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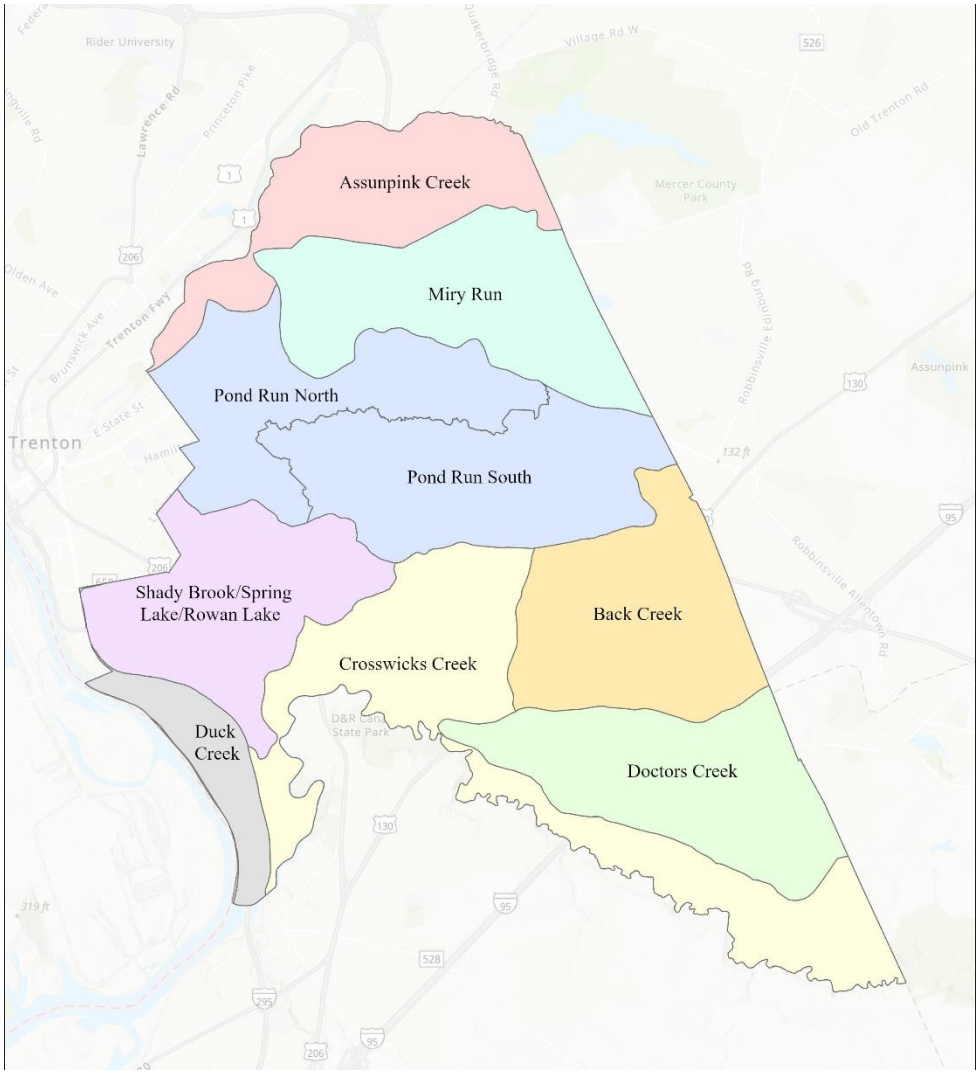

Hamilton Township (Mercer County)
Watershed Inventory Report

Developed by the Rutgers Cooperative Extension Water Resources Program
Funded by Hamilton Township, Mercer County, New Jersey
January 31, 2024

Table of Contents

List of Figures

List of Tables

Acknowledgements

The Hamilton Township (Mercer County) Watershed Inventory Report has been produced by the **Rutgers Cooperative Extension (RCE) Water Resources Program**.

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Introduction

Located in Mercer County in central New Jersey, Hamilton Township covers over 40 square miles east of Trenton. With a population of 92,297 (2020 United States Census), Hamilton Township is dominated by urban land uses. Over a third of the municipality's land uses, approximately 35.3%, is comprised of residential properties (NJDEP Open Data). Of that residential land use, a large portion, 65.8%, is residential, single unit, medium density development (NJDEP Open Data). The New Jersey Department of Environmental Protection (NJDEP) has defined single unit, medium density development as residential urban/suburban neighborhoods greater than 1/8-acre and up to and including 1/2-acre lots (Anderson et al., 1976). These areas generally contain about 30 to 35% impervious surface areas (Anderson et al., 1976). In addition to residential development, urban land use also includes land used for commercial, industrial, recreational, and transportation purposes. Natural lands (forests, wetlands, and water) make up approximately 31.6% of Hamilton Township. These areas generally have lower amounts of impervious cover than urban areas as they lack the associated infrastructure.

Hamilton Township contains portions of eight watersheds: Assunpink Creek, Back Creek, Crosswicks Creek, Doctors Creek, Duck Creek, Miry Run, Pond Run, and Shady Brook. There are approximately 131 miles of rivers and streams within the municipality; these include the Assunpink Creek along the northern edge of the municipality, Miry Run and its tributaries, Pond Run and tributaries, Edges Brook, Back Creek, Doctors Creek and tributaries, and a section of the Delaware River. Hamilton Township is within the New Jersey Department of Environmental Protection (NJDEP) Watershed Management Areas (WMA) 11 (Central Delaware Tributaries) and WMA 20 (Assiscunk, Crosswicks, and Doctors Creeks).

The purpose of this watershed inventory report is to provide a comprehensive understanding of key, defining features within the watersheds throughout Hamilton Township. This involves gathering, organizing, and presenting information about existing conditions and infrastructure within each watershed. It aims to serve as a tool for informed decision-making, planning, and implementation of sustainable watershed management strategies aimed to protect and enhance the health of the watershed, its associated ecosystems, and the surrounding communities.

A geographic information system (GIS) was used to visualize data pertaining to the existing stormwater infrastructure, land cover, watershed delineation, and water quality classification and impairments within separate layers. Datasets from the New Jersey Department of Environmental Protection's (NJDEP's) GIS database was used to populate the watershed inventory map, from which the relevant data were isolated. Datasets representing Hamilton Township's existing stormwater infrastructure were provided by the township and were manipulated, if necessary, for the specific purposes of this report.

Storm Drain Inlets

Hamilton Township, located in Mercer County, New Jersey, owns and operates about 7,244 storm drain inlets and catch basins that drain into waterways throughout the township. Hamilton Township utilizes the web-based GIS application TRAISR to manage their digital stormwater assets and visualize the location of mapped catch basin locations. Figure 1 depicts the Hamilton-owned and operated catch basin network across the township as well as additional inlets that are included in the dataset for those not owned by the Township.

All catch basins that are "owned and operated" by Hamilton Township are required to be inspected once every five years per the municipal separate storm sewer system (MS4) permit from the NJDEP. Condition assessments are conducted on a yearly basis, with one of five zones being inspected each year such that each catch basin is inspected once every five years. Additional information about the status of these catch basins is available in the Hamilton Township "Stormwater Catch Basin Assessment Summary" prepared by the RCE Water Resources Program.

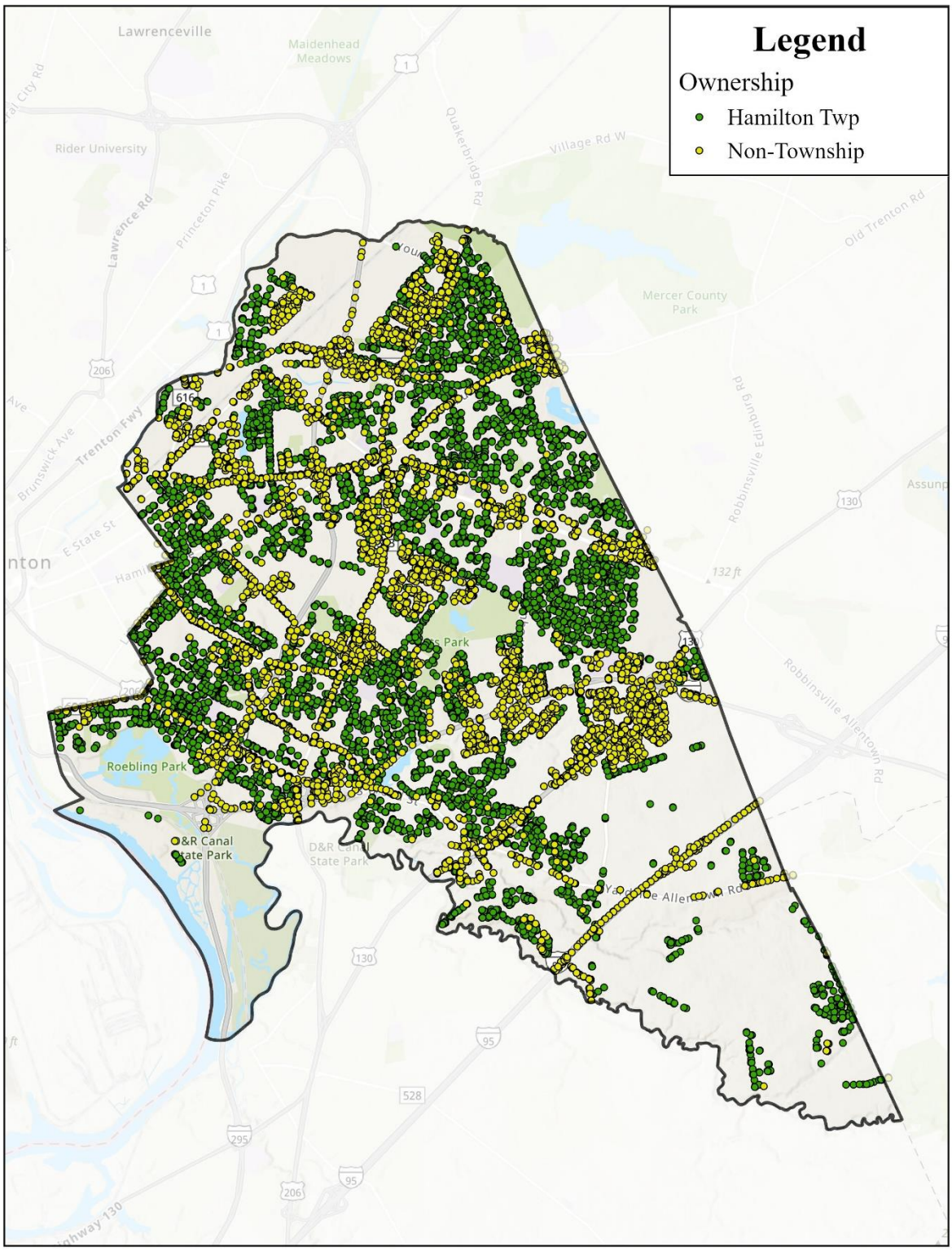

Figure 1: Hamilton Township catch basins

Stormwater Outfalls

Hamilton Township, located in Mercer County, New Jersey, owns and operates over 400 stormwater outfalls that drain directly into waterways. Figure 2 depicts the outfalls that are owned and operated by Hamilton Township per the MS4 permit from the NJDEP.

All outfalls that are "owned and operated" by Hamilton Township are required to be inspected once every five years per the MS4 permit from the NJDEP. Condition assessments are conducted on a yearly basis, addressing approximately 25% of the outfalls each year for four years, leaving the fifth year to find outfalls missed during initial inspection rounds, such that each outfall is inspected once every five years. Additional information about the observed outfall conditions and illicit discharge investigations are reported upon in the Hamilton Township "Stormwater Outfall Assessment Summary" and the "Illicit Discharge Report" prepared by the RCE Water Resources Program.

Receiving Waterbodies

There are 432 outfalls accounted for under Hamilton Township ownership and operation. Of these township owned and operated outfalls, 21 (5%) discharge to the Assunpink Creek, 40 (9%) discharge to Back Creek, 24 (6%) discharge to Crosswicks Creek, 34 (8%) discharge to Doctors Creek, 98 (23%) discharge to Miry Run, 196 (45%) discharge to Pond Run, and 19 (4%) discharge to the Shady Brook/Spring Lake/Rowan Lake network. Figure 2 indicates the receiving waterbodies of the Hamilton Township owned and operated outfalls.

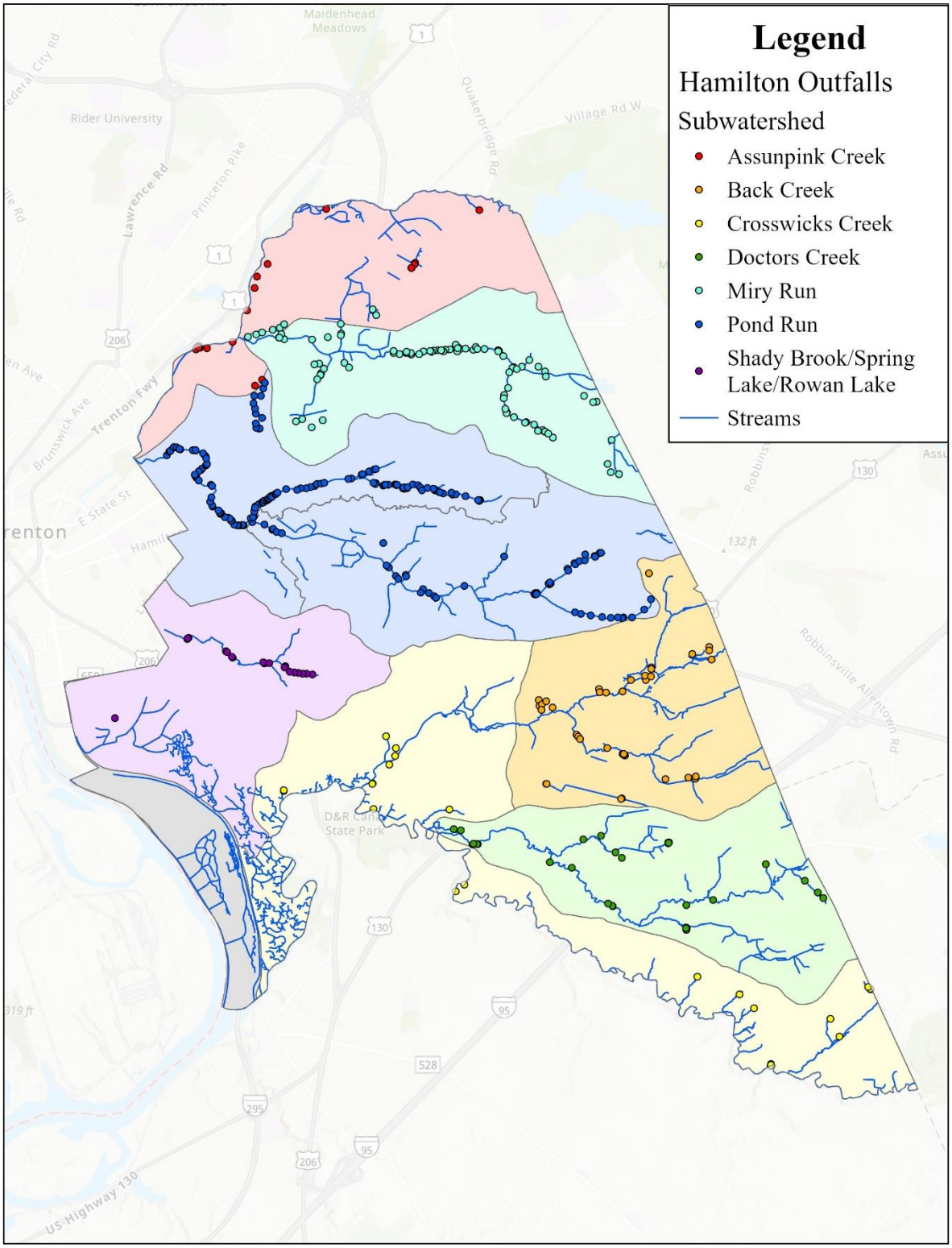

Figure 2: Hamilton Township owned and operated stormwater outfalls

Stormwater Interconnections

Hamilton Township contains parts of other MS4 systems including state owned (New Jersey Department of Transportation (NJDOT) and other NJ State property) and county owned (Mercer County) systems. There are also small portions of adjacent municipalities' MS4 systems that drain into or out of Hamilton (Upper Freehold Township, Trenton City). The locations of these stormwater interconnections have been delineated as a series of point locations that mark where one system enters or leaves from another. Every effort was made to correctly represent interconnection with available data of roads and parcels along with the stormwater piping network. Due to the complexity of the stormwater piping system, there are many instances where water moves back and forth between systems, and it is often unclear exactly which portions are owned or maintained by which entity. There are a total of 242 interconnections delineated with the involved parties being 162 Mercer County, 66 NJDOT, 3 other NJ State property, 6 Trenton City, and 5 Upper Freehold Township. Figure 3: Hamilton Township stormwater interconnections illustrates the distribution of these interconnections.

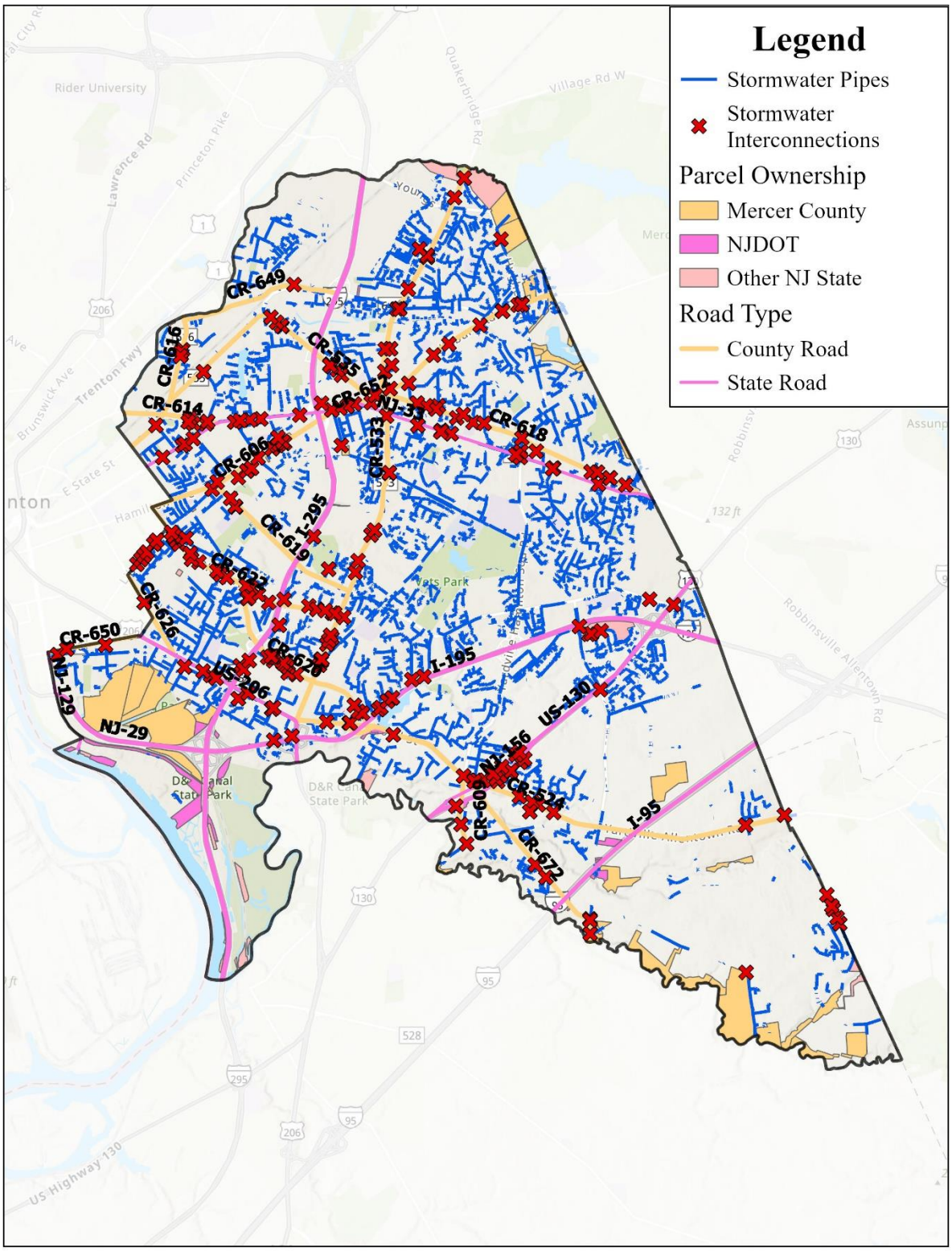

Figure 3: Hamilton Township stormwater interconnections

Drainage Area Delineations

The Watershed Inventory Report includes a delineation of the drainage areas that are flowing to outfalls as well as upstream of interconnection points. These delineations can identify potential sources for illicit discharges from outfalls or aid in identifying other issues in the stormwater piping network.

General Methodology

The procedure used to delineate drainage areas for the outfalls and interconnection points considered the township's topography, the stream network, and the pipe network using toolsets in ArcGIS Pro and ArcHydro. This stormwater representation combines surface drainage and connectivity defined by the stormwater infrastructure which redirects the surface drainage. The outfalls and interconnection points represent drainage points for drainage area delineation purposes. Since the datasets mapping the pipe network and these drainage points were established independently of one another, it was important to establish connectivity within the network. Thus, the closest point along a pipe to these drainage points was found. For the interconnections, these points were adjusted where needed to ensure they were placed along the stormwater pipe network. In the case of the outfalls, these points were connected via new lines representing the connection from the stormwater pipe network to the outfalls. The same procedure was then used to establish connectivity between the outfalls and the nearest stream or waterbody.

Once connectivity was established, these networks were used to alter the existing topography by reconditioning the digital elevation model (DEM) to represent this network as an artificial low point in the elevations. The purpose of this is to direct surface flow to the stormwater pipe network and into the streams. Further processing must be employed to generate a hydraulically correct DEM by filling local low points that would otherwise disrupt further hydraulic analysis.

Using this modified DEM, analysis tools constructed rasterized flow direction and flow accumulation data. Ideally, the flow accumulation would coincide with the pipe and stream network. However, the necessary measures for DEM preprocessing and reconditioning introduce some error to the analysis, so these layers are not entirely in agreement. As the drainage points must be located along the flow accumulation network, the closest point along the flow accumulation line was found for each of the outfalls and the interconnections. Then, a watershed

delineation tool was used, which took the flow direction into account along with each of the drainage points to delineate each respective drainage area.

Visual analysis was performed to ensure that the delineated drainage areas were adequate representations of the surface flow into the pipe network that fed into each drainage area. Delineations that were insufficient representations for their associated outfall or interconnection were disassociated with drainage points.

The delineation procedure is not entirely accurate due to assumptions and analysis issues and is ineffective if there is not a well-established pipe network, but it does provide a rough understanding of what the drainage areas sources are for outfalls. Future procedures can be refined to improve the delineation process by incorporating networks and catch basins into the analysis. This effort should be combined with auditing and refining the stormwater pipe network to fill in gaps.

Outfalls

The delineated watersheds representing the drainage area of the outfalls are referred to as "outfallsheds" moving forward. The watershed delineation tool generated a total of 427 outfallsheds, meaning that delineation failed for five of the 432 outfalls accounted for throughout Hamilton Township. Visual analysis nullified 76 of these outfallsheds, mainly on account of being too heavily representative of the streamshed rather than what drained to the outfall. Thus, the 351 unique watersheds displayed in Figure 4 were deemed to be an appropriate representation of the surface runoff that drained to the pipe network associated with each of these outfalls. The outfall ID field corresponds to the unique symbology of the outfallshed, unless the outfallshed has been nullified, in which case the "isNull" value, which dictates the symbology, has been manually altered to zero and made invisible.

Interconnections

The watershed delineation tool generated a drainage area for each of the 242 stormwater interconnections. Visual analysis ruled out three of these drainage areas, leaving the 239 unique drainage areas displayed in Figure 5 representing the surface runoff that drains to the pipe network associated with the drainage point at each interconnection. The interconnection ID field corresponds to the unique ID of the drainage area, unless it has been nullified, in which case the "isNull" value which dictates the symbology has been manually altered to zero and made invisible.

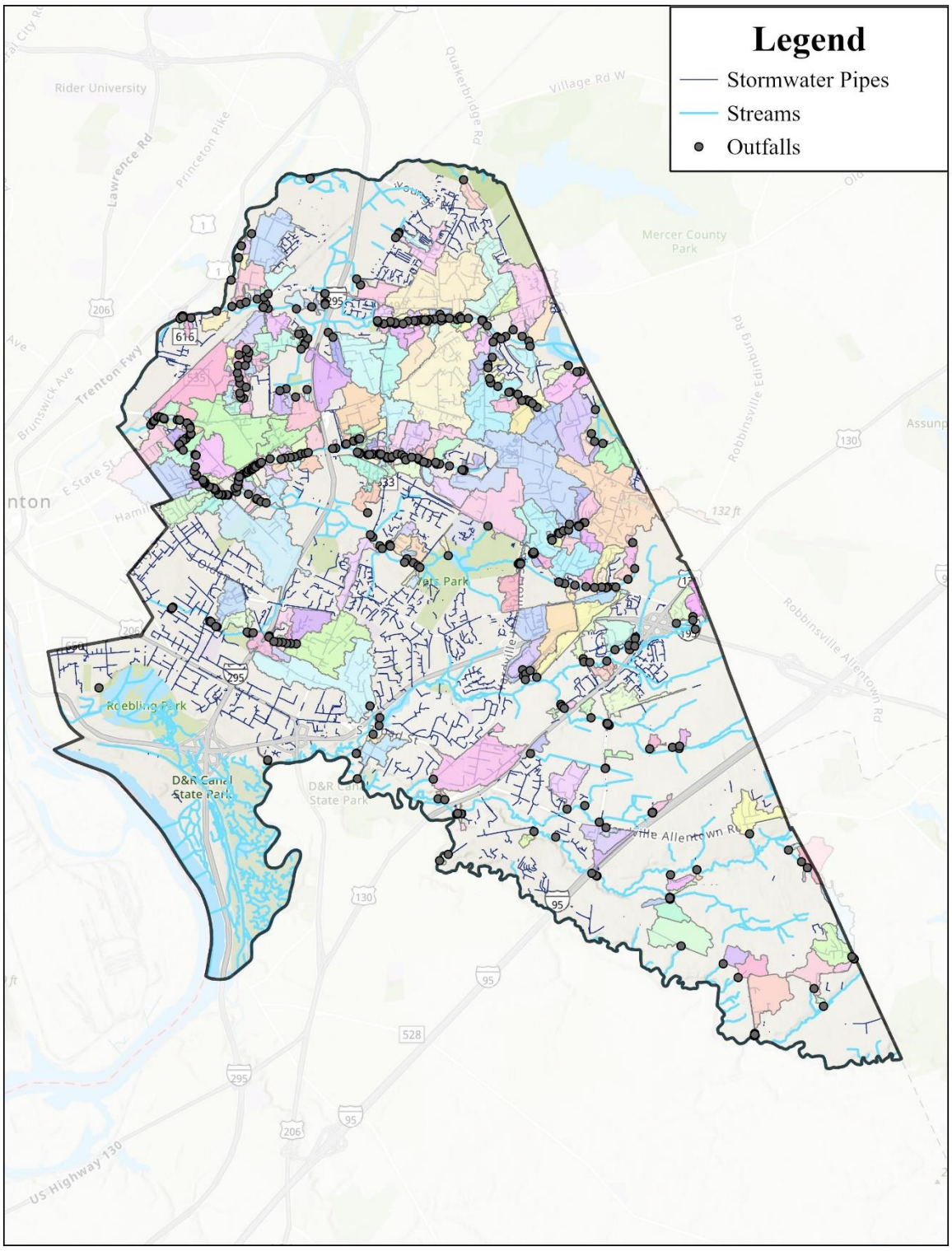

Figure 4: Hamilton Township outfall watershed delineations

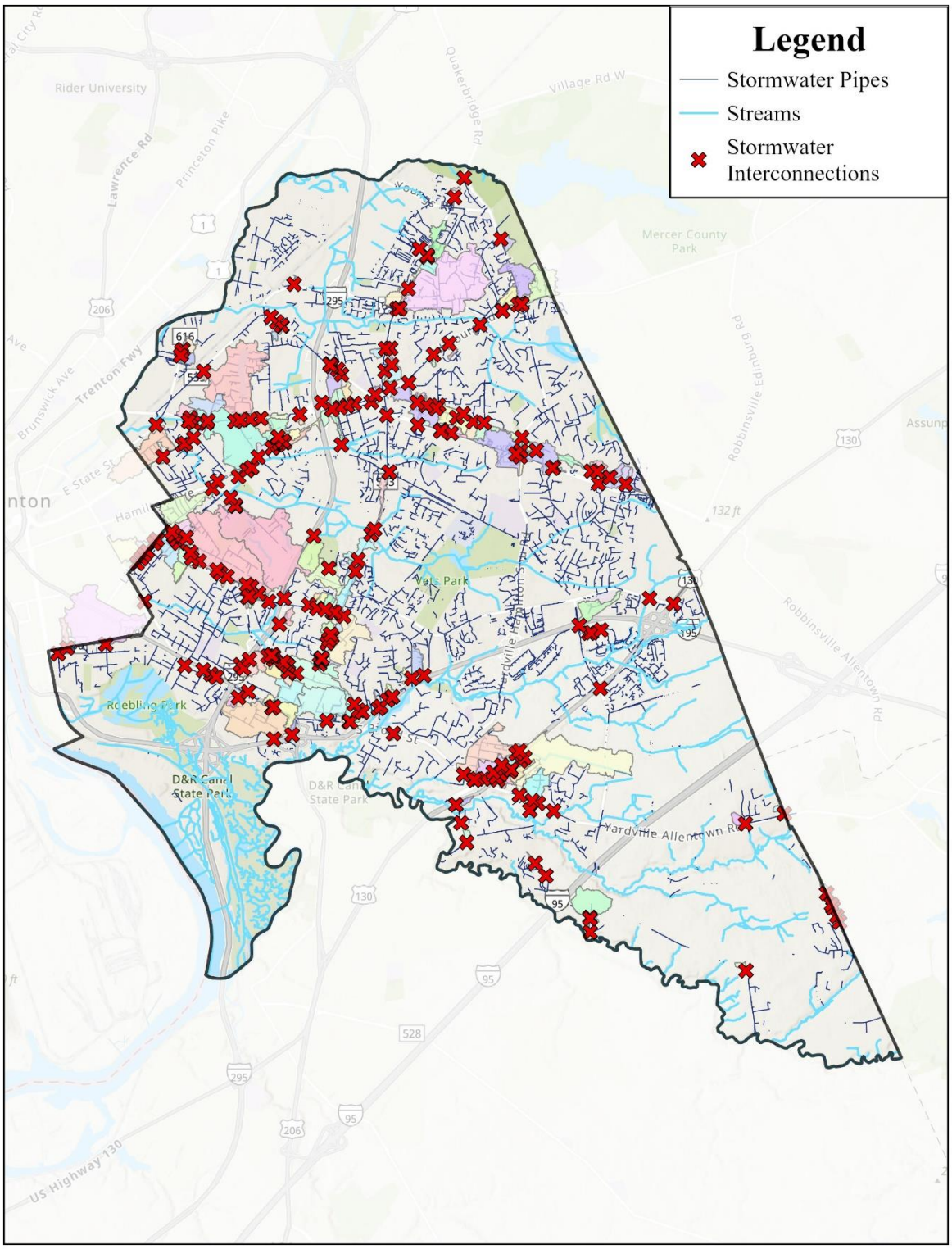

Figure 5: Hamilton Township stormwater interconnection watersheds

Non-Municipally Owned and Operated Stormwater Infrastructure

Hamilton Township has collected data for non-municipally owned and operated stormwater infrastructure which primarily consists of stormwater management basins (detention basins, retention basins, infiltration basins). The storm drain inlet layer also contains all known storm drain inlets that are not owned or operated by the Township included in the data fields. Of the stormwater basins, there are 61 owned by the Township, 8 owned by Mercer County, 41 owned by State entities, 263 owned by private entities, and 15 on homeowner property. There are also 9 identified that were developed before 1984 that are not regulated but are included for reference. These facilities are displayed in Figure 6.

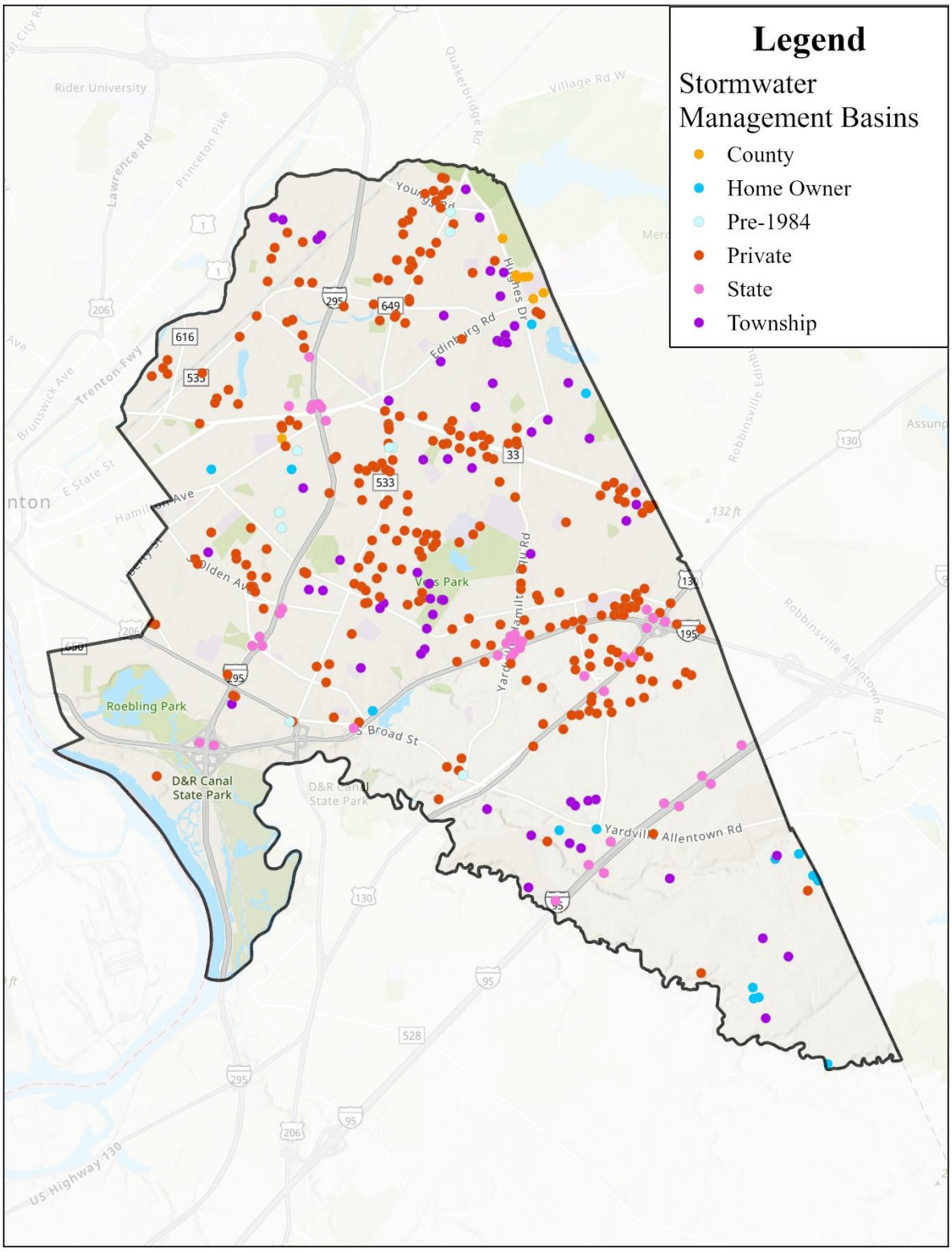

Figure 6: Stormwater management basins

Water Quality Classification

The majority of streams in Hamilton Township are classified as non-trout freshwaters subject to man-made wastewater discharges (FW2-NT). A small fraction of the waters in Hamilton Township are also category one waters (C1) which are protected from any measurable change to existing water quality because of their exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resources. About 130 miles, or over 99%, of streams in Hamilton Township are considered FW2-NT. Only one (1) mile, or just under 1%, of streams are classified as FW2-NTC1. Figure 7 depicts the water quality classification of surface waters throughout Hamilton Township.

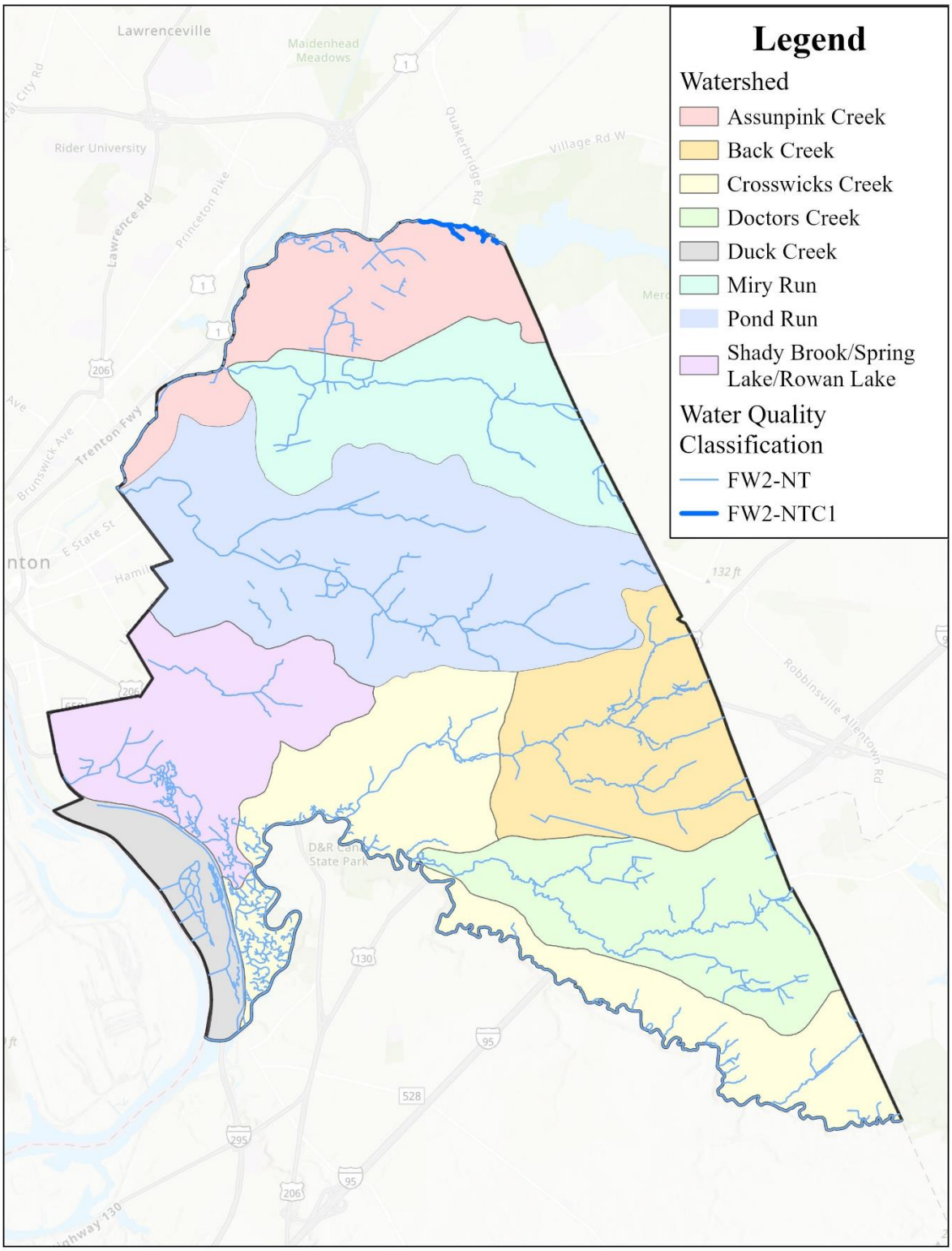

Figure 7: Water quality classification of surface waters throughout Hamilton Township

Water Quality Impairments

Section 303(d) of the Clean Water Act requires states to identify and list waters that do not meet water quality standards after the implementation of technology-based controls. These waters are impaired, meaning they do not meet water quality standards designed to protect public health and the environment. If a water body is found to be impaired, it is included in the 303(d) list, and a total maximum daily load (TMDL) may be developed for that impairment. Table 1 and Table 2 summarize the impairments identified by the 303(d) list published in 2020 for each subwatershed in Hamilton Township. Figure 8 depicts the areas to which each of these impairments apply, and the sections are formatted by the year the Impairment was first listed in the 303(d) list.

Table 1: Low priority water quality impairments

Low Priority Water Quality Impairments according to 2020 303(d) list by year first listed							Total Impairments by HUC
HUC14: Impaired Segments	Arsenic	Biological- Cause unknown	Chlordane in Fish Tissue	Lead	Mercury in Fish Tissue	PCBs in Fish Tissue	
HUC02040105230050: Assunpink Ck (Shipetaukin to Trenton Rd)	1998	2006	2014			2012	4
HUC02040105240030: Miry Run (Assuspink Cr)	2012	2016					2
HUC02040105240040: Pond Run	2018	2016					2
HUC02040105240060: Assunpink Ck (below Shipetaukin Ck)	1998	2016		1998	2010		4
HUC02040201030010: Duck Creek and UDRV to Assunpink Ck					2006	2006	2
HUC02040201050050: Crosswicks Ck (Ellisdale trib - Walnford)	2006			2012			2
HUC02040201050070: Crosswicks Ck (Doctors Ck-Ellisdale trib)	2006				2006	2006	3
HUC02040201060030: Doctors Creek (below Allentown)		2016					1
HUC02040201070010: Back Creek (above Yardville-H Sq Road)	2018	2016					2
HUC02040201070020: Crosswicks Ck (below Doctors Creek)	2016	2008				2016	3
HUC02040201070030: Shady Brook/Spring Lake/Rowan Lake					2006	2006	2
Total Impairments by Parameter	8	7	1	2	4	5	27

Table 2: High priority water quality impairments

Medium Priority Water Quality Impairments according to 2020 303(d) list by year first listed							Total Impairments by HUC
HUC14: Impaired Segments	Dissolved Oxygen	Escherichia Coli (E. COLI)	pH	Phosphorus, Total	Total Suspended Solids (TSS)	Turbidity	
HUC02040105230050: Assunpink Ck (Shipetaukin to Trenton Rd)		2014					1
HUC02040105240030: Miry Run (Assuspink Cr)							
HUC02040105240040: Pond Run			2020	2020	2006		3
HUC02040105240060: Assunpink Ck (below Shipetaukin Ck)				2010			1
HUC02040201030010: Duck Creek and UDRV to Assunpink Ck							
HUC02040201050050: Crosswicks Ck (Ellisdale trib - Walnford)				2002			1
HUC02040201050070: Crosswicks Ck (Doctors Ck-Ellisdale trib)				2002	2018	2006	3
HUC02040201060030: Doctors Creek (below Allentown)	2018						1
HUC02040201070010: Back Creek (above Yardville-H Sq Road)		2018		2006			2
HUC02040201070020: Crosswicks Ck (below Doctors Creek)		2012		2006	2006		3
HUC02040201070030: Shady Brook/Spring Lake/Rowan Lake							
Total Impairments by Parameter	1	3	1	6	3	1	15

Figure 8: 303(d) impaired waters by year first listed

TMDLs and Water Quality Impairments

In accordance with Section 305(b) and 303(d) of the Federal Clean Water Act, New Jersey is required to assess the overall water quality of the state's waters and identify those waterbodies with a water quality impairment for which total maximum daily loads (TMDLs) may be necessary. NJDEP fulfills its assessment obligation under the Clean Water Act through the Integrated Water Quality Monitoring and Assessment Report (i.e., Integrated Report), which includes the Integrated List of Waterbodies, issued biennially. A TMDL represents the assimilative or carrying capacity of a waterbody, taking into consideration point and nonpoint sources of pollutants of concern, the natural background, and surface water withdrawals. A TMDL can be thought of as a "budget" for the total amount of a pollutant that can enter a waterbody while still maintaining surface water quality standards. TMDLs have been developed for various pollutants in various waterbodies throughout the state. Tier A MS4 discharges are considered point sources under the Clean Water Act; Tier B MS4 discharges are considered nonpoint sources. Hamilton Township is a Tier A municipality. For MS4 discharges, best management practices (BMPs) are generally considered the most appropriate form of effluent limitation when designed to satisfy technology-based requirements and to protect water quality.

The NJDEP has created a TMDL Look-Up Tool to find applicable TMDLs for each municipality. This tool can be found at https://www.nj.gov/dep/dwq/msrp-tmdl-rh.htm. This tool will review every year to determine if new TMDLs have been approved and adopted so they can be incorporated into the Stormwater Pollution Prevention Plan (SPPP). NJDEP Open Data also has GIS layers pertaining to published and lakesheds and streamsheds. Table 3 below shows the approved TMDLs for the waterbodies in Hamilton Township, and Figure 8 depicts the region to which each TMDL applies.

Table 3: Approved TMDLs for waterbodies in Hamilton Township, Mercer County, NJ

Date	Pollutant	Waterbody
Stream TMDLs		
2003	Fecal Coliform	Assunpink Creek, Pond Run, Crosswicks Creek, Pleasant Run, Miry Run, Doctors Creek
2003	PCBs	Back Creek (above Yardville-H Sq Road)
2003	PCBs	Crosswicks Creek (Doctors Ck-Ellisdale trib)
2003	PCBs	Crosswicks Creek (Ellisdale Tributary - Walnford)
2003	PCBs	Crosswicks Creek (below Doctors Creek)
2003	PCBs	Doctors Creek (below Allentown)
2003	PCBs	Duck Creek and UDRV to Assunpink Creek
2003	PCBs	Shady Brook/Spring Lake/Rowan Lake
2007	Total Phosphorus	Doctors Creek and Miry Run
Lake TMDLs		
2003	Total Phosphorus	Spring Lake

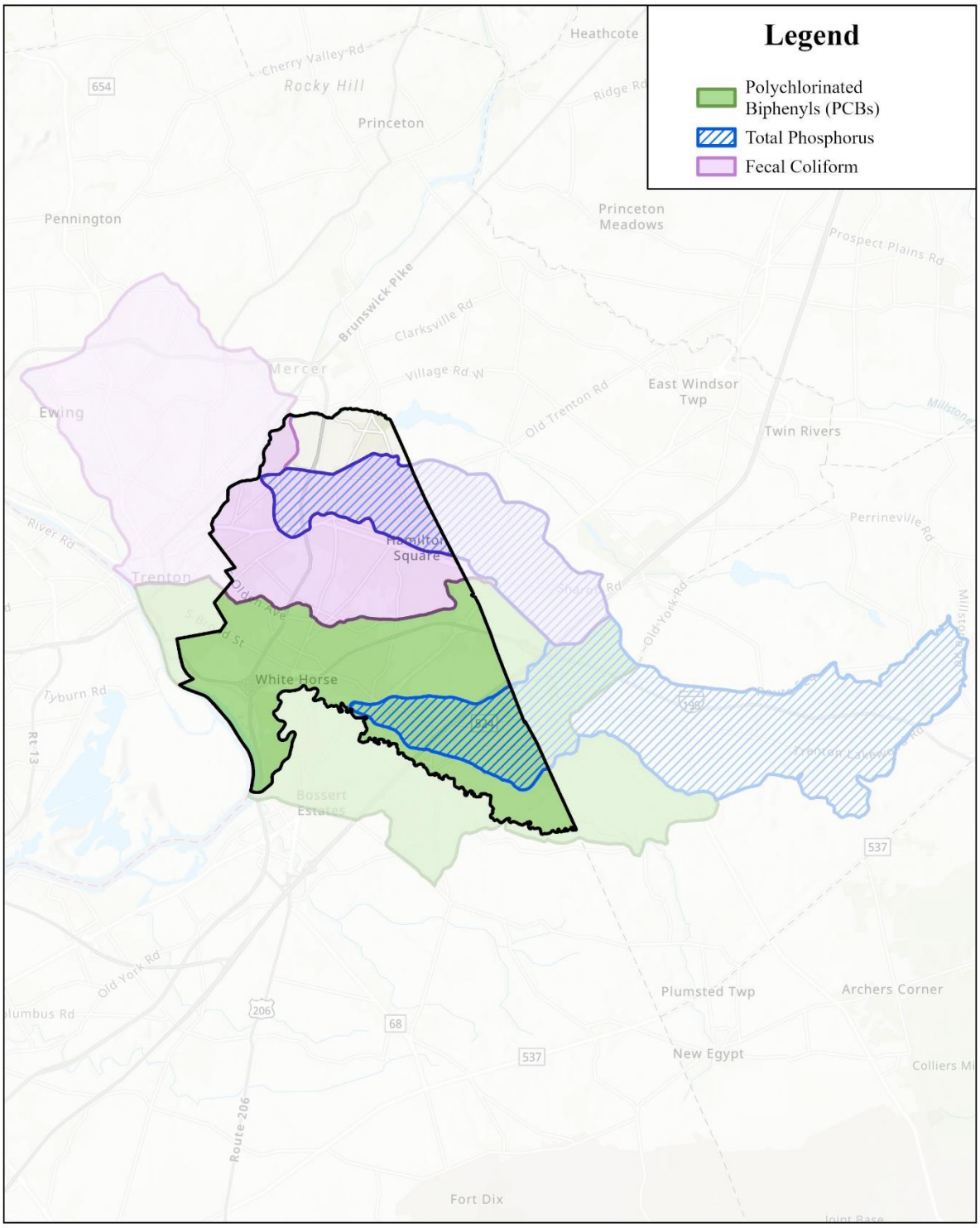

Figure 9: Watershed reaches within and surrounding Hamilton Township with TMDLs

Fecal Coliform TMDLs

Prior to October 2006, New Jersey had water quality standards for fecal coliform as an indicator for pathogen impairment. The regulations stated that "Fecal coliform levels shall not exceed a geometric average of 200 CFU/100 ml nor should more than 10 percent of the total sample taken during any 30-day period exceed 400 CFU/100 ml in FW2 waters." In 2003, TMDLs were developed for fecal coliform. These TMDLs included the load reductions required to achieve instream fecal coliform concentrations. Nonpoint and stormwater point sources are the primary contributors to fecal coliform loads in these streams and can include storm-driven loads transporting fecal coliform from sources such as geese, farms, and domestic pets to the receiving water. Nonpoint sources also include steady inputs from sources such as failing sewage conveyance systems and failing or inappropriately located septic systems. Because the total point source contribution other than stormwater (i.e., publicly-owned treatment works, POTWs) is an insignificant fraction of a percent of the total load, these fecal coliform TMDLs will not impose any change in current practices for POTWs and will not result in changes to existing effluent limits.

Fecal coliform TMDLs were developed for Assunpink Creek, Pond Run, Crosswicks Creek, Pleasant Run, Miry Run, and Doctors Creek in Hamilton Township. The TMDLs identified load reductions from 86% to 99% to achieve the instream fecal coliform criteria. For each waterway that has a fecal coliform TMDL, there are recommended strategies for achieving the required load reductions. Most of the strategies include complying with the MS4 permit requirements including passing pet waste ordinances, street sweeping, and catch basin cleaning. In watersheds where there are agricultural land uses, the recommended strategies included helping the farmer obtain United States Farm Bill funding to implement agricultural best management practices that will reduce the impact of stormwater runoff from their farm.

PCB TMDLs

The states of Delaware, New Jersey, and Pennsylvania have identified the Delaware Estuary as being impaired based on their findings of elevated levels of polychlorinated biphenyls (PCBs) in the tissue of fish caught in this portion of the Delaware River. As a result of this finding, the Delaware River Basin Commission (DRBC) prepared a TMDL for polychlorinated biphenyls

(PCBs) for water quality management zones 2-5 of the Tidal Delaware River. Hamilton Township is in water quality management zone 2.

PCBs are classified as a probable human carcinogen by the U.S. Environmental Protection Agency (EPA). They also have been shown to have an adverse impact on human reproductive and immune systems and may act as an endocrine disruptor. Due to their stable properties, PCBs were used in hundreds of industrial and commercial applications, including electrical, heat transfer, and hydraulic equipment; as plasticizers in paints, plastics, and rubber products; and in pigments, dyes, and carbonless copy paper, among other applications. PCB laden oil is often associated with electrical transformers. More than 1.5 billion pounds of PCBs were manufactured in the United States before their manufacture and general use, with a few small exceptions, was banned by the EPA in the late 1970s. Existing uses in some electrical equipment continue to be allowed. PCBs are hydrophobic and thus tend to bind to organic particles in sediment and soils. Their chemical stability allows them to persist in the environment for years. PCBs accumulate in the tissue of fish and other wildlife, entering the organism through absorption or ingestion. As a result, they may be present in fish and marine mammals at levels many times higher than in the surrounding water and at levels unsuitable for human consumption.

Since pentachlorobiphenyls (penta-PCBs) were the dominant PCBs in fish tissue monitored in the estuary and ambient data indicated that throughout the estuary penta-PCBs represents approximately 25% of the total PCBs present, the penta-PCBs were selected for the development of the TMDL. TMDLs, wasteload allocations (WLAs), and load allocations (LAs) for total PCBs were extrapolated using a factor of 4 to 1 from TMDLs, and allocations were developed for penta-PCBs.

The TMDL recognizes the Hamilton Township MS4 as a point source. Approximately 24% of the PCB loads to the Delaware River in zone 2 come from the MS4s in this zone, which include Hamilton Township and 12 other municipalities in New Jersey and seven other municipalities in Pennsylvania. The calculated wasteload allocation for the MS4s in zone 2 is 1.511 mg/day for penta-PCBs and 6.044 mg/day for total PCBs. While a percent reduction in PCB loading for Hamilton Township is not provided in the PCB TMDL, monitoring data show that the existing PCB load in zone 2 is roughly two to three orders of magnitude higher than the TMDL.

Phosphorus TMDLs

Spring Lake, Miry Run, and Doctors Creek were all determined to have total phosphorus concentrations above the surface water quality standard and therefore required a TMDL to be developed. Excessive phosphorus can lead to eutrophication and can be detrimental to a waterbody. For freshwater streams, the total phosphorus water quality standard is 0.1 mg/l, and for freshwater lakes, the standard is 0.05 mg/l.

Spring Lake is a 22-acre lake located in Hamilton Township, Mercer County. The lake drains a small portion (115 acres) of the Trenton Marshes, an extensive wetland area that borders the Delaware River. The lakeshed is very small, only 5.3 times the area of the lake, and consists entirely of forest and wetland. Spring Lake was once part of a small amusement park, serving primarily an aesthetic purpose and has been used for fishing; however, more recently excessive weed growth has interfered with its use. The majority of inflow into the lake is through groundwater seepage and springs, with a lake mean depth of 1.22 meters and a total outflow of 379,000 m^3. Lake volume and detention time were estimated at 107,000 m^3 and 103 days, respectively. For the purposes of this TMDL analysis, 75% of the water load was assumed to be due to groundwater infiltration. Since the drainage is all wetlands and most of the flow to the lake is groundwater infiltration, the TMDL does not require a phosphorus load reduction for any land uses in the Spring Lake watershed.

Impervious Cover

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Hamilton Township that have been covered with materials that are highly resistant to infiltration by water, rendering them impervious. These impervious cover values were used to estimate the impervious coverage for Hamilton Township. Based upon the NJDEP impervious surface data, Hamilton Township has impervious cover totaling 22.7%.

The literature suggests a link between impervious cover and stream ecosystem impairment (Schueler, 1994; Arnold and Gibbons, 1996; May et al., 1997). Impervious cover may be linked to the quality of lakes, reservoirs, estuaries, and aquifers (Caraco et al., 1998), and the amount of impervious cover in a watershed can be used to project the current and future quality of streams. Based on the scientific literature, Caraco et al. (1998) classified urbanizing streams into the following three categories: sensitive streams, impacted streams, and non-supporting streams.

Schueler (1994, 2004) developed an impervious cover model that classified "sensitive streams" as typically having a watershed impervious surface cover from 0-10%. "Impacted streams" have a watershed impervious cover ranging from 11-25% and typically show clear signs of degradation from urbanization. "Non-supporting streams" have a watershed impervious cover of greater than 25%; at this high level of impervious cover, streams are simply conduits for stormwater flow and no longer support a diverse stream community. Schueler et al. (2009) reformulated the impervious cover model based upon new research that had been conducted.

This analysis determined that stream degradation was first detected at 2 to 15% impervious cover. The updated impervious cover model recognizes the wide variability of stream degradation at impervious cover below 10%. The updated model also moves away from having a fixed line between stream quality classifications. For example, 5 to 10% impervious cover is included for the transition from sensitive to impacted, 20 to 25% impervious cover for the transition between impacted and non-supporting, and 60 to 70% impervious cover for the transition from non-supporting to urban drainage. Based upon this information, Hamilton Township's high impervious cover percentage would suggest that its waterways are impacted and most likely not meeting the state's surface water quality standards. The extent of the impervious cover in Hamilton Township is shown in Figure 10.

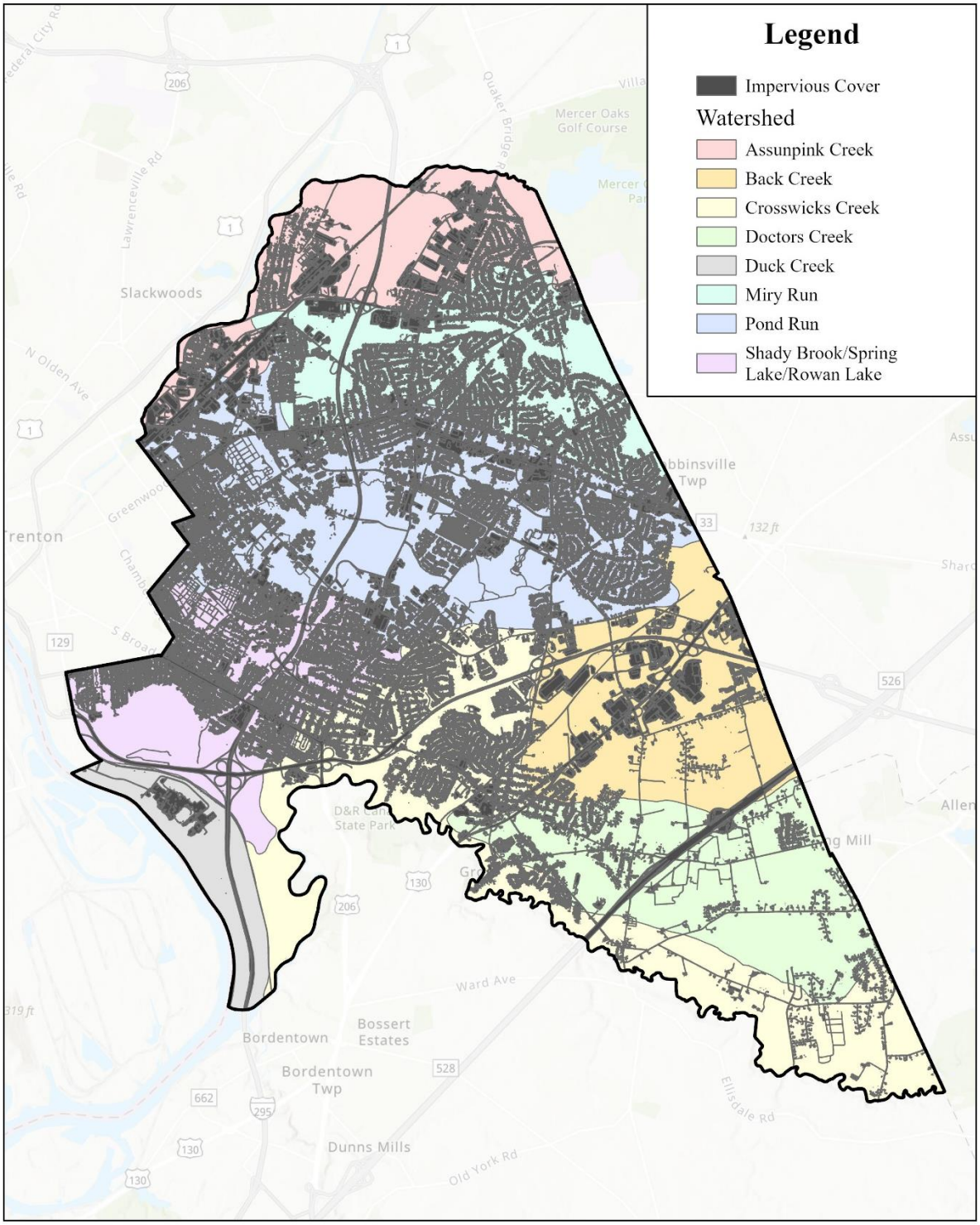

Figure 10: Impervious cover throughout Hamilton Township

Overburdened Communities

Overburdened communities with limited financial resources have less capacity to invest in adequate stormwater management systems, increasing the vulnerability of the community to flooding. Flooding in overburdened communities can also lead to public health issues since these communities are already more susceptible to health disparities. This dataset was extracted from NJDEP's GIS Open Data source. The sections of Hamilton Township that are considered overburdened communities are depicted in Figure 11.

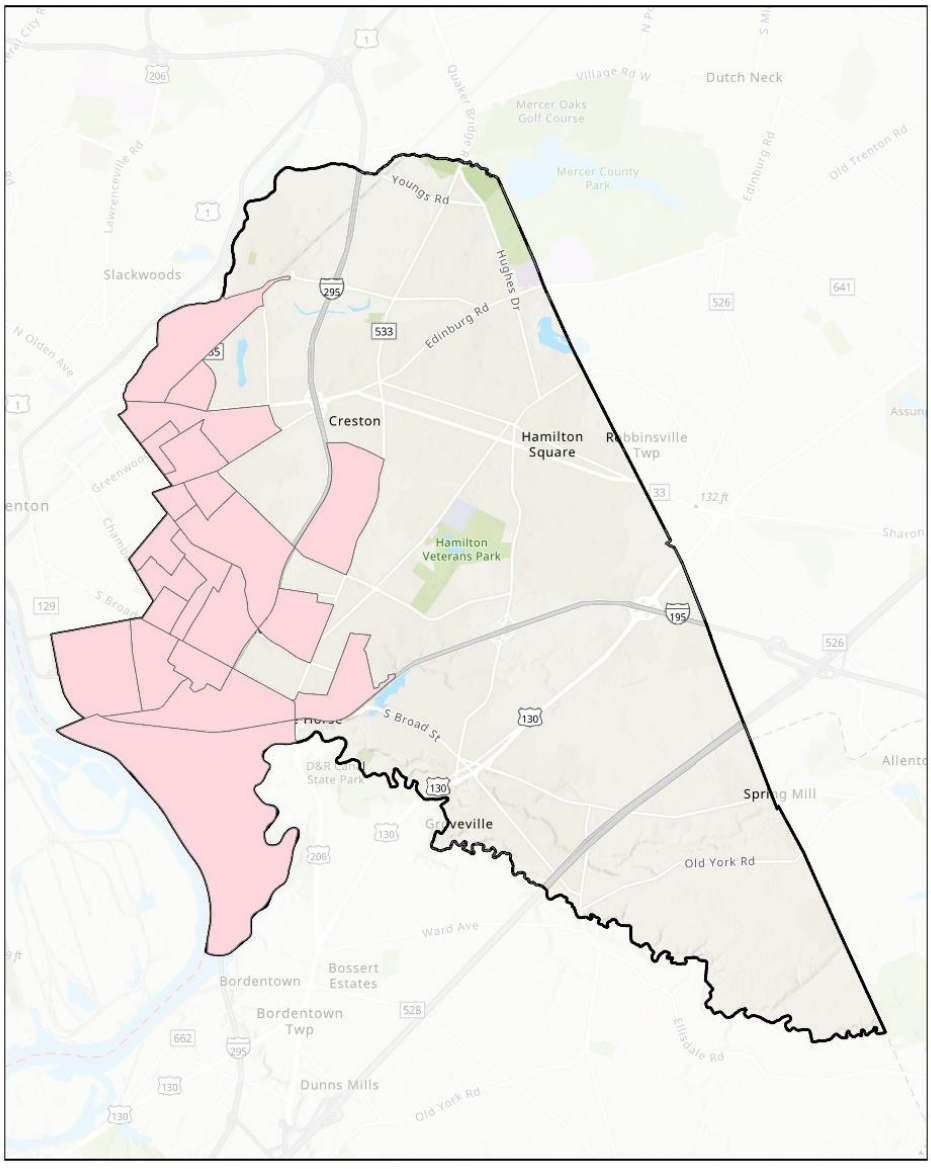

Figure 11: Hamilton Township overburdened communities

Conclusion

This Watershed Inventory Report shall serve as a record of the known stormwater infrastructure, water quality data, and additional relevant information. All the datasets contained in this report have been compiled into a GIS digital map that can be utilized to look at the data in far more detail than the static maps included will provide. This report will be followed by a Watershed Assessment Report, which will provide an assessment of potential water quality improvement projects that can be done to address water quality issues that have been identified in this report.

References

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