



Hamilton Township (Mercer County)

Stormwater Mitigation Plan

FINAL DRAFT

Developed by the Rutgers Cooperative Extension Water Resources Program

Funded by Hamilton Township, Mercer County, New Jersey

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Background on Stormwater Mitigation Planning¹

The Stormwater Management rules, N.J.A.C. 7:8, establish design and performance standards for stormwater management that address water quality, water quantity and groundwater recharge. These standards are to be met on the site of a proposed development and, to the maximum extent practicable, are to use nonstructural stormwater management strategies. The New Jersey Department of Environmental Protection (NJDEP) recognized that situations may arise in which the design and performance standards may be impossible to meet on the site of a proposed project due to site constraints. Therefore, at N.J.A.C. 7:8-4, the Stormwater Management rules allow a municipality to develop a mitigation plan to accommodate these special cases.

A municipal mitigation plan is an optional element of a Municipal Stormwater Management Plan, but is required for a municipality to grant a variance or exemption to the design and performance standards for stormwater runoff quality, stormwater runoff quantity, and ground water recharge. A municipal mitigation plan must identify the measures necessary to offset the deficit created with respect to the design and performance standard(s) that would result from the granting of a variance or exemption at a project site. The plan must ensure that the mitigation is completed in the drainage area and for the performance standard(s) for which the variance or exemption was granted for a project. To be in effect, a municipal mitigation plan must be adopted into the municipal stormwater control ordinance and approved by the county review agency.

The existence of a mitigation plan does not supersede the requirements that an applicant meet the design and performance standards for ground water recharge, stormwater quantity, and stormwater quality on-site to the maximum extent practicable and that the standards be met using non-structural techniques to the maximum extent practicable. Instead, it allows municipalities, in limited circumstances, to waive strict compliance with one or more of the performance standards, where full compliance cannot reasonably be accommodated on-site, provided there is mitigation of the effect of the deficient compliance provided in accordance with an approved mitigation plan. The test of reasonable accommodation includes reducing the size, scale, or

¹ The background text has been adapted from “Guidance for the Development of Municipal Mitigation Plans – February 2006.”

layout of the proposed project to meet the design and performance standards on-site and thereby avoid the need to seek a variance or exemption. A waiver cannot be granted if the project requesting a waiver or exemption would result in a localized adverse impact or create a compliance deficit that cannot be compensated for by offsite mitigation.

Subject to the caveats for applicability and consistent with the provisions of an approved mitigation plan, a municipality may waive one or more of the design and performance standards for projects reviewed under the Municipal Land Use Law (MLUL) or for projects undertaken by the municipality that are not subject to MLUL. Waivers for linear development projects must be evaluated using the requirements under N.J.A.C. 7:8-5.2(e), which includes the requirement to address mitigation for the performance standard for which strict compliance was not obtained. Where the NJDEP issues a permit that includes a stormwater management review and an associated waiver under the provisions of the specific permit, the municipality is not required to further consider the project under the provisions of the municipal mitigation plan. However, the municipality may choose to require mitigation for projects receiving a waiver from the NJDEP.

A mitigation plan can also be used to identify existing problems resulting from current stormwater management practices and the means to address them proactively. In addition, where current stormwater management practices contribute to water quality problems or designated use impairments, total maximum daily load (TMDL)² implementation plans can target problem areas and prioritize funding available for watershed restoration. Further, measures to address existing stormwater management problems can become a regulatory requirement when they are identified as “additional measures” in a municipal stormwater permit. “Additional measures” become a permit requirement when they are identified in an adopted TMDL or water quality management plan amendment.

² TMDLs are developed for impaired waterways in the state. They identify and quantify the impairment, and determine the pollutant load reductions needed to achieve water quality criteria.

Introduction

Located in Mercer County in central New Jersey, Hamilton Township covers over 40 square miles east of the City of Trenton. Hamilton Township is dominated by urban land uses (Figure 1). Over half of the municipality's land area, approximately 58%, is considered urban. A large portion of the urban land use, 39.7%, is residential, single unit, medium density development (Figure 2). Based upon the 2007 NJDEP land use/land cover data, Hamilton Township has impervious cover totaling 22.7%. In many regions of the country, as little as 10% watershed impervious cover has been linked to stream degradation, with the degradation becoming more severe as impervious cover increases³. Hamilton Township has made a commitment to better manage stormwater to reduce the impact to water quality and decrease localized flooding.

Methodology

Hamilton Township contains portions of eight watersheds (Figure 3). For this plan, a series of potential mitigation projects have been identified in each of these watersheds. Initially, aerial imagery was used to identify potential project sites with extensive areas of impervious cover. Field visits were made to each of these sites to determine the viability for reducing impervious cover or disconnecting impervious surfaces from draining directly to the municipal storm sewer system or local waterway. During these site visits, appropriate stormwater best management practices (BMPs) were identified. Sites that already have stormwater BMPs were eliminated from consideration.

For each potential mitigation project site, land use specific aerial loading coefficients were used to determine the annual runoff loads for total phosphorus (TP), total nitrogen (TN), and total suspended solids (TSS) (Table 1). These are the same aerial loading coefficients that NJDEP uses in developing TMDLs for impaired waterways in the state. The percentage of impervious cover for each site was extracted using the 2007 NJDEP land use/land cover GIS dataset. For

³ Schueler, T. 1994. The Importance of Imperviousness. *Watershed Protection Techniques* 1(3): 100-111.

impervious areas, runoff volumes were calculated for the 2-year design storm (3.3 inches of rain) and for the annual rainfall total of 44 inches.

For each potential mitigation project site, drainage areas were determined for suggested BMPs. Preliminary runoff volumes were then calculated for each BMP opportunity to provide a preliminary order-of-magnitude understanding of the stormwater mitigation potential at each site. BMPs for stormwater mitigation need to be designed to manage the 2-year design storm, enabling these BMPs to capture 95% of the annual rainfall. The reduction in TSS loading was also calculated for each drainage area for each BMP opportunity using the aerial loading coefficients in Table 1. The maximum volume reduction in stormwater runoff for each BMP for a storm was determined by calculating the volume of runoff captured from the 2-year design storm. For each BMP, the peak discharge reduction potential was determined through hydrologic modeling in HydroCAD. For each BMP a cost estimate is provided. These costs were determined based upon the square footage of the BMP and the real cost of BMP implementation in New Jersey.

The potential mitigation project sites identified in this plan provide examples of the types of stormwater mitigation possible in Hamilton Township. The list is not all inclusive and applicants should review this list with Township officials prior to selecting a mitigation project site. The calculations provided and BMP opportunities identified are preliminary and will require further detailed evaluation and design. Applicants looking to conduct mitigation on these sites or other sites will be responsible for verifying all conditions, completing design plans in conformance with state and municipal guidance, obtaining property owner permission, and determining requirements for operations and maintenance.

Selecting a Mitigation Project to Offset a Deficit

Attachment 1 contains potential mitigation project sites by watershed. Each project identifies a BMP opportunity and an approximate drainage area that this BMP can treat. For example, a project site may identify bioretention as a BMP opportunity and includes an estimated drainage area to be managed by the BMP. A mitigation project may include all or a portion of a site as

needed to satisfy the stormwater management deficit. For each potential mitigation project site, estimates for the recharge potential, TSS removal potential, maximum volume reduction potential per storm, and the peak reduction potential are provided. This should enable an applicant to determine if a potential mitigation project would adequately offset the stormwater management deficit. Finally, estimated costs are provided.

An alternative to selecting a project from those provided in this plan is for the applicant to identify a different project. All the information described above must be provided for the project along with the specific information discussed below.

Whether a project is selected from those included in this plan or a different project is identified by the applicant, an applicant must provide specific information to demonstrate that an appropriate mitigation project has been selected to offset the deficit as described below. An assessment of the impact that would result from the requested deviation from full compliance with the stormwater management rules in the drainage area affected by the proposed project is required. For example, a waiver for stormwater quantity requirements must focus on the impacts of increased runoff on flooding, considering both quantity and location. Stormwater quality mitigation must aim to prevent an increase in pollutant load to the waterbodies that would be affected by the waiver/exemption. Ground water recharge mitigation must seek to maintain the baseflow and aquifer recharge in the area that would be affected by the waiver/exemption. For the purpose of this discussion, the term “sensitive receptor” is used to refer to a specific area or feature that would be sensitive to the impact assessed above.

Selection of an appropriate mitigation project for a requested waiver/exemption must adhere to the following requirements:

1. The project must be within the same area that would contribute to the receptor impacted by the project. *Note that depending on the specific performance standard waived, the sensitive receptor and/or the contributory area to that receptor may be different.* If there are no specific sensitive receptors that would be impacted as the result of the grant of the waiver, then the location of the mitigation project can be located anywhere within the

municipality and should be selected to provide the most benefit relative to an existing stormwater problem in the same category (quality, quantity, or recharge).

2. Legal authorization must be obtained to construct the project at the location selected. This includes maintenance and any access needs for the project in the future. It is important to note that legal authorization has **not** been obtained for the potential projects included in Attachment 1 of this plan. The applicant must obtain this authorization.
3. The project should be close to the location of the original project, and if possible, be located upstream at a similar distance from the identified sensitive receptor. This distance should not be based on actual location, but on a similar hydraulic distance to the sensitive receptor. For example, if the project for which a waiver is obtained discharges to a tributary, but the closest location discharges to the main branch, it may be more beneficial to identify a location discharging to the same tributary.
4. For ease of administration, if sensitive receptors are addressed, it is preferable to have one location that addresses any and all of the performance standards waived, rather than one location for each performance standard.
5. It must be demonstrated that implementation of the mitigation project will result in no adverse impacts to other properties.
6. Mitigation projects that address stormwater runoff quantity can provide storage for proposed increases in runoff volume, as opposed to a direct peak flow reduction.

Additional considerations are discussed below for each of the stormwater management requirements.

Stormwater Quantity Considerations

Increased stormwater runoff volume from new development can cause damages to property and habitat due to increased flood elevations and/or flood velocities. Mitigation project areas can include locations that will provide for additional storage and slower release of excess stormwater. Mitigation of stormwater quantity can be accomplished by increasing flood storage areas along the waterway, creating new BMPs to control previously uncontrolled runoff or by retrofitting existing stormwater structures to decrease volume and peak runoff.

In areas adjacent to the stream, a hydrologic and hydraulic analysis can be performed to determine if increasing storage capacity would offset the additional volume of runoff and associated peak increase from sites upstream of the storage area. Increases in the storage capacity of an existing structure, such as upstream of a bridge or culvert, can also be considered provided that it is demonstrated that such an increase does not exacerbate flooding at other areas.

Note that work in regulated areas, such as floodplains and wetlands must be performed in accordance with applicable regulations such as the Flood Hazard Area Control Act Rules and the Freshwater Wetland Act Rules. Also, many areas of open space in New Jersey have received funding from the Department's Green Acres Program, and many of those encumbered lands have restrictions placed on them as a result of that funding. Any and all restrictions placed on these lands must be investigated by the municipality before these areas can be utilized for mitigation to ensure that there are no conflicts.

Some examples of areas or features sensitive to changes with regard to flooding include:

- Culverts and bridges—these features may constrict flow and cause flooding or may provide storage that, if lost, would cause downstream flooding problems
- Property subject to flooding—areas of concern include those where there is historical evidence of recurrent problems, particularly if exacerbated over time because of increasing impervious surface in the contributing watershed
- Eroding/widening stream banks or channels—particularly if due to changes in hydrology due to effects of development
- Category One waters—flooding effects could alter habitat that was the basis for the designation
- Wetlands—changes in hydrology can affect the viability of wetlands, either by increasing or decreasing volumes and velocities of water discharging to the wetlands

Stormwater Quality Considerations

Stormwater quality is regulated for the purpose of minimizing/preventing nonpoint source pollution from reaching the waterway. Mitigation for stormwater quality can be achieved either

by directing the runoff from the water quality design storm into a natural area where it can be filtered and/or infiltrated into the ground, by constructing a new BMP to intercept previously untreated runoff or by retrofitting existing stormwater systems that previously did not provide sufficiently for water quality.

Existing forested and other vegetated non-wetland areas also can be used as a water quality mitigation area if runoff is discharged as sheet flow through the area in a non-erosive manner and if the vegetated area is restricted from future development. A discussion of the appropriate widths for these vegetative filters is provided in Chapter 9 of the New Jersey Stormwater Best Management Practices Manual (BMP Manual).

If a mitigation project cannot be identified that would compensate for a waiver related to water quality, and provided the project requiring a waiver would not result in a measurable change in water quality relative to TSS and nutrients, the mitigation project could be designed to address another parameter of concern in the watershed (as indicated by an impairment listing and/or an adopted TMDL) for which stormwater is a source, such as fecal coliform.

Some examples of areas or features sensitive to water quality changes include:

- Trout associated waters—chemical pollutants and temperature effects can diminish viability of populations
- Lakes, ponds or other impoundments—these waterways are sensitive to the addition of nutrients
- Threatened and endangered species or their habitats—sensitive to both quality and quantity changes
- Drinking water supplies—adverse effects on quality can increase the cost of treatment or threaten the use
- Category One waters—an issue where quality was the basis of the designation
- Waterways with a water quality or use impairment—deterioration of quality in an impaired waterway will increase the cost and challenge of restoration

Ground Water Recharge Considerations

Recharge is regulated to maintain the availability of ground water as a water supply source as well as to provide a stable source of baseflow in streams.

There are two requirements associated with the recharge standard. The first is that 100 percent of the site's average annual pre-developed ground water recharge volume be maintained after development, and the second is that 100 percent of the difference between the site's pre- and post-development 2-year runoff volumes be infiltrated. To mitigate for ground water recharge design requirements, either computational method can be utilized to determine the volume lost that needs to be provided by the mitigation project.

One method to accomplish ground water recharge mitigation is to discharge runoff as sheet flow across a vegetated area to allow for the infiltration of runoff. It should be noted that, if this measure is used, calculating compliance with the recharge standard is limited to the 2-year storm standard, given existing methods.

Some examples of areas or features sensitive to ground water recharge changes include:

- Springs, seeps, wetlands, white cedar swamps—sensitive to changes in ground water level/hydrology
- Threatened and endangered species or their habitats—some are sensitive to changes in ambient ground water levels
- Streams with low base flow or passing flow requirements—would be particularly sensitive to changes in hydrology
- Aquifer recharge zones—loss of recharge in these areas can adversely affect ground water supply
- Category One waters—loss of base flow can affect many of the bases for designation

Nonstructural Stormwater Management Strategies

All applicants are required to meet the design and performance standards in the Stormwater Management rules to the maximum extent practicable by incorporating nonstructural stormwater management strategies into the design. The applicant is required to identify the nonstructural strategies incorporated into the design of the project. If the applicant contends that it is not feasible for engineering, environmental, or safety reasons to incorporate any nonstructural stormwater management strategies, the applicant shall identify the strategy and provide a basis for the contention. If the applicant cannot satisfy the “maximum extent practicable⁴” requirement or cannot provide an engineering, environmental, or safety reason for not incorporating a nonstructural strategy into the design, a waiver may be granted, and this deficit can be offset by providing the Township funding to implement one of the following programs:

- Downspout disconnection program for homeowners
- Rain garden rebate program for homeowners
- Rain barrel distribution program
- *Stormwater Management in Your Schoolyard* educational program
- Water conservation program for businesses and homeowners
- Stormwater basin maintenance, repair, and improvement

The amount of funding required for the nonstructural stormwater management strategies deficit offset will be determined by the Township.

Administrative Requirements

Hamilton Township has a Tier A NJPDES Municipal Stormwater General Permit and is required to file an annual report to demonstrate continuing compliance with permit requirements. The Township will indicate in the annual report form whether any variances or exemptions from stormwater management standards have been given. When submitting the

⁴ The nine nonstructural management strategies are listed in Attachment 2 along with the requirements to demonstrate the “maximum extent practical” requirement.

annual report as required by the NJPDES permit, the Township will provide an annual submission of its variances, exemptions, and related mitigation projects to the NJDEP. This annual report to NJDEP will include both projects reviewed by the municipality under the MLUL as well as the municipality's own projects that are unable to fully comply with design and performance standards. The following information will be provided for each waiver granted from the performance standard(s).

- Impact from noncompliance: A table quantifying what would be required for the project to achieve the standards, the extent to which this value will be achieved on-site and the extent to which the value must be mitigated off-site will be provided.

- Narrative and supporting information regarding the need for the waiver including:
 - The waiver cannot be due to a condition created by the applicant. If the applicant can comply with the Stormwater Management rules through a reduction in the scope of the project, the applicant has created the condition and a waiver **cannot** be issued. The Township will provide information that demonstrates that the need for a waiver is not created by the applicant.

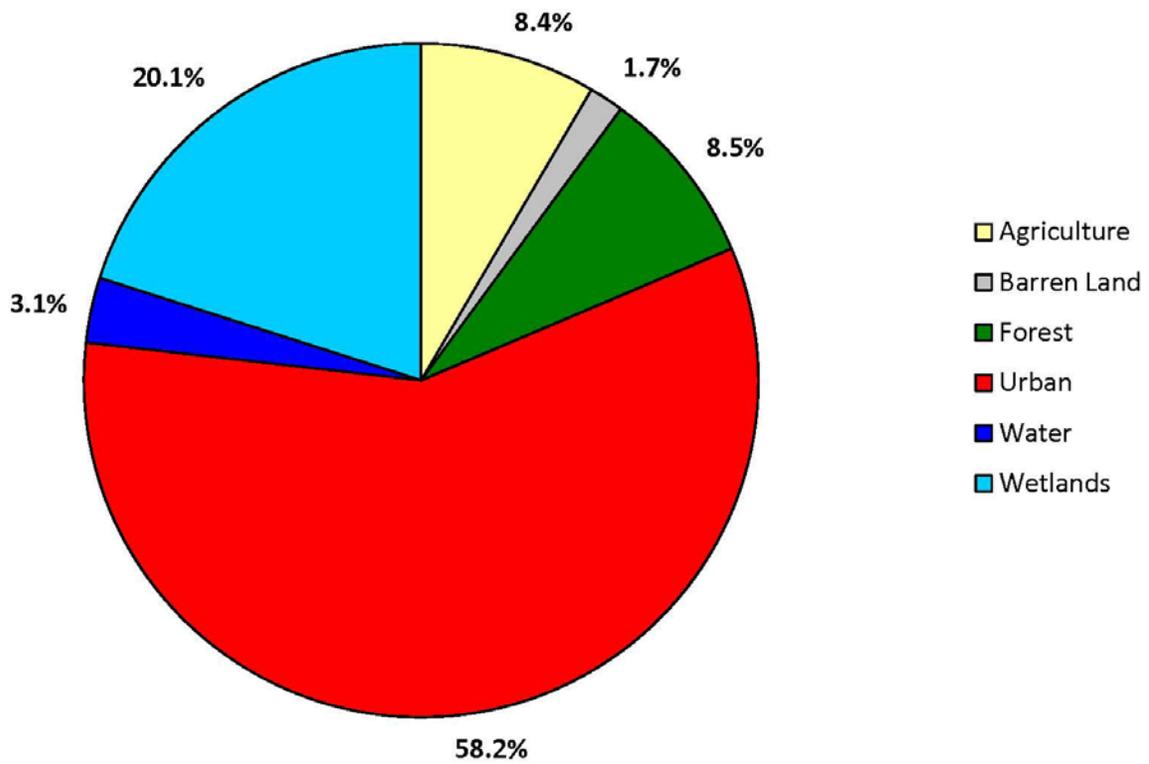
 - Provide a discussion and supporting documentation of the site conditions peculiar to the subject property that prevent the construction of a stormwater management facility that would achieve full compliance with the design and performance standards. Site conditions may include soil type, the presence of karst geology, acid soils, a high groundwater table, unique conditions that would create an unsafe design, as well as conditions that may provide a detrimental impact to public health, welfare, and safety.

 - Demonstration that the grant of the requested waiver/exemption would not result in an adverse impact that would not be compensated for by offsite mitigation.

- Sensitive Receptor: The sensitive receptor(s) related to the performance standard from which a waiver is sought will be identified. Information will be provided that demonstrates that the mitigation site contributes to the same sensitive receptor.
- Design of the Mitigation Project: Design details of the mitigation project will be provided. This includes, but is not limited to, drawings, calculations, and other information needed to evaluate the mitigation project.
- Responsible Party: Information on the party or parties responsible for the construction and the maintenance of the mitigation project will be provided. Documentation will be provided to demonstrate that the responsible party is aware of, has authority to, and accepts the responsibility for construction and maintenance. Under no circumstance shall the responsible party be an individual single-family homeowner. Selection of a project location that is under municipal authority avoids the need to obtain authority from a third party for the construction and future maintenance of the project.
- Maintenance: A maintenance plan that addresses the maintenance criteria at N.J.A.C. 7:8-5.8 will be provided. In addition, if the maintenance responsibility is being transferred to the municipality or another entity, the entity responsible for the cost of the maintenance must be identified. The municipality may provide the option for the applicant to convey the mitigation project to the municipality, if the applicant provides for the cost of maintenance in perpetuity.
- Permits: Any and all necessary local, state or other applicable permits for the mitigation measure or project will be obtained prior to the municipal approval of the project for which mitigation is being provided.
- Construction: The Township will provide information to demonstrate that the construction of the mitigation project coincides with the construction of the proposed project. A certificate of occupancy or final approval by the municipality for the project requiring

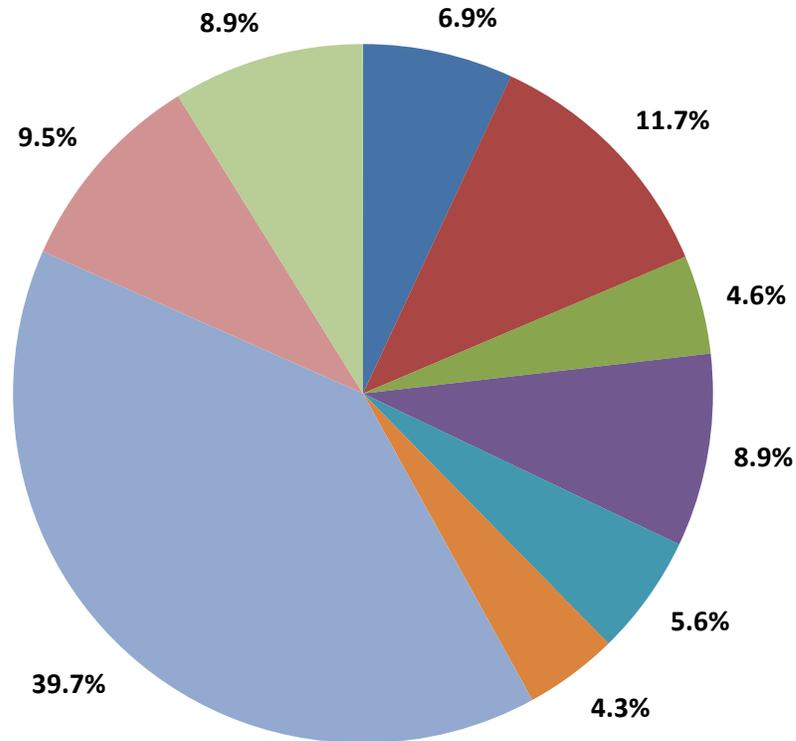
mitigation cannot be issued until the mitigation project or measure receives final approval. Any mitigation projects proposed by the municipality to offset the stormwater impacts of that municipality's own projects must be completed within six months of the completion of the municipal project to remain in compliance with their NJPDES General Permit.

Figure 1



Pie chart illustrating the land use in Hamilton Township (Urban, Agricultural, Forest, Wetlands, Barren Land, and Water).

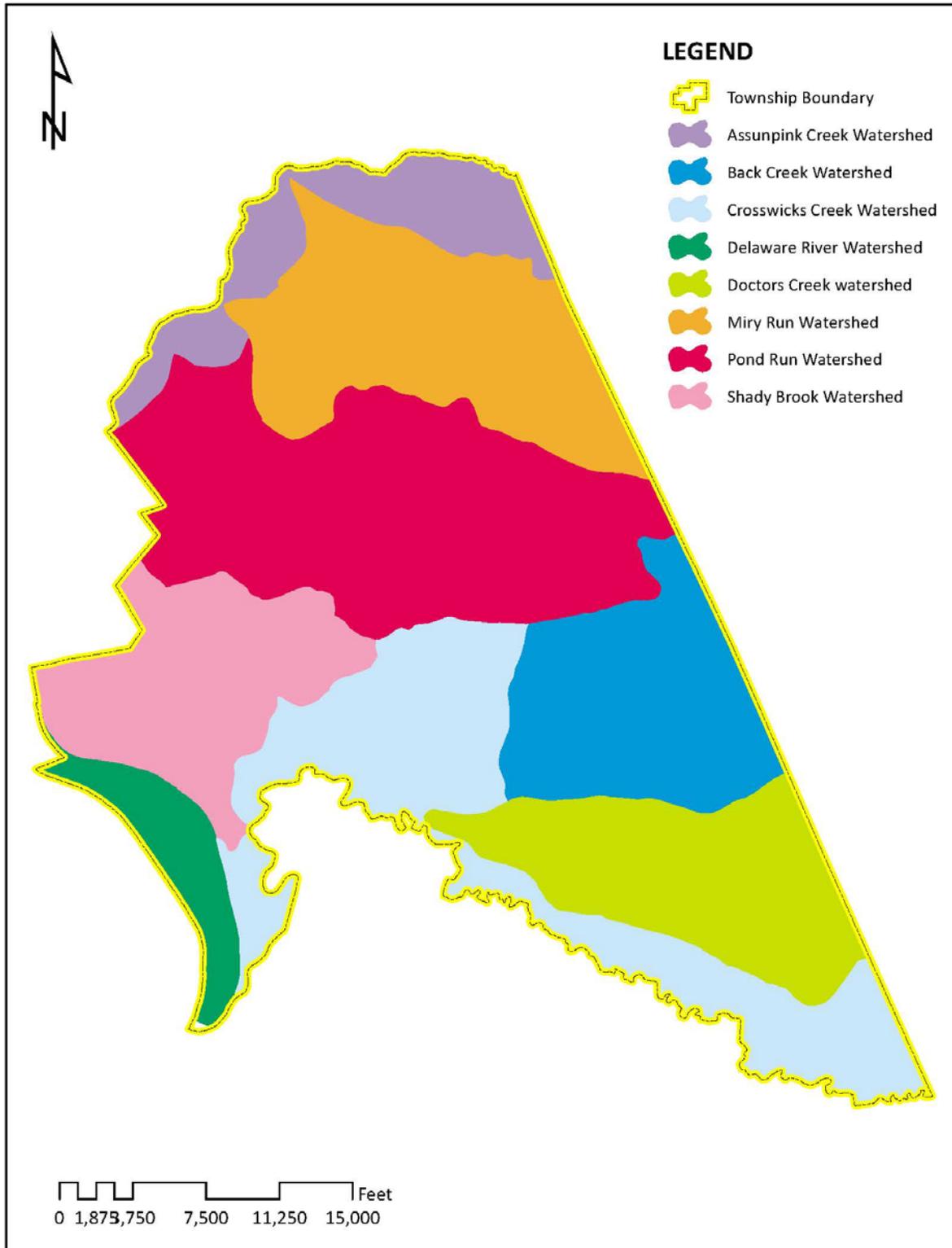
Figure 2



- Recreational Land
- Commercial
- Industrial
- Mixed Urban
- Rural Residential
- Low Density Residential
- Medium Density Residential
- High Density Residential
- Tranportation/Infrastructure

Pie chart illustrating the various types of urban land use in Hamilton Township (low density residential, medium density residential, high density residential, mixed urban, commercial, industrial, etc.)

Figure 3



Subwatershed Map of Hamilton Township

Table 1

Land Cover	TP load (lbs/acre/yr)	TN load (lbs/acre/yr)	TSS load (lbs/acre/yr)
High, Medium Density Residential	1.4	15	140
Low Density, Rural Residential	0.6	5	100
Commercial	2.1	22	200
Industrial	1.5	16	200
Urban, Mixed Urban, Other Urban	1.0	10	120
Agriculture	1.3	10	300
Forest, Water, Wetlands	0.1	3	40
Barrenland/Transitional Area	0.5	5	60

Ref: NJDEP Stormwater Best Management Practice Manual, 2004.

Aerial Loading Coefficients

Attachment 1

Potential Stormwater Mitigation Project Sites by Subwatershed

Shady Brook

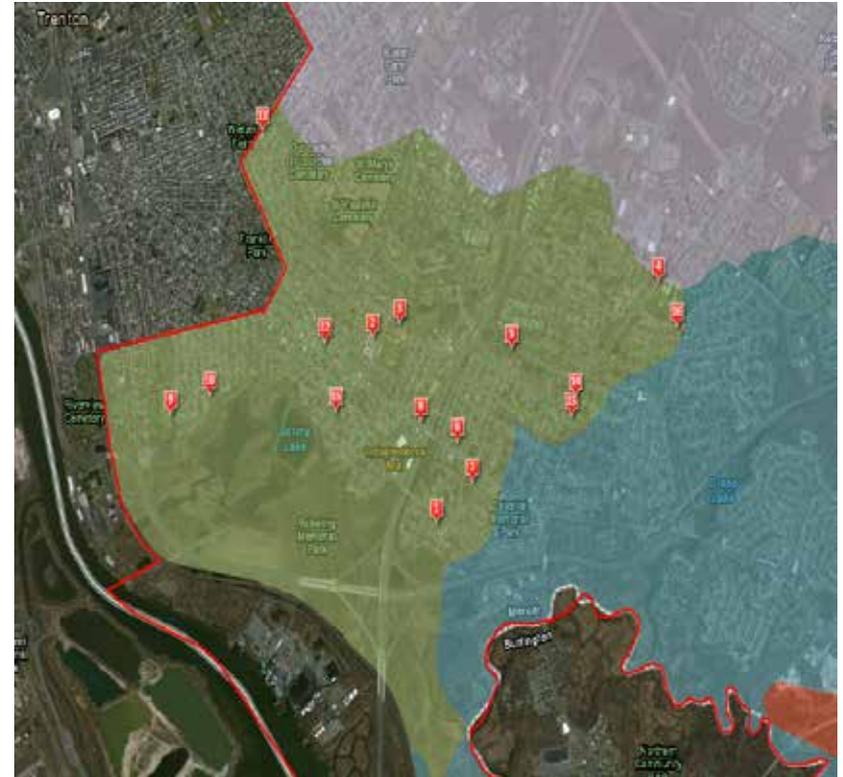


Shady Brook Watershed Location Map



Project Sites

1. Kishthardt Elementary School
2. Hamilton High West
3. George E. Wilson Elementary School
4. Grice Middle School
5. McGalliard Elementary School
6. True Servant Preschool Academy
7. Bottom Dollar
8. Independence Mall
9. Duetzville Park
10. Lalor Elementary School
11. Life St. Francis
12. Rustling the Fire Hose Company
13. Kenneth M. McCoy Insurance
14. St. Mark Lutheran Church
15. Hamilton Educational Program
16. Field at Grice Middle School



Kisthardt Elementary School

Internal downspouts disconnect into grass.
Potential site for a rain garden near the playground.



Address	Latitude	Longitude
215 Harcourt Drive	40.187958	-74.716377

Area (Sq. Ft)	Lot	Block
199,999	13	2411

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
83,189	42	64,823	6	64	702

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for:

Hamilton High West

This site has many potentials to implement a Best Management Practice (BMP). There is an empty mulched circle on the side of the school which could be converted to a ~100 sq. ft. rain garden. This would receive runoff from the connected downspouts. There is another potential on the side of the school near the corner of E. Park Ave and S. Clinton Ave. There is a sloped area where disconnected downspouts spill onto, thus creating a sediment bay at the top of the slope. Create a river stone lined channel to help dissipate energy as water travels down slope to area for a rain garden ~ 350 sq. ft. There is ample room for a ~500 sq. ft. rain garden to reduce runoff and promote groundwater recharge in the back of the school adjacent to Parkinson Ave. The last potential BMP opportunity is on the corner of E. Park Ave and Parkinson Ave. There is sediment build up on the curbs. Curb cuts could reduce this, and allow water to enter the rain garden.

Address	Latitude	Longitude
2720 South Clinton Avenue	40.18789	-74.65473

Area (Sq. Ft.)	Lot	Block
325,992	1	2346

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
307,581	94	239,673	16	164	1,494

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Pervious Pavement, Vegetated Filter



George E. Wilson Elementary School

At this site, curb cuts can be added to both tree islands and grassed areas to allow runoff an opportunity to infiltrate into the ground, recharging groundwater. There are also some broken catch basins that may need fixing.

Address	Latitude	Longitude
600 East Park Avenue	40.200048	-74.72035

Area (Sq. Ft.)	Lot	Block
342,064	31	2379

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
111,209	33	86,656	9	88	1,065

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for:



Grice Middle School

Rain Garden potential on northeast side of school - downspout can be disconnected. The area is small, so a swale may be more appropriate. Other nearby downspouts can be disconnected into downspout planter boxes.



Address	Latitude	Longitude
901 White Horse Hamilton Road	40.202582	-74.692508

Area (Sq. Ft.)	Lot	Block
680,761	51	2445

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
226,116	33	176,194	19	188	2,196

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Biofiltration (with underdrain system), Biofiltration (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Pervious Pavement, Vegetated Filter

McGalliard Elementary School

On the west side of the building (the corner of the school closest to Arena Dr), there is an opportunity to disconnect downspouts into a rain garden to reduce erosion and prevent ponding in a nearby playground.

Address	Latitude	Longitude
1600 Arena Drive	40.198554	-74.708305

Area (Sq. Ft.)	Lot	Block
431,617	48	2474

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
143,811	33	112,061	9	102	1,052

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential



Suitable for: Biofiltration (with underdrain system), Biofiltration (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Vegetated Filter

True Servant Preschool Academy

At this site, there is an open area adjacent to Maddock Ave near the side entrance of the building. This open area has a large grassed area that could be a potential site for a rain garden to capture stormwater runoff.



Address	Latitude	Longitude
2630 South Broad Street	40.192925	-74.714193

Area (Sq. Ft.)	Lot	Block
34,069	24	2423

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
31,862	94	24,827	2	17	155

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for:

Bottom Dollar

This is currently a construction site with a "Space for Lease" sign on the corner of S. Broad St and Dewey Ave. New construction could lead to BMP opportunities.



Address	Latitude	Longitude
2735 Broad Street	40.19044	-74.712588

Area (Sq. Ft.)	Lot	Block
168,178	2	2451

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
157,624	94	122,824	8	85	769

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for:

Independence Mall

The majority of this site consists of parking lots. There are no good opportunities for tree or planter boxes in the parking lot islands - they are more elevated than the surrounding pavement. Parking spaces could be converted into pervious pavement to reduce runoff in the parking lot.



Address	Latitude	Longitude
2496 South Broad Street	40.194112	-74.718085

Area (Sq. Ft.)	Lot	Block
1,073,323	3	2389

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
1,012,565	94	789,011	52	539	4926

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for:

Duetzville Park

There is significant sediment accumulation near the catch basin of the second baseball clubhouse. This is a potential rain garden location with a curb cut to capture some of the runoff from the parking lot. Most of the area surrounding the catch basin is elevated approximately 3 ft; however, there is a flat area perpendicular to the storm drain where the rain garden could be placed.



Address	Latitude	Longitude
213 Bunting Avenue	40.194538	-74.744989

Area (Sq. Ft.)	Lot	Block
455,999	3	2187

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
67,401	94	52,520	10	104	1247

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Biofiltration (with underdrain system), Biofiltration (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Pervious Pavement, Vegetated Filter

Lalor Elementary School

There is a parking lot adjacent to Barricklo Street that slopes down to a grassed area near the playground. There is evidence of ponding. A rain garden would help capture some of the runoff to reduce the ponding.



Address	Latitude	Longitude
25 Barnt-Deklyn Road	40.195702	-74.740792

Area (Sq. Ft.)	Lot	Block
126,837	1	2212

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
54,848	94	42,738	4	38	431

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for:

Life St. Francis

At this site, near Woosley Ave, there are parking lot islands that could potentially be converted into tree boxes. The parking lot crowns, and therefore the islands can help capture the runoff from the sloped parking lot.



Address	Latitude	Longitude
1435 Liberty Street	40.211716	-74.735093

Area (Sq. Ft.)	Lot	Block
25,000	1	2033

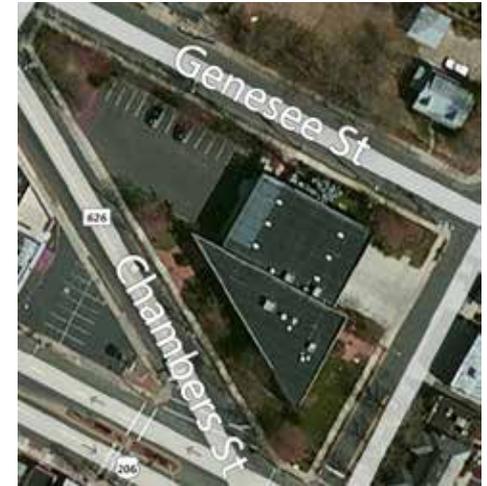
Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
22,500	90	17,532	1	13	115

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for:

Rustling Fire Hose Company

This site offers potential for pervious pavement. The driveway slopes down into an encircled area where, presumably, the water settles and ponds. Pervious pavement could reduce the ponding of runoff.



Address	Latitude	Longitude
13 Rennie Street	40.198911	-74.728428

Area (Sq. Ft.)	Lot	Block
41,181	1	2302

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
30,885	75	24,067	2	21	189

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Biofiltration (with underdrain system), Biofiltration (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Pervious Pavement, Vegetated Filter

Kenneth M. McCoy Insurance

On the north side of the building there is a turf lined ditch with a potential to be retrofitted as a swale. However, utility lines and AC units are behind building and may need to be accessed. In the front, the parking lot slopes onto a lawn area. There is potential for a ~2500 sq. ft. rain garden on the south side of the parking lot.



Address	Latitude	Longitude
1878 Arena Drive	40.194466	-74.701923

Area (Sq. Ft.)	Lot	Block
30,764	1	2531

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
19,997	75	15,582	2	16	142

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for:

St. Mark Lutheran Church

Behind the St. Mark Lutheran Church is a parking lot that slopes onto the lawn. The runoff, as a result, is causing gullying in the lawn. There is potential for a ~500 sq. ft. rain garden to be implemented to intercept runoff and eliminate gullying. Also, on the side of the church, adjacent to Orchard Ave, there is room for an ~500 sq. ft. rain garden that can intercept runoff from a disconnected downspout that is currently emptying onto a lawn.



Address	Latitude	Longitude
350 White Horse Avenue	40.195639	-74.701503

Area (Sq. Ft.)	Lot	Block
51,453	7,8,9,10	2493

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
19,227	75	14,982	2	24	215

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for:

Hamilton Educational Program

At this site, there are downspouts that currently disconect onto the front lawn of the building, adjacent to Rowan Ave. This is a potential site for a rain garden. The basketball and tennis courts on the premises are currently not being used. These can be converted into a pervious cover to allow water to infiltrate. Behind the building, the downspouts are connected to the pavement. There are planted grassy areas with no curbs nearby - these could be replaced with tree boxes or additional plantings to capture runoff.



Address	Latitude	Longitude
310 Rowan Avenue	40.194702	-74.727179

Area (Sq. Ft.)	Lot	Block
39,803	1	2362

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosporus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
33,833	75	26,363	2	20	183

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Pervious Pavement, Vegetated Filter

Field at Grice Middle School

There is a low point on Goeke Drive where water is flooding. Before water hits this spot, curb could be cut and a trench drain can be added to bring water into a rain garden near the edge of the Grice Middle School field.



Address	Latitude	Longitude
70 Goeke Drive	40.199842	-74.690613

Area (Sq. Ft.)	Lot	Block
8,244	35	2445

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
29	3.5	22	12	.97	19

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Pervious Pavement, Vegetated Filter

Pond Run



Pond Run Watershed Location Map



Project Sites

1. St. Gregory the Great Catholic Church
2. Pace Charter School
3. Reynolds's Middle School
4. Trenton Catholic Academy: McCorristin Campus
5. Whitehorse Plaza Shopping Center
6. Suburban Plaza
7. Greenwood Elementary School
8. Hamilton Township Building
9. Hamilton Township Library
10. Hamilton Township Police Division
11. Hamilton Golf Center
12. Hamilton Lanes
13. Kuser Elementary School
14. Bromley Park
15. Alexander Elementary School
16. Langtree Elementary School
17. Mercerville Elementary School
18. Sayen Elementary School



St. Gregory the Great Catholic Church

This site has potential for filterra boxes at islands that are ground level that intercept water that goes directly to a catch basin. There is also a potential to implement pervious pavers to increase both infiltration and aesthetics on the south side of the building at a compacted gravel parking lot. There is also a potential for a rain garden on the south east building. The downspout in front can be disconnected onto the lawn.

Address	Latitude	Longitude
4620 Nottingham Way	40.223574	-74.638529

Area (Sq. Ft)	Lot	Block
245,300	182	1841

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
193,481	79	150,764	11	115	1,068

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Vegetated Filter Strips



Pace Charter School

This site has potential for a rain garden near the front of the building, adjacent to Hamilton Ave, to capture stormwater runoff from the rooftop.



Address	Latitude	Longitude
1949 Hamilton Avenue	40.225868	-74.712644

Area (Sq. Ft.)	Lot	Block
88,487	4	1917

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
40,480	46	31,543	3	32	323

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: This site has a soil ranking of "Urban"; because of this, a site suitability was unable to be performed.



Trenton Catholic Academy: McCorristin Campus

This site has potential to disconnect downspouts and add a rain garden near the front entrance of the school, adjacent to Leonard Ave. There is also an opportunity to disconnect downspouts in the back portion of the school, near the community garden/area.



Address	Latitude	Longitude
99 Leonard Avenue	40.21675	-74.720253

Area (Sq. Ft.)	Lot	Block
853,107	1.01	2154

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
182,597	21	142,283	18	180	2,265

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Porous Pavement, Vegetated Filter Strips



Whitehorse Plaza Shopping Center

The parking lot at this site slopes towards Whitehouse-Mercerville Road. Curbs can be cut and lead into a rain garden at an island adjacent to Whitehouse-Mercerville Road.



Address	Latitude	Longitude
1750 Whitehouse Mercerville Road	40.223435	-74.687573

Area (Sq. Ft.)	Lot	Block
366,404	7	1922

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
311,369	85	242,625	17	174	1,609

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Vegetated Filter Strips

Suburban Plaza

The parking lot at this site is in poor shape and could use repaving with porous pavement to allow stormwater to infiltrate.



Address	Latitude	Longitude
1700 Nottingham Way	40.232986	-74.715639

Area (Sq. Ft.)	Lot	Block
1,012,722	168	1589

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
972,891	96	758,097	48	505	4,612

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Porous Pavement, Vegetated Filter Strips



Greenwood Elementary School

There are connected downspouts in front of the school. These can be disconnected into a rain garden for aesthetic purposes, and also to promote groundwater infiltration and help reduce stormwater.

Address	Latitude	Longitude
2069 Greenwood Avenue	40.230299	-74.7236

Area (Sq. Ft.)	Lot	Block
83,374	1	1884

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
75,121	90	58,536	4	42	383

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Porous Pavement, Vegetated Filter Strips



Hamilton Township Building

This site has many connected downspouts that could be disconnected into a rain garden. Also, the parking lot in back drains into a center storm drain - putting pervious pavement around the area may reduce the amount of runoff entering the storm drain and would help to eliminate sediment build up around the drain.

Address	Latitude	Longitude
2100 Greenwood Avenue	40.230496	-74.724201

Area (Sq. Ft.)	Lot	Block
433,444	24	1757

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
158,553	37	123,548	14	147	1,511

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Porous Pavement, Vegetated Filter Strips



Hamilton Township Library

Currently exists both a rain garden and detention basin that could use some heavy maintenance. Furthermore, the parking lot is in decrepit shape and should be retrofitted.



Address	Latitude	Longitude
1 Justice Samuel A Alito Jr Way	40.211712	-74.6315

Area (Sq. Ft.)	Lot	Block
120,360	13	2597

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
114,342	95	80,097	6	61	554

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Dry Pond, Grass Swale, Vegetated Filter Strips



Hamilton Township Police Division

This site has a lot of sediment build up - potential to cut curbs and implement rain gardens or filterra boxes at the various islands located within the parking lot.

Address	Latitude	Longitude
1270 Whitehouse Mercerville Road	40.212441	-74.692646

Area (Sq. Ft.)	Lot	Block
236,513	7	2163

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosporus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
215,525	91	167,942	11	120	1,088

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Vegetated Filter Strips



Hamilton Golf Center

Near the front entrance of the golf center, there is evidence of gullying from runoff. This is a potential site for a rain garden. There is also some sediment buildup near the corner of the parking lot that is adjacent to Justice Samuel A Alito Jr Way. A rain garden could be implemented here.

Address	Latitude	Longitude
5 Justice Samuel A Alito Jr Way	40.212908	-74.699619

Area (Sq. Ft.)	Lot	Block
3,118,016	5	2163

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
176,286	6	137,366	22	259	3,205

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Dry Pond, Grass Swale, Vegetated Filter Strips



Hamilton Lanes

This parking lot is extremely eroded and holds a lot of standing water - wetland conditions have begun forming on the side of the parking lot. Pervious pavement and a rain garden would be ideal to reduce the amount of standing water and help promote infiltration and recharge groundwater.

Address	Latitude	Longitude
1200 Kuser Road	40.21199	-74.703471

Area (Sq. Ft.)	Lot	Block
234,893	9	2163

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
158,865	68	123,791	8	83	780

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Dry Pond , Grass Swale, Vegetated Filter Strips



Kuser Elementary School

This site has an area in front of school, adjacent to Newkirk Ave, with approximately 250 sq. ft. available for a rain garden. Downspout in this area is broken (middle piece of pipe is missing).



Address	Latitude	Longitude
70 Newkirk Avenue	40.220519	-74.725047

Area (Sq. Ft.)	Lot	Block
71,775	42	2023

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
56,147	78	43,751	3	32	301

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), bioretention (infiltration), dry pond, grass swale, infiltration trenches, porous pavement, vegetated filter strips

Bromley Park

Pond Run cuts right through this park, making it a priority to reduce the amount of nonpoint source pollution that is entering it. There is a potential to implement a rain garden near the tennis courts, where there is evidence of ponding.

Address	Latitude	Longitude
	40.233019	-74.729694

Area (Sq. Ft.)	Lot	Block
223,354	7	1733

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
31,186	14	24,301	5	55	637

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Vegetated Filter Strips



Alexander Elementary School

At this site, runoff from the parking lot is entering the grassed area in the front of the school. There is evidence of sediment accumulation. This would make for a good location for a rain garden. Also, at the side of the building adjacent to Estates Blvd (near the parking lot) is a downspout that needs disconnection into a rain garden.



Address	Latitude	Longitude
20 Robert Frost Drive	40.217856	-74.653743

Area (Sq. Ft.)	Lot	Block
508,467	20	1980

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
122,057	24	29,061	11	109	1,374

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Dry Pond, Grass Swale, Infiltration Trench, Vegetated Filter Strips

Langtree Elementary School

At this site, there is a deeply eroded area at the corner entrance of the school, adjacent to Whatley Road. There is approximately 300 sq. ft. of area available for a rain garden implementation, however nearby trees could be an issue. Downspouts around the school could also be disconnected into nearby lawn area. A branch of Pond Run flows directly behind the school, making it a priority area.



Address	Latitude	Longitude
2080 Whatley Road	40.225008	-74.678668

Area (Sq. Ft.)	Lot	Block
665,111	19	1925

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
65,481	13	65,481	12	122	1,678

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Vegetated Filter Strips



Mercerville Elementary School

At this site, there is a culvert placed beneath the back building to allow water to flow through. There is lots of sedimentation leading to the catch basin. There is a potential to implement a strip of porous pavement to reduce flow. There is also water ponding near the playground - a rain garden may help to capture and reduce runoff to prevent ponding. In front of building, adjacent to Regina ave, there are connected downspouts - there is a possibility to disconnect these to a rain garden

Address	Latitude	Longitude
60 Regina Avenue	40.237761	-74.689405

Area (Sq. Ft.)	Lot	Block
145,760	27,28,29	1694

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
98,417	68	76,689	6	57	574

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Porous Pavement, Vegetated Filter Strips



Sayen Elementary School

At this site, there are a few downspouts that are directly connected. These can be disconnected into either a lawn area or into a rain garden, whichever seems more feasible.

Address	Latitude	Longitude
3333 Nottingham Way	40.231012	-74.671885

Area (Sq. Ft.)	Lot	Block
569,632	14	1828

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
86,996	15	67,789	10	105	1336

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Porous Pavement, Vegetated Filter Strips



Miry Run

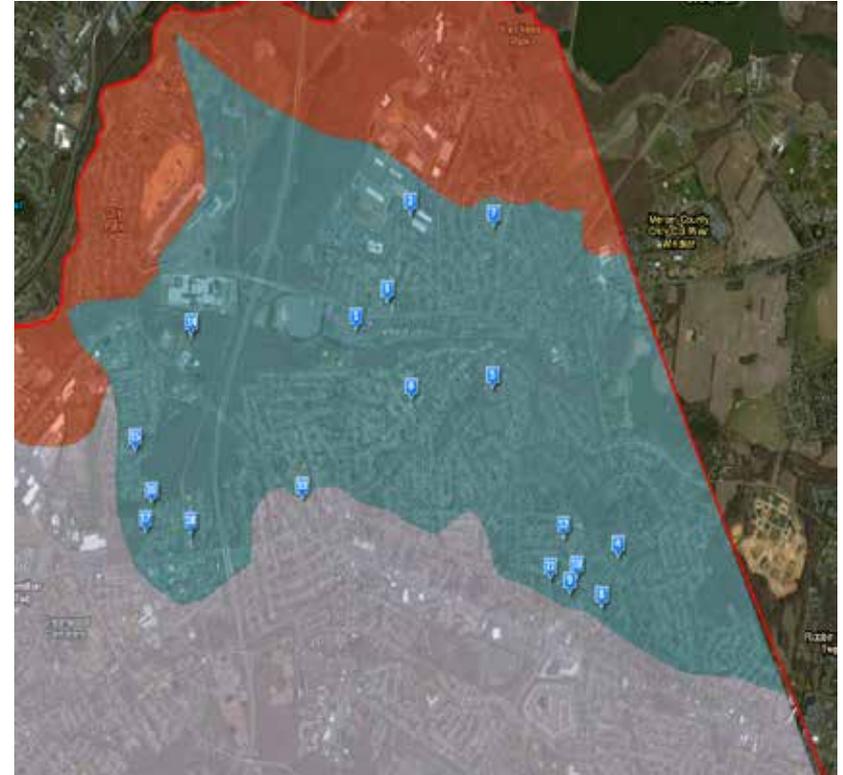




Miry Run Watershed Location Map

Project Sites

1. Clover Square
2. Ibis Plaza Office Suites
3. University Plaza
4. Nottingham Volunteer Fire Company
5. St. Mark United Methodist Church
6. Morgan Elementary School
7. University Heights/H.D. Morrison Elementary School
8. Hamilton Square Baptist Church
9. Greater Victory Ministries
10. Hamilton Township School District
11. First Presbyterian Church
12. Baseball Fields
13. Our Lady of Sorrows School
14. Merlin Industries Inc.
15. Enterprise Volunteer Fire Co.
16. Christ Presbyterian Church
17. Klockner Elementary School
18. VFW Hamilton Township Post



Clover Square

At this site, there is a potential to put pervious pavers in the parking spaces to slow down runoff before it enters the onsite retention pond. Also, there is an area where a swale could be implemented to direct runoff from the parking lot to the retention pond. This could help slow down runoff, as well as capture some of the nutrients before it enters the retention pond.

Address	Latitude	Longitude
3100 Quakerbridge Road	40.248039	-74.686371

Area (Sq. Ft)	Lot	Block
887,560	19	1603

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
721,124	81	561,914	36	386	3,558

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Biofiltration (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Porous Pavement, Vegetated Filter



Ibiza Plaza Office Suites

This site offers many potential. It currently houses a detention basin. However, runoff in the back of the building is flowing under a fence via curb cut that has a lot of sediment build-up. This offers potential to retrofit with cement slabs and rip rap/ river stones. There is also potential for a shallow swale to connect to the basin on the east side; water runs along the curb, so curb cuts can be used to convey water into the swale.

Address	Latitude	Longitude
3525 Quakerbridge Road	40.255482	-74.680372

Area (Sq. Ft.)	Lot	Block
337,837	113, 114	1521

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
317,934	94	247,741	17	182	1,671

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Suitable for: Biofiltration (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Porous Pavement, Vegetated Filter



University Plaza

This site offers many potential. It currently houses a detention basin. However, runoff in the back of the building is flowing under a fence via curb cut that has a lot of sediment build-up. This offers potential to retrofit with cement slabs and rip rap/ river stones. There is also potential for a shallow swale to connect to the basin on the east side; water runs along the curb, so curb cuts can be used to convey water into the swale.

Address	Latitude	Longitude
96 Flock Road	40.249857	-74.682981

Area (Sq. Ft.)	Lot	Block
167,756	16	1551

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
120,244	72	93,697	7	74	701

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Biofiltration (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Vegetated Filter



Nottingham Volunteer Company

At this site, there is a large park directly across the street that stormwater could be directed to. There are also possible opportunities for tree boxes or Filterra boxes where trees are already planted on the cement dividers. There is also a possible rain garden location to left of the ballroom entrance with 450 square feet of grass with 3 downspouts emptying into the area. There are many downspouts that could be disconnected and hooked up to rain barrels.

Address	Latitude	Longitude
200 Mercer Street	40.233412	-74.65753

Area (Sq. Ft.)	Lot	Block
148,755	24.01	1839

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
141,313	72	110,114	7	75	684

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Biofiltration (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Vegetated Filter



St. Mark United Methodist Church

The large parking lot at this site is sloped toward a field to the left of Paxson Ave. This is a potential spot for a rain garden to capture some of the runoff from the parking lot.

Address	Latitude	Longitude
465 Paxson Avenue	40.24428	-74.671402

Area (Sq. Ft.)	Lot	Block
268,143	8	1622

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
108,184	40	84,299	9	90	905

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Biofiltration (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Vegetated Filter



Morgan Elementary School

In the back of this school, there are some downspouts that are currently connected and let out onto the pavement. If the downspouts were disconnected, they could be redirected to let out into a rain garden that could be placed in the grassy area between the building and playground



Address	Latitude	Longitude
38 Stamford Road	40.243543	-74.680297

Area (Sq. Ft.)	Lot	Block
378,083	34	1618

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
135,068	36	105,248	11	109	1,249

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Biofiltration (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Vegetated Filter



University Heights/H.D. Morrison Elementary School

On site, there is an existing onsite drainage basin at left side. Possible retrofitting of drainage basin would decrease maintenance and use of irrigation. Also, the left front lawn has a lot of erosion, and drains to the a storm drain at the low point in the field. There is a possibility to implement a rain garden or swale. To the right side of the front of the school (when facing it) there is a slope leading to what appears to be a basin. This is a potential swale or bioretention site with good visibility from both the street and school



Address	Latitude	Longitude
645 Paxson Avenue	40.254647	-74.671274

Area (Sq. Ft.)	Lot	Block
547,717	13,24,25	1561

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
122,050	22	95,104	11	104	1502

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Biofiltration (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Porous Pavement, Vegetated Filter



Hamilton Square Baptist Church

This site is a cemetery, therefore the only possible place for a rain garden is the very back of the parking lot. There is also potential to disconnect downspouts into rain barrels and use the captured water to treat the cemetery grass.

Address	Latitude	Longitude
3752 Nottingham Way	40.230078	-74.659386

Area (Sq. Ft.)	Lot	Block
138,227	87	1839

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
61,839	45	48,186	5	49	494

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Biofiltration (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Porous Pavement, Vegetated Filter



Great Victory Ministries

At this site, the parking lot is in poor condition, and grass is growing through the pavement. This could be repaved with pervious pavers. The entire parking lot drains to a catch basin on the east side of the site. In the front, downspouts are connected. Front lawn may be suitable for two 300-500 sq. ft. rain gardens. Also, there are some downspouts that are directly connected. A rain barrel could be placed under the downspout to capture rooftop runoff.

Address	Latitude	Longitude
3632 Nottingham Way	40.231037	-74.662894

Area (Sq. Ft.)	Lot	Block
35,411	34	1836

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
29,271	83	22,808	2	17	153

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Biofiltration (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Porous Pavement, Vegetated Filter



Hamilton Township School District

At this site, the runoff from the parking lot drains into the grass. There is some erosion at a corner point of the grass; this is a potential spot to implement a rain garden to intercept the runoff and overflow into a nearby catch basin.

Address	Latitude	Longitude
90 Park Avenue	40.232044	-74.662133

Area (Sq. Ft.)	Lot	Block
56,083	6,8	1836

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
50,026	89	38,982	3	28	257

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Biofiltration (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Porous Pavement, Vegetated Filter



First Presbyterian Church

There are multiple possibilities for this site. Rain gardens can be planted along the left side of the building. Also, water is pooling around the island holding a welcome sign. Possible location for a rain garden or it can be remodeled with low growing rain garden plants. A small mowed detention basin is located in the back of the building. There is a lot of standing water and sediment build-up on the parking lot at the corner of the detention basin. A swale may help bring that water into the basin much easier. The third section of the lot drains to the corner of a mini detention basin. A lot of water is not getting in and is puddling at the edge. There is a possibility to put a swale between the building and the parking stalls.

Address	Latitude	Longitude
3550 Nottingham Way	40.231913	-74.665019

Area (Sq. Ft.)	Lot	Block
82,504	20,50,51,52	1830

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
67,998	82	52,986	6	58	532

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Biofiltration (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Porous Pavement, Vegetated Filter



Baseball Fields

In lot 1, Sue Carella café building runoff and baseball field runoff flows across the asphalt into a storm drain (has standing water). Possible location for a swale. There is also deep ponding occurring on right side of parking lot closest to entrance. Water accumulation currently at 6 inches. Grass is patchy in this area. Would consider this a priority of project to install a rain garden here. Also, the parking area parallel to Sayen Drive is very old; water slopes toward far end. Implementation of a rain garden in this area or porous asphalt would decrease runoff. Area with welcome sign at entrance was poorly maintained and overgrown with weeds. A rain garden at this area would capture the water that is flowing from the entrance roadway and provide an aesthetic value to entrance. In lot 3, there is standing water on parking lot by the basketball court. Side of park with parking lots 3a and 3b does not appear to have any drainage system. All water empties onto grass, which two days after rain was still wet, and in some places still holding water. Possible opportunities for rain gardens where the standing water collects in lot3a and where the debris collects in lot3b. Channel extending from lot3 debris to "training facility" = 137 ft. Lot3a = 187x63x153x42 (uneven rectangle). Lot3b = approx. 81x66.



Address	Latitude	Longitude
Doreen Road and Sayen Drive	40.234636	-74.663575

Area (Sq. Ft.)	Lot	Block
605,540	95,105	1722

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
121,669	20	94,807	13	131	1,572

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Biofiltration (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Vegetated Filter



Our Lady of Sorrows School

Field on left side of property is constructed as a basin receiving all rooftop runoff from downspouts. Parking lot drains to two catch basin at the end of a long sidewalk, in the left corner. Possible swale to help direct runoff to the storm drain or basin.

Address	Latitude	Longitude
3800 East State Street	40.237098	-74.692313

Area (Sq. Ft.)	Lot	Block
501,063	80	1666

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
220,076	44	171,488	18	183	1,889

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Biofiltration (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Vegetated Filter



Merlin Industries Inc.

Good potential for a rain garden in front of the building where the downspout lets out onto the front lawn. Approximately 2000 sq. ft. or more available. Miry Run is directly behind this property, making it a priority to capture nonpoint source pollution in the runoff before it runs into the stream.

Address	Latitude	Longitude
2904 East State Street	40.247695	-74.704522

Area (Sq. Ft.)	Lot	Block
935,824	7	1602

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
203,339	22	158,446	11	139	1,761

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Biofiltration (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Vegetated Filter



Enterprise Volunteer Fire Co

Good potential for a rain garden in front of the building where the downspout lets out onto the front lawn. Approximately 2000 sq. ft. or more available. Miry Run is directly behind this property, making it a priority to capture nonpoint source pollution in the runoff before it runs into the stream.

Address	Latitude	Longitude
569 Klockner Road	40.240265	-74.710706

Area (Sq. Ft.)	Lot	Block
23,402	12	1648

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
23,402	100	18,232	1	12	108

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Biofiltration (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Porous Pavement, Vegetated Filter



Christ Presbyterian Church

Lawn space at lower elevation than road;
potential site for a swale or rain garden
because downspouts let out here.



Address	Latitude	Longitude
746 Klockner Road	40.23684	-74.708858

Area (Sq. Ft.)	Lot	Block
143,812	58	1656

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
32,813	23	25,569	3	28	320

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential



Suitable for: Biofiltration (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Vegetated Filter

Klockner Elementary School

At this site, front lawn has about 500 sq ft of area and may be suitable for a rain garden. Another possible location for a rain garden is in front of the playground, however children may run through it

Address	Latitude	Longitude
830 Klockner Road	40.235017	-74.709567

Area (Sq. Ft.)	Lot	Block
110,773	1,2,3	1659

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
53,806	49	41,926	4	38	403

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Biofiltration (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Porous Pavement, Vegetated Filter



VFW Hamilton Township Post

Parking lot is completely paved and has a lot of grass growing in between the pavement. Could be repaved using porous pavement; there are a lot of puddles. Pervious pavers can also be placed around the building for the downspouts.



Address	Latitude	Longitude
77 Christine Avenue	40.234919	-74.704576

Area (Sq. Ft.)	Lot	Block
75,118	25	1660

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
47,623	63	37,109	3	31	297

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Biofiltration (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Porous Pavement, Vegetated Filter



Doctors Creek





Doctors Creek Watershed Location Map

Project Sites

1. Yardville Elementary School
2. St. George Ukrainian Orthodox Church



Yardville Elementary School

Recommendation includes attaching pipes to downspouts to direct runoff into nearby grass area. Also, there are two downspouts in the front that let out onto the grass. Suitable for a rain garden.



Address	Latitude	Longitude
450 Yardville Allentown Road	40.178103	-74.662188

Area (Sq. Ft)	Lot	Block
187,256	1	2699

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
81,714	44	63,673	6	59	653

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Suitable for: Biofiltration (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Pervious Pavement, Vegetated Filter

St. George Ukrainian Orthodox Church

At this site, downspouts in the front of the building are letting out onto the pavement. In the back and on the sides of the building, downspouts are letting out onto the grass; however the grass is being heavily eroded and moss is forming. Recommended rain gardens in these areas to control the runoff coming off of the roof.



Address	Latitude	Longitude
839 Yardville Allentown Road	40.17175	-74.650181

Area (Sq. Ft.)	Lot	Block
536,154	1	2700

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
111,918	21	87,209	14	151	1601

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Biofiltration (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Vegetated Filter

Crosswicks Creek



Crosswicks Creek Watershed Location Map

Project Sites

1. Grow-Ville Community Day School
2. Yardville Heights Elementary School
3. Sunnybrae Park
4. St. Raphaels Roman Catholic Church
5. The Stone Terrace
6. Hamilton YMCA at Sawmill
7. Switlik Park
8. Robinson Elementary School
9. Sunnybrae Elementary School



Grow-Ville Community Day School



Address	Latitude	Longitude
449 Church Street	40.170986	-74.672264

Area (Sq. Ft)	Lot	Block
30,612	24,26	2661

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
26,020	85	20,276	1.5	16	141

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for:

Yardville Heights Elementary School



Address	Latitude	Longitude
3880 S. Broad Street	40.186549	-74.685612

Area (Sq. Ft.)	Lot	Block
238,466	15	2606

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
102,099	43	79,558	8	85	797

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for:

Sunnybrae Park



Address	Latitude	Longitude
5 Pleasant Drive	40.193632	-74.677351

Area (Sq. Ft.)	Lot	Block
276,723	96	2606

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
77,902	28	60,703	4	47	572

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for:

St. Raphael's Roman Catholic Church



Address	Latitude	Longitude
3500 Broad Street	40.188668	-74.697766

Area (Sq. Ft.)	Lot	Block
547,632	30	2542

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
275,857	50	214,953	20	208	2,024

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for:

The Stone Terrace



Address	Latitude	Longitude
2279 Kuser Road	40.199563	-74.676959

Area (Sq. Ft.)	Lot	Block
531,823	161	2575

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
189,089	36	147,342	12	158	1640

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for:

Hamilton YMCA at Sawmill



Address	Latitude	Longitude
185 Sawmill Road	40.154801	-74.629503

Area (Sq. Ft.)	Lot	Block
3,407,062	14.01	2730

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
242,055	78	188,614	78	48	6,840

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for:

Switlik Park



Address	Latitude	Longitude
Fisher Place	40.180374	-74.680742

Area (Sq. Ft.)	Lot	Block
807,435	130	2614

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
122,868	78	95,741	9	112	1,388

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for:

Robinson Elementary School



Address	Latitude	Longitude
495 Gropp Drive	40.196193	-74.693556

Area (Sq. Ft.)	Lot	Block
413,988	17,18,19	2548

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
114,524	28	89,240	11	110	1310

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for:

Sunnybrae Elementary School



Address	Latitude	Longitude
166 Elton Avenue	40.189501	-74.671618

Area (Sq. Ft.)	Lot	Block
1,042,981	126	2606

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
262,473	25	204,524	20	220	2437

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for:

Back Creek





Back Creek Watershed Location Map

Project Sites

1. Villa Romanza
2. Custom Calibrations Solutions, LLC
3. Verizon
4. AAA Mid-Atlantic
5. Hamilton Medical Arts
6. Coala & Co.
7. Crocket Middle School
8. Internet Creations
9. S.T. Peterson & Co. Inc. Office Space
10. AAA Mid-Atlantic
11. Skylink Technology Inc.



Villa Romanza

At this site, all of the downspouts are connected together by a pipe that lets out onto the back corner of the lot, where there is standing water and sediment buildup. There is little to no room for a rain garden, but porous pavement would help to alleviate some of the ponding issues this lot is facing.

Address	Latitude	Longitude
429 Route 516	40.18345	-74.6618

Area (Sq. Ft)	Lot	Block
159,698	1,2	2686

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
110,465	69	86,077	44	473	4,706

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Dry Pond, Grass Swale, Vegetated Filter Strips



Custom Calibrations Solutions, LLC

Water is not flowing through the curb cuts that were already placed at this site.
Retrofitting of the curb cuts and potentially implement a rain garden to reduce ponding.

Address	Latitude	Longitude
535 US 130	40.18789	-74.65473

Area (Sq. Ft.)	Lot	Block
37,254	130	2712

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
22,872	61	17,822	2	15	145

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Dry Pond, Grass Swale, Vegetated Filter Strips



Verizon

At this site, curb cuts can be added to both tree islands and grassed areas to allow runoff an opportunity to infiltrate into the ground, recharging groundwater. There are also some broken catchbasins that may need fixing.

Address	Latitude	Longitude
600 Horizon Drive	40.20026	-74.6464

Area (Sq. Ft.)	Lot	Block
1,484,198	5.05, 5.07, 5.08	2612

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
704,389	48	549,225	44	473	4,706

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential



Suitable for: Bioretention (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Porous Pavement, Vegetated Filter Strips

AAA Mid-Atlantic

There are curb cuts with stone channels directing the water to a catch basin. Instead, add a swale so that some of the water can infiltrate into the ground before going directly into the catch basin.

Address	Latitude	Longitude
700 Horizon Drive	40.19812	-74.6463

Area (Sq. Ft.)	Lot	Block
510,254	5.02	2612

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
279,703	55	217,950	17	181	1,773

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Porous Pavement, Vegetated Filter Strips



Hamilton Medical Arts

This site has tree islands in the parking lot. Curb cuts can be put in to allow runoff from the parking lot to infiltrate to the ground.



Address	Latitude	Longitude
2501 Kuser Road	40.20413	-74.6612

Area (Sq. Ft.)	Lot	Block
249,127	7	2591

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
200,235	80	156,027	11	116	1,064

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Dry Pond, Grass Swale, Vegetated Filter Strips

Coala & Co.

There are multiple possibilities for this site. Downspouts are disconnected with a lot of erosion settled at the bottom. There is a storm drain in the lot with heavy erosion and sediment build up around it. Curb cuts into the grass area could also be helpful to allow runoff from the parking lot to infiltrate into the grass.

Address	Latitude	Longitude
2 Crossroads Drive	40.20497	-74.6585

Area (Sq. Ft.)	Lot	Block
651,321	14	2591

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
357,285	55	278,404	25	259	2,573

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Dry Pond, Grass Swale, Infiltration Trench, Vegetated Filter Strips



Crocket Middle School

There is a sloped walk way/channel that directs the parking lot runoff directly to a curb cut that leads into what appears to be a retention pond. There is a geese infestation without a proper buffer around the retention pond. Add buffer to existing retention pond to deter geese from entering.

Address	Latitude	Longitude
2631 Kuser Road	40.20657	-74.6487

Area (Sq. Ft.)	Lot	Block
415,117	2	2592

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
191,272	46	149,043	12	130	1,289

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Bioretention (infiltration), Dry Pond, Grass Swale, Infiltration Trench, Vegetated Filter Strips



Internet Creations

Add curb cuts to islands and grassed area to allow parking lot runoff to infiltrate into the grass.

Address	Latitude	Longitude
3 AAA Drive	40.20389	-74.6315

Area (Sq. Ft.)	Lot	Block
120,360	13	2597

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
114,342	95	80,097	6	61	554

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Dry Pond, Grass Swale, Vegetated Filter Strips



S. T. Peterson & Co. Inc. Office Space

There is standing water and sediment build up in the corner of the lot. Add curb cuts that direct water into a rain garden to allow the water to infiltrate and to recharge ground water.

Address	Latitude	Longitude
1 AAA Drive	40.20543	-74.6312

Area (Sq. Ft.)	Lot	Block
196,562	14	2597

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
105,894	54	82,515	6	62	591

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Dry Pond, Grass Swale, Vegetated Filter Strips



AAA

At this site, the runoff from the parking lot drains into the grass. There is some erosion at a corner point of the grass; this is a potential spot to implement a rain garden to intercept the runoff and overflow into a nearby catch basin.

Address	Latitude	Longitude
2 South Gold Drive	40.20711	-74.629024

Area (Sq. Ft.)	Lot	Block
145,193	1	2597.01

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
93,398	64	72,777	6	59	571

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Dry Pond, Grass Swale, Vegetated Filter Strips



Skylink Technology Inc.

There is an eroded grass area in the front lawn of the parking lot. Potential to implement a rain garden in this location to reduce erosion.

Address	Latitude	Longitude
5 Marlen Drive	40.205411	-74.629024

Area (Sq. Ft.)	Lot	Block
167,124	9	2597

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
108,032	65	84,180	4	46	572

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (with underdrain system), Dry Pond, Grass Swale, Vegetated Filter Strips



Assunpink Creek

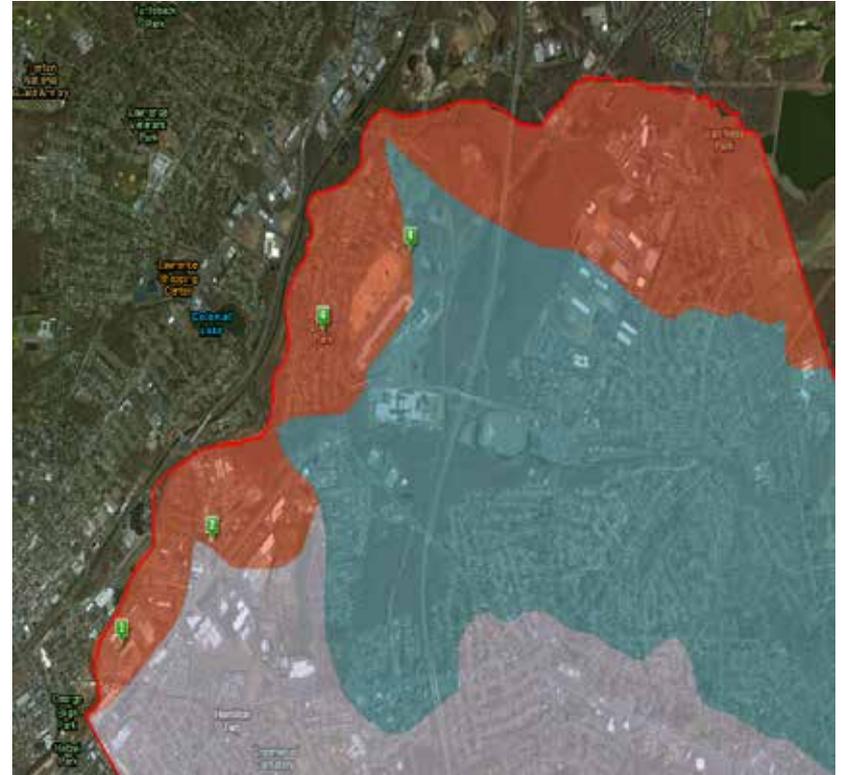




Assunpink Creek Watershed Location Map

Project Sites

1. Seimens Demag Delaval Turbomach.
2. BLV Holding Company
3. Medallion Care
4. AAA Mid-Atlantic



Seimens Demag Delaval Turbomach.

At this site, the roadway once you turn off of Nottingham Way [leading to Siemens] is sloping towards the lawn area on the West side of the property. A rain garden or swale could potentially be implemented to capture roadway runoff. Electrical wires in the area must be avoided.

Address	Latitude	Longitude
840 Nottingham Way	40.235984	-74.735445

Area (Sq. Ft.)	Lot	Block
2,432,416	1	1517

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
1,525,490	63	1,188,692	70	751	9,350

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (infiltration), Bioretention (with underdrain system), Dry Pond, Grass Swale, Infiltration Trench, Pervious Pavement, Vegetated Filter



BLV Holding Company

At this site, there are downspouts in front of the building that are carrying water to the sidewalk. A riverstone apron can be placed across the sidewalk as to bring the water into a rain garden, or just allow it to infiltrate into the lawn.

Address	Latitude	Longitude
3 Industrial Avenue	40.242388	-74.725381

Area (Sq. Ft.)	Lot	Block
122,192	14	158

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
84,373	69	65,745	5	51	489

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (infiltration), Bioretention (with underdrain system), Dry Pond, Grass Swale, Infiltration Trench, Pervious Pavement, Vegetated Filter



Medallion Care

The parking lot at this site pitches in the center. There are islands placed on either side of the pitch that can be converted to tree boxes to intercept the runoff from the parking lot. Also, the parking lot at this site is deteriorating and shows evidence of erosion. The lot could be replaced with pervious pavement as a means of aesthetically improving the lot, while also reducing the amount of runoff produced.

Address	Latitude	Longitude
1 Electronics Avenue	40.260239	-74.703353

Area (Sq. Ft.)	Lot	Block
271,242	9	1505

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
244,118	69	190,221	9	100	1248

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (infiltration), Bioretention (with underdrain system), Dry Pond, Grass Swale, Infiltration Trench, Pervious Pavement, Vegetated Filter



Cornell Heights Park

When first entering the lot of Cornell Heights Park, there is a speedbump where runoff is stopping and being carried over to the lawn. A rain garden could be implemented to capture this runoff and to reduce erosion in the area.

Address	Latitude	Longitude
Amherst Avenue	40.25531	-74.713056

Area (Sq. Ft.)	Lot	Block
77,981	19	1535

Impervious Cover Area (Sq. Ft.)	Percent Impervious (%)	Runoff for the 1.25" Quality Storm (gal)	Total Phosphorus Loads (lbs/yr)	Total Nitrogen Loads (lbs/yr)	Total Suspended Solids Loads (lbs/yr)
42,890	69	33,420	2	18	215

Recharge Potential	Total Suspended Solids Removal Potential	Stormwater Peak Reduction Potential

Suitable for: Bioretention (infiltration), Bioretention (with underdrain system), Dry Pond, Grass Swale, Infiltration Trench, Pervious Pavement, Vegetated Filter



Attachment 2
**Nonstructural Stormwater Management Strategies and
How to Demonstrate “Maximum Extent Practicable”**

1. Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss.
Requirement: Applicant must identify all existing riparian buffers, corridors, wetlands, and highly erodible soils on the plans. Disturbance of these areas must be prevented by installing fencing, identification signage, and/or other protective elements. All proposed measures must be clearly indicated on the plans.
2. Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces.
Requirement: Applicant must demonstrate that impervious cover is less than 10% of the site or that any impervious areas exceeding 10% of the site area are disconnected to prevent stormwater runoff from flowing directly into the storm sewer system and/or nearby waterways.
3. Maximize the protection of natural drainage features and vegetation.
Requirement: Applicant must identify these features and vegetation on the plans and protect these features with fencing or justify disturbance of these areas and provide a plan for restoration of these areas. All proposed measures must be clearly indicated on the plans.
4. Minimize the decrease in the "time of concentration" from pre-construction to post-construction. "Time of concentration" is defined as the time it takes for runoff to travel from the hydraulically most distant point of the drainage area to the point of interest within a watershed.
Requirement: If #2 is satisfied, this criteria also is satisfied.
5. Minimize land disturbance including clearing and grading.
Requirement: Applicant is allowed to clear an area up to 150% of the final right of way (ROW) of the roadway. The Applicant is only allowed to clear up to 150% of the width of a final driveway. The Applicant is only allowed to clear up to 50 feet around a structure footprint.
6. Minimize soil compaction.
Requirement: All limits of disturbance must be fenced off to prevent heavy equipment entering these areas.
7. Provide low-maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers and pesticides.
Requirement: A landscape plan signed and sealed by a New Jersey Licensed Landscape Architect must be submitted to the Township that shows all turfgrass areas and all landscaped areas. A minimum of 10% of proposed landscape areas shall use native vegetation species.

8. Provide vegetated open-channel conveyance systems discharging into and through stable vegetated areas.

Requirement: A minimum of 10% of all stormwater conveyance must be accomplished through the use of open channel vegetated channels.

9. Provide other source controls to prevent or minimize the use or exposure of pollutants at the site to prevent or minimize the release of those pollutants into stormwater runoff. These source controls include, but are not limited to:

- i. Site design features that help to prevent accumulation of trash and debris in drainage systems.

Requirement: All catch basins must comply with MS4 regulations.

- ii. Site design features that help to prevent discharge of trash and debris from drainage systems.

Requirement: All catch basins must comply with MS4 regulations.

- iii. Site design features that help to prevent and/or contain spills or other harmful accumulations of pollutants at industrial or commercial developments.

Requirement: All outdoor chemical storage areas shall be covered and have secondary containment in compliance with Federal, State, and Local regulations.

- iv. When establishing vegetation after land disturbance, applying fertilizer in accordance with the requirements established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq., and implementing rules.

Requirement: Applicant must have an approved soil erosion and sediment control permit and comply with all requirements.