

RUTGERS

New Jersey Agricultural
Experiment Station



Hamilton Township (Mercer County) Stormwater Outfall Assessment Summary 2019 Addendum

Developed by the Rutgers Cooperative Extension Water Resources Program
Funded by Hamilton Township, Mercer County, New Jersey
November 27, 2019

Introduction

Hamilton Township, located in Mercer County, New Jersey, maintains over 400 stormwater outfalls that drain directly into waterways. This document is a summary of the outfall pipe inspection program conducted in 2019. The purpose of the program is to provide a baseline assessment of existing conditions related to stream scouring at stormwater outfall discharge locations in streams and waterways. This assessment evaluates the physical condition of outfall structures, erosion caused by the outfalls, structural integrity, and other factors.

The outfalls assessed are in addition to the previous assessments conducted in 2015 and 2017. It was not the intent of this program to be a complete and comprehensive inventory of all stormwater outfalls in the municipal separate storm sewer system (MS4). All efforts for this project were for the purpose of mapping and inventorying outfall pipes that discharge directly to mapped streams. The assessments were performed in August 2019 by the Rutgers Cooperative Extension (RCE) Water Resources Program.

Methods and Procedures

A multi-part approach was taken to assess stormwater outfalls that discharge directly to waterways in Hamilton Township. A geographic information system (GIS) was created to visualize the location of mapped outfall locations. A data layer was created using the GIS application EpiCollect. The application software was used to develop a mobile assessment tool that could record information collected in the field using hand-held tablet computers. Field staff then used the tablet computers and EpiCollect software to photograph, record data, and geotag the location of each stormwater outfall assessed. RCE Water Resources Program staff visited and assessed accessible stormwater outfalls using EpiCollect and then processed the data using ESRI's ArcMap desktop program. A total of 40 outfalls were located and assessed in 2019. This is in addition to the 316 outfalls assessed in 2015 and 2017. Information about the condition, material, diameter, and other factors was recorded for each assessed outfall.

A maintenance prioritization was developed using the field data collected for the 40 stormwater outfalls. Priority was given to outfalls that showed significant signs of deterioration, were causing downstream erosion, were unstable due to erosion, or showed signs of illicit connections. Consideration was also given to the amount of vegetation growth in and around the outfall, quantity of sediment deposits, areas of known commercial or industrial uses, and other factors.

Summary of Key Findings

The following conclusions were formed after reviewing data for the 40 outfalls assessed. Out of the 40, a total of seven (7) were deemed inaccessible due to private property boundaries or an excess of vegetation. Of the accessible 33 outfalls, a total of 27% of assessed outfalls were designated as high priority locations in need of maintenance, 12% were designated as medium priority, and 61% were designated as low maintenance priority sites. Approximately 27% of outfalls were found to be showing signs of significant deterioration. An estimated 18% of the outfalls were found to be causing downstream erosion, and 21% of outfalls were noted to be unstable due to erosion. Information about each outfall assessed can be found in the Tabular Data section of this document. Summary maps of this information can be found in the Summary Maps section.

Description of Summary Maps

A series of five summary maps were created illustrating the key findings noted above. These maps include, “Outfall Maintenance Prioritization,” which displays the nine (9) high maintenance priority outfalls. This map represents a prioritization for maintenance of stormwater outfalls. Higher priority was given to damaged outfalls, outfalls that are causing erosion, outfalls that are unstable due to erosion, areas with floatables, and unknown sources of odors. The “Outfall Accessibility” map displays the seven (7) outfalls which were not able to be assessed due to private property constraints or excessive vegetation blocking the path. The “Outfall Pipe Condition” map identifies outfall structures with visible cracking, spalling, corrosion, and peeling. There were nine (9) stormwater outfalls identified as having a degraded physical condition. The “Outfall Erosion” map represents outfall locations where downstream erosion was noted due to the outfall discharge. There are a total of six (6) outfalls identified to be causing downstream erosion. The final summary map, “Outfall Stability,” identifies those outfalls that are unstable due to erosion in and around the outfall structure. There are seven (7) outfalls that have been identified as having questionable overall outfall structural stability.

Recommendations

Based on the assessment and summary findings, preliminary recommendations for remediation and maintenance include the following:

1. The nine (9) outfalls identified as high priority for maintenance should be visited by Hamilton Township personnel, and a plan and schedule should be developed to take the necessary corrective actions as soon as possible.
2. A complete maintenance plan and schedule should be developed for all stormwater outfalls to address the deficiencies noted in this assessment in a timely manner.

This assessment was not intended to be a complete and comprehensive inventory of all stormwater outfalls in the MS4 system. Efforts for this project focused solely on mapping and inventorying known outfall pipes discharging directly to mapped streams. Other outfalls in the MS4 system exist and may need to be investigated at a later time.