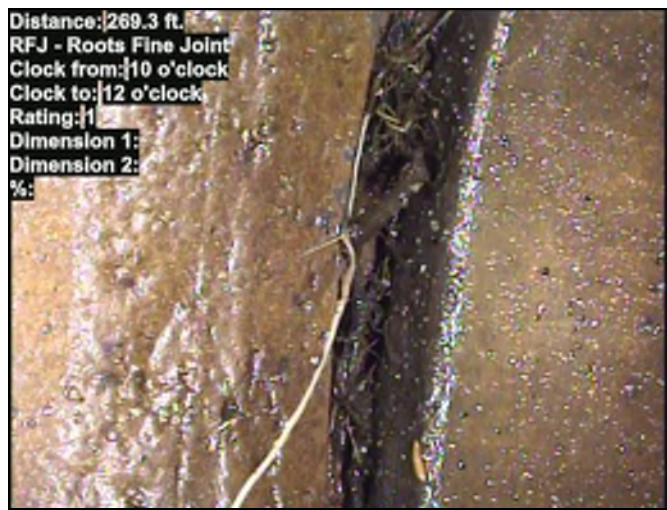
Distance: 226.6 ft.
 TF - Tap Factory
 Clock from: 9 o'clock
 Clock to:
 Rating:
 Dimension 1: 6
 Dimension 2:
 %:
 Photo: 666667978.00-30328.00-20240422-010742-012331.JPG
 At: 226.6 ft. 9/. TF - Tap Factory
 Joint: No



Distance: 226.6 ft.
 RML - Roots Medium Lateral
 Clock from: 9 o'clock
 Clock to:
 Rating: 3
 Dimension 1:
 Dimension 2:
 %: 30 %
 Photo: 666667978.00-30328.00-20240422-010742-012341.JPG
 At: 226.6 ft. 9/. RML - Roots Medium Lateral
 Joint: No 30 %



Distance: 239.4 ft.
 RFJ - Roots Fine Joint
 Clock from: 7 o'clock
 Clock to: 10 o'clock
 Rating: 1
 Dimension 1:
 Dimension 2:
 %:
 Photo: 666667978.00-30328.00-20240422-010742-012434.JPG
 At: 239.4 ft. RFJ - Roots Fine Joint
 7/10
 Joint: Yes



Distance: 269.3 ft.
RFJ - Roots Fine Joint
Clock from: 10 o'clock
Clock to: 12 o'clock
Rating: 1
Dimension 1:
Dimension 2:
%:
Photo: 666667978.00-30328.00-20240422-010742-012551.JPG
At: 269.3 ft. RFJ - Roots Fine Joint
10/12
Joint: Yes



Distance: 273.5 ft.
TF - Tap Factory
Clock from: 9 o'clock
Clock to:
Rating:
Dimension 1: 6
Dimension 2:
%:
Photo: 666667978.00-30328.00-20240422-010742-012613.JPG
At: 273.5 ft. 9/. TF - Tap Factory
Joint: No



Distance: 273.6 ft.
RBL - Roots Ball Lateral
Clock from: 9 o'clock
Clock to:
Rating: 4
Dimension 1:
Dimension 2:
%: 80 %
Photo: 666667978.00-30328.00-20240422-010742-012623.JPG
At: 273.6 ft. 9/. RBL - Roots Ball Lateral
Joint: No 80 %



Distance: 279.4 ft.
FM - Fracture Multiple
Clock from: 5 o'clock
Clock to: 7 o'clock
Rating: 4
Dimension 1:
Dimension 2:
%:
Photo: 666667978.00-30328.00-20240422-010742-012752.JPG
At: 279.4 ft. 5/7 FM - Fracture Multiple
Joint: No



Distance: 279.4 ft.
ISGT - Intruding Sealing Material Grout
Clock from: 5 o'clock
Clock to: 7 o'clock
Rating: 2
Dimension 1:
Dimension 2:
%: 5 %
Photo: 666667978.00-30328.00-20240422-010742-012724.JPG
At: 279.4 ft. 5/7 ISGT - Intruding Sealing Material Grout
Joint: No 5 %



Distance: 283.5 ft.
RFJ - Roots Fine Joint
Clock from: 10 o'clock
Clock to: 11 o'clock
Rating: 1
Dimension 1:
Dimension 2:
%:
Photo: 666667978.00-30328.00-20240422-010742-012819.JPG
At: 283.5 ft. RFJ - Roots Fine Joint
10/11
Joint: Yes



Photo: 666667978.00-30328.00-20240422-010742-012845.JPG

At: 289.3 ft. RFJ - Roots Fine Joint
12/2

Joint: Yes



Photo: 666667978.00-30328.00-20240422-010742-012935.JPG

At: 305.7 ft. 10/. TFC - Tap Factory Capped

Joint: No



Photo: 666667978.00-30328.00-20240422-010742-013007.JPG

At: 315.5 ft. JOM - Joint Offset Medium

Joint: No

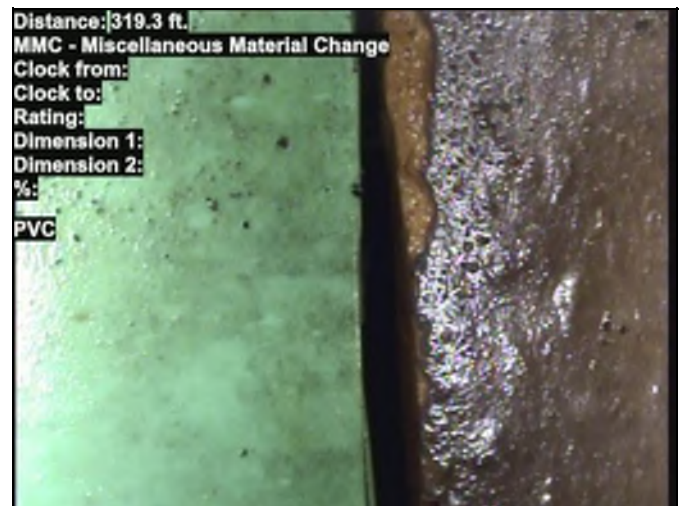


Photo: 666667978.00-30328.00-20240422-010742-013135.JPG

At: 319.3 ft. MMC - Miscellaneous Material Change

Joint: No PVC



Photo: 666667978.00-30328.00-20240422-010742-015824.JPG

At: 327.7 ft. MMC - Miscellaneous Material Change

Joint: No VCP



Photo: 666667978.00-30328.00-20240422-010742-020132.JPG

At: 332.7 ft. MSA - Miscellaneous Survey Abandoned

Joint: No DEBRIS.

APPENDIX C: CATCHMENT 32 SUMMARY MEMO



MEMORANDUM



TO: Lucica Hiller, City of Somerville, Stormwater Manager
CC: Todd Prokop, Woodard & Curran
Colin Brown, SDE
FROM: Garrett Bergey, Woodard & Curran
DATE: January 12, 2024
RE: Somerville IDDE Investigations – Catchment 32 Summary Memo

This memo summarizes the key findings of inspections and recommendations for Catchment 32 as part of Task 1, Illicit Discharge, Detection, and Elimination (IDDE) Investigation: Data Management and Reporting. Woodard & Curran (W&C), along with their subcontractor, Stacey DePasquale Engineering, Inc (SDE), organized and performed the inspections described in this report.

Background Information

Catchment 32 is located in the Assembly Square neighborhood. The catchment is bordered by the Mystic River, the Massachusetts Bay Transportation Authority (MBTA) railroad, Mystic Avenue, Revolution Drive, and Grand Union Boulevard. The outfall for this catchment discharges to the Mystic River.

Dry weather screening and sampling was completed on October 16, 2020 from MS4 Outfall 32. The results show that the discharge at Outfall does not meet the likely sewer indicators. Per the 2016 MS4 Permit, likely sewer indicators include the following: 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. Even though the likely sewer indicator thresholds were not met, the ammonia and surfactants results were sufficiently high to suggest there may be sewage inputs in the catchment. The dry weather screening and sampling results at Outfall 32 from October 2020 are shown in **Table 1**.



**TABLE 1: OUTFALL 32 DRY WEATHER SCREENING AND SAMPLING RESULTS
(OCTOBER 2020)**

MS4 Outfall	32
Date	10/16/2020
Flow	Yes
Velocity	Slow (0 – 0.5 ft/s)
Flow Color	Clear
Depth of Flow (in.)	6
Sediment	No
Floatables	No
Odor	Musty
pH	6.99
Temperature (°C)	20
Specific Conductivity (µs/cm)	3,570
Salinity (µg/L or ppt)	1.8
Ammonia (mg/L)	5
Surfactants (mg/L)	1.5
Chlorine (mg/L)	Not Detected
E. Coli (MPN/100 mL)	20
Meets Likely Sewer Indicators? (Yes/No)	No
BOD₅ (mg/L)	< 8.0
Dissolved Oxygen (mg/L)	2.67
Total Phosphorus (µg/L)	230
Oil and Grease (mg/L)	1.4
Fecal Coliform (CFU/100 mL)	70
Comments	Iron Deposits



Catchment investigations were conducted in December 2020 in response to the original 2020 outfall screening results. Three manholes met the likely sewer indicator criteria described above. Results from these three manholes are shown in **Table 2**.

TABLE 2: CATCHMENT INVESTIGATION RESULTS

Manhole	Pipe	Street	Ammonia (mg/L)	Surfactants (mg/L)	Chlorine (mg/L)
32-6265	32-6267:32-6265	Revolution Drive	3	0.25	0.26
32-6389	32-6124:32-6389	Foley Street	0.8	0.25	0.09
32-6122	32-7001:32-6122	Canal Street	10	1.5	1.63

Based on the results shown in **Table 2**, the City completed additional investigations throughout Catchment 32 to determine the source of contamination. The areas for further investigation were identified during Permit Year 3 (July 1, 2020, through June 30, 2021). In most areas, buildings adjacent to contaminated pipes were targeted for building inspections. In areas with high rise or large commercial buildings, like Assembly Square, the City of Somerville (City) performed dye flushing of public infrastructure in efforts to rule out issues within the City's infrastructure before attempting large-scale building inspections. A summary of the investigations completed to date and the recommendations for next steps are provided in the following sections.

Revolution Drive

The sampling results from December 2020 showed that pipe segment 32-6267:32-6265 has ammonia, surfactants, and chlorine values above the permit threshold. Dye tests were not completed during Permit Year 4 as there was no sewer mapped in the area.

The contaminated pipe is located in front of 290 Revolution Drive, which is a newly constructed building. In February 2023, W&C reviewed the record drawings associated with 290 Revolution Drive and integrated mapping updates in GIS. The City was also able to confirm that the storm drain pipe under 290 Revolution has been abandoned, so W&C updated GIS to show the inactive pipe.

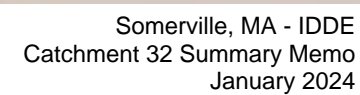
Once mapping updates were completed, additional investigations were conducted to determine the source of contamination.

Upstream sampling was completed in June 2023 to determine which pipe is the source of contamination. **Table 3** summarizes the results of June 2023 sampling. The pipes found to be contaminated are highlighted in red in **Figure 1**.



TABLE 3: REVOLUTION DRIVE 2023 SAMPLING RESULTS

Manhole	Pipe Segment	Ammonia (mg/L)	Surfactants (mg/L)	Chlorine (mg/L)
32-6267	32-6423 : 32-6267	3.00	0.50	0.25
32-6423	32-6407 : 32-6423	3.00	0.50	Not Detected
32-6423	32-6424 : 32-6423	3.00	0.75	1.28
32-6424	32-6425 : 32-6424	3.00	0.75	0.82
32-6425	FIT-7009 : 32-6425	5.00	2.00	Not Detected





The furthest upstream pipes that could be inspected were SW-CB-03622 : 32-6425 and FIT-7009 : 32-6425 as SDE could not locate any pipe segments or catch basins upstream of SW-CB-03622 (pipe from north) or 32-6425 (pipe from northeast). Due to the configuration of the structure, SDE was unable to determine which pipe the flow was coming from. To further investigate this area and determine what is upstream of SW-CB-03622 (north inlet to 32-6425) and 32-6425 (northeast inlet), CCTV inspections were completed by National Water Main Cleaning Company (NWMCC) on September 5, 2023.

During CCTV inspections, it appeared that the catch basins upstream of SW-CB-03622 are part of the rain gardens in the area, but pipe inspections could not be completed due to a drop connection. It was also observed that pipe segment FIT-7009 : 32-6425 was observed to be wet. This suggests that the flow sampled on June 22, 2023, was FIT-7009 : 32-6425. The CCTV inspection reports are included in **Attachment A**.

Dye tests were completed at this property on November 29, 2023, and December 6, 2023. A total of ten dye tests were conducted throughout the building and all tests were legal. Since all tests were legal, W&C recommended laboratory sampling for surfactants and human/total Bacteroides to verify if there is sewage present. SDE visited DMH 32-6425 on December 20, 2023, to collect the lab samples, however there was not enough flow to sample. The crew placed a sandbag and returned on December 26, 2023, there was still not enough flow to sample. SDE plans to make another attempt with a new sandbag to capture flow. The sandbag will be left in place for an extended dry period to maximize the opportunity to capture flow.



Canal Street

The sampling results from December 2020 showed that pipe segment 32-7001 : 32-6122 has ammonia, surfactants, and chlorine values above the permit threshold. This pipe segment enters storm drain manhole 32-6122 from the eastern side. This segment is located downstream of 445 Artisan Way, which is a large retail/commercial/apartment complex. A pipe inspection from December 2020 showed standing water in the upstream segment 32-6121 : 32-6122, which enters storm drain manhole 32-6122 from the north. The pipe highlighted in red in **Figure 2** is the contaminated pipe segment. The brown pipe segment (32-7000 : 32-6443) had a sewage odor and visual evidence of sewage present during an April 2023 inspection.

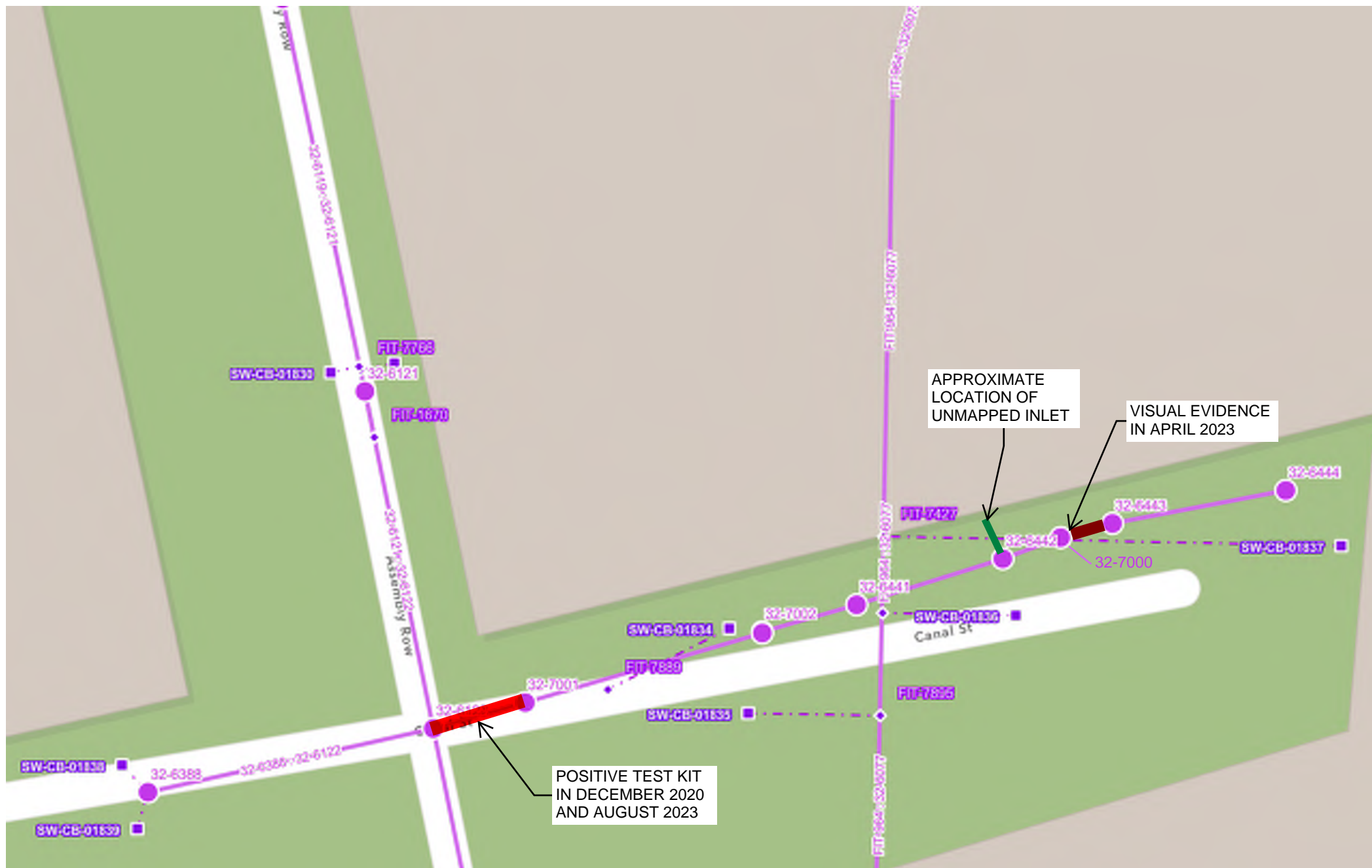


Figure 2: Canal Street Inspection Area



During Permit Year 4, public sewer and storm infrastructure was dye tested. Dye was placed in sewer manhole S2-3222 at the intersection of Canal Street and Assembly Row and the dye was observed in sewer manhole S2-3287. No dye was seen in storm drain manhole 32-6122 so no illicit connection was found.

Additional sampling was completed in August 2023 during dry weather and low tide. The sample results for 32-7001 : 32-6122 resulted in a positive test kit (Chlorine = 1.67 mg/L, Ammonia = 10.0 mg/L, Surfactants = 3.00 mg/L).

CCTV was completed on Canal Street on September 5th, 2023 of pipes on the eastern side of DMH 31-6122. The CCTV inspections showed an unmapped inlet in DMH 32-6442, as shown in **Figure 2**. The inlet was observed to have waste and toilet paper entering the drainage manhole. The camera went 54.8' into the property of 445 Artisan Way (property may also be known as 450 Canal Street) (an apartment complex) and could not move around the bend, however more toilet paper was seen coming from that direction. This is a suspected illicit connection from the apartment complex. As mentioned previously, there was also potential waste/visual evidence observed in DMH 32-7000 in April 2023. There could potentially be multiple issues here as this is not in line with the unmapped inlet to 32-6442. The CCTV inspection reports are included in **Attachment A**.

In attempts to verify the suspected illicit connection, SDE completed dye tests at the AVA Apartments located at 445 Artisan Way on October 23, 2023. A total of eight dye tests were completed in vacant units and public spaces, but all tests were legal. On December 19, 2023, SDE completed some additional dye tests at the retail spaces connected to this property and all tests were legal. **Table 4** summarizes the retail spaces where dye tests were completed.

TABLE 4: 445 ARTISAN WAY DYE TEST SUMMARY

Retail Space	Address	Test Result
Coach	562 Assembly Row	Legal
American Eagle	541 Assembly Row	Legal
Le Macron French Pastry	411 Artisan Way	Legal
Ten One Tea House	421 Artisan Way	Legal

There are additional retail and commercial spaces to dye test within this property, so follow-up inspections will be completed. Once all retail spaces have been tested, additional dye tests will be coordinated in the apartment complex to ensure all vertical stacks have been tested.



Foley Street

The sampling results from December 2020 showed that pipe segment 32-6124 : 32-6389 has ammonia, surfactants, and chlorine values above the permit threshold. This pipe segment is located downstream of 133 Middlesex Ave, which is the Assembly Square Mall. Refer to **Figure 3** for the location of the contaminated pipe segment, which is highlighted in red.



During Permit Year 4, the City attempted dye tests of public sewer and storm infrastructure to avoid dye testing the shopping mall. Dye tests were completed at two sewer manholes (S2-3282 and S2-3326) and both were confirmed to connect to sewer manhole S2-3324. No dye was seen in storm drain manhole 32-6389 so no illicit connections were found.

In June 2023, a building inspection was completed at the Assembly Square Mall. The dye testing was completed at "Tulip", a business in the Assembly Row shopping mall, from a toilet in the women's restroom on the left side of the complex. This dye test was Legal; however, it is recommended that the additional units in this building be dye tested.

Follow up sampling was completed in pipe segment 32-6124 : 32-6389 in August 2023 during dry weather and low tide to compare results to the original 2020 sample. The low tide investigation resulted in a positive test kit (Chlorine = 0.3 mg/L, Ammonia = 2.00 mg/L, Surfactants = 0.75 mg/L).

Due to the tidal influence in the pipe network, W&C recommends focusing efforts on the suspected illicit connection(s) on Canal Street. Once the Canal Street issue is resolved, additional investigations in this area may be conducted.



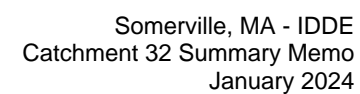
Grand Union Blvd (Near Home Depot)

The drainage system along Grand Union Boulevard between Revolution Drive and Mystic Avenue was initially thought to connect to Somerville Stormwater Outfall 34, however this outfall did not have a delineated catchment boundary. In May 2021, SDE completed a mapping investigation for Outfall 34 using pipe alignments, sound testing, and dye testing. It was determined that the drainage system in this vicinity is actually connected to Outfall 32. The stormwater system in this area was then sampled and included in ongoing Catchment 32 investigations.

Pipe segment 32-7012 : 32-7013 (formerly identified as S2-6179 : S2-6178) was first inspected in May 2021. The sampling resulted in a positive test kit (Chlorine = 1.50 mg/L, Ammonia = 3.00 mg/L, Surfactants = 1.00 mg/L). A summary of pipe inspections in this area is included in **Table 5**. These segments are shown in **Figure 4**.

TABLE 5: GRAND UNION BOULEVARD INSPECTION SUMMARY

Pipe Segment	Inspection Date	Results
32-7012 : 32-7013 (formerly identified as S2-6179 : S2-6178)	May 2021	Chlorine = 1.50 mg/L Ammonia = 3.00 mg/L Surfactants = 1.00 mg/L
	August 2023	Standing Water
32-7011 : 32-7012 (formerly identified as S2-6203 : S2-6179)	June 2023	Standing Water
	August 2023	Cleared
UNK : 32-7012 (formerly identified as UNK : S2-6179)	June 2023	Chlorine = 1.51 mg/L Ammonia = 0.20 mg/L Surfactants = Not Detected
	August 2023	Cleared
32-7010 : 32-7011 (formerly identified as S2-6205 : S2-6203)	June 2023	Cleared





Additional investigations were completed during low tide and dry weather in August 2023. At this time, 32-7013 : 32-7012 had standing water. Segment 32-7011 : 32-7012 (formerly identified as S2-6203 : S2-6179) had no flow observed, but a sandbag could not be placed due to the tidal nature of the pipe network. The City is not required to perform sandbagging therefore this is considered cleared.

Ammonia and chlorine had been detected in pipe segment UNK : 32-7012 (formerly identified as UNK : S2-6179) in June 2023, however the pipe segment was observed dry during the August 2023 low tide inspection and is considered cleared. A sound test of adjacent drainage infrastructure was inconclusive, so additional investigations are recommended to determine the endpoint of this pipe segment. Similarly, upstream structures for pipe segments UNK : 32-7013 (formerly identified as UNK : S2-6178), UNK : 32-7012, and the northeast inlet of 32-7011 could not be confirmed with sound testing so additional investigations are needed to confirm the pipe endpoints. Pipe segment UNK : 32-7010 (formerly UNK : S2-6205) was not confirmed with sound testing, however SDE noted that based on its location it might be coming from a roof drain/sump pump from a building at 20 Assembly Square which has no downspouts and a flat roof.

The City may wish to complete further investigations in this vicinity to determine the endpoints of unknown pipe segments. Due to the tidal influence in the pipe network, W&C recommends focusing efforts on the suspected illicit connection(s) on Canal Street. Once the Canal Street issue is resolved, additional investigations in this area may be conducted.



Next Steps

Based on the results of recent Catchment 32 investigations, W&C recommends that the City take the following steps:

- Complete remaining building inspections to determine the source of the suspected illicit connection(s) on Canal Street.
- Complete laboratory sampling at 290 Revolution Drive to verify sewage is present.
- Wait until the issues on Canal Street are addressed and then begin follow-up investigations at 133 Middlesex Avenue and Home Depot due to potential tidal influence.



ATTACHMENT A: CCTV INSPECTION REPORTS



NWMCC INSPECTION REPORT

PACP Rating Description

1: Excellent Condition

Minor Defects - Failure unlikely in the foreseeable future

2: Good Condition

Defects that have not begun to deteriorate - Pipe unlikely to fail for at least 20 years.

3: Fair Condition

Moderate defects that will continue to deteriorate - Pipe may fail in 10-20 years.

4: Poor Condition

Severe Defects that will become Grade 5 defects within the foreseeable future - Pipe will probably fail in 5-10 years.

5: Immediate Attention

Defects require immediate attention - Pipe has failed or will likely fail within the next 5 years or sooner.



The Environmental
Protection Specialists

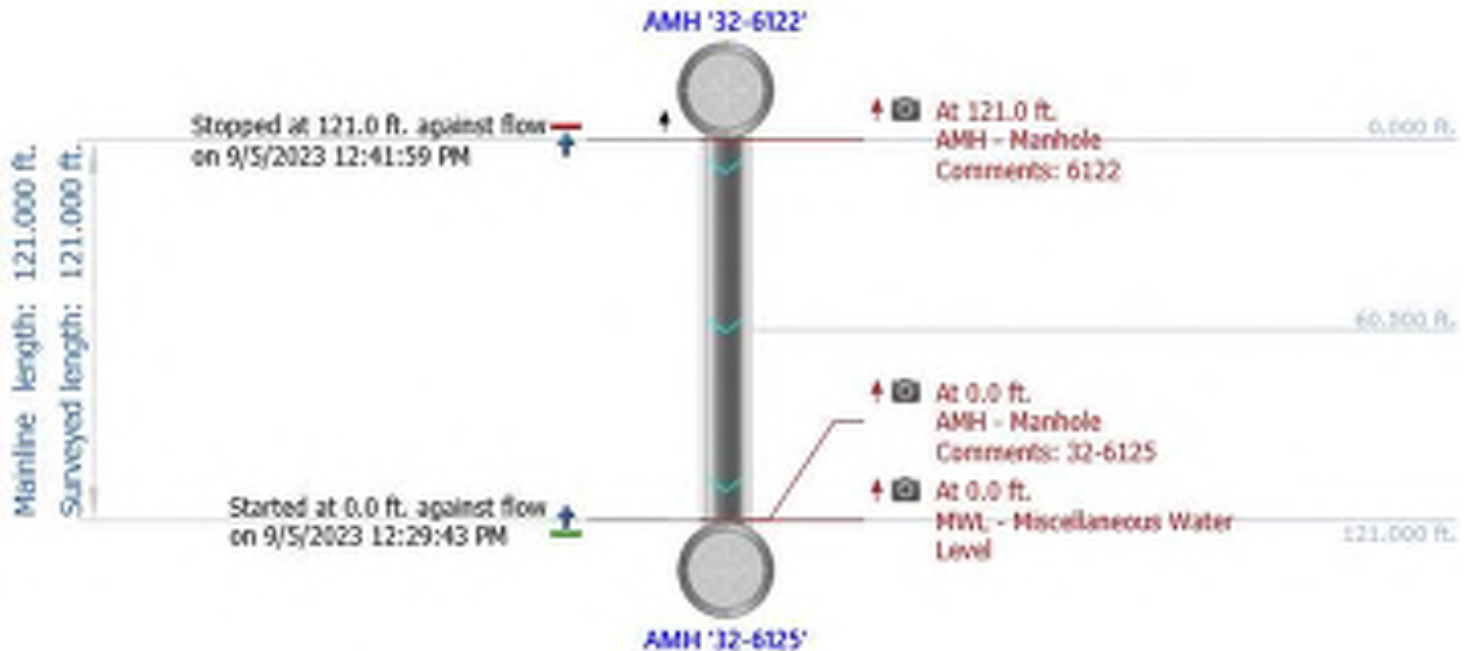
National Water Main Cleaning
Co.
25 Marshall Street
Canton, MA 02021
Office: 800-422-0815
Fax: 781-828-2473

NWMCC INSPECTION REPORT

Start date/time: 20230905 12:29	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: 32-6122-32-6125
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned: 20230905	Project name: WOOD08-13
City: SOMERVILLE MA	Street: ASSEMBLY RD	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: 32-6122	Downstream MH No: 32-6125	Direction: U	Total length: 121.000 ft.	Length surveyed: 121.000 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length: 	Height: 36 in.	Material: Reinforced Concrete Pipe	LateralsCounter: Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	0	0000	0.0	0	0.0	1.0	
2	0	0				0	0							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							



NWMCC INSPECTION REPORT

Inspection Photos

City:

SOMERVILLE MA

Street:

ASSEMBLY RD

Start date/time:

20230905 12:29

Pipe segment ref.:

32-6122-32-6125

Start date/time: 20230905-122943
Pipe segment ref.: Storm Main '32-6122-32-6125'
Project name: WOOD08-13
Surveyed by: N.Batista
City: SOMERVILLE MA
Street: ASSEMBLY RD
Upstream MH No: AMH '32-6122'
Downstream MH No: AMH '32-6125'
Direction: U
Location code:
Height: 36 in.
Width:
Shape: C
Material: RCP
Weather: 1



Photo: 32-6122-32-6125-20230905-122944.JPG

At: 0 ft. AMH - Manhole

Joint: No 32-6125

Start date/time: 20230905-122943
Pipe segment ref.: Storm Main '32-6122-32-6125'
Project name: WOOD08-13
Surveyed by: N.Batista
City: SOMERVILLE MA
Street: ASSEMBLY RD
Upstream MH No: AMH '32-6122'
Downstream MH No: AMH '32-6125'
Direction: U
Location code:
Height: 36 in.
Width:
Shape: C
Material: RCP
Weather: 1

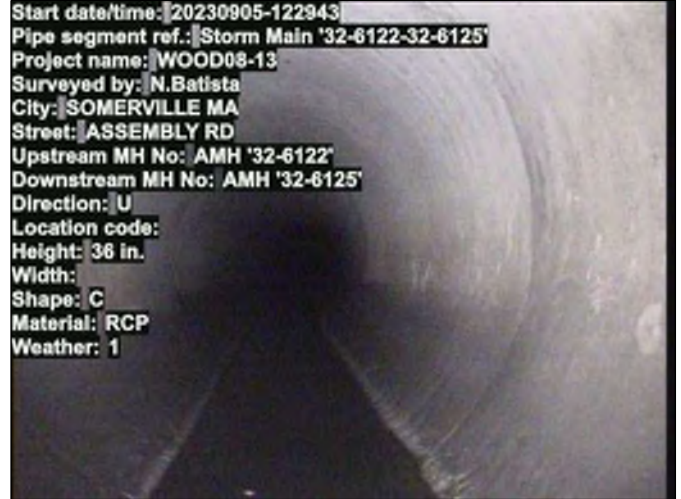


Photo: 32-6122-32-6125-20230905-122945.JPG

At: 0 ft. MWL - Miscellaneous Water Level

Joint: No 5 %

Distance: 121.0 ft.
AMH - Manhole
Clock from:
Clock to:
Rating:
Dimension 1:
Dimension 2:
%:
6122



Photo: 32-6122-32-6125-20230905-124140.JPG

At: 121 ft. AMH - Manhole

Joint: No 6122



NWMCC INSPECTION REPORT

PACP Rating Description

1: Excellent Condition

Minor Defects - Failure unlikely in the foreseeable future

2: Good Condition

Defects that have not begun to deteriorate - Pipe unlikely to fail for at least 20 years.

3: Fair Condition

Moderate defects that will continue to deteriorate - Pipe may fail in 10-20 years.

4: Poor Condition

Severe Defects that will become Grade 5 defects within the foreseeable future - Pipe will probably fail in 5-10 years.

5: Immediate Attention

Defects require immediate attention - Pipe has failed or will likely fail within the next 5 years or sooner.



The Environmental
Protection Specialists

National Water Main Cleaning
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25 Marshall Street
Canton, MA 02021
Office: 800-422-0815
Fax: 781-828-2473

NWMCC INSPECTION REPORT

Start date/time: 20230905 07:48	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: 32-6421-32-6424
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned:	Project name: WOOD08-13
City: SOMMERVILLE MA	Street: REVOLUTION DR	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: 32-6421	Downstream MH No: 32-6424	Direction: U	Total length: 25.600 ft.	Length surveyed: 25.600 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length:	Height: 12 in.	Material: Reinforced Concrete Pipe	LateralsCounter: Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	3	3100	3.0	0	1	1	1100	1.0	4	2.0	3.1	
2	0	0				0	0							
3	0	3				0	0							
4	0	0				0	0							
5	0	0				0	0							



Mainline length: 25,600 ft.
Surveyed length: 25,600 ft.

Omitted: 25.6 ft.

Started at 0.0 ft. against flow
on 9/5/2023 7:48:48 AM



AMH '32-6424'



At 0.0 ft.
AMH - Manhole
Comments: 32-6424



At 0.0 ft.
MWL - Miscellaneous Water
Level

25,600 ft.
25,600 ft.

NWMCC INSPECTION REPORT

Inspection Photos

City:	Street:	Start date/time:	Pipe segment ref.:
SOMMERVILLE MA	REVOLUTION DR	20230905 07:48	32-6421-32-6424

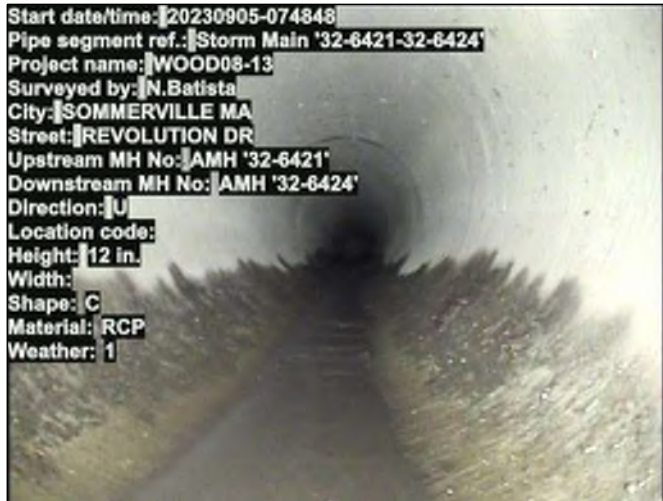


Photo: 32-6421-32-6424-20230905-074849.JPG
At: 0 ft. MWL - Miscellaneous Water Level
Joint: No 5 %

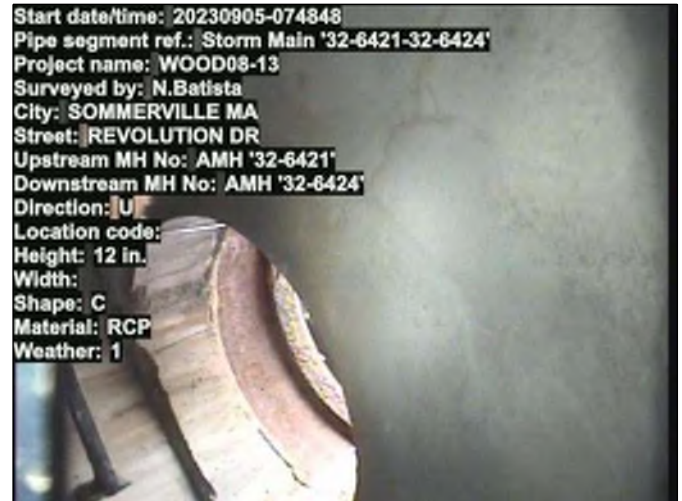


Photo: 32-6421-32-6424-20230905-074848.JPG
At: 0 ft. AMH - Manhole
Joint: No 32-6424



Photo: 32-6421-32-6424-20230905-075303.JPG
At: 7.8 ft. 5/7 IS - Infiltration Stain
Joint: No



Photo: 32-6421-32-6424-20230905-075244.JPG
At: 7.8 ft. 8/8 CM - Crack Multiple
Joint: No



Photo: 32-6421-32-6424-20230905-080056.JPG
At: 25.6 ft. MSA - Miscellaneous Survey Abandoned
Joint: No DUE TO SIZE CHANGE AND BEND



Photo: 32-6421-32-6424-20230905-075823.JPG
At: 25.6 ft. MSC - Miscellaneous Shape/Size Change
Joint: No



NWMCC INSPECTION REPORT

PACP Rating Description

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Minor Defects - Failure unlikely in the foreseeable future

2: Good Condition

Defects that have not begun to deteriorate - Pipe unlikely to fail for at least 20 years.

3: Fair Condition

Moderate defects that will continue to deteriorate - Pipe may fail in 10-20 years.

4: Poor Condition

Severe Defects that will become Grade 5 defects within the foreseeable future - Pipe will probably fail in 5-10 years.

5: Immediate Attention

Defects require immediate attention - Pipe has failed or will likely fail within the next 5 years or sooner.

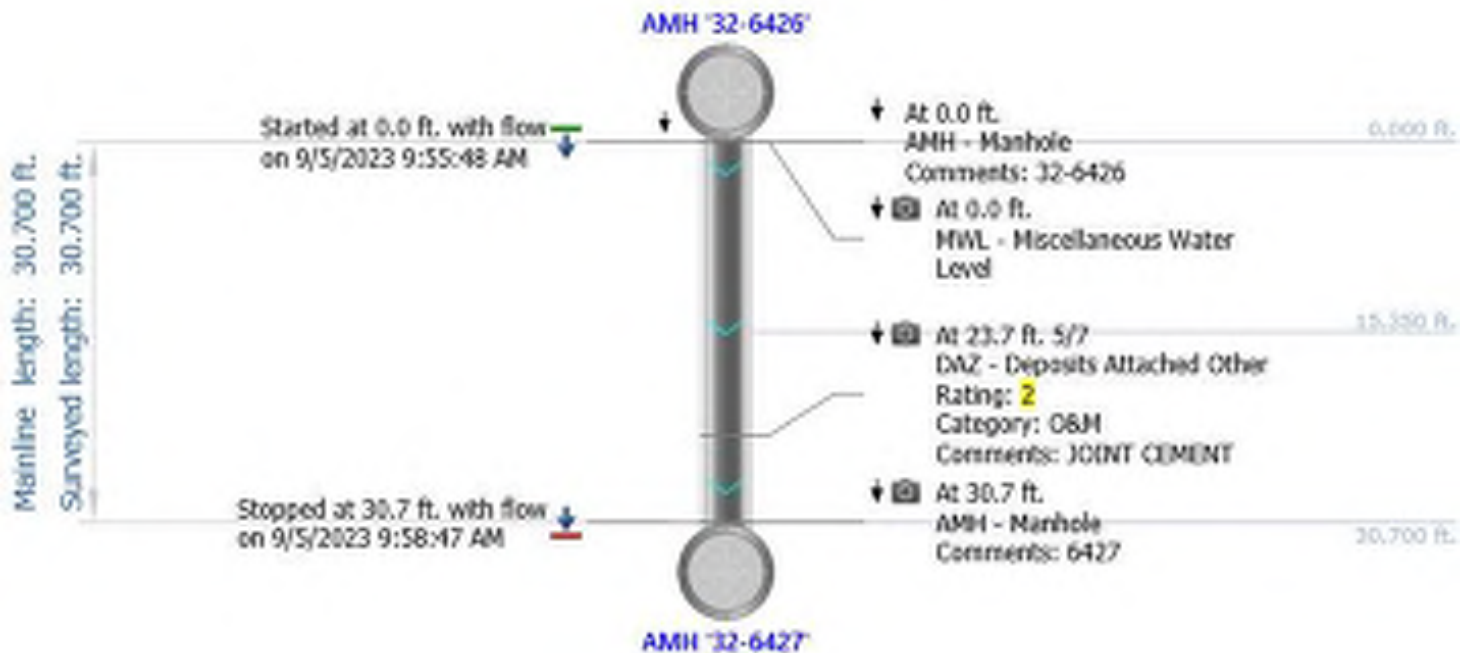


NWMCC INSPECTION REPORT

Start date/time: 20230905 09:55	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: 32-6426-32-6427
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned: 20230905	Project name: WOOD08-13
City: SOMERVILLE MA	Street: REVOLUTION DR	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: 32-6426	Downstream MH No: 32-6427	Direction: D	Total length: 30.700 ft.	Length surveyed: 30.700 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length:	Height: 12 in.	Material: Reinforced Concrete Pipe	LateralsCounter: Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	2	2100	2.0	2	2.0	2.1	
2	0	0				0	2							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							



NWMCC INSPECTION REPORT

Inspection Photos

City:

SOMERVILLE MA

Street:

REVOLUTION DR

Start date/time:

20230905 09:55

Pipe segment ref.:

32-6426-32-6427



Photo: 32-6426-32-6427-20230905-095549_1.JPG

At: 0 ft. MWL - Miscellaneous Water Level

Joint: No 5 %

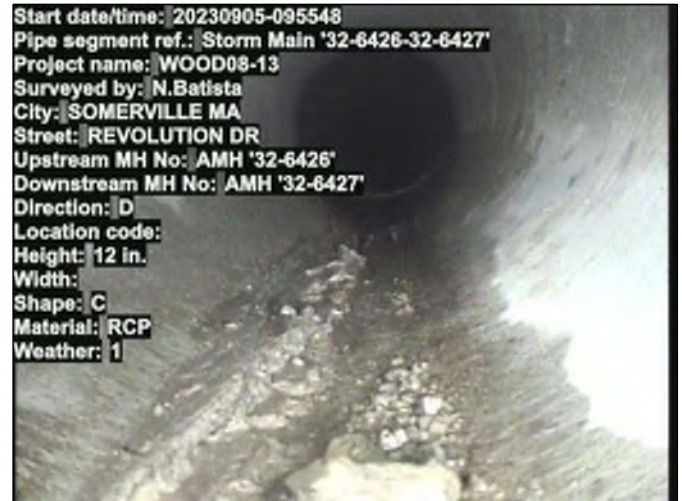


Photo: 32-6426-32-6427-20230905-095549.JPG

At: 0 ft. MWL - Miscellaneous Water Level

Joint: No 5 %



Photo: 32-6426-32-6427-20230905-095714.JPG

At: 23.7 ft. 5/7 DAZ - Deposits Attached Other

Joint: No 5 % JOINT CEMENT



Photo: 32-6426-32-6427-20230905-095831.JPG

At: 30.7 ft. AMH - Manhole

Joint: No 6427



NWMCC INSPECTION REPORT

PACP Rating Description

1: Excellent Condition

Minor Defects - Failure unlikely in the foreseeable future

2: Good Condition

Defects that have not begun to deteriorate - Pipe unlikely to fail for at least 20 years.

3: Fair Condition

Moderate defects that will continue to deteriorate - Pipe may fail in 10-20 years.

4: Poor Condition

Severe Defects that will become Grade 5 defects within the foreseeable future - Pipe will probably fail in 5-10 years.

5: Immediate Attention

Defects require immediate attention - Pipe has failed or will likely fail within the next 5 years or sooner.

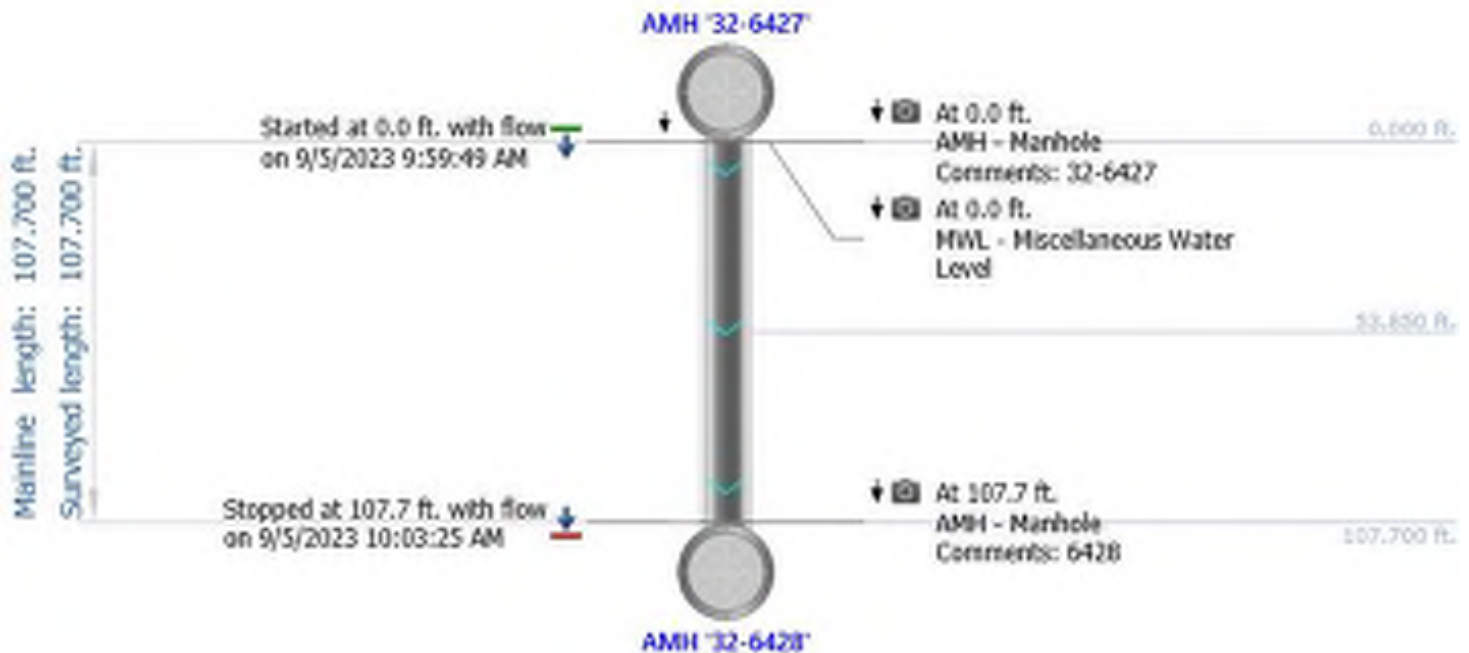


NWMCC INSPECTION REPORT

Start date/time: 20230905 09:59	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: 32-6427-32-6428
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned: 20230905	Project name: WOOD08-13
City: SOMERVILLE MA	Street: REVOLUTION DR	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: 32-6427	Downstream MH No: 32-6428	Direction: D	Total length: 107.700 ft.	Length surveyed: 107.700 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length:	Height: 15 in.	Material: Reinforced Concrete Pipe	LateralsCounter: Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	0	0000	0.0	0	0.0	1.0	
2	0	0				0	0							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							



NWMCC INSPECTION REPORT

Inspection Photos

City:	Street:	Start date/time:	Pipe segment ref.:
SOMERVILLE MA	REVOLUTION DR	20230905 09:59	32-6427-32-6428



Photo: 32-6427-32-6428-20230905-095949.JPG

At: 0 ft. AMH - Manhole
Joint: No 32-6427

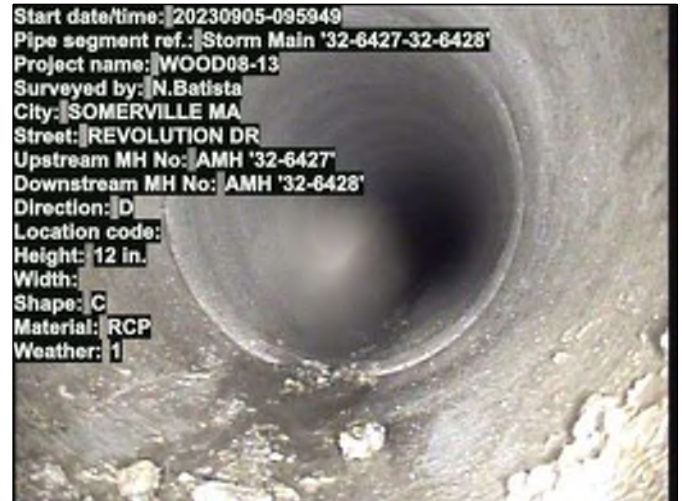


Photo: 32-6427-32-6428-20230905-095950.JPG

At: 0 ft. MWL - Miscellaneous Water Level
Joint: No 5 %

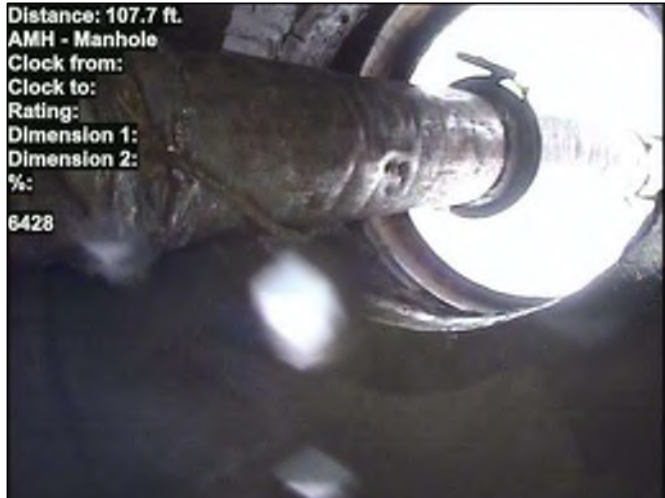


Photo: 32-6427-32-6428-20230905-100309.JPG

At: 107.7 ft. AMH - Manhole
Joint: No 6428



NWMCC INSPECTION REPORT

PACP Rating Description

1: Excellent Condition

Minor Defects - Failure unlikely in the foreseeable future

2: Good Condition

Defects that have not begun to deteriorate - Pipe unlikely to fail for at least 20 years.

3: Fair Condition

Moderate defects that will continue to deteriorate - Pipe may fail in 10-20 years.

4: Poor Condition

Severe Defects that will become Grade 5 defects within the foreseeable future - Pipe will probably fail in 5-10 years.

5: Immediate Attention

Defects require immediate attention - Pipe has failed or will likely fail within the next 5 years or sooner.



The Environmental
Protection Specialists

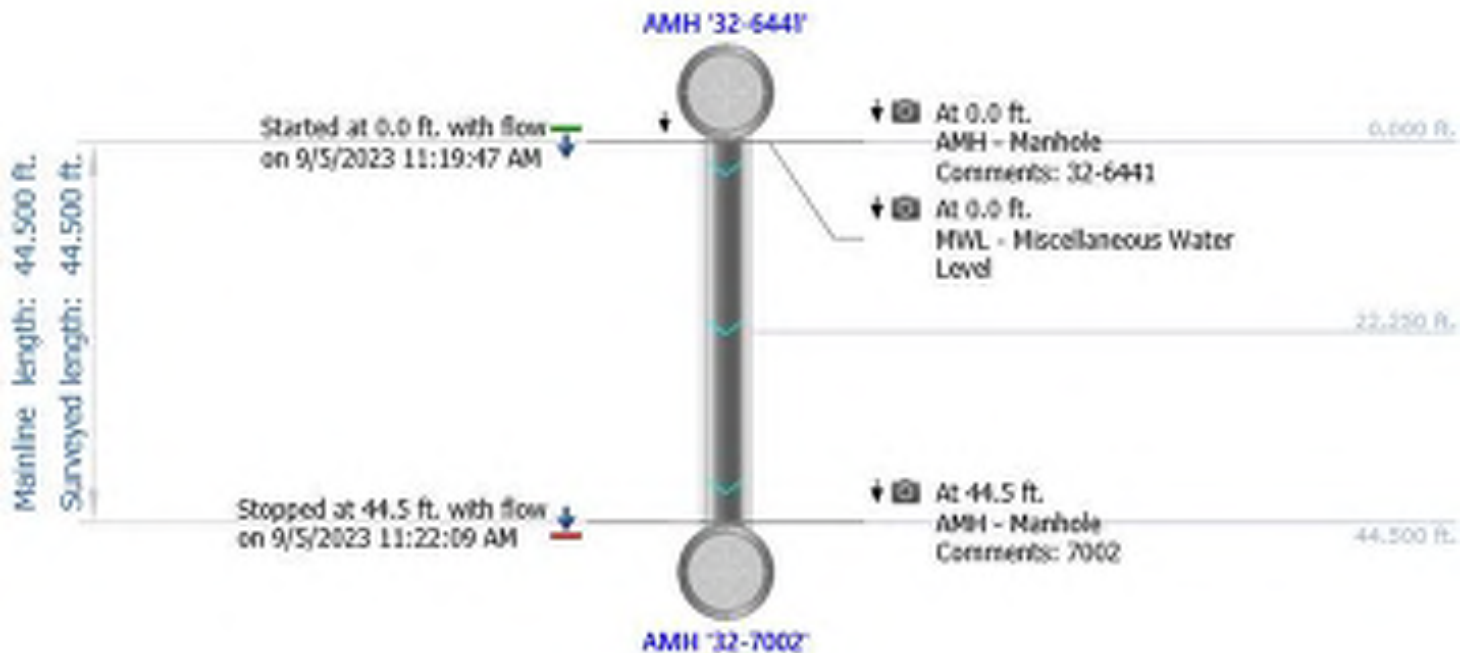
National Water Main Cleaning
Co.
25 Marshall Street
Canton, MA 02021
Office: 800-422-0815
Fax: 781-828-2473

NWMCC INSPECTION REPORT

Start date/time: 20230905 11:19	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: 32-6441-32-7002
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned: 20230905	Project name: WOOD08-13
City: SOMERVILLE MA	Street: CANAL ST	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: 32-6441	Downstream MH No: 32-7002	Direction: D	Total length: 44.500 ft.	Length surveyed: 44.500 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length:	Height: 18 in.	Material: Reinforced Concrete Pipe	LateralsCounter: Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	0	0000	0.0	0	0.0	1.0	
2	0	0				0	0							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							



NWMCC INSPECTION REPORT

Inspection Photos

City:	Street:	Start date/time:	Pipe segment ref.:
SOMERVILLE MA	CANAL ST	20230905 11:19	32-6441-32-7002



Photo: 32-6441-32-7002-20230905-111947.JPG

At: 0 ft. AMH - Manhole
Joint: No 32-6441

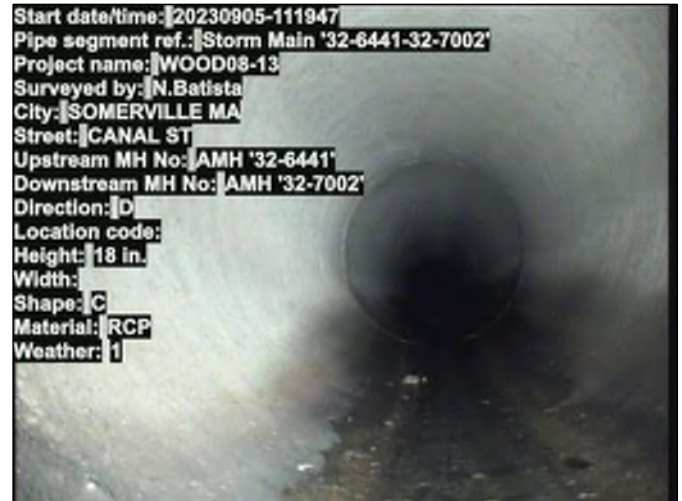


Photo: 32-6441-32-7002-20230905-111948.JPG

At: 0 ft. MWL - Miscellaneous Water Level
Joint: No 5 %



Photo: 32-6441-32-7002-20230905-112140.JPG

At: 44.5 ft. AMH - Manhole
Joint: No 7002



NWMCC INSPECTION REPORT

PACP Rating Description

1: Excellent Condition

Minor Defects - Failure unlikely in the foreseeable future

2: Good Condition

Defects that have not begun to deteriorate - Pipe unlikely to fail for at least 20 years.

3: Fair Condition

Moderate defects that will continue to deteriorate - Pipe may fail in 10-20 years.

4: Poor Condition

Severe Defects that will become Grade 5 defects within the foreseeable future - Pipe will probably fail in 5-10 years.

5: Immediate Attention

Defects require immediate attention - Pipe has failed or will likely fail within the next 5 years or sooner.



The Environmental
Protection Specialists

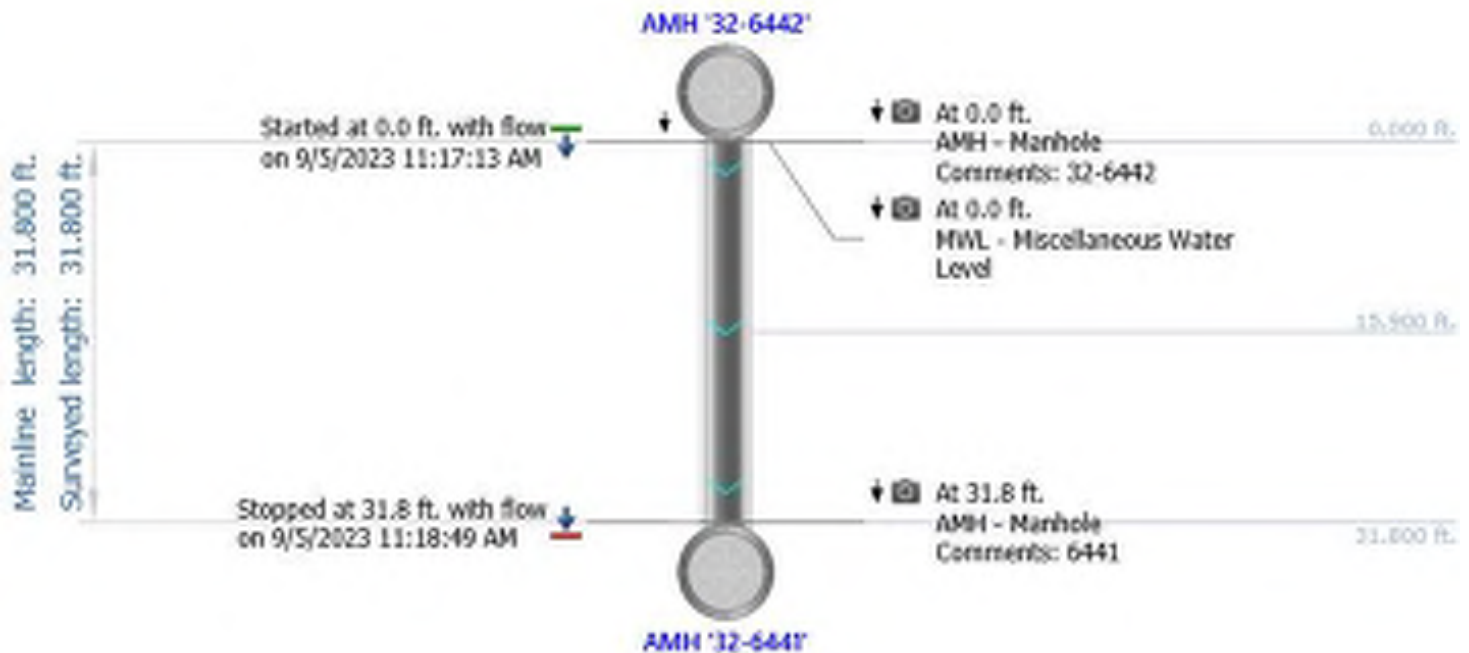
National Water Main Cleaning
Co.
25 Marshall Street
Canton, MA 02021
Office: 800-422-0815
Fax: 781-828-2473

NWMCC INSPECTION REPORT

Start date/time: 20230905 11:17	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: 32-6442-32-6441
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned: 20230905	Project name: WOOD08-13
City: SOMERVILLE MA	Street: CANAL ST	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: 32-6442	Downstream MH No: 32-6441	Direction: D	Total length: 31.800 ft.	Length surveyed: 31.800 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length:	Height: 18 in.	Material: Reinforced Concrete Pipe	LateralsCounter: Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	0	0000	0.0	0	0.0	1.0	
2	0	0				0	0							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							



NWMCC INSPECTION REPORT

Inspection Photos

City:

SOMERVILLE MA

Street:

CANAL ST

Start date/time:

20230905 11:17

Pipe segment ref.:

32-6442-32-6441



Photo: 32-6442-32-6441-20230905-111713.JPG

At: 0 ft. AMH - Manhole

Joint: No 32-6442

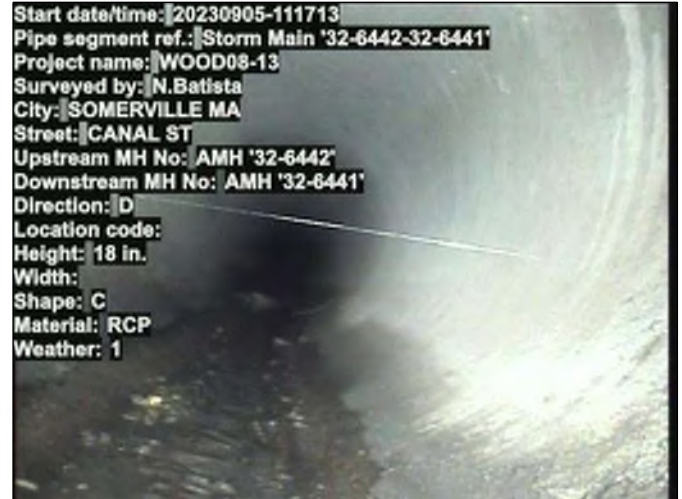


Photo: 32-6442-32-6441-20230905-111714.JPG

At: 0 ft. MWL - Miscellaneous Water Level

Joint: No 5 %



Photo: 32-6442-32-6441-20230905-111835.JPG

At: 31.8 ft. AMH - Manhole

Joint: No 6441



NWMCC INSPECTION REPORT

PACP Rating Description

1: Excellent Condition

Minor Defects - Failure unlikely in the foreseeable future

2: Good Condition

Defects that have not begun to deteriorate - Pipe unlikely to fail for at least 20 years.

3: Fair Condition

Moderate defects that will continue to deteriorate - Pipe may fail in 10-20 years.

4: Poor Condition

Severe Defects that will become Grade 5 defects within the foreseeable future - Pipe will probably fail in 5-10 years.

5: Immediate Attention

Defects require immediate attention - Pipe has failed or will likely fail within the next 5 years or sooner.

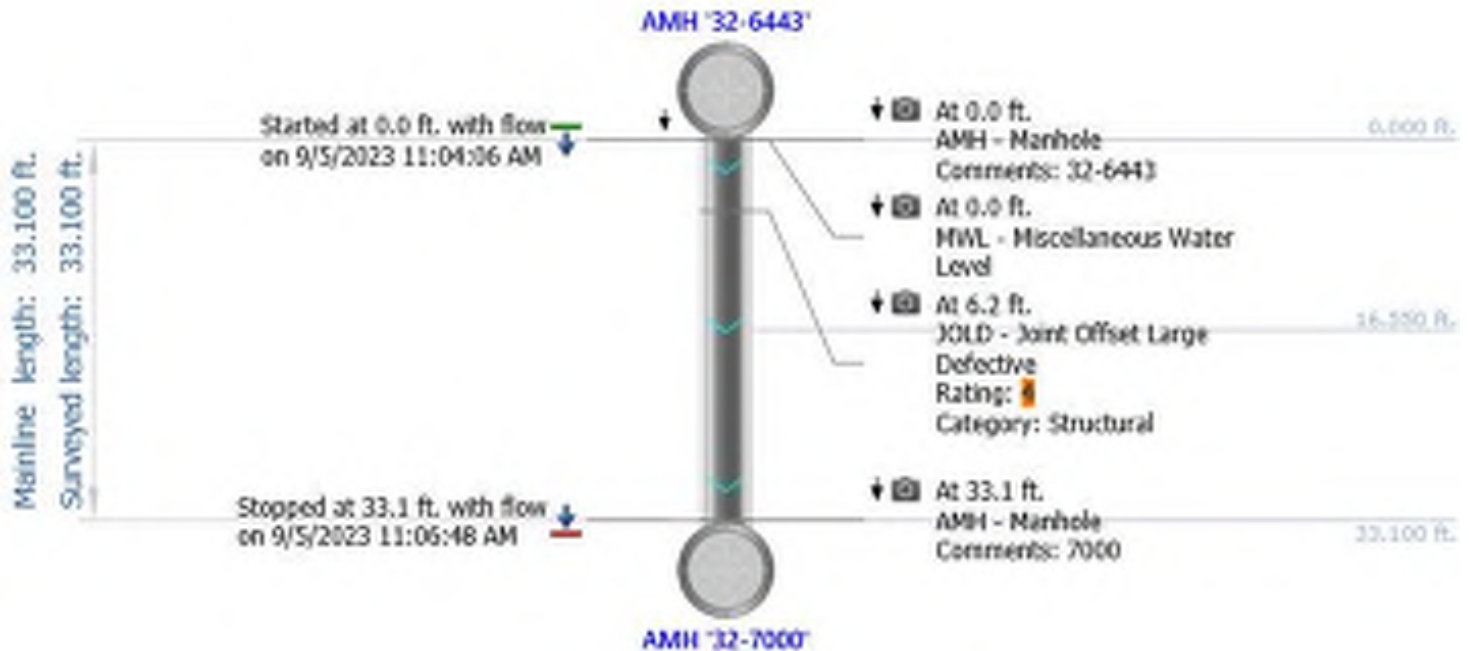


NWMCC INSPECTION REPORT

Start date/time: 20230905 11:04	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: 32-6443-32-7000
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned: 20230905	Project name: WOOD08-13
City: SOMERVILLE MA	Street: CANAL ST	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: 32-6443	Downstream MH No: 32-7000	Direction: D	Total length: 33.100 ft.	Length surveyed: 33.100 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length: 12 in.	Material: Reinforced Concrete Pipe	LateralsCounter:	Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	4	4100	4.0	0	0	0	0000	0.0	4	4.0	4.1	
2	0	0				0	0							
3	0	0				0	0							
4	0	4				0	0							
5	0	0				0	0							



NWMCC INSPECTION REPORT

Inspection Photos

City:	Street:	Start date/time:	Pipe segment ref.:
SOMERVILLE MA	CANAL ST	20230905 11:04	32-6443-32-7000



Photo: 32-6443-32-7000-20230905-110406.JPG

At: 0 ft. AMH - Manhole

Joint: No 32-6443

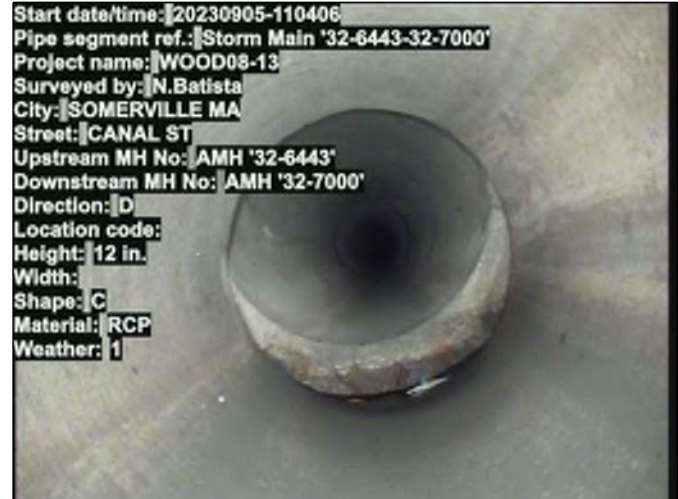


Photo: 32-6443-32-7000-20230905-110407.JPG

At: 0 ft. MWL - Miscellaneous Water Level

Joint: No 5 %



Photo: 32-6443-32-7000-20230905-110519_1.JPG

At: 6.2 ft. JOLD - Joint Offset Large Defective

Joint: No



Photo: 32-6443-32-7000-20230905-110519.JPG

At: 6.2 ft. JOLD - Joint Offset Large Defective

Joint: No



Photo: 32-6443-32-7000-20230905-110631.JPG

At: 33.1 ft. AMH - Manhole

Joint: No 7000



NWMCC INSPECTION REPORT

PACP Rating Description

1: Excellent Condition

Minor Defects - Failure unlikely in the foreseeable future

2: Good Condition

Defects that have not begun to deteriorate - Pipe unlikely to fail for at least 20 years.

3: Fair Condition

Moderate defects that will continue to deteriorate - Pipe may fail in 10-20 years.

4: Poor Condition

Severe Defects that will become Grade 5 defects within the foreseeable future - Pipe will probably fail in 5-10 years.

5: Immediate Attention

Defects require immediate attention - Pipe has failed or will likely fail within the next 5 years or sooner.



The Environmental
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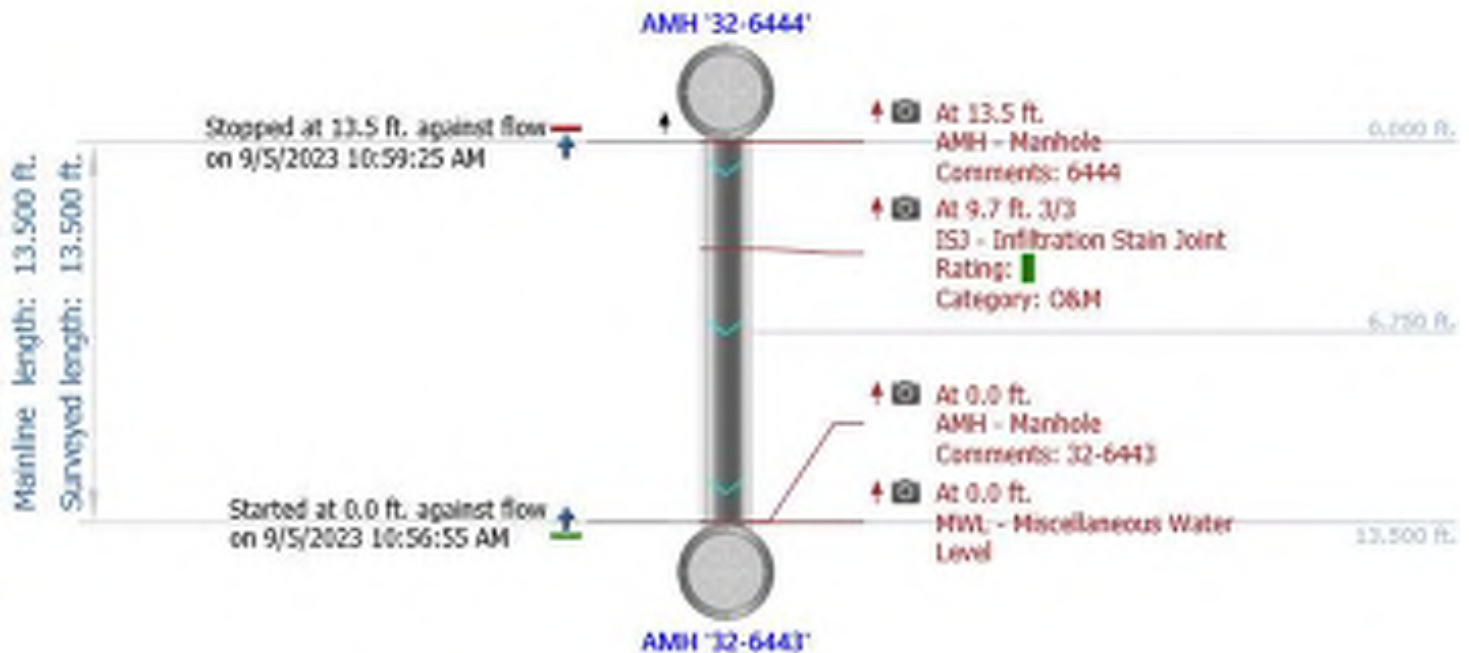
National Water Main Cleaning
Co.
25 Marshall Street
Canton, MA 02021
Office: 800-422-0815
Fax: 781-828-2473

NWMCC INSPECTION REPORT

Start date/time: 20230905 10:56	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: 32-6444-32-6443
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned: 20230905	Project name: WOOD08-13
City: SOMMERVILLE MA	Street: CANAL ST	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: 32-6444	Downstream MH No: 32-6443	Direction: U	Total length: 13.500 ft.	Length surveyed: 13.500 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length:	Height: 12 in.	Material: Reinforced Concrete Pipe	LateralsCounter: Additional info: WONT BE ABLE TO SHOW YOU ENTRY MANHOLE OPENNING DUE TO BE A SUMP MANHOLE

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	1	1	1100	1.0	1	1.0	1.1	
2	0	0				0	0							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							



NWMCC INSPECTION REPORT

Inspection Photos

City:	Street:	Start date/time:	Pipe segment ref.:
SOMMERVILLE MA	CANAL ST	20230905 10:56	32-6444-32-6443

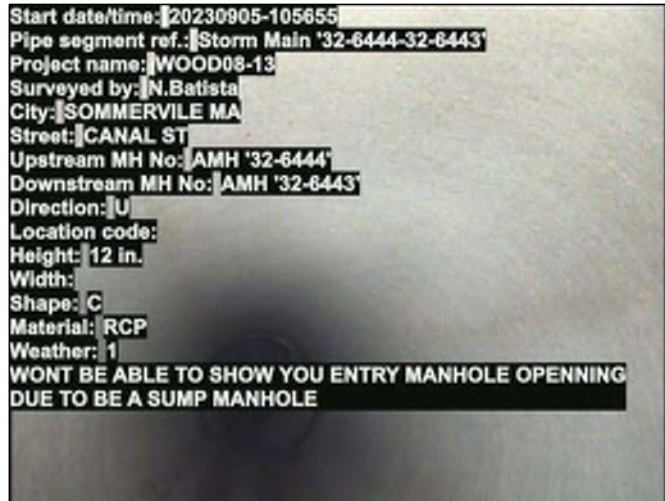


Photo: 32-6444-32-6443-20230905-105657.JPG
At: 0 ft. MWL - Miscellaneous Water Level
Joint: No 5 %

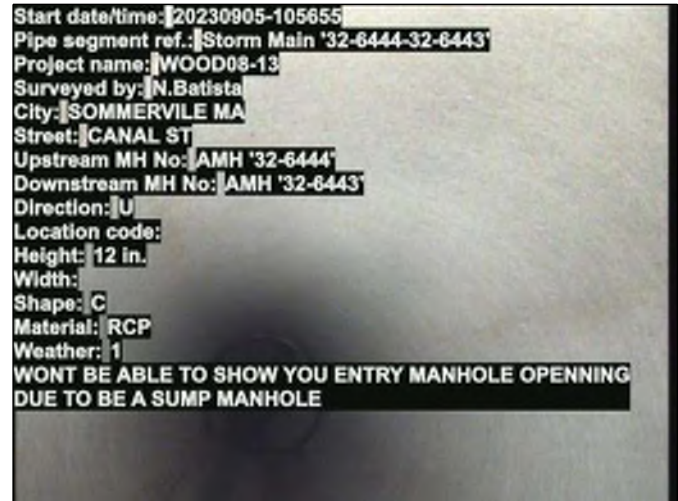


Photo: 32-6444-32-6443-20230905-105656.JPG
At: 0 ft. AMH - Manhole
Joint: No 32-6443



Photo: 32-6444-32-6443-20230905-105823.JPG
At: 9.7 ft. 3/3 ISJ - Infiltration Stain Joint
Joint: Yes



Photo: 32-6444-32-6443-20230905-105857.JPG
At: 13.5 ft. AMH - Manhole
Joint: No 6444



NWMCC INSPECTION REPORT

PACP Rating Description

1: Excellent Condition

Minor Defects - Failure unlikely in the foreseeable future

2: Good Condition

Defects that have not begun to deteriorate - Pipe unlikely to fail for at least 20 years.

3: Fair Condition

Moderate defects that will continue to deteriorate - Pipe may fail in 10-20 years.

4: Poor Condition

Severe Defects that will become Grade 5 defects within the foreseeable future - Pipe will probably fail in 5-10 years.

5: Immediate Attention

Defects require immediate attention - Pipe has failed or will likely fail within the next 5 years or sooner.



The Environmental
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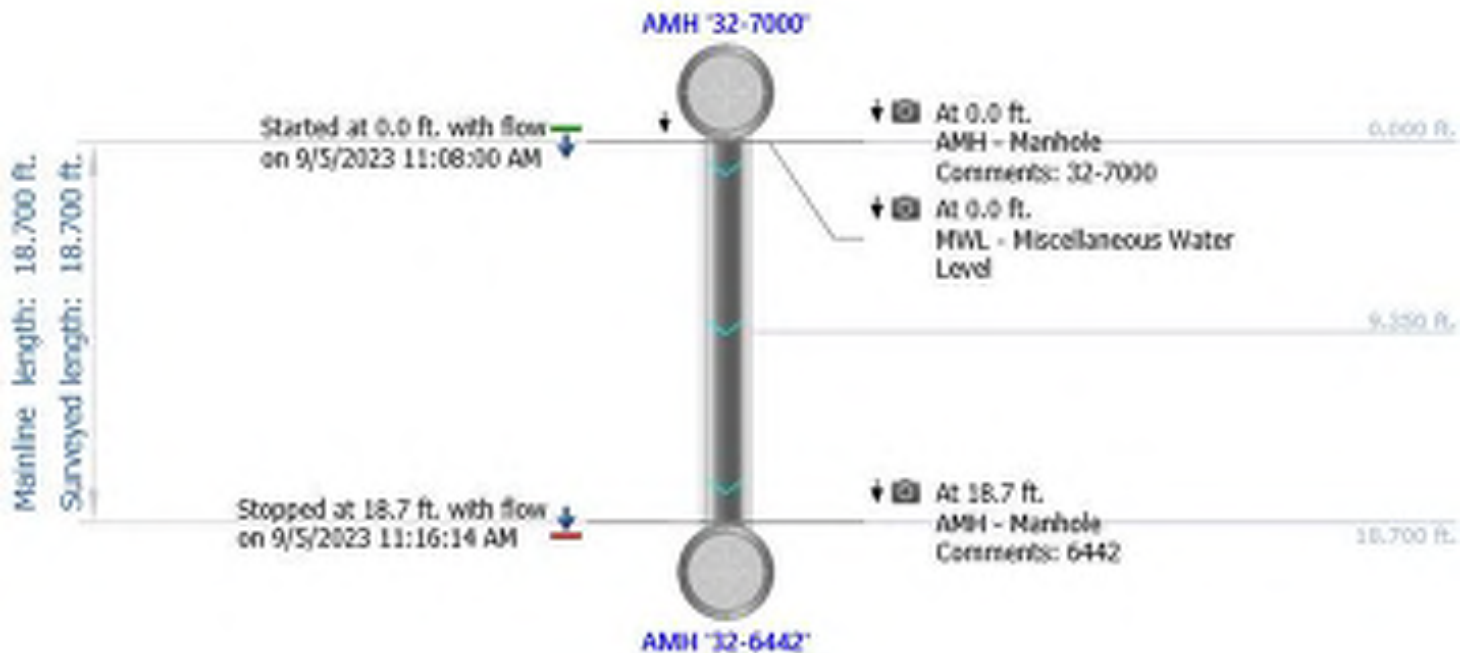
National Water Main Cleaning
Co.
25 Marshall Street
Canton, MA 02021
Office: 800-422-0815
Fax: 781-828-2473

NWMCC INSPECTION REPORT

Start date/time: 20230905 11:08	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: 32-7000-32-6442
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned: 20230905	Project name: WOOD08-13
City: SOMERVILLE MA	Street: CANAL ST	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: 32-7000	Downstream MH No: 32-6442	Direction: D	Total length: 18.700 ft.	Length surveyed: 18.700 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length:	Height: 18 in.	Material: Reinforced Concrete Pipe	LateralsCounter: Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	0	0000	0.0	0	0.0	1.0	
2	0	0				0	0							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							



NWMCC INSPECTION REPORT

Inspection Photos

City:	Street:	Start date/time:	Pipe segment ref.:
SOMERVILLE MA	CANAL ST	20230905 11:08	32-7000-32-6442

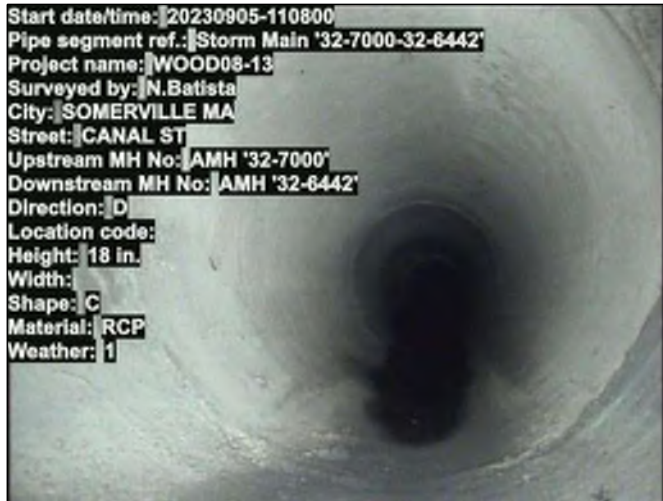


Photo: 32-7000-32-6442-20230905-110801_1.JPG
At: 0 ft. MWL - Miscellaneous Water Level
Joint: No 5 %

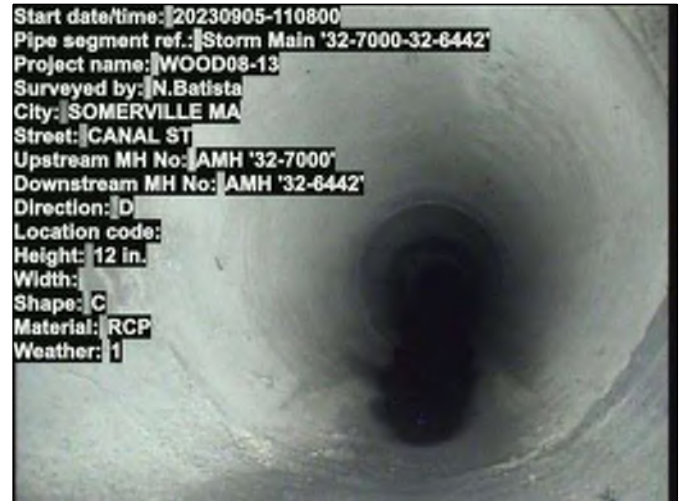


Photo: 32-7000-32-6442-20230905-110801.JPG
At: 0 ft. MWL - Miscellaneous Water Level
Joint: No 5 %

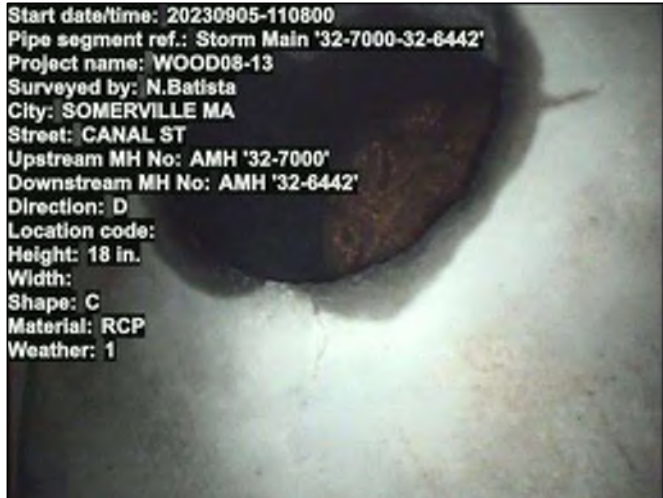


Photo: 32-7000-32-6442-20230905-110800.JPG
At: 0 ft. AMH - Manhole
Joint: No 32-7000



Photo: 32-7000-32-6442-20230905-111600.JPG
At: 18.7 ft. AMH - Manhole
Joint: No 6442



NWMCC INSPECTION REPORT

PACP Rating Description

1: Excellent Condition

Minor Defects - Failure unlikely in the foreseeable future

2: Good Condition

Defects that have not begun to deteriorate - Pipe unlikely to fail for at least 20 years.

3: Fair Condition

Moderate defects that will continue to deteriorate - Pipe may fail in 10-20 years.

4: Poor Condition

Severe Defects that will become Grade 5 defects within the foreseeable future - Pipe will probably fail in 5-10 years.

5: Immediate Attention

Defects require immediate attention - Pipe has failed or will likely fail within the next 5 years or sooner.



The Environmental
Protection Specialists

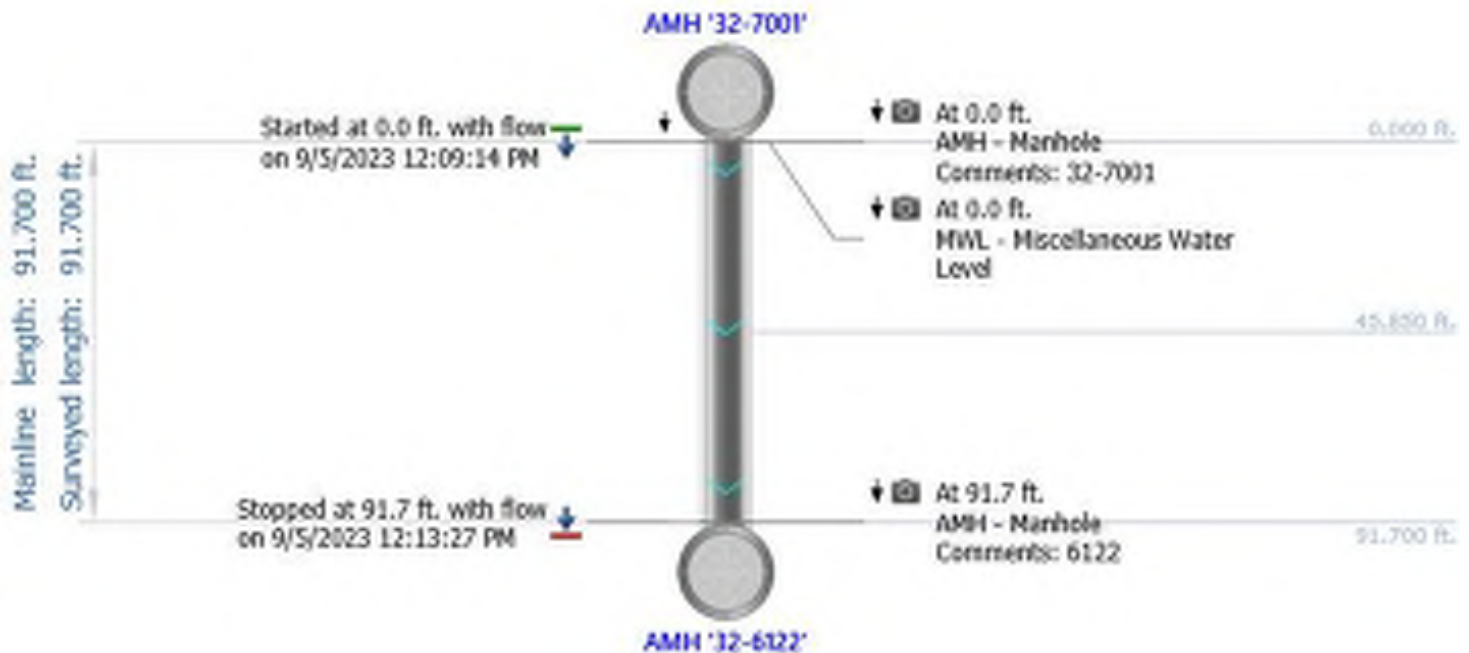
National Water Main Cleaning
Co.
25 Marshall Street
Canton, MA 02021
Office: 800-422-0815
Fax: 781-828-2473

NWMCC INSPECTION REPORT

Start date/time: 20230905 12:09	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: 32-7001-32-6122
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned: 20230905	Project name: WOOD08-13
City: SOMERVILLE MA	Street: CANAL ST	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: 32-7001	Downstream MH No: 32-6122	Direction: D	Total length: 91.700 ft.	Length surveyed: 91.700 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length:	Height: 18 in.	Material: Reinforced Concrete Pipe	LateralsCounter: Additional info: WONT BE ABLE TO SHOW YOU ENTRY MANHOLE OPENNING DUE TO BE A SUMP MANHOLE

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	0	0000	0.0	0	0.0	1.0	
2	0	0				0	0							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							



NWMCC INSPECTION REPORT

Inspection Photos

City:	Street:	Start date/time:	Pipe segment ref.:
SOMERVILLE MA	CANAL ST	20230905 12:09	32-7001-32-6122



Photo: 32-7001-32-6122-20230905-120914.JPG

At: 0 ft. AMH - Manhole

Joint: No 32-7001

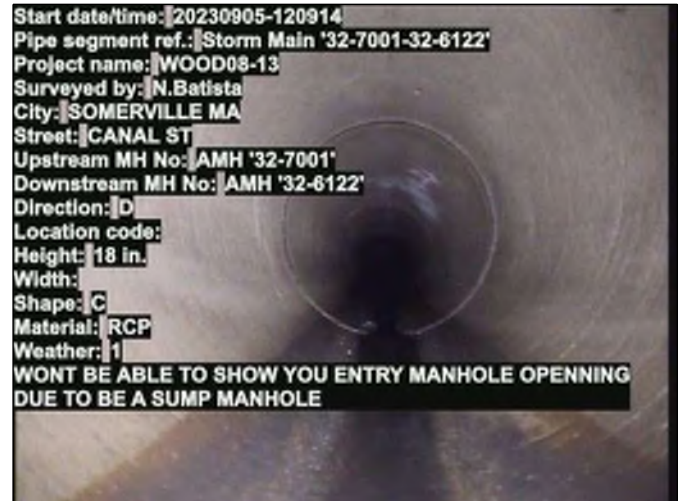


Photo: 32-7001-32-6122-20230905-120915.JPG

At: 0 ft. MWL - Miscellaneous Water Level

Joint: No 5 %



Photo: 32-7001-32-6122-20230905-121310.JPG

At: 91.7 ft. AMH - Manhole

Joint: No 6122



NWMCC INSPECTION REPORT

PACP Rating Description

1: Excellent Condition

Minor Defects - Failure unlikely in the foreseeable future

2: Good Condition

Defects that have not begun to deteriorate - Pipe unlikely to fail for at least 20 years.

3: Fair Condition

Moderate defects that will continue to deteriorate - Pipe may fail in 10-20 years.

4: Poor Condition

Severe Defects that will become Grade 5 defects within the foreseeable future - Pipe will probably fail in 5-10 years.

5: Immediate Attention

Defects require immediate attention - Pipe has failed or will likely fail within the next 5 years or sooner.



The Environmental
Protection Specialists

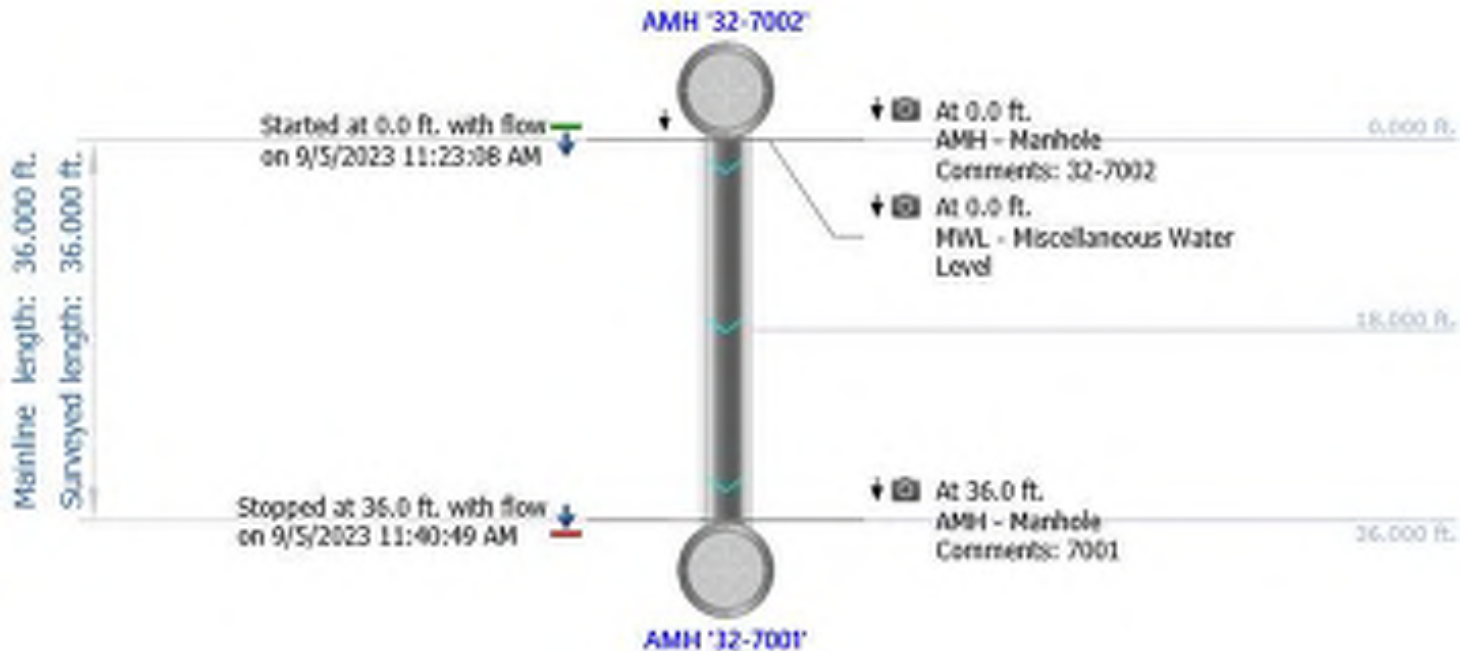
National Water Main Cleaning
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25 Marshall Street
Canton, MA 02021
Office: 800-422-0815
Fax: 781-828-2473

NWMCC INSPECTION REPORT

Start date/time: 20230905 11:23	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: 32-7002-32-7001
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned: 20230905	Project name: WOOD08-13
City: SOMERVILLE MA	Street: CANAL ST	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: 32-7002	Downstream MH No: 32-7001	Direction: D	Total length: 36.000 ft.	Length surveyed: 36.000 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length:	Height: 18 in.	Material: Reinforced Concrete Pipe	LateralsCounter: Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	0	0000	0.0	0	0.0	1.0	
2	0	0				0	0							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							



NWMCC INSPECTION REPORT

Inspection Photos

City:	Street:	Start date/time:	Pipe segment ref.:
SOMERVILLE MA	CANAL ST	20230905 11:23	32-7002-32-7001

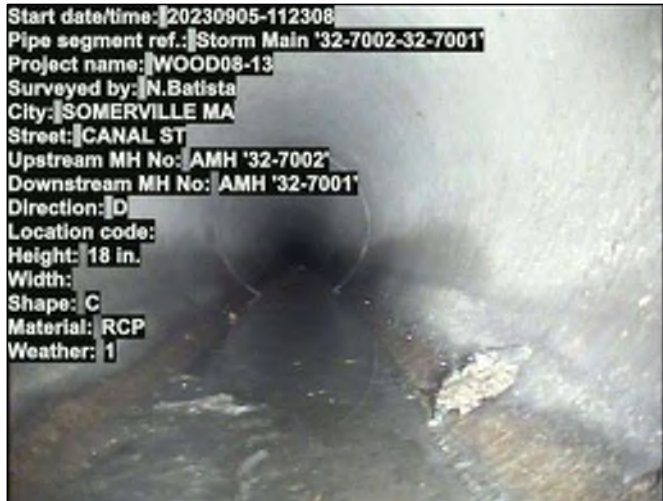


Photo: 32-7002-32-7001-20230905-112309.JPG
At: 0 ft. MWL - Miscellaneous Water Level
Joint: No 5 %



Photo: 32-7002-32-7001-20230905-112308.JPG
At: 0 ft. AMH - Manhole
Joint: No 32-7002

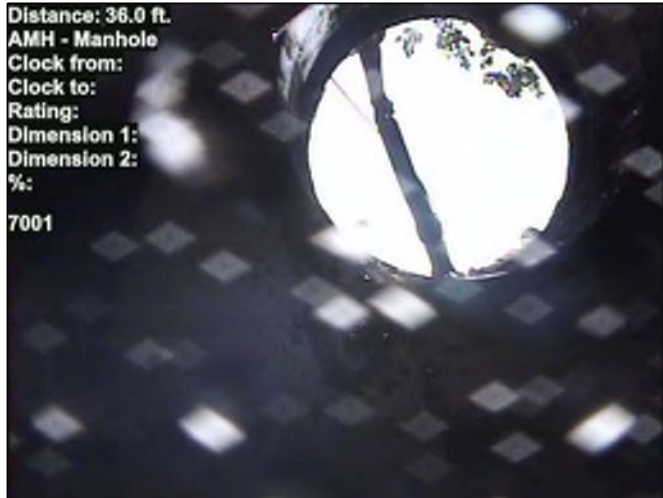


Photo: 32-7002-32-7001-20230905-114030.JPG
At: 36 ft. AMH - Manhole
Joint: No 7001



NWMCC INSPECTION REPORT

PACP Rating Description

1: Excellent Condition

Minor Defects - Failure unlikely in the foreseeable future

2: Good Condition

Defects that have not begun to deteriorate - Pipe unlikely to fail for at least 20 years.

3: Fair Condition

Moderate defects that will continue to deteriorate - Pipe may fail in 10-20 years.

4: Poor Condition

Severe Defects that will become Grade 5 defects within the foreseeable future - Pipe will probably fail in 5-10 years.

5: Immediate Attention

Defects require immediate attention - Pipe has failed or will likely fail within the next 5 years or sooner.

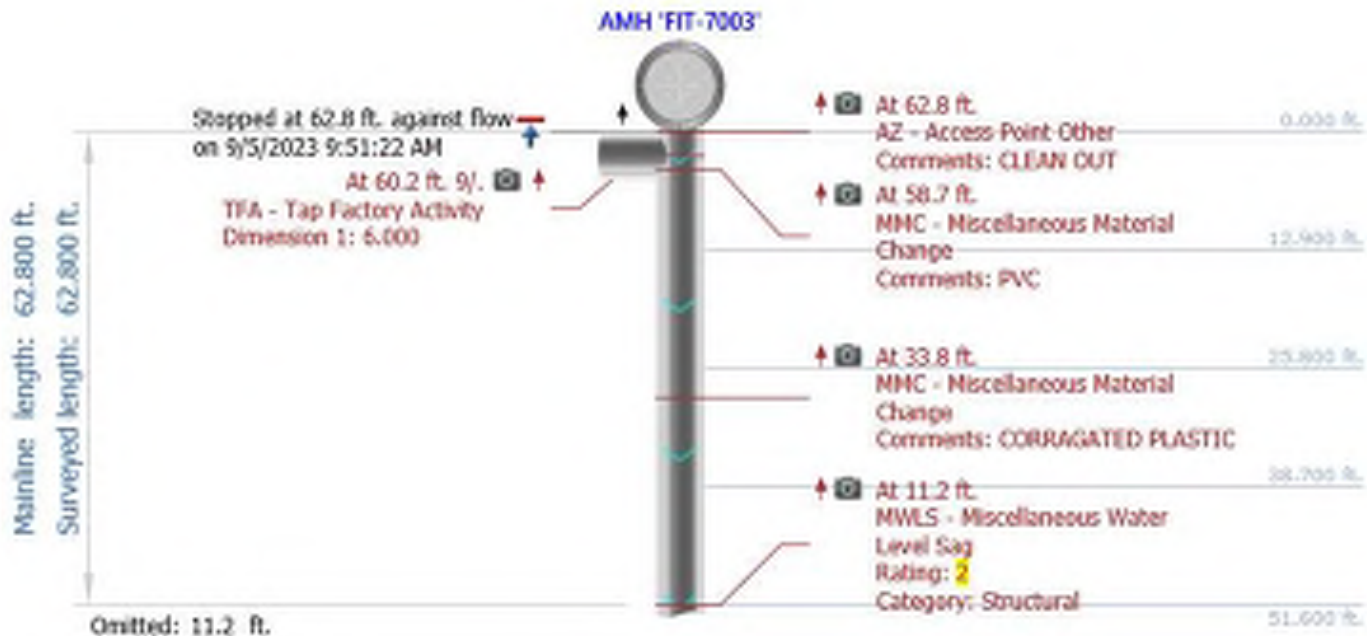


NWMCC INSPECTION REPORT

Start date/time: 20230905 09:46	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: FIT-7003-32-6426
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned: 20230905	Project name: WOOD08-13
City: SOMERVILLE MA	Street: REVOLUTION DR	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: FIT-7003	Downstream MH No: 32-6426	Direction: U	Total length: 62.800 ft.	Length surveyed: 62.800 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length:	Height: 12 in.	Material: Reinforced Concrete Pipe	LateralsCounter: Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	2	2100	2.0	0	0	0	0000	0.0	2	2.0	2.1	
2	0	2				0	0							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							



Mainline length: 62.800 ft.
Surveyed length: 62.800 ft.

Omitted: 62.8 ft.

Started at 0.0 ft. against flow
on 9/5/2023 9:45:42 AM



AMH '32-6426'



At 0.0 ft.

AMH - Manhole

Comments: 32-6426



At 0.0 ft.

MWL - Miscellaneous Water
Level

62.800 ft.
62.800 ft.

NWMCC INSPECTION REPORT

Inspection Photos

City:	Street:	Start date/time:	Pipe segment ref.:
SOMERVILLE MA	REVOLUTION DR	20230905 09:46	FIT-7003-32-6426



Photo: FIT-7003-32-6426-20230905-094642.JPG

At: 0 ft. AMH - Manhole

Joint: No 32-6426

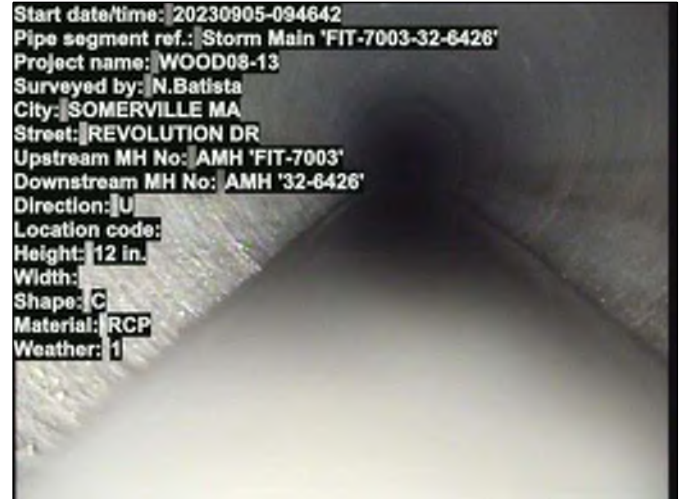


Photo: FIT-7003-32-6426-20230905-094643.JPG

At: 0 ft. MWL - Miscellaneous Water Level

Joint: No 5 %



Photo: FIT-7003-32-6426-20230905-094758.JPG

At: 11.2 ft. MWLS - Miscellaneous Water Level Sag

Joint: No 10 %



Photo: FIT-7003-32-6426-20230905-094848.JPG

At: 33.8 ft. MMC - Miscellaneous Material Change

Joint: No CORRUGATED PLASTIC

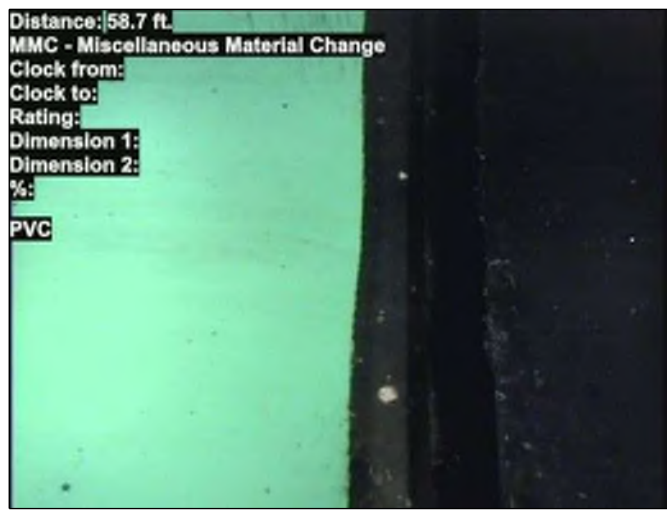


Photo: FIT-7003-32-6426-20230905-095032.JPG
At: 58.7 ft. MMC - Miscellaneous Material Change
Joint: No PVC

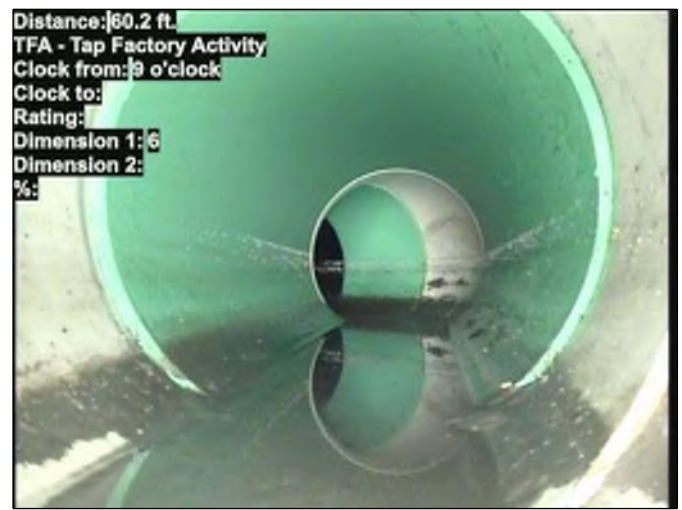


Photo: FIT-7003-32-6426-20230905-095051.JPG
At: 60.2 ft. 9/ TFA - Tap Factory Activity
Joint: No

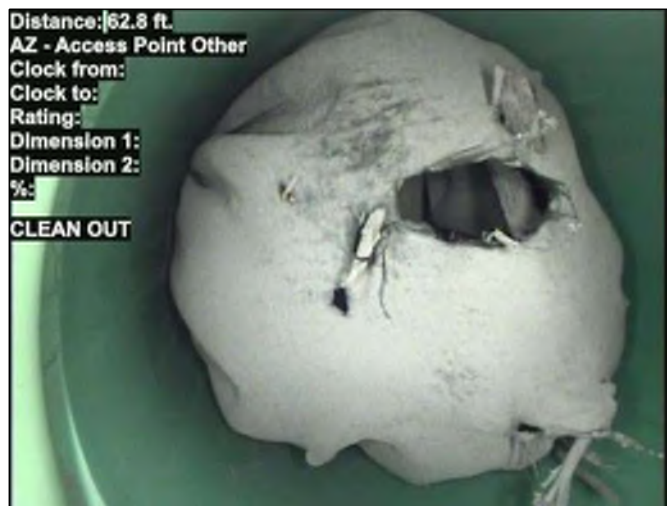


Photo: FIT-7003-32-6426-20230905-095106.JPG
At: 62.8 ft. AZ - Access Point Other
Joint: No CLEAN OUT



NWMCC INSPECTION REPORT

PACP Rating Description

1: Excellent Condition

Minor Defects - Failure unlikely in the foreseeable future

2: Good Condition

Defects that have not begun to deteriorate - Pipe unlikely to fail for at least 20 years.

3: Fair Condition

Moderate defects that will continue to deteriorate - Pipe may fail in 10-20 years.

4: Poor Condition

Severe Defects that will become Grade 5 defects within the foreseeable future - Pipe will probably fail in 5-10 years.

5: Immediate Attention

Defects require immediate attention - Pipe has failed or will likely fail within the next 5 years or sooner.

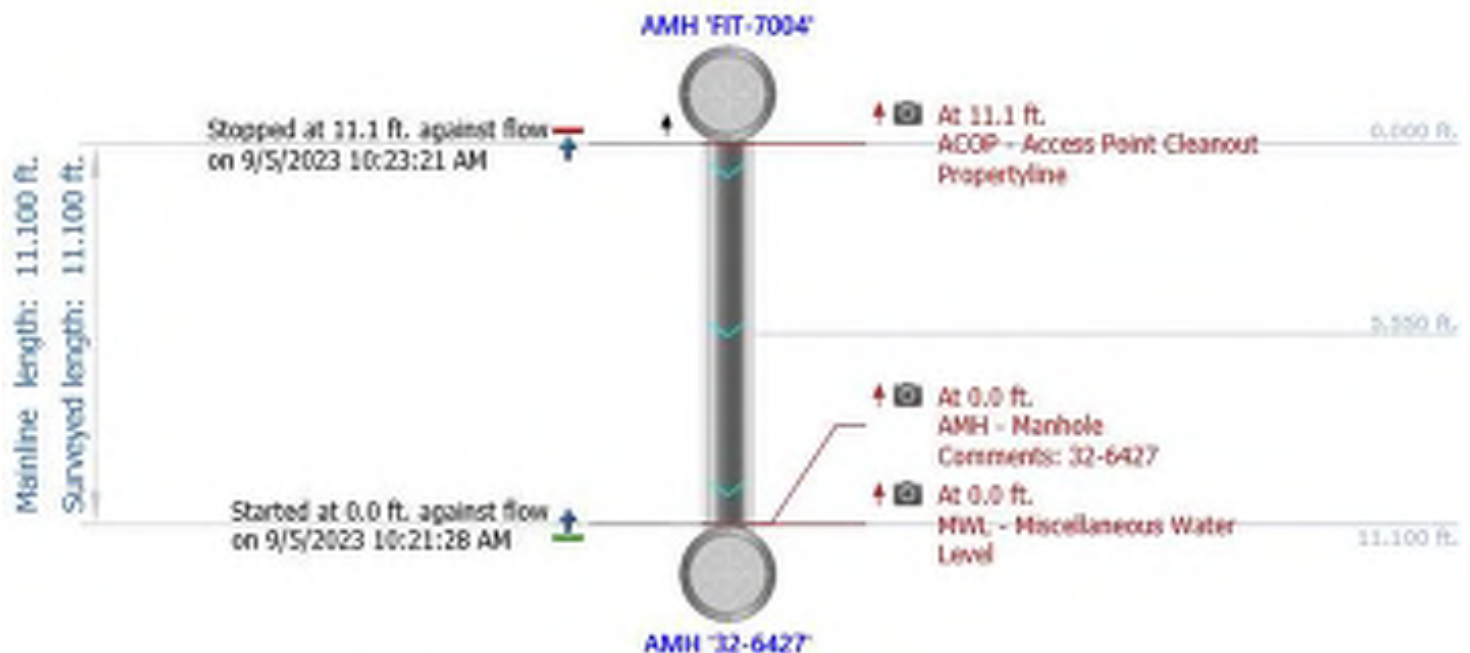


NWMCC INSPECTION REPORT

Start date/time: 20230905 10:21	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: FIT-7004-32-6427
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned: 20230905	Project name: WOOD08-13
City: SOMERVILLE MA	Street: REVOLUTION DR	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: FIT-7004	Downstream MH No: 32-6427	Direction: U	Total length: 11.100 ft.	Length surveyed: 11.100 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length:	Height: 8 in.	Material: Reinforced Concrete Pipe	LateralsCounter: Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	0	0000	0.0	0	0.0	1.0	
2	0	0				0	0							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							



NWMCC INSPECTION REPORT

Inspection Photos

City:	Street:	Start date/time:	Pipe segment ref.:
SOMERVILLE MA	REVOLUTION DR	20230905 10:21	FIT-7004-32-6427



Photo: FIT-7004-32-6427-20230905-102128.JPG

At: 0 ft. AMH - Manhole

Joint: No 32-6427

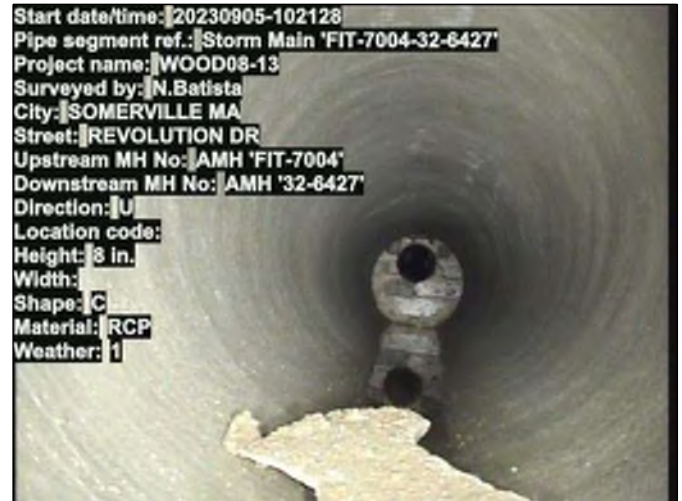


Photo: FIT-7004-32-6427-20230905-102129.JPG

At: 0 ft. MWL - Miscellaneous Water Level

Joint: No 5 %



Photo: FIT-7004-32-6427-20230905-102243.JPG

At: 11.1 ft. ACOP - Access Point Cleanout Propertyline

Joint: No



NWMCC INSPECTION REPORT

PACP Rating Description

1: Excellent Condition

Minor Defects - Failure unlikely in the foreseeable future

2: Good Condition

Defects that have not begun to deteriorate - Pipe unlikely to fail for at least 20 years.

3: Fair Condition

Moderate defects that will continue to deteriorate - Pipe may fail in 10-20 years.

4: Poor Condition

Severe Defects that will become Grade 5 defects within the foreseeable future - Pipe will probably fail in 5-10 years.

5: Immediate Attention

Defects require immediate attention - Pipe has failed or will likely fail within the next 5 years or sooner.



The Environmental
Protection Specialists

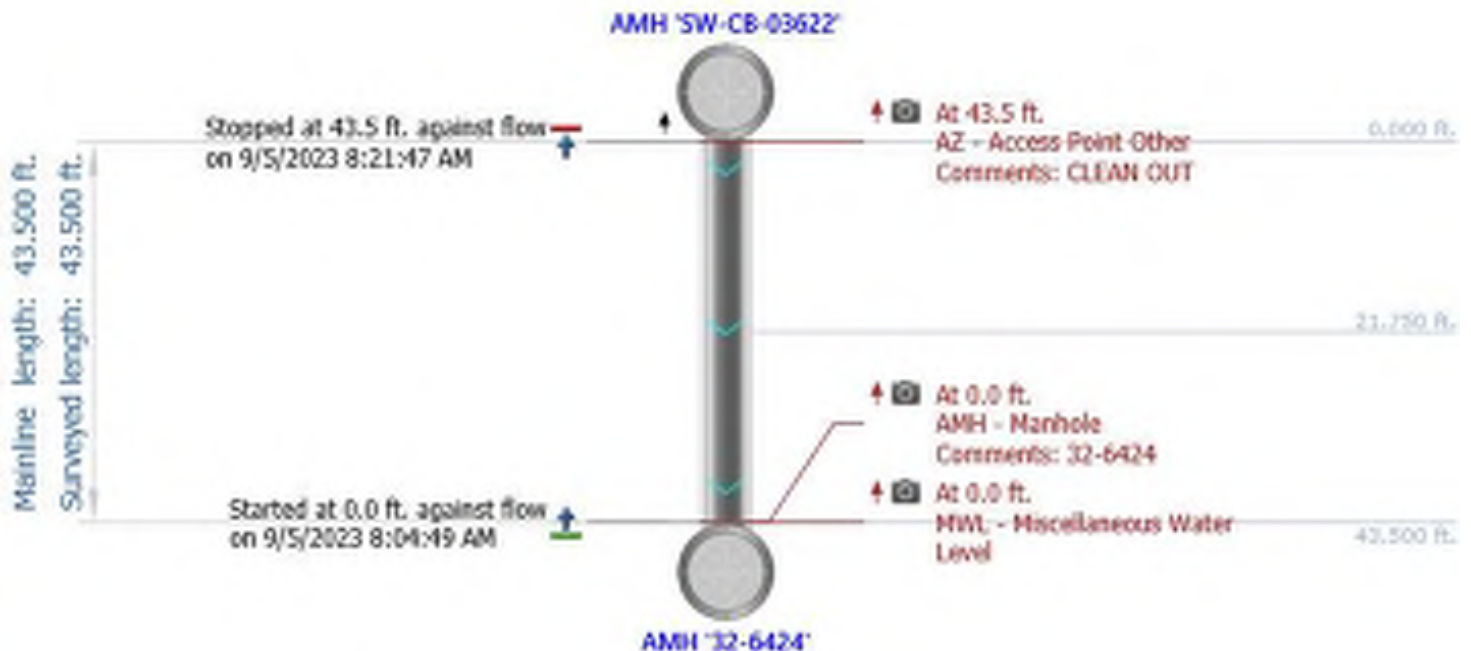
National Water Main Cleaning
Co.
25 Marshall Street
Canton, MA 02021
Office: 800-422-0815
Fax: 781-828-2473

NWMCC INSPECTION REPORT

Start date/time: 20230905 08:04	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: SW-CB-03622-32-6424
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned: 20230905	Project name: WOOD08-13
City: SOMMERVILLE MA	Street: REVOLUTION DR	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: SW-CB-03622	Downstream MH No: 32-6424	Direction: U	Total length: 43.500 ft.	Length surveyed: 43.500 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length:	Height: 8 in.	Material: Polyvinyl Chloride	LateralsCounter: Additional info: WONT BE ABLE TO SHOW YOU ENTRY MANHOLE OPENNING DUE TO LINE IS A DROP TO MANHOLE

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	0	0000	0.0	0	0.0	1.0	
2	0	0				0	0							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							



NWMCC INSPECTION REPORT

Inspection Photos

City:	Street:	Start date/time:	Pipe segment ref.:
SOMMERVILLE MA	REVOLUTION DR	20230905 08:04	SW-CB-03622-32-6424

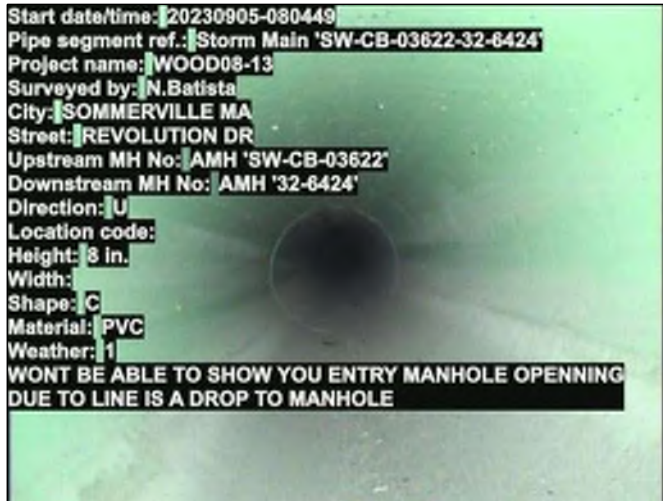


Photo: SW-CB-03622-32-6424-20230905-080450.JPG
At: 0 ft. MWL - Miscellaneous Water Level
Joint: No 5 %



Photo: SW-CB-03622-32-6424-20230905-080449.JPG
At: 0 ft. AMH - Manhole
Joint: No 32-6424



Photo: SW-CB-03622-32-6424-20230905-082128.JPG
At: 43.5 ft. AZ - Access Point Other
Joint: No CLEAN OUT



NWMCC INSPECTION REPORT

PACP Rating Description

1: Excellent Condition

Minor Defects - Failure unlikely in the foreseeable future

2: Good Condition

Defects that have not begun to deteriorate - Pipe unlikely to fail for at least 20 years.

3: Fair Condition

Moderate defects that will continue to deteriorate - Pipe may fail in 10-20 years.

4: Poor Condition

Severe Defects that will become Grade 5 defects within the foreseeable future - Pipe will probably fail in 5-10 years.

5: Immediate Attention

Defects require immediate attention - Pipe has failed or will likely fail within the next 5 years or sooner.



The Environmental
Protection Specialists

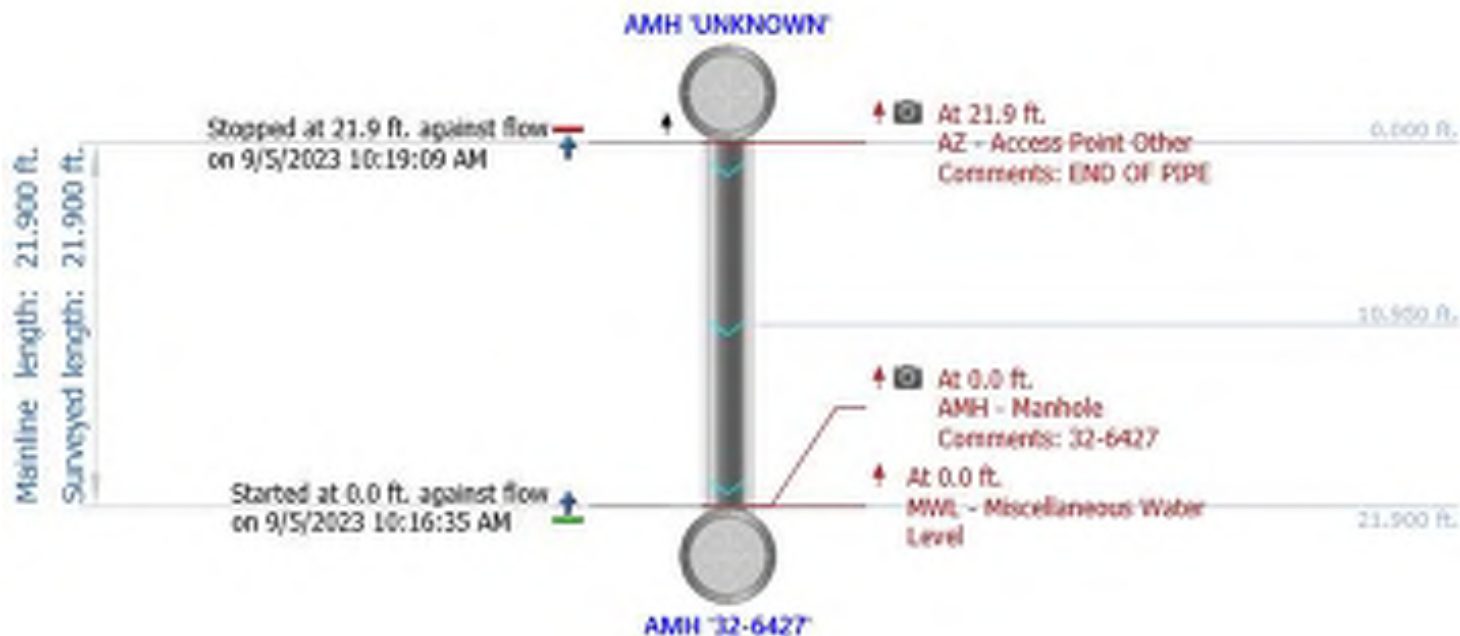
National Water Main Cleaning
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Office: 800-422-0815
Fax: 781-828-2473

NWMCC INSPECTION REPORT

Start date/time: 20230905 10:16	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: UNKNOWN-32-6427
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned: 20230905	Project name: WOOD08-13
City: SOMERVILLE MA	Street: REVOLUTION DR	Location code:	Pipe use: Sanitary Sewage Pipe	Drainage area: Flow control:
Upstream MH No: UNKNOWN	Downstream MH No: 32-6427	Direction: U	Total length: 21.900 ft.	Length surveyed: 21.900 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length:	Height: 8 in.	Material: Polyvinyl Chloride	LateralsCounter: Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	0	0000	0.0	0	0.0	1.0	
2	0	0				0	0							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							



NWMCC INSPECTION REPORT

Inspection Photos

City:	Street:	Start date/time:	Pipe segment ref.:
SOMERVILLE MA	REVOLUTION DR	20230905 10:16	UNKNOWN-32-6427

Start date/time: 20230905-101635
Pipe segment ref.: Storm Main 'UNKNOWN-32-6427'
Project name: WOOD08-13
Surveyed by: N.Batista
City: SOMERVILLE MA
Street: REVOLUTION DR
Upstream MH No: AMH 'UNKNOWN'
Downstream MH No: AMH '32-6427'
Direction: U
Location code:
Height: 8 in.
Width:
Shape: C
Material: PVC
Weather: 1

Photo: UNKNOWN-32-6427-20230905-101636.JPG

At: 0 ft. AMH - Manhole

Joint: No 32-6427

Distance: 21.9 ft.
AZ - Access Point Other
Clock from:
Clock to:
Rating:
Dimension 1:
Dimension 2:
%:
END OF PIPE

Photo: UNKNOWN-32-6427-20230905-101850.JPG

At: 21.9 ft. AZ - Access Point Other

Joint: No END OF PIPE



NWMCC INSPECTION REPORT

PACP Rating Description

1: Excellent Condition

Minor Defects - Failure unlikely in the foreseeable future

2: Good Condition

Defects that have not begun to deteriorate - Pipe unlikely to fail for at least 20 years.

3: Fair Condition

Moderate defects that will continue to deteriorate - Pipe may fail in 10-20 years.

4: Poor Condition

Severe Defects that will become Grade 5 defects within the foreseeable future - Pipe will probably fail in 5-10 years.

5: Immediate Attention

Defects require immediate attention - Pipe has failed or will likely fail within the next 5 years or sooner.



The Environmental
Protection Specialists

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Canton, MA 02021
Office: 800-422-0815
Fax: 781-828-2473

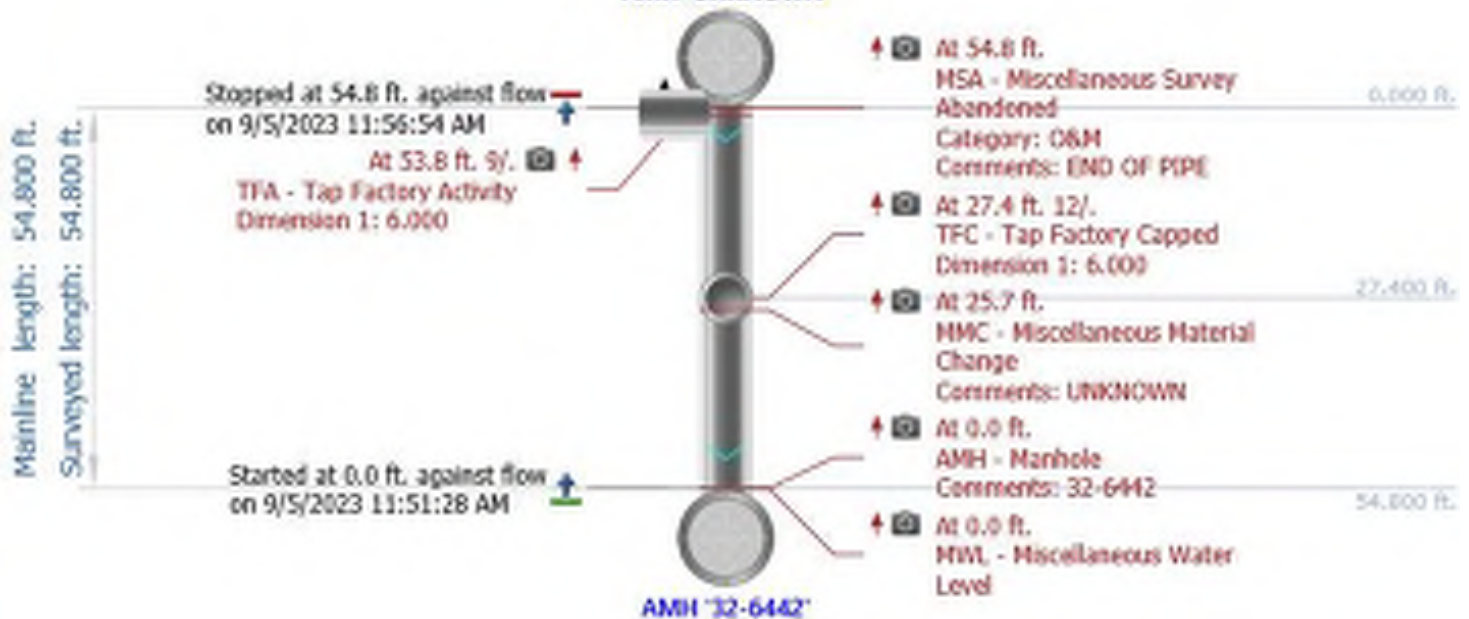
NWMCC INSPECTION REPORT

Start date/time: 20230905 11:51	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: UNKNOWN-32-6442
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned: 20230905	Project name: WOOD08-13
City: SOMERVILLE MA	Street: CANAL ST	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: UNKNOWN	Downstream MH No: 32-6442	Direction: U	Total length: 54.800 ft.	Length surveyed: 54.800 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length:	Height: 12 in.	Material: Reinforced Concrete Pipe	LateralsCounter: Additional info: SINCE THIS IS A DRAIN WHEN WE GOT TO THIS MANHOLE WE NOTICED THERE IS SANITARY ON THIS LINE SO WE ARE INVESTIGATING IT

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	0	0000	0.0	0	0.0	1.0	
2	0	0				0	0							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							

AMH 'UNKNOWN'



NWMCC INSPECTION REPORT

Inspection Photos

City:	Street:	Start date/time:	Pipe segment ref.:
SOMERVILLE MA	CANAL ST	20230905 11:51	UNKNOWN-32-6442

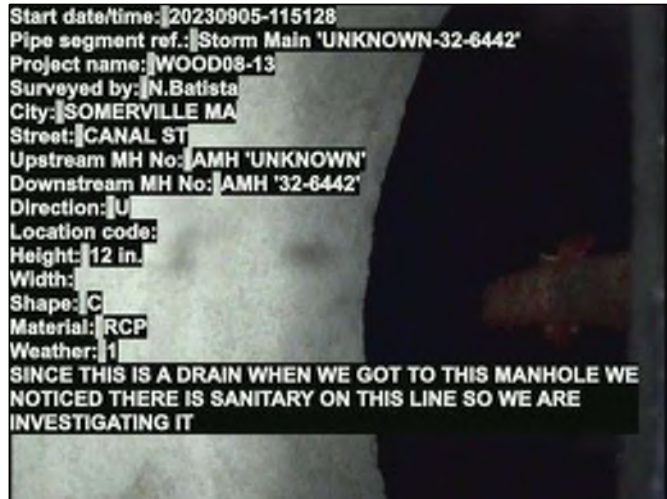


Photo: UNKNOWN-32-6442-20230905-115128.JPG

At: 0 ft. AMH - Manhole

Joint: No 32-6442

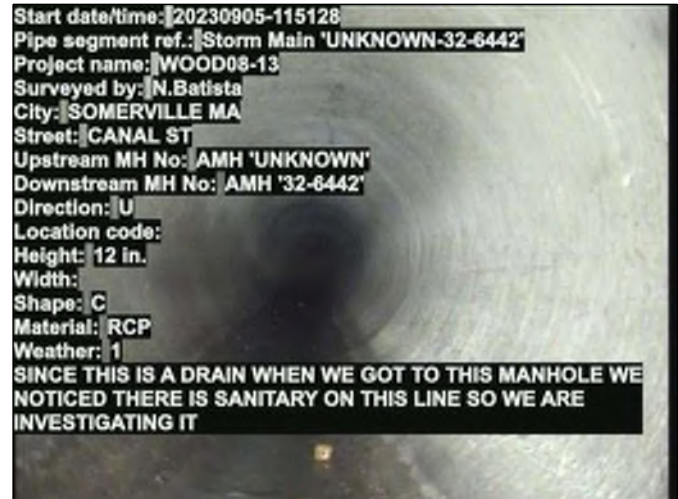


Photo: UNKNOWN-32-6442-20230905-115129.JPG

At: 0 ft. MWL - Miscellaneous Water Level

Joint: No 5 %



Photo: UNKNOWN-32-6442-20230905-115342.JPG

At: 25.7 ft. MMC - Miscellaneous Material Change

Joint: No UNKNOWN



Photo: UNKNOWN-32-6442-20230905-115442.JPG

At: 27.4 ft. 12/. TFC - Tap Factory Capped

Joint: No



Photo: UNKNOWN-32-6442-20230905-115626.JPG
At: 53.8 ft. 9/. TFA - Tap Factory Activity
Joint: No



Photo: UNKNOWN-32-6442-20230905-115633.JPG
At: 54.8 ft. MSA - Miscellaneous Survey Abandoned
Joint: No END OF PIPE

APPENDIX D: 290 REVOLUTION DRIVE INVESTIGATION MEMO



MEMORANDUM



TO: Lucica Hiller, City of Somerville, Stormwater Manager
CC: Todd Prokop, Woodard & Curran
Colin Brown, SDE
FROM: Garrett Bergey, Woodard & Curran
DATE: January 12, 2023
RE: Somerville IDDE Investigations – 290 Revolution Drive

This memorandum summarizes the key inspections and recommendations to date for the storm drain infrastructure in the vicinity of 290 Revolution Drive as part of Task 1, Illicit Discharge, Detection, and Elimination (IDDE) Investigation: Data Management and Reporting. Woodard & Curran (W&C), along with their subcontractor, Stacey DePasquale Engineering, Inc (SDE), organized and performed the inspections described in this report.

Background Information

290 Revolution Drive falls within Catchment 32, which is located in the Assembly Square neighborhood. The outfall for this catchment discharges to the Mystic River.

Catchment investigations were conducted in December 2020 in response to the original 2020 outfall screening results. Per the 2016 MS4 Permit, likely sewer indicators include the following: 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. The results for Revolution Drive met the likely sewer indicator criteria as shown in **Table 1**.

TABLE 1: CATCHMENT 32 INVESTIGATION RESULTS (DECEMBER 2020)

Manhole	Pipe	Street	Ammonia (mg/L)	Surfactants (mg/L)	Chlorine (mg/L)
32-6265	32-6267:32-6265	Revolution Drive	3	0.25	0.26

Additional Investigations

The sampling results from December 2020 showed that pipe segment 32-6267:32-6265 has ammonia, surfactants, and chlorine values above the permit threshold. Dye tests were not completed during Permit Year 4 as there was no sewer mapped in the area.



The contaminated pipe is located in front of 290 Revolution Drive (also known as 275 Foley Street), which is a newly constructed apartment building. In February 2023, W&C reviewed the record drawings associated with 290 Revolution Drive and integrated mapping updates in GIS. The City was also able to confirm that the storm drain pipe under 290 Revolution has been abandoned, so W&C updated GIS to show the inactive pipe.

Once mapping updates were completed, additional investigations were conducted to determine the source of contamination.

Upstream sampling was completed in June 2023 to determine which pipe is the source of contamination. **Table 2** summarizes the results of June 2023 sampling. The pipes found to be contaminated are highlighted in red in **Figure 1**.

TABLE 2: REVOLUTION DRIVE 2023 SAMPLING RESULTS

Manhole	Pipe Segment	Ammonia (mg/L)	Surfactants (mg/L)	Chlorine (mg/L)
32-6267	32-6423 : 32-6267	3.00	0.50	0.25
32-6423	32-6407 : 32-6423	3.00	0.50	Not Detected
32-6423	32-6424 : 32-6423	3.00	0.75	1.28
32-6424	32-6425 : 32-6424	3.00	0.75	0.82
32-6425	FIT-7009 : 32-6425	5.00	2.00	Not Detected



Somerville, MA - IDDE
290 Revolution Drive Summary Memo
January 2024



The furthest upstream pipes that could be inspected were SW-CB-03622 : 32-6425 and FIT-7009 : 32-6425 as SDE could not locate any pipe segments or catch basins upstream of SW-CB-03622 (pipe from north) or 32-6425 (pipe from northeast). Due to the configuration of the structure, SDE was unable to determine which pipe the flow was coming from. To further investigate this area and determine what is upstream of SW-CB-03622 (north inlet to 32-6425) and 32-6425 (northeast inlet), CCTV inspections were completed by National Water Main Cleaning Company (NWMCC) on September 5, 2023.

During CCTV inspections, it appeared that the catch basins upstream of SW-CB-03622 are part of the rain gardens in the area, but pipe inspections could not be completed due to a drop connection. Dye that was poured into SW-CB-03622 was observed during the CCTV inspection for pipe segment SW-CB-03622 : 32-6425. The inspection crew could not figure out where FIT-7014 : 32-6434 connects to the system, however since there were no additional inlets at 32-6428 or at 32-6427 and 32-6426, it is suspected that FIT-7014 : 32-6434 may also be part of the rain gardens. It was also observed that pipe segment FIT-7009 : 32-6425 was observed to be wet. This suggests that the flow sampled on June 22, 2023, was FIT-7009 : 32-6425. Refer to **Attachment A** for the CCTV inspection reports.

Dye tests were completed at the apartment complex on November 29, 2023, and December 6, 2023. A total of ten dye tests were conducted throughout the building and all tests were legal. **Table 3** provides a summary of the fixtures that have been dye tested to date.

TABLE 3: DYE TEST SUMMARY

Inspection Date	Unit/Suite/ Apartment Number	Fixture Tested	Dye Test Result
12/6/2023	Unit 850	Toilet (8 th Floor)	Legal
12/6/2023	Mechanical Closet	Cleanout on stack going into the floor	Legal
12/6/2023	Unit 319	Toilet (1 st Floor)	Legal
12/6/2023	Public Restrooms (First Floor)	Toilet (1 st Floor)	Legal
12/6/2023	Janitorial Closet (First Floor)	Sink (1 st Floor)	Legal
11/29/2023	Public Restrooms (First Floor)	Toilet (1 st Floor)	Legal
11/29/2023	Women's Restroom (Social Club - Unit 335)	Toilet (3 rd Floor)	Legal
11/29/2023	Show Room (Unit 329)	Toilet (3 rd Floor)	Legal
11/29/2023	Unit 618	Sink (6 th Floor)	Legal
11/29/2023	Public restroom near concierge desk	Toilet (1 st Floor)	Legal

Since all tests were legal, W&C recommended laboratory sampling for surfactants and human/total Bacteroides to verify if there is sewage present. SDE visited DMH 32-6425 on December 20, 2023, to collect the lab samples, however there was not enough flow to sample. The crew placed a sandbag and returned on December 26, 2023, there was still not enough flow to sample. SDE plans to make another attempt with a new sandbag to capture flow. The sandbag will be left in place for an extended period to try to maximize opportunity to capture flow.

ATTACHMENT A: CCTV INSPECTION REPORTS





NWMCC INSPECTION REPORT

PACP Rating Description

1: Excellent Condition

Minor Defects - Failure unlikely in the foreseeable future

2: Good Condition

Defects that have not begun to deteriorate - Pipe unlikely to fail for at least 20 years.

3: Fair Condition

Moderate defects that will continue to deteriorate - Pipe may fail in 10-20 years.

4: Poor Condition

Severe Defects that will become Grade 5 defects within the foreseeable future - Pipe will probably fail in 5-10 years.

5: Immediate Attention

Defects require immediate attention - Pipe has failed or will likely fail within the next 5 years or sooner.



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Fax: 781-828-2473

NWMCC INSPECTION REPORT

Start date/time: 20230905 07:48	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: 32-6421-32-6424
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned:	Project name: WOOD08-13
City: SOMMERVILLE MA	Street: REVOLUTION DR	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: 32-6421	Downstream MH No: 32-6424	Direction: U	Total length: 25.600 ft.	Length surveyed: 25.600 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length:	Height: 12 in.	Material: Reinforced Concrete Pipe	LateralsCounter: Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	3	3100	3.0	0	1	1	1100	1.0	4	2.0	3.1	
2	0	0				0	0							
3	0	3				0	0							
4	0	0				0	0							
5	0	0				0	0							



Mainline length: 25,600 ft.
Surveyed length: 25,600 ft.

Omitted: 25.6 ft.

Started at 0.0 ft. against flow
on 9/5/2023 7:48:48 AM



AMH '32-6424'



At 0.0 ft.
AMH - Manhole
Comments: 32-6424



At 0.0 ft.
MWL - Miscellaneous Water
Level

25,600 ft.
25,600 ft.

NWMCC INSPECTION REPORT

Inspection Photos

City:	Street:	Start date/time:	Pipe segment ref.:
SOMMERVILLE MA	REVOLUTION DR	20230905 07:48	32-6421-32-6424

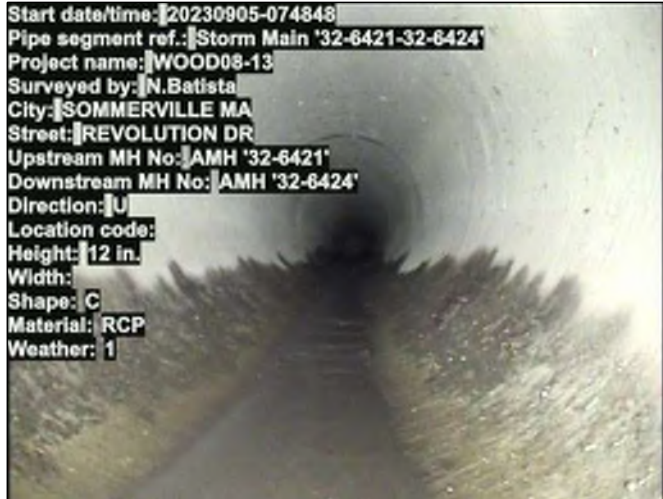


Photo: 32-6421-32-6424-20230905-074849.JPG
At: 0 ft. MWL - Miscellaneous Water Level
Joint: No 5 %

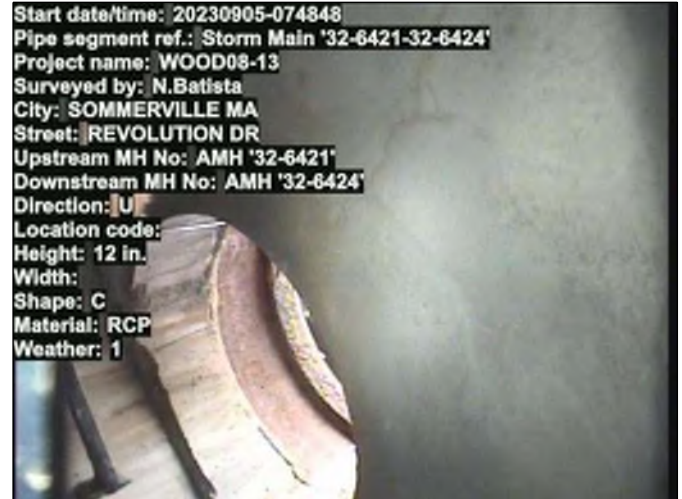


Photo: 32-6421-32-6424-20230905-074848.JPG
At: 0 ft. AMH - Manhole
Joint: No 32-6424



Photo: 32-6421-32-6424-20230905-075303.JPG
At: 7.8 ft. 5/7 IS - Infiltration Stain
Joint: No



Photo: 32-6421-32-6424-20230905-075244.JPG
At: 7.8 ft. 8/8 CM - Crack Multiple
Joint: No



Photo: 32-6421-32-6424-20230905-080056.JPG
At: 25.6 ft. MSA - Miscellaneous Survey Abandoned
Joint: No DUE TO SIZE CHANGE AND BEND



Photo: 32-6421-32-6424-20230905-075823.JPG
At: 25.6 ft. MSC - Miscellaneous Shape/Size Change
Joint: No

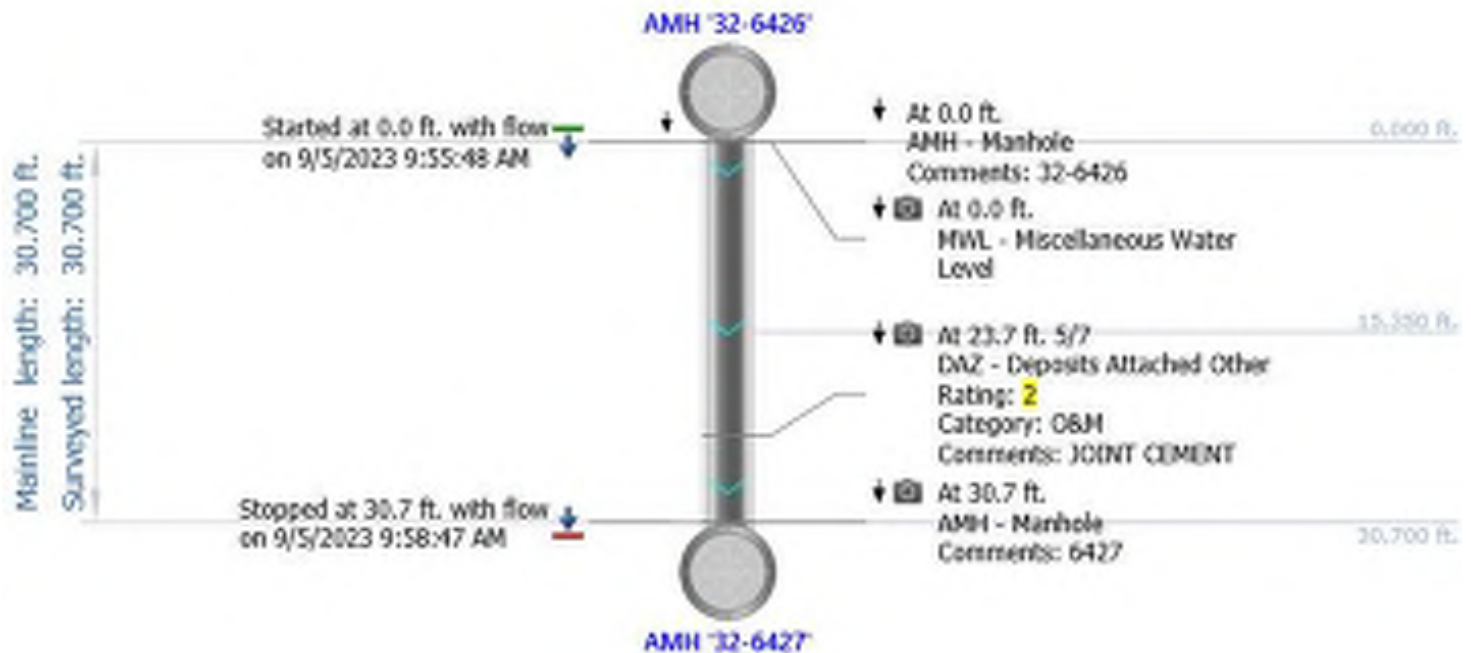


NWMCC INSPECTION REPORT

Start date/time: 20230905 09:55	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: 32-6426-32-6427
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned: 20230905	Project name: WOOD08-13
City: SOMERVILLE MA	Street: REVOLUTION DR	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: 32-6426	Downstream MH No: 32-6427	Direction: D	Total length: 30.700 ft.	Length surveyed: 30.700 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length:	Height: 12 in.	Material: Reinforced Concrete Pipe	LateralsCounter: Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	2	2100	2.0	2	2.0	2.1	
2	0	0				0	2							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							



NWMCC INSPECTION REPORT

Inspection Photos

City:

SOMERVILLE MA

Street:

REVOLUTION DR

Start date/time:

20230905 09:55

Pipe segment ref.:

32-6426-32-6427



Photo: 32-6426-32-6427-20230905-095549_1.JPG

At: 0 ft. MWL - Miscellaneous Water Level

Joint: No 5 %

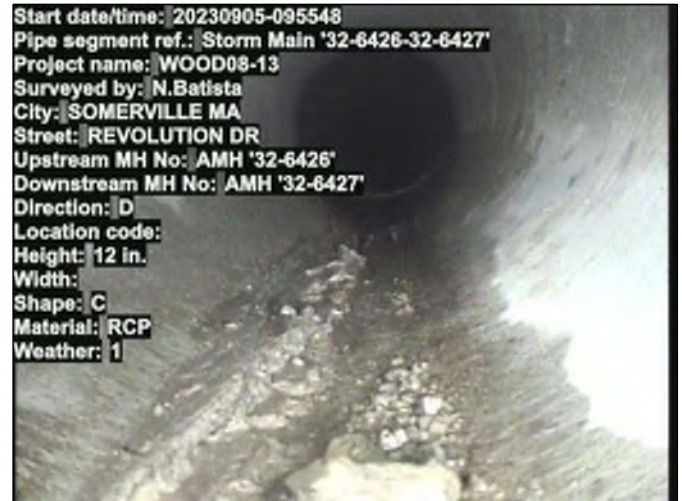


Photo: 32-6426-32-6427-20230905-095549.JPG

At: 0 ft. MWL - Miscellaneous Water Level

Joint: No 5 %



Photo: 32-6426-32-6427-20230905-095714.JPG

At: 23.7 ft. 5/7 DAZ - Deposits Attached Other

Joint: No 5 % JOINT CEMENT



Photo: 32-6426-32-6427-20230905-095831.JPG

At: 30.7 ft. AMH - Manhole

Joint: No 6427

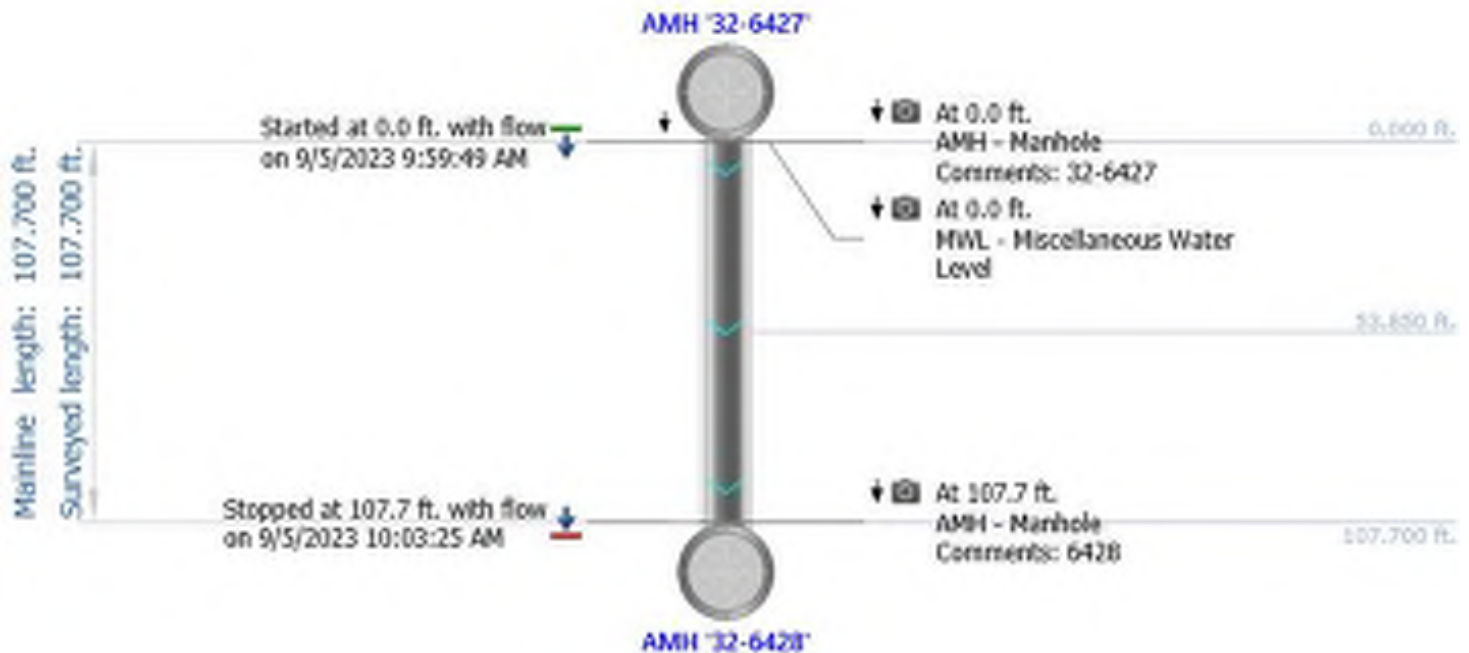


NWMCC INSPECTION REPORT

Start date/time: 20230905 09:59	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: 32-6427-32-6428
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned: 20230905	Project name: WOOD08-13
City: SOMERVILLE MA	Street: REVOLUTION DR	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: 32-6427	Downstream MH No: 32-6428	Direction: D	Total length: 107.700 ft.	Length surveyed: 107.700 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length:	Height: 15 in.	Material: Reinforced Concrete Pipe	LateralsCounter: Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	0	0000	0.0	0	0.0	1.0	
2	0	0				0	0							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							



NWMCC INSPECTION REPORT

Inspection Photos

City:	Street:	Start date/time:	Pipe segment ref.:
SOMERVILLE MA	REVOLUTION DR	20230905 09:59	32-6427-32-6428



Photo: 32-6427-32-6428-20230905-095949.JPG

At: 0 ft. AMH - Manhole
Joint: No 32-6427

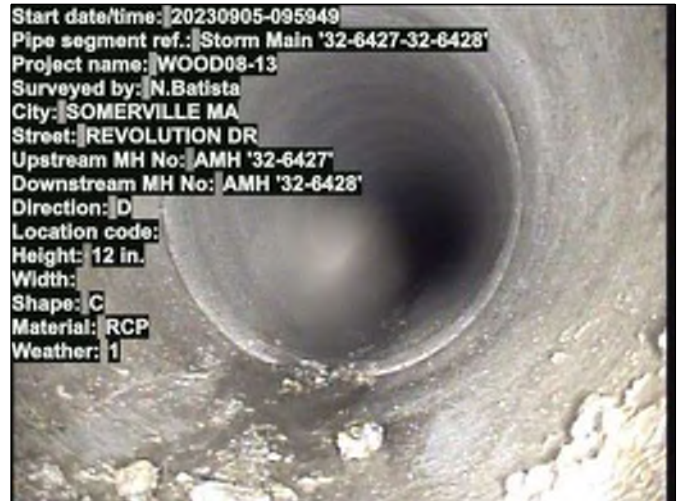


Photo: 32-6427-32-6428-20230905-095950.JPG

At: 0 ft. MWL - Miscellaneous Water Level
Joint: No 5 %

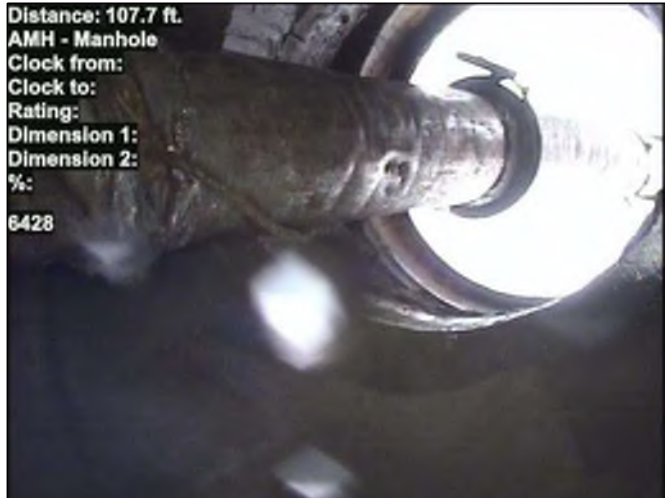


Photo: 32-6427-32-6428-20230905-100309.JPG

At: 107.7 ft. AMH - Manhole
Joint: No 6428

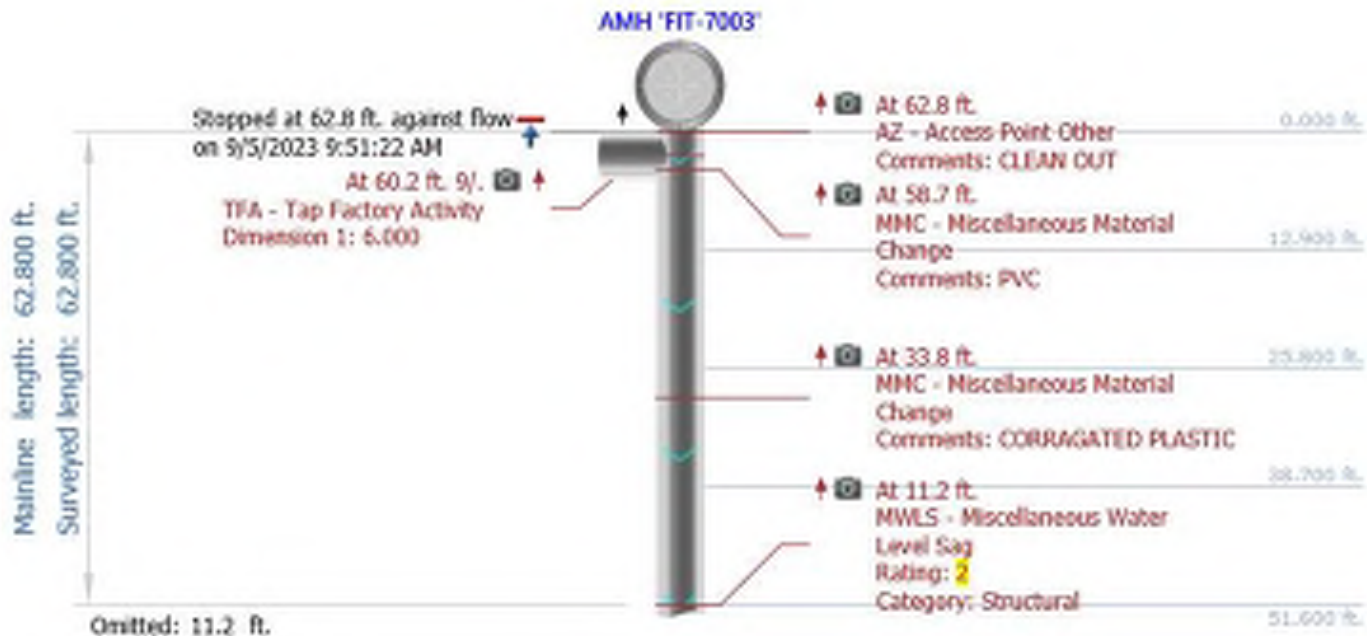


NWMCC INSPECTION REPORT

Start date/time: 20230905 09:46	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: FIT-7003-32-6426
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned: 20230905	Project name: WOOD08-13
City: SOMERVILLE MA	Street: REVOLUTION DR	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: FIT-7003	Downstream MH No: 32-6426	Direction: U	Total length: 62.800 ft.	Length surveyed: 62.800 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length:	Height: 12 in.	Material: Reinforced Concrete Pipe	LateralsCounter: Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	2	2100	2.0	0	0	0	0000	0.0	2	2.0	2.1	
2	0	2				0	0							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							



Mainline length: 62.800 ft.
Surveyed length: 62.800 ft.

Omitted: 62.8 ft.

Started at 0.0 ft. against flow
on 9/5/2023 9:45:42 AM



AMH '32-6426'



At 0.0 ft.

AMH - Manhole

Comments: 32-6426



At 0.0 ft.

MWL - Miscellaneous Water
Level

62.800 ft.
62.800 ft.

NWMCC INSPECTION REPORT

Inspection Photos

City:	Street:	Start date/time:	Pipe segment ref.:
SOMERVILLE MA	REVOLUTION DR	20230905 09:46	FIT-7003-32-6426



Photo: FIT-7003-32-6426-20230905-094642.JPG

At: 0 ft. AMH - Manhole

Joint: No 32-6426

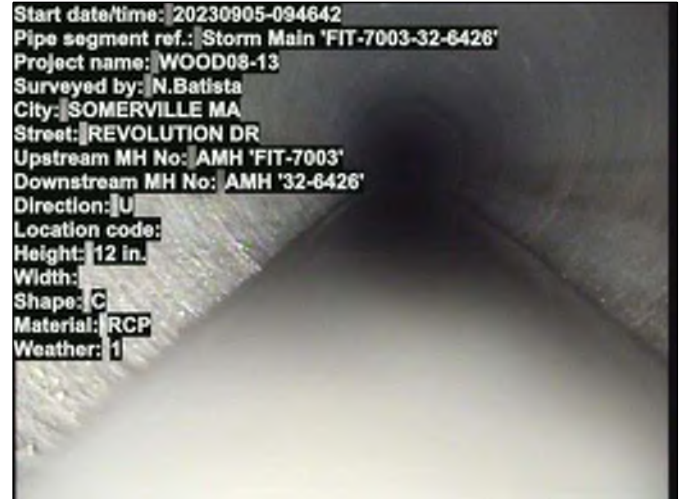


Photo: FIT-7003-32-6426-20230905-094643.JPG

At: 0 ft. MWL - Miscellaneous Water Level

Joint: No 5 %



Photo: FIT-7003-32-6426-20230905-094758.JPG

At: 11.2 ft. MWLS - Miscellaneous Water Level Sag

Joint: No 10 %



Photo: FIT-7003-32-6426-20230905-094848.JPG

At: 33.8 ft. MMC - Miscellaneous Material Change

Joint: No CORRAGATED PLASTIC

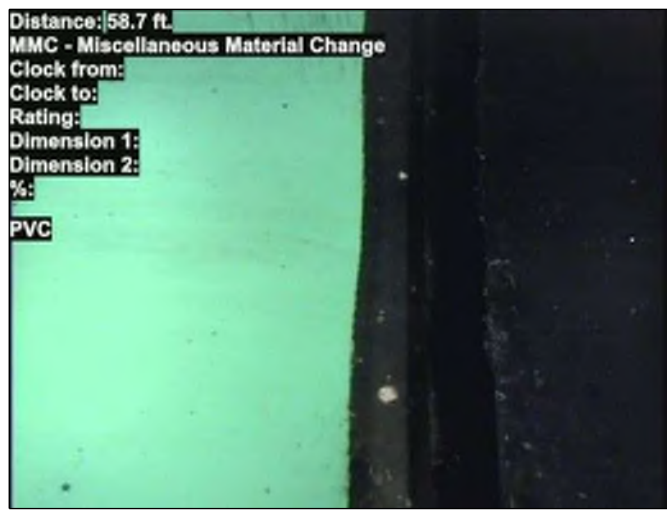


Photo: FIT-7003-32-6426-20230905-095032.JPG
At: 58.7 ft. MMC - Miscellaneous Material Change
Joint: No PVC

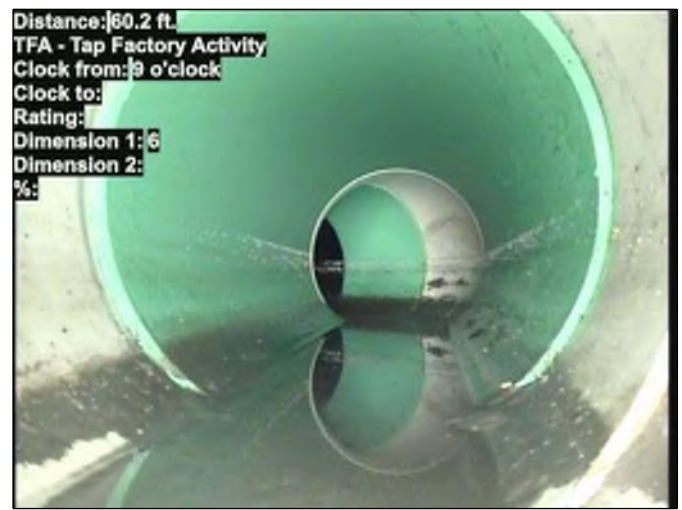


Photo: FIT-7003-32-6426-20230905-095051.JPG
At: 60.2 ft. 9/ TFA - Tap Factory Activity
Joint: No

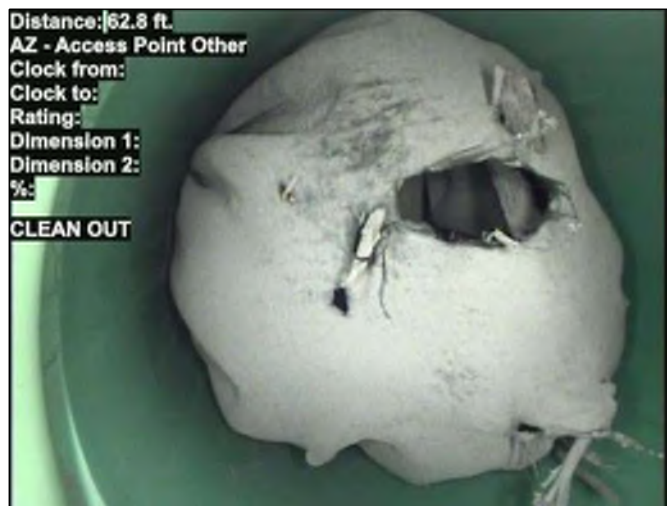


Photo: FIT-7003-32-6426-20230905-095106.JPG
At: 62.8 ft. AZ - Access Point Other
Joint: No CLEAN OUT

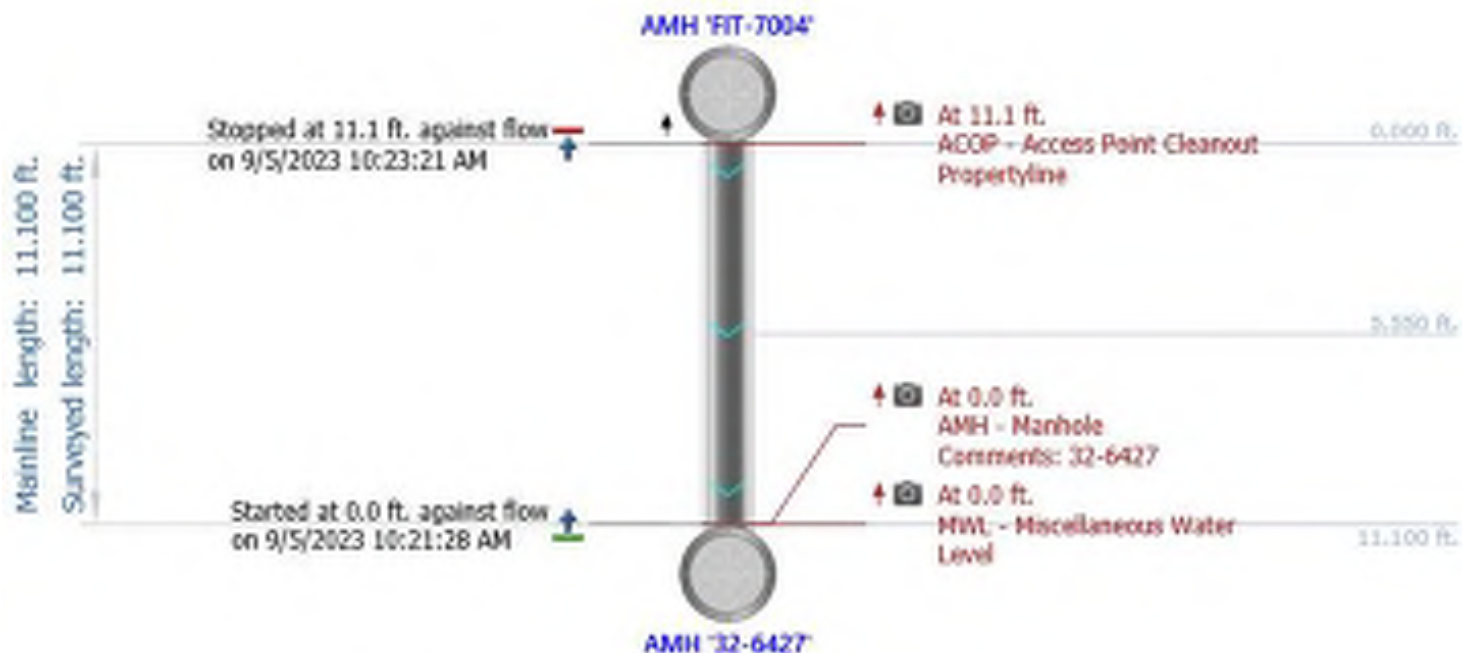


NWMCC INSPECTION REPORT

Start date/time: 20230905 10:21	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: FIT-7004-32-6427
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned: 20230905	Project name: WOOD08-13
City: SOMERVILLE MA	Street: REVOLUTION DR	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: FIT-7004	Downstream MH No: 32-6427	Direction: U	Total length: 11.100 ft.	Length surveyed: 11.100 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length:	Height: 8 in.	Material: Reinforced Concrete Pipe	LateralsCounter: Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	0	0000	0.0	0	0.0	1.0	
2	0	0				0	0							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							



NWMCC INSPECTION REPORT

Inspection Photos

City:	Street:	Start date/time:	Pipe segment ref.:
SOMERVILLE MA	REVOLUTION DR	20230905 10:21	FIT-7004-32-6427



Photo: FIT-7004-32-6427-20230905-102128.JPG

At: 0 ft. AMH - Manhole

Joint: No 32-6427

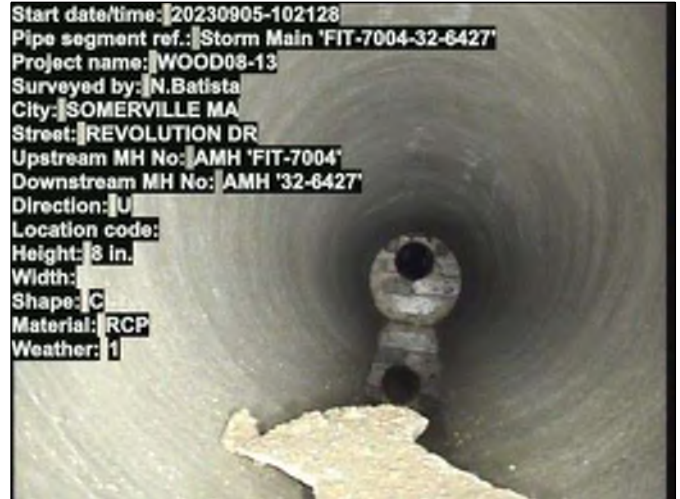


Photo: FIT-7004-32-6427-20230905-102129.JPG

At: 0 ft. MWL - Miscellaneous Water Level

Joint: No 5 %



Photo: FIT-7004-32-6427-20230905-102243.JPG

At: 11.1 ft. ACOP - Access Point Cleanout Propertyline

Joint: No



The Environmental
Protection Specialists

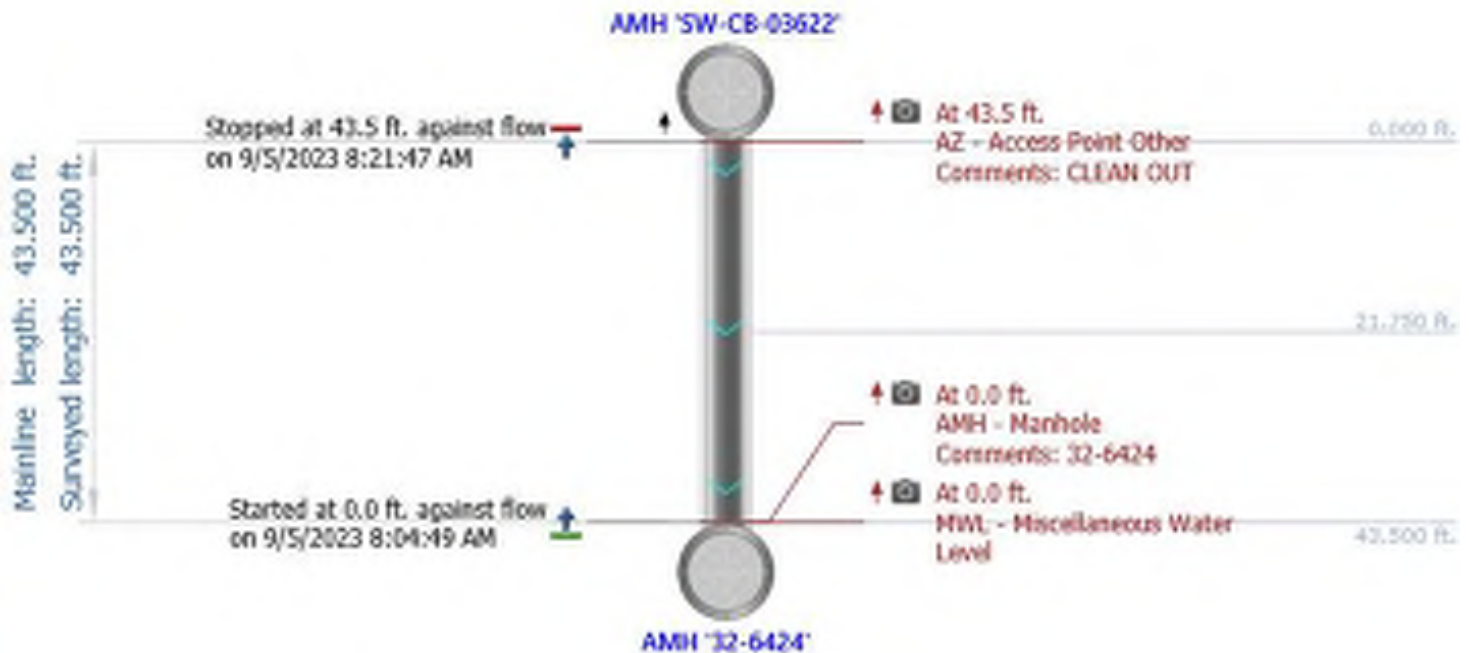
National Water Main Cleaning
Co.
25 Marshall Street
Canton, MA 02021
Office: 800-422-0815
Fax: 781-828-2473

NWMCC INSPECTION REPORT

Start date/time: 20230905 08:04	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: SW-CB-03622-32-6424
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned: 20230905	Project name: WOOD08-13
City: SOMMERVILLE MA	Street: REVOLUTION DR	Location code:	Pipe use: Stormwater Pipe	Drainage area: Flow control:
Upstream MH No: SW-CB-03622	Downstream MH No: 32-6424	Direction: U	Total length: 43.500 ft.	Length surveyed: 43.500 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length:	Height: 8 in.	Material: Polyvinyl Chloride	LateralsCounter: Additional info: WONT BE ABLE TO SHOW YOU ENTRY MANHOLE OPENNING DUE TO LINE IS A DROP TO MANHOLE

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	0	0000	0.0	0	0.0	1.0	
2	0	0				0	0							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							



NWMCC INSPECTION REPORT

Inspection Photos

City:	Street:	Start date/time:	Pipe segment ref.:
SOMMERVILLE MA	REVOLUTION DR	20230905 08:04	SW-CB-03622-32-6424

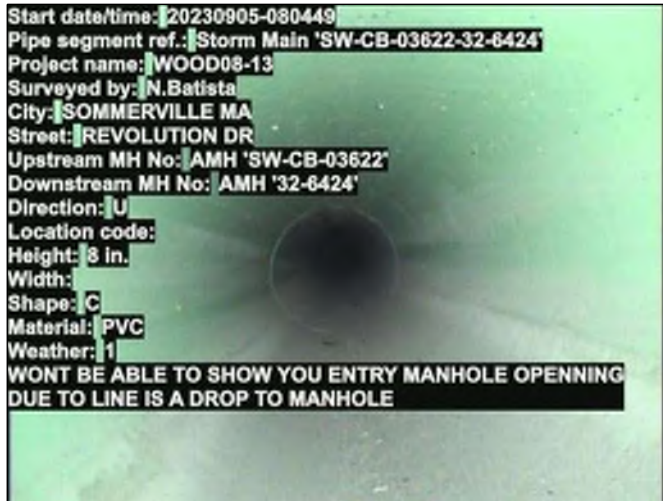


Photo: SW-CB-03622-32-6424-20230905-080450.JPG
At: 0 ft. MWL - Miscellaneous Water Level
Joint: No 5 %



Photo: SW-CB-03622-32-6424-20230905-080449.JPG
At: 0 ft. AMH - Manhole
Joint: No 32-6424



Photo: SW-CB-03622-32-6424-20230905-082128.JPG
At: 43.5 ft. AZ - Access Point Other
Joint: No CLEAN OUT



The Environmental
Protection Specialists

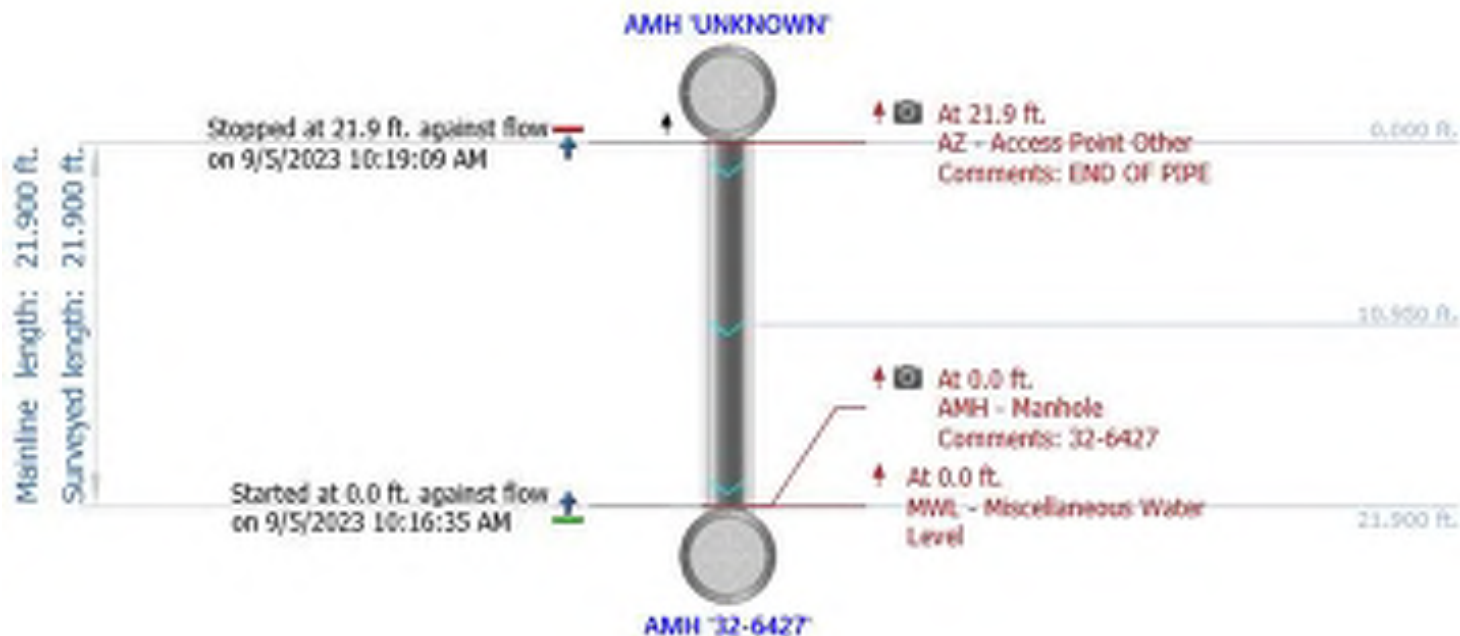
National Water Main Cleaning
Co.
25 Marshall Street
Canton, MA 02021
Office: 800-422-0815
Fax: 781-828-2473

NWMCC INSPECTION REPORT

Start date/time: 20230905 10:16	Weather: Dry - No precipitation during survey	Surveyed by: N.Batista	Certificate number: N/A	Pipe segment ref.: UNKNOWN-32-6427
Owner:	Customer:	Pre-cleaning: Light Cleaning	Date cleaned: 20230905	Project name: WOOD08-13
City: SOMERVILLE MA	Street: REVOLUTION DR	Location code:	Pipe use: Sanitary Sewage Pipe	Drainage area: Flow control:
Upstream MH No: UNKNOWN	Downstream MH No: 32-6427	Direction: U	Total length: 21.900 ft.	Length surveyed: 21.900 ft.
Purpose: Infiltration /Inflow Investigation	Pipe joint length:	Height: 8 in.	Material: Polyvinyl Chloride	LateralsCounter: Additional info:

Pipe Ratings

Grade	Structural:					O&M:					Overall:			
	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Defects	Segment Grade	Pipe Rating	Quick Rating	Pipe Rating Index	Pipe Rating	Pipe Rating Index	LoF	Risk
1	0	0	0	0000	0.0	0	0	0	0000	0.0	0	0.0	1.0	
2	0	0				0	0							
3	0	0				0	0							
4	0	0				0	0							
5	0	0				0	0							



NWMCC INSPECTION REPORT

Inspection Photos

City:	Street:	Start date/time:	Pipe segment ref.:
SOMERVILLE MA	REVOLUTION DR	20230905 10:16	UNKNOWN-32-6427

Start date/time: 20230905-101635
Pipe segment ref.: Storm Main 'UNKNOWN-32-6427'
Project name: WOOD08-13
Surveyed by: N.Batista
City: SOMERVILLE MA
Street: REVOLUTION DR
Upstream MH No: AMH 'UNKNOWN'
Downstream MH No: AMH '32-6427'
Direction: U
Location code:
Height: 8 in.
Width:
Shape: C
Material: PVC
Weather: 1

Photo: UNKNOWN-32-6427-20230905-101636.JPG
At: 0 ft. AMH - Manhole
Joint: No 32-6427

Distance: 21.9 ft.
AZ - Access Point Other
Clock from:
Clock to:
Rating:
Dimension 1:
Dimension 2:
%:
END OF PIPE

Photo: UNKNOWN-32-6427-20230905-101850.JPG
At: 21.9 ft. AZ - Access Point Other
Joint: No END OF PIPE