Pollutant Reduction Plan

Unnamed Tributaries to Hazle Creek, Black Creek and Catawissa Creek

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1.0 Purpose and Scope

This Pollutant Reduction Plan (PRP) is part of the required Notice of Intent (NOI) of Hazle Township's PAG-13 General Permit requirements for NPDES permit coverage of regulated small municipal separate storm sewer systems (MS4s) discharge of stormwater to surface waters of the Commonwealth. <u>Hazle Township's small MS4s were previously covered by a PaDEP waiver but are now required to apply for NPDES permit coverage based on urbanized areas as determined by the latest Decennial Census by the U.S. Census Bureau and as designated as needing a permit by PaDEP. Hazle Township proposes to operate under this General Permit as designated and regulated by the U.S. Environmental Protection Agency (EPA) pursuant to 40 CFR § 122.32(a)(1) or designated as regulated by DEP under 40 CFR § 122.32(a)(2).</u>

Hazle Township discharges stormwater into several unnamed tributaries including Hazle Creek, Black Creek and Catawissa Creek which have been listed by DEP as being an impaired stream. Accordingly, Hazle Township is developing this Pollution Reduction Plan (PRP) to address water quality initiatives within these drainage areas. This (PRP) will be re-evaluated regularly by Hazle Township for its effectiveness in reducing pollutant loads from its stormwater discharges. If the Township believes the PRP should be revised or best management practices (BMP) updated, Hazle Township shall work with the Regional Office of PaDEP for review and approval of any revisions and/or updates.

Hazle Township sewersheds were evaluated based on PaDEP NPDES Standards for permit coverage of stormwater discharges from municipal separate storm sewer systems (MS4s). For this permit cycle, Hazle Township has identified all MS4s and developed this Pollutant Reduction Plan to address discharges to surface waters impaired for certain pollutants or for discharge to waters in the Chesapeake Bay watershed.

This PRP will be used as a guideline to help Hazle Township identify and manage overall stormwater objectives. The planning and design process is an important tool to assist in the prevention of pollutants discharging into the Township's impaired streams. Addressing water quality and pollution concerns during project planning by use of thoughtful municipal ordinances and guidelines can decrease the cost, risks and environmental issues facing the Township. Implementation of Hazle Township's PRP plan will be a multi-faceted approach integrating educational, public participation, operation and maintenance, and training, whenever possible.

This PRP is prepared based on the best and most current guidance made available by PA DEP. Definitions of relevant regulatory terms have been provided as part of this report. This PRP proposes the following tentative schedule after receipt of final DEP approval:

- Year 1: Complete detailed mapping of all sewersheds including storm water infrastructure.
- Year 2 & 3: Design and Permit require BMP's
- Year 4: Seek required funding, bid and begin construction of proposed BMP's
- Year 5: Complete construction and begin to monitor and review performance of BMPs and additional needed improvements

2.0 Six (6) Minimum Control Measure Requirements of PRP

MCM1 Public Education: The Final PRP will implement several efforts targeted to Public Education and Outreach on Stormwater Impacts. Working thru recommendations of EPA and DEP educational videos, booklets, stencil drain kits, children's activity books and informational posters will be utilized to meet this minimum control measure.

MCM2 Public Involvementr: The public can provide valuable input and assistance to the Township's stormwater management program and will be given an opportunity to play an active role in development and implementation of the PRP program. An active and involved community is crucial to the success of this stormwater management program.

The Township held an initial informational public meeting to review the proposed permit and development of this Pollution Reduction Plan (PRP). A public notice of the initial PRP was issued in a June 4, 2018 publication of the Hazleton Standard Speaker newspaper. The final revised PRP was readvertised for comment in an August 15, 2022 public notice. The plan was available for review at the Township Municipal Building from June 11, 2018 thru July 11, 2018, again from August 15, 2002 tjru September 15, 2022 as well as on the Hazle Township Web Site. A public meeting was held on Tuesday, July 17, 2018 at Hazle Township Commons Building. A copy of both public notices are included in the Appendix.

The public was given over 30 days to provide commentary on the contents of the PRP. Hazle Township did not receive any public comments. Hazle Township held a public meeting and did not receive any public presence, written or public comments.

MCM3 Illicit Discharges: One of the Township's goals of this PRP will be to identify, map, educate and eliminate illicit stormwater and pollutant discharges into the municipality. The Township has historically not mapped, identified, tracked, monitored or inspected its stormwater infrastructure unless a complaint was received. This PRP will take steps to begin the detailed mapping in compliance with DEP's model map recommendations, identify and evaluate all outfalls and implement a public discharge complaint policy.

MCM4 Construction Site Runoff: One of the major contributors to stream degradation and pollution loading is poorly managed and controlled construction site runoff. The Township will increase local efforts of construction site inspection, monitoring, reporting and potential violations. DEP's recommended construction site inspection and complaint form will be implemented to log and track complaints and violations.

<u>MCM5</u> Post-Construction Stormwater: The Township will work closely with County Planning Department and the County Conservation District to implement, maintain, monitor and inspect all approved post construction BMP's. Municipal Planning Ordinances will be reviewed and updated to reflect preferred low impact design and green infrastructure for large developments, industrial sites as well as individual residential single-family construction.

<u>MCM6 Municipal Operations</u>: Hazle Township will utilize DEP guidelines to prepare an inventory of municipal facilities and activities related to stormwater BMP's, and to develop a stormwater "Operations & Maintenance Plan". Stormwater pollution hazards associated with each facilities/activity on the inventory plan will be identified.

3.0 General Permit Requirements

In order to properly develop this PRP, it is important to have an understanding of all Hazle Township's permit requirements. Hazle Township is required by the PaDEP and the Environmental Protection Agency (EPA) to implement a ten (10%) percent reduction in sediment pollution from stormwater discharges to impaired surface waters of the Commonwealth over the next five (5) year permit term. Based on storm sewer sheds identified in this report and after detailed mapping is complete this plan Hazle Township proposes to implement acceptable Best Management Practices (BMPs) to accomplish the required reduction. Hazle Township has MS4 discharges or "outfalls" to Hazle Creek, Black Creek, and unnamed tributaries to Catawissa Creek. These stream basins are listed in the 2016 Pennsylvania Integrated Water Quality Monitoring and Assessment Report (Integrated Report) as impaired for siltation (i.e. sediment) and are highlighted and identified below.

As per PaDEP's 3800-PM-BCW0100a 5/2016 NOI Instructions, Hazle Township received a waiver from DEP during the last permit term and is now only required to submit as an attachment to this NOI, at a minimum, a topographic map identifying all MS4 outfalls, surface waters receiving stormwater discharges, the MS4's legal boundaries and the UA boundaries. Hazle Township has also drafted changes to their current stormwater ordinance to implement PaDep MS4 control recommendations.

MS4 Name	NPDES ID	Individual Permit Required?	Reason	Impaired Downstream Waters or Applicable TMDL Name	Requirement(s)	Other Cause(s) of Impairmen	
zerne County	-						
HARVEYS LAKE BORO	PAI132235	Yes	SP, IP	Chesapeake Bay Nutrients/Sediment	Appendix D-Nutrients, Siltation (4a)		
HAZLE TWP	PAG132300*	Na		Hazle Creek	Appendix A-Metals, pH (4a)		
				Black Creek	Appendix A-Metals, pH (4a)		
				Catawissa Creek	Appendix A-Metals (4a)		
				Chesapeake Bay Nutrients/Sediment	Appendix D-Nutrients, Siltation (4a)		
					Cranberry Creek		Flow Alterations (4c)
				Unnamed Tributaries to Susquehanna River	Appendix E-Siltation (5)	Flow Alterations (4c)	
				Cross Run	Appendix A-Metals (4a)		
					Little Black Creek	Appendix E-Siltation (5)	Flow Alterations (4c)
				Unnamed Tributaries to Little Fishing Creek	Appendix E-Siltation (5)	Flow Alterations (4c)	
	11 11 11			Stony Creek	Appendix A-Metals, pH (4a)		
	1	1					

Table 1: Hazle Township is required to reduce the sediment loading by 10 percent over the next five (5) year permit term.

Mapping: In order to determine how much existing sediment is being contributed to receiving streams, the Township first needed to examined how stormwater runoff is entering the municipality, how the runoff is being impacted once inside its boundaries, and how the stormwater is collected and discharged from the municipality. The Township created an overall storm sewer map for its MS4 permit, showing the locations of storm outfalls, inlets, manholes, pipes, swales and pipe discharge locations. This map will be in GIS format and also be used to identify land uses including and impervious/pervious surfaces and each storm sewershed boundary associated with each MS4 outfall.

A GIS mapping platform was utilized for analysis and development of the Township's PRP and will include and address the following:

- 1. Storm Sewer & Street Map existing GIS base map will be created showing the municipal storm sewer system with outfall locations, streams and drainage channels.
- Topo & Impaired Stream Map contour information from available LIDAR shapefile information downloaded from Pennsylvania Spatial Data Access (PASDA) website will be used to analyze stormwater flow. Impaired stream information is provided by PA DEP online GIS mapping service (eMAP).
- 3. Storm Drainage Areas Maps drainage collection systems to each MS4 outfall will be identified and mapped using the topographic information and field locating and mapping stormwater assets. This process will assess stormwater runoff entering and traveling through the storm sewer system along streets, swales, inlets and pipes. The mapping will identify areas with 'dispersed discharges' where runoff is not piped and does not have single point source, but is allowed to flow across a surface into a stream or receiving body of water, such as pond, wetland, or tributary stream.
- 4. Impairment Area Map after the drainage areas are outlined in detail each storm sewershed boundary was delineated. This boundary will show the area of the Township which drains to and impacts each stream. Any land use areas draining to non-impaired streams outside the urbanized areas will not be included in the PRP calculations. Sewer sheds draining to any open mining operation past or present which has disrupted stream flow will be excluded from the Township's analysis.
- 5. Land Use Map land uses will be evaluated for each sewershed. Determining the land use for a property is essential for calculating the pervious and impervious areas within each drainage area. Available shapefiles on PASDA will be used as basis of this analysis.
- 6. Parsing the mapping included in the attached appendix identifies areas that are to be "parsed" from the planning area. At the Township's discretion and as approved by PaDep, certain areas may be shown on the map that are within the storm sewershed but are not included in the calculation of land area or the existing pollution loading. These areas are may be covered by an existing NPDES permit for the control of stormwater, covered under PaDot permit requirements, contain present or past surface mining operations, is an area that drains away from the Township MS4 or an area that does not have a qualified MS4. BMPs implemented on parsed land will be excluded form use as a credit toward meeting the MS4's pollutant loading reduction requirements.

If parsing is initially complete for the this PRP but the Township decides later that it would be in their best interests to include that land in the PRP, the Township may submit a modified PRP to DEP, following the required public participation requirement.

4.0 Background/Setting

According to the United States Census Bureau, Hazle Township has a total area of 45.3 square miles of which 45.1 square miles is land and 0.27 square miles or 0.59% is water. It is drained by tributaries of the Susquehanna River except in the southeast, which drains to the Lehigh River in the Delaware River Basin. The 2010 Urbanized Area (U.S. Census Bureau) covers approximately 4,925 Acres of land area in the Township based on GIS Analysis.



Fig. 1: Map of Hazle Township Boundary and 2010 Census Urbanized Areas

4.1 LOADING AND POLLUTANTS OF CONCERN

The Township has identified pollutants of concern for each storm sewershed and in the overall PRP planning area. DEP's MS4 Requirements Table identified Hazle Township as having impaired stream waters for Black Creek, Hazle Creek, Messer Run-Catawissa Creek, and Beaver Creek. These streams are impaired due to sediment and nutrients. The terms "sediment", "siltation" and "suspended solids" all refer to inorganic solids.

The EPA also notes that nitrogen pollution is one of America's most widespread, costly and challenging environmental problems. Although Nitrogen and Phosphorous are natural elements and support both animal and plant life, too much of either can impact our air quality, alter plant growth, decrease aquatic habitat and impact our food and drinking resources.

This PRP calculated the existing loading of the pollutant(s) of concern in pounds per year (lbs/yr). Hazle Township utilized GIS the mapping information to determine its existing contribution of sediment being discharged each watershed.

Hazle Township is required to reduce the amount of sediment discharge by 10%, and Phosphorous by 5%. It is the intent to select BMPs suited to reduce this pollution loading. The final PRP shall demonstrate that the selected BMPs will achieve the minimum reductions required by DEP.

It is assumed that a reduction in nutrients will accomplish a commensurate with meeting the reduction in sediment.

4.2 BEST MANAGEMETN PRACTICES TO MEET REDUCTION IN POLLUTANT LOADING

Once the Township has identified the amount of pollution load required to be reduced it will identify areas within the municipality to be further studied for BMP improvements. The proposed implementation of BMPs or land use changes shall be within the storm sewershed that will result in meeting required reductions.

The Township intends to implement BMP's within five (5) years of DEP's approval date for coverage under the PAG-13 General Permit. The BMPs may be located on public or private property and land acquisition may be required. The Township will also work with developers to identify BMPs that may be installed by others.

During the five (5) year permit period, the Township may elect to take credit for BMPs that are less than 1 acre and are not being used to meet regulatory requirements, such as a Chapter 102 NPDES permit for construction activities. The Township is considering modifications of the current storm water ordinance to implement BMPS for all land development that exceed minimum requirements of the Chapter 102 NPDES permit in order to take "Credit" towards the MS4 permit requirements.

Map of Major drainage basins withing Hzle Township:



Figure 2: Map of the basins and streams that flow through Hazle Township. Stream segments colored red indicate impaired portions of streams.

Hazle Township

Final MS4 Pollutant Reduction Plan



BLACK CREEK BASIN

Black and Hazle Creek				
Information Status Links				
County: Luzerne, Schuylkill, Carbon Category: AMD	EPA Approved	TMDL: Black and Hazle Creek		
Cause: Metals, pH HUC: 2040106	4/9/2009	Public Notice: Black and Hazle Creek Public Notice		

Figure 3: Map and EPA data for Black Creek Basin flowing through Hazle Township.

Final MS4 Pollutant Reduction Plan



HAZLE CREEK BASIN

Black and Hazle Creek				
Information Status Links				
County: Luzerne, Schuylkill, Carbon Category: AMD	EPA Approved 4/9/2009	TMDL: Black and Hazle Creek		
Cause: Metals, pH HUC: 2040106		Public Notice: Black and Hazle Creek Public Notice		

Figure 4: Map and EPA data for Hazle Creek Basin flowing through Hazle Township.

Hazle Township

Final MS4 Pollutant Reduction Plan



MESSER RUN – CATAWISSA CREEK BASIN

Catawissa Creek				
Information Status Links				
County: Columbia, Schuylkill		TMDL: Catawissa Creek Watershed TMDL		
Category: AMD EPA Approved Cause: Metals, pH 4/9/2003		Information: Information Sheet for Catawissa Creek Watershed		
		TMDL		
HUC: 2040203, 2050107, 2050301		Public Notice: Public Notice for Catawissa Creek Watershed TMDL		

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Figure 5: Map and EPA data for Catawissa Creek Basin flowing through Hazle Township.



Final MS4 Pollutant Reduction Plan



BEAVER CREEK – BLACK CREEK BASIN

Black and Hazle Creek				
Information Status Links				
County: Luzerne, Schuylkill, Carbon Category: AMD	EPA Approved	TMDL: Black and Hazle Creek		
Cause: Metals, pH HUC: 2040106	4/9/2009	Public Notice: Black and Hazle Creek Public Notice		

Figure 6: Map and EPA data for Beaver Creek Basin flowing through Hazle Township.

4.3 Black Creek

The headwaters of Black Creek begin in Foster Township near Freeland and flow southwest though the community of Jeddo where it enters Hazle Township. Surface water flow from the headwaters in this area is cut off from the actual stream by permitted open mining activity. No surface flow from the Urbanized Areas in this area is currently able to flow to the stream crossing at Stockton Mountain Road.

Additional watershed lies between two mountain ridges near the community of Ebervale which is also separated from the stream bank due to active mines south of this Village. Further downstream, the creek leaves the two mountains and flows thru urbanized areas north of Hazleton, crossing Pennsylvania Route 940 and Pennsylvania Route 309.

Watershed area from the headwaters of Little Black Creek near Pardeesville, Milnesville and Hollywood also appear to be separated from surface flow to this creek due to active mine operations. Active mining south of Harleigh and Pardeesville as well as outfalls directly to large mine pits currently prevent surface water flow from entering this stream.

Until such time as the mine operations cease and the land is restored to allow surface flow and MS4 outfalls to discharge to the stream these areas are included in this PRP but will have no immediate impact on reducing overall sediment loading.

4.4 Hazle Creek

Hazle Creek is a tributary source stream of the Lehigh River and the Delaware River Basin. The headwaters of this creek are located within the east-side neighborhoods of Hazle Township. Active mine operations separate MS4 from the Diamond Avenue area and prevent flow into the stream. Urbanized areas south of the Hazleton Beltway flow overland without an MS4 outfall into the active Jeansville mining area and currently do not flow to the headwaters of Beaver Creek.

Until such time as the mine operations cease and the land is restored to allow surface flow and MS4 outfalls to discharge to the stream these areas are included in this PRP but will have no immediate impact on reducing overall sediment loading.

4.5 Unnamed Tributaries to Catawissa Creek

A small portion of Hazle Township and an urbanized area along the south side of the municipality drain to the headwaters of Catawissa Creek. The waters of Catawissa Creek are highly acidic due to runoff from an abandoned mine in the creek's watershed. Headwaters of Catawissa Creek start in this south section of Hazle Township and flow south-west into Schuylkill County and eventually to the Susquehanna River. Active coal mining and abandoned strip pits still separate surface flow from the urbanized areas in this location.

Until such time as the mine operations cease and the land is restored to allow surface flow and MS4 outfalls to discharge to the stream these areas are included in this PRP but will have no immediate impact on reducing overall sediment loading.

5.0 Pollutant Reduction

Per the MS4 permit and PRP Instructions document (3800-PM-BCW0100k), over the next five (5) year permit cycle this plan will address Public Participation, Storm Sewershed mapping, Pollutants of Concern, Existing Sediment Loading, Proposed Best Management Practices (BMPs), Funding Mechanisms, and Operations and Maintenance of BMP's.

Hazle Township has completed the next step in the restoration effort of local water bodies and complying with the mandate to meet the Total Maximum Daily Load (TMDL) requirements set by the federal government. This plan sets a 5-year goal, from DEP's approval of the PRP, to reduce pollution into local waterways by installing various Best Management Practices (BMPs). The township is required to reduce pollution caused from sediment by 10%, Phosphorus by 5%, and Nitrogen by 3%. It is assumed that by meeting the reduction in sediment pollution the phosphorus and nitrogen reductions will also be met since these pollutants bind to soil particles. The current calculated preliminary sediment pollutant load (not yet accounting for previously installed BMPs) is 1,015,282 lbs/yr for the entire Township, meaning that the township is responsible for reducing this by 101,528 lbs/yr.

In order to meet these reduction goals, the township will develop a plan involving a series of projects throughout each small watershed. The PRP proposes implementing In-Line Water Treatment devices, stream restoration, adding outfall protection and restoring swales. This plan is preliminary and may change during the permit cycle if after additional detailed analysis more feasible/cost effective projects are discovered.

Based on Section 4 of the Recommendations of the Expert Panel to Define Removal Rates for Urban Stormwater Retrofit Projects this PRP estimates that addressing runoff from low, medium and high intensity development may result in a total project Load Reduction of 120,778 lbs/yr, exceeding the required reduction for the 5-year permit. The projects is expected to cost in excess of \$5,000,000. Although implementation of this PRP plan is a significant cost to the Township, the Township Supervisors will proactively look for ways to achieve pollutant load reductions and pursue grant opportunities to reduce the overall cost of achieving the required load reductions.

5.1 Public Participation and Education

Hazle Township will make the final version of this PRP available to the public to review and provide comments for thirty (30) days, initiated by a public notice published in the Standard Speaker. A copy of the each public notice published in the Standard Speaker is included in Appendix A. All timely comments received and a record of consideration of these comments will be added to this Appendix. The PRP will be presented by the Board of Supervisors at a public meeting at a time and date to be established. Additional comments will also be accepted at this meeting from any interested members of the public.

Public Education Goals: Educate public as to effects of stormwater runoff including:

- How polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.
- How sediment can cloud the water and make it difficult or impossible for aquatic plants to grow as well as destroy aquatic habitats.
- Explain how excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
- Identify how bacteria and other pathogens can wash into swimming areas and create health hazards.
- Show how debris—plastic bags, six-pack rings, bottles, and cigarette butts—washed into waterbodies can choke, suffocate, or disable aquatic life and animals.
- Identify how typical household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.
- Discuss how polluted stormwater directly impacts drinking water sources.

Public Participation Goals: Help residents learn how to be part of the Solution to Runoff Pollution:

Stormwater flowing over driveways, lawns, and sidewalks, picks up debris, chemicals, dirt, and other pollutants. Stormwater can flow into a storm sewer system or directly to a lake, stream, river, or wetland. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water and is the largest threat to clean water.

By practicing healthy household habits, homeowners can keep common pollutants like pesticides, pet waste, grass clippings, and automotive fluids off the ground and out of stormwater. The Township will promote and adopt healthy household habits by simply taking steps around home and businesses to increase the amount of water that entering into the ground and thus reducing the amount of water flowing into the street. Some initial steps that will be promoted include:

- Wash your car on the lawn (not the driveway), or take your car to a commercial car wash
- Plant additional trees, shrubs, and ground cover
- Use of rain barrels to catch and store water for use in gardens
- Redirecting down spouts from paved areas and roads to vegetated areas
- Installing gravel trenches along driveways and patios to retain runoff
- Increased use of porous materials (i.e. porous concrete, wooden planks or brick pavers) for walkways and patios
- Grade driveways and walkways to direct water flow toward vegetated areas

Hazle Township

Public Involvement:

The EPA believes that the public can provide valuable input and assistance to small municipal stormwater management programs. Therefor the public is given opportunities to play an active role in both the development and implementation of this PRP program. An active and involved community is critical to the success of this stormwater management program.

Broad public understanding and support from citizens who participate in the development and decision making process and who are partially responsible for the program make it less likely to raise legal challenges to the program and more likely to take an active role in its implementation. Shorter implementation schedules are realized due to fewer obstacles in the form of public and legal challenges. The municipality sees an increase in citizen volunteers and a broader base of expertise and economic benefits while developing a relationship between the community and government programs on a watershed perspective.

Proposed BMP's:

- Hold a public stormwater awareness meeting to receive input on the proposed MS4 program.
- Develop and host hands-on stormwater workshops on various topics such as rain barrels, composting, and rain gardens.
- Identify possible partner groups and hold joint coordination meetings including watershed foundations, Penn State, Conservation District, major stakeholders, etc.
- Identify and develop community volunteer opportunities.
- Encourage public participation and method of receiving and tracking information, complaints and recommendations.
- Improve and educate developers of construction site stormwater runoff control.

5.2 Storm Sewersheds

All storm sewersheds from urbanized areas and areas identified by PaDep were manually delineated in ArcMap 10.7GIS tools using digital elevation models, (2) foot topographic contours from PAMAP and published data by the Pennsylvania Department of Conservation and Natural Resources (DCNR). Data was overlaid on aerial maps referencing Google Street View and multiple sources of aerial imagery.

"Parsing" provided an opportunity to eliminate areas within storm sewersheds from the existing pollutant load that do not drain to the MS4, areas that are already covered by an NPDES permit for the control of stormwater, areas that are excluded such as PaDot right of way, and areas that are separated from streams due to active mine activities. Storm sewersheds which extend outside of the municipal boundary and do not drain to the Township MS4 system were also removed from these calculations.

Sewersheds which convey stormwater and are owned by the Township, designed to collect or convey stormwater including drains, pipes, and ditches are considered an MS4. All combined storm sewer systems are excluded. Storm sewershed boundaries are synonymous with the planning area boundaries and maps illustrating the storm sewersheds to be further mapped in this next permit cycle are attached below.

See Appendix B for a detailed breakdown and analysis of each sewershed analyzed in this PRP.

A summary list of outfalls as identified to date and associated with MS4 storm sewershed is included in Appendix C. Also listed is the receiving sediment-impaired stream for each outfall and United States Geological Survey (USGS) National Hydrography Dataset (NHD) Hydrologic Unit Code (HUC) 12 watershed.

5.3 Mapping the Storm Sewersheds

Using GIS tools and available online sources the entire storm sewer system was delineated and mapped for all sewersheds. A clear distinction was made between the sewersheds that discharge to locally impaired waters subject to Appendix E requirements and those subject to Appendix D. WikiWatershed was then used to estimate the pervious and impervious area within each sewershed for the areas as indicated in figures below:



Figure 7: Storm Sewersheds in North area, Hazle Township Luzerne County.



Figure 8: Storm sewersheds in Drifton area, Hazle Township Luzerne County.



Figure 9: Storm sewershed in Diamond Ave. area, Hazle Township Luzerne County.



Figure 10: Storm sewersheds in Harwood and Greenridge area, Hazle Township Luzerne County.



Figure 11: Storm sewersheds in New Coxesville area, Hazle Township Luzerne County.



Figure 12: Storm sewersheds in Valmont area, Hazle Township Luzerne County.



Figure 13: Storm sewersheds in Beaver Brook area, Hazle Township Luzerne County.

5.4 Pollutants of Concern

The primary pollutant of concern that Hazle Township is required to address is sediment. To meet the mandated requirements, a minimum ten (10) percent sediment reduction must be demonstrated.

5.5 Existing Sediment Loading

To determine existing sediment loading in urbanized areas that drain impaired streams the methodology described in the DEP guidance document entitled "Pollution Reduction Plan: A Methodology" was utilized. Per the "Pollutant Aggregation Suggestions for MS4 Requirements Table Instructions" and the "Pollutant Aggregation Suggestions for MS4 Requirements Table (Municipal)", Hazle Township has elected to achieve a ten (10) percent sediment pollutant reduction across the entire Planning Area (i.e. storm sewersheds), as opposed to a 10 percent reduction in the Planning Areas for each receiving impaired surface water. Utilizing ArcGIS 10.5, 2011 National Land Cover Dataset (NLCD) data the acreage of each land cover classification type within the each storm sewersheds was calculated. The aggregate NLCD statistics within the storm sewersheds for each impaired receiving water was tabulated by land cover classification type. The land use information from WikiWatershed comes from the 2011 National Land Cover Database (NLCD 2011).

Please note the following NLCD 2011 definitions:

- Developed, Open Space Impervious surfaces account for less than 20% of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.
- Developed, Low Intensity Impervious surfaces account for 20% to 49% percent of total cover. These areas most commonly include single-family housing units.
- Developed, Medium Intensity Impervious surfaces account for 50% to 79% of the total cover. These areas most commonly include single-family housing units.
- Developed High Intensity Impervious surfaces account for 80% to 100% of the total cover. Highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial.

The NLCD 2011 information amalgamates impervious and pervious land uses together to create larger scale land use categories. Therefore the impervious and pervious information needs to be separated out using the percentage information provided in each definition. However PA DEP analysis has determined that the highest percentage of impervious must be used to remain accurate. The appropriate impervious percentages are as follows:

- Developed, Open Space 19% impervious
- Developed, Low Intensity 49% impervious
- Developed, Medium Intensity 79% impervious
- Developed High Intensity 100% impervious

The calculation was performed using a simple spreadsheet which converts the area information from square meters to acres then multiplies by the correct impervious ratio.

The "Developed Land Loading Rates for PA Counties" (Attachment B of the PRP Instructions) for "Luzerne County" were applied for impervious developed and pervious developed. The existing sediment loading quantified from the entire Planning Area was 624,462 lbs/yr. No existing BMPs were credited to reduce the existing sediment loading. Based on this simple method of load calculations in Appendix C, Hazle Township will be required to remove 10% of this loading over the next five year permit cycle or 62,446 lbs/year of sediment.

	Developed	Attachme Land Loading R	nt B ates for PA Countie	25	
21.21-1			TN	TP	TSS (Sediment
County	Category	Acres	lb/acre/yr	Ib/acre/yr	Ib/acre/yr
	impervious developed	5,857.0	20.43	3	1,648
Luzerne	pervious developed	13,482.9	19.46	0.98	221
	Outside of Urbanized Area	All	10	0.33	234.6

5.6 Proposed Best Management Practices (BMPs) and Load Reduction Calculations

Proposed BMP's:

Hazle Township proposes to meet the required 10 percent sediment load reduction for the current Planning Area by implementing several BMPs within each area during the next five (5) year permit term.

These BMPs may include a combination of the following BMP's:

- Street Sweeping
- Infiltration Trenches
- Filtering Practices
- Storm Inlet Inserts
- Vegetated Open Swales
- Bio-swales
- Stream Restoration
- Outfall Protection and lining

As each sewer shed is mapped and analyzed final BMP's will be selected and implemented. Pollutant reductions resulting from the proposed BMPs will be quantified using PaDep approved methodology.

Pollution Prevention & Good Housekeeping:

Preventing pollutants from entering a waterway is better than attempting to restore a waterway after it has been polluted. Hazle Township will focus on preventing pollution before it happens. BMPs will focus on preventing pollutants from contacting stormwater.

Municipal activities including winter road maintenance, minor road repairs, infrastructure work, automobile maintenance, landscaping and park maintenance, and building maintenance will be

reviewed annually to help prevent discharge to nearby waterbodies. In addition, polices for containing spills, manage trash, and handle non-stormwater discharges will be developed.

Cleaning storm drains can be a major method of preventing pollutants from entering nearby waterways. Hazle Township staff will be trained to prevent and reduce stormwater pollution from activities like maintaining infrastructure and performing daily municipal activities including:

- Developing inspection and maintenance procedures and schedules for stormwater BMPs
- Implementing BMPs to treat pollutants from roadways and drainage infrastructure, maintenance areas, storage yards, and road salt storage areas.
- Establishing procedures for properly disposing of pollutants removed
- Identifying ways to incorporate water quality controls into new and existing projects
- Developing a training program for staff involved in activities that could discharge pollutants
- Developing standard operating procedures that incorporate stormwater BMPs for common municipal activities

Load Reduction Calculations:

This plan sets a 5-year goal, from DEP's approval of the PRP, to reduce pollution into local waterways by installing various Best Management Practices (BMPs) as noted above. In order to meet these reduction goals, the township will develop and implement these BMP's involving a series of projects throughout each small watershed. As each water shed is mapped in detail over the next five years In-Line Water Treatment devices, stream restoration, outfall protection and swale restoration will be added. This plan is preliminary and may change during the permit cycle if more feasible/cost effective projects are discovered.

As noted, this load reduction calculation is based on the Simplified method of Sediment Removal and Section 4 of the Recommendations of the Expert Panel to Define Removal Rates for Urban Stormwater Retrofit Projects. Due to the fact that this is the municipalities first permit cycle and acknowledging the diversity of possible retrofit BMP applications as further details and analysis are completed, this method provides a potential maximum calculated Load Reduction of 120,778 lbs/yr, if all BMP's are implemented. The analysis indicates that the Township has adequate MS4 watershed and potential BMP's to address the required 101,528 lbs/yr reduction for the 5-year permit. The initial mapping indicates that there are 58 distinct sub watersheds within the Urbanized Area of the Hazle Township boundary of which 28 sewersheds qualify as permitted MS4 areas.

5.7 Funding Mechanisms

Since detailed existing storm system mapping still needs to be completed it is difficult to estimate exact costs of BMP implementation and if any land acquisition will be required. Using a BMP budget cost of \$215,000 per sub-watershed including design, engineering, permitting and construction it is expected to cost approximately \$4,945,000 over the five year permit cycle or approximately \$989,000 per year. Although implementation of this PRP plan is a significant cost to the Township, the Township Supervisors will proactively look for ways to achieve pollutant load reductions and pursue grant opportunities to reduce the overall cost of achieving the required load reductions.

Hazle Township will seek various funding mechanisms to complete all improvements. Funding may include but not be limited to General Funds, Pennvest, Growing Greener, Pa Department of Community and Economic Development and Department of Housing and Urban Development. Engineering, design and estimated costs for the implementation of each proposed BMP will also be developed as each watershed is detailed and analyzed. Hazle Township plans on funding all proposed and required BMPs through money secured through this next permit cycle including revisions to fees and costs incorporated into the stormwater management ordinance.

5.8 Operations and Maintenance

To ensure the long-term effectiveness of all proposed BMPs, operation and maintenance (O&M) is crucial. All the proposed BMPs will be located on Township-owned property or right of way. It will be the responsibility of the Township to maintain the integrity of all facilities as required for each proposed BMP (Pennsylvania Stormwater BMP Manual). The Township is already performing some level of maintenance for these areas through mowing, cleaning and debris removal. It is the intent of the Township to select and design BMP's to minimize operation and maintenance expenses of all new and/or retrofitted facilities. The following tables identify potential BMP's and their required operation and maintenance responsibilities.

BMP Option 1	Parties Responsible for O&M	O&M Activities	Frequency of Activities
		Visually inspect bank and structures	Annually
Stream Restoration	Hazle Township Public Works Director Maintenance Staff	Note and photograph any accelerated weathering, displacement or significant changes	Annually
		Inspect the bank and structures after heavy rainfall	As Needed
		Sponsor Clean Up events to clear debris and trash from the drainage area.	Annual event coordinated with the Township

BMP Option 2	Parties Responsible for O&M	O&M Activities	Frequency of Activities
	Hazle Township Public Works Director Maintenance Staff Local schools	Visually inspect the channel; remove weeds, debris and intrusive plants; replacement of any rip rap or stone areas	Monthly (first 6 months) Annually after 6 mo.
		Visually inspect the channel; look to conduct outdoor classroom exercises, provide Township copy of the class exercise report	Annually
Open Channel Vegetation		Mow and trim vegetation to ensure safety, aesthetics, proper swale operations, and to suppress weeds and invasive plants	As Needed Mowing and trimming schedule to be directed by the Nursery supplier
		Provide summary of maintenance activities conducted to the Township	Annually
		Provide training on proper uses of fertilizers, pesticides, de-icers and other materials within the drainage area; review non-toxic alternatives	Annual Training for Maintenance Staff coordinated with Hazle Township staff

BMP Option 3	Parties Responsible for O&M	O&M Activities	Frequency of Activities
		Visually inspect for signs of erosion; Clear accumulation of debris at pipe openings and discharge points	As Needed following construction
		Initial watering program to get plantings established	As Needed following construction
		Prune and weed swale to maintain appearance; Remove trash and debris	Monthly
	Public Works Director	Remove and replace mulch	Every 2-3 years
Rain Gardens	Private Participation Local schools	Inspect inflow area for sediment accumulation; Test planting bed pH soil, adjust as needed	Annually
		Replace dying vegetation	Annually
		Visually inspect and check cross- section and longitudinal slopes	Annually
		Inspect inflow area for sediment accumulation; Test planting bed pH soil, adjust as needed	Annually

BMP Option 4	Parties Responsible for O&M	O&M Activities	Frequency of Activities
		Designate restricted use areas near the pavement to prevent clogging materials from being washed into the area (mulch piles, truck washing areas, material storage, etc.)	Annual Training for Staff on restricted activities on or near permeable pavement
		Post signs at parking lot about restrictive uses for the area	As needed
		Weed removal	Monthly
Permeable Pavement	Hazle Township	Maintenance Agreement with Hazle Township	Prior to construction
		Vacuum Sweeper; Records of vacuum	At least 2 times a year. More if needed
		sweeping (preventative measure)	Regenerative air vacuum sweepers recommended for regular maintenance
		Inspection for accumulated dust, sediment and debris	Quarterly
		Municipal Compliance verification	Annually

BMP Option 5	Parties Responsible for O&M	O&M Activities	Frequency of Activities
		Inspect accumulation of debris, remove debris, flag and repair locations of channelization and /or erosion that need re-stabilized	At least twice a year
	Hazle Township	Inspect vegetative for 85% sustained coverage, reestablish cover if >50% damage is observed, remove invasive/ unwanted plant growth	At least twice a year Min. 1 Inspection - during growing season Min. 1 inspection – during non-growing season
Filter Strip Runoff Reduction		Removal of sediment when accumulation exceeds 2 inches in depth	As Needed
		Legal agreement with property owner	Prior to BMP work List of maintenance and operation tasks to be provided in a written manual for both parties
	Property Owner	Inspection log for recording observations and maintenance activities	Annual submission of log forms to Township

6.0 Conclusion

The required ten (10) percent reduction in sediment can be achieved through the proposed implementation of BMP's. These BMP's will be funded and implemented by the end of this permit cycle in 2028.

7.0 Definitions

Best Management Practices (BMPs): Schedules of activities, prohibitions of practices, structural controls (e.g., infiltration trenches), design criteria, maintenance procedures, and other management practices to prevent or reduce pollution to the waters of the Commonwealth. BMPs include Erosion and Sedimentation Control Plans, Post Construction Stormwater Management Plans, MS4 TMDL Plans, Stormwater Management Act Plans, and other treatment requirements, operating procedures and practices to control runoff, spillage or leaks, sludge or waste disposal, drainage from raw material storage, and methods to reduce pollution, to recharge groundwater, to enhance stream base flow and to reduce the threat of flooding and stream bank erosion. [NPDES Stormwater Discharges from Small MS4s General Permit 5/2016 (PAG-13)]

Municipal Separate Storm Sewer System (MS4): All separate storm sewers that are defined as "large" or "medium" or "small" municipal separate storm sewer systems pursuant to 40 CFR §§ 122.26(b)(18), or designated as regulated under 40 CFR § 122.26(a)(1)(v). [PAG-13]

National Pollutant Discharge Elimination System (NPDES): A permit issued under 25 Pa. Code Chapter 92a (relating to National Pollutant Discharge Elimination System permitting, monitoring and compliance) for the discharge or potential discharge of pollutants from a point source to surface waters. [PAG-13]

Outfall: A "Point Source" as defined by 40 CFR § 122.2 is the point where an MS4 discharges stormwater to other surface waters of this Commonwealth. This does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream and are used to convey waters of the Commonwealth (40 CFR § 122.26 (b) (9)). [PAG-13]

Owner or operator: The owner or operator of any "facility" or "activity" subject to regulation under the NPDES program. [PAG-13]'

Parsing: A process in which land area is removed from a Planning Area in order to calculate the actual or target pollutant loads that are applicable to an MS4. [NPDES from Small MS4 PRP Instructions-Attachment A]

Planning Area: All of the storm sewersheds that an MS4 must calculate existing loads and plan load reductions for [NPDES from Small MS4 PRP Instructions]

8.0 Appendix A: Advertisement

The Standard Speaker (Under act P.L. 877 No 160. July 9, 1976) Commonwealth of Pennsylvania, County of Luzerne

HAZLE TOWNSHIP SUPERVISORS WENDY NAPRAVA PO BOX 506 HAZLE TOWNSHIP BLDG HARLEIGH PA 18225

Account # 218982 Order # 82218071 Ad Price: 190.64

POLLUTION REDUCTION

Ann Marie Fortese

Being duly sworn according to law deposes and says that (s)he is Billing clerk for The Standard Speaker, owner and publisher of The Standard Speaker, a newspaper of general circulation, established in 1865, published in the city of Hazleton, county and state aforesaid, and that the printed notice or publication hereto attached is exactly as printed in the regular editions of the said newspaper on the following dates:

06/04/2018

Affiant further deposes and says that neither the affiant nor The Standard Speaker is interested in the subject matter of the aforesaid notice or advertisement and that all allegations in the foregoing statement as time, place and character or publication are true

Sworn and subscribed to before me this 4th day of June, A.D., 2018

(Notary Public)

Commonwealth of Pennsylvanies - Notary Enal Sharch Venturi, Notary Public Leekawanna County My commission explore Fallmery 12, 2022 Gammission number 1254225 Member, Fornsylvaria Association of Nolarity



NOTICE

NOTICE NOTICE IS HEREBY GIVEN THAT Hade dynaship has prepared a fool-lution Reduction Plan (PRP) as re-quired by the PA DEP which plan outlines potential activities and projects to reduce pollution caused by sediment and/or nutrients in re-ceiving streams. The PRP is avail-able for public feview and commend at the Township Office located at 101 West 27th Street. Hade Town-ship PA 18202 beginning June 11, 2018 weekdays during regular bus-ness hours of 720 a.m. until 200 pm. The Plan is also available for review beginning June 11, 2018 at the Townships Website at http://www.hadetownship.com.

http://www.nazistownsnip.com Written comments will be accepted in person or by mail at the Town-shipe Office address above no later than close of business on July 11, 2018. Public comment concerning the PRP will also be accepted at a public meeting to be held on Tues-der, July 17, 2018 at 64 on Tues-der, July 17, 2018 at 64 on Tues-dention of the Plan by the Hazle Township Supervisors will be con-sidered at the Townships regularly schedulad public meeting to be held on August 13, 2018 at 6;00 p.m.

/s/ John Synoski Hazle Township Planning Director

9.0 Appendix B: Sub-Sewershed Analysis

The Hazle Township Municipal Storm Water System was broken down into sub-watersheds utilizing Wiki "Model My Watershed" Tool created by the StroudTM Water Research Center and GIS mapping analysis utilizing layers and tools provided by PASDA. PASDA 2-foot USGS contours, field research of existing piped storm drainage system, Google earth 3-D, PASDA Hillshade and experience working in the area was utilized to determine direction of flow, probable type of flow (sheet, swale or piping) and reasonable outfall locations based on available data.

Based on recent coordination and plan review discussions with PaDep, any area meeting the Parsing Guidelines established by the Department may be excluded from the Planning Area for the MS4 Permit. Parsing for PRPs include the following:

- 1. Areas within the storm sewer shed that do not drain to a Township/Municipal MS4
- 2. Areas already covered by an NPDES permit for the control of stormwater
- 3. Sites covered by the PAG-03 General Permit for Stormwater Associated with Industrial Activity
- 4. Areas associated with non-municipal stormwater NPDES permit coverage that exists within the urbanized area of a municipality
- 5. Land area associated with private development, School Districts, PennDOT roadways, Railroads and the Pennsylvania Turnpike (roads and right of ways)
- 6. Lands associated with the production area of a Concentrated Animal Feeding Operation
- 7. Land areas in which stormwater runoff does not enter the MS4.
- 8. Homeowner's associations which do not contain municipal roads or other municipal infrastructure
- 9. Schools which do not contain municipal roads or other municipal infrastructure.
- 10. Any drainage area disconnected from the stream being analyzed (i.e. open mine pit or mining)

There has been and continues to be a large area of surface mining activities within Hazle Township. Many of these current and former mining activities have disturbed and significantly scared the original surface topography and have altered many of the original stream drainage flow paths. Several sewersheds surface flow never reach the stream due to these mining activities. As required by PaDep, a more detailed study of all mining areas is required prior to parsing this land.

Surface mining alterations have resulted in a significant discontinuation of the historical stream and has resulted in surface discharge to open pits, active mining operations and most likely eventually the mine pool. All areas draining to current or former mining activities, isolated open pits, mine pools or areas that are disconnected from the MS4 and the stream being impacted are parsed out and excluded from this MS4 analysis at this time as approved by PaDep.

NORTH AREA OF HAZLE TOWNSHIP

The North area of Hazle Township contains the primary Urbanized section of the Township. This section of Hazle Township borders Sugarloaf Township, Borough of West Hazleton and Butler Township. Watershed areas which do not contain a Township MS4, areas that drain to Padot, and PaDot right of way have been parsed out of the MS4 and excluded from this analysis.

1 Laurel Mall South SWS1: This drainage area contains part of the Chapel Hill Development, entrance to and part of the Laurel Mall, development of commercial buildings along SR 93 and industrial development along Dessen Drive in West Hazleton. All drainage systems except for the small area in Chapel Hill are private or part of/drain to the PaDot right of way. Hazle Township does not own or maintain any municipal stormwater piping, swales or roads in this drainage area except for Chapel Hill and therefore areas except the Chapel Hill watershed are parsed out of this analysis.

						Larre Mail Sources	Add and a stand an
12-11-1		Contra Contra	In In and		1.	4	
aurel_Mall_	South	_SW5_1			5		
aurel_Mall_	South	_SWS_1 gridcode	Shape_Leng	Shape_Area	Acres	Watershed	Descriptio
aurel_Mall_ OBJECTID 6585	South Id	_SWS_1 gridcode 0	Shape_Leng 11758.706638	Shape_Area 2019480.87285	Acres 46	Watershed 1 Laurel_Mall_South_SWS_1D	Descriptio No Twp MS4 but drains to W. Haz Pipes
aurel_Mall_ OBJECTID 6585 6585	South	_SWS_1 gridcode 0 0	Shape_Leng 11758.706638 11758.706638	Shape_Area 2019480.87285 638954.494213	Acres 46	Watershed Laurel_Mal_South_SWS_1D Laurel_Mal_South_SWS_1B	Descriptio No Twp MS4 but drains to W. Haz Pipes Parsed Out No MSS4 All Private Dev Drains to PaDot
aurel_Mall_ OBJECTID 6585 6585 6585	South Id 1	_SWS_1 gridcode 0 0	Shape_Leng 11758.706638 11758.706638 11758.706638	Shape_Area 2019480.87285 638954.494213 169657.471616	Acres 46	Watershed 1 Laurel_Mal_South_SWS_1D 1 Laurel_Mal_South_SWS_1B 1 Laurel_Mal_South_SWS_1C	Descriptio No Twp MS4 but drains to W. Haz Pipes Parsed Out No MSS4 All Private Dev Drains to PaDot Parsed Out - PaDot ROW No MS4

Proposed BMP's: Since section 1A is such a small isolated MS4 drainage area street sweeping, and inlet inserts are proposed to remove contaminants. The 46 acres of section 1D includes Fox Manor Road where inlets and street sweeping is also proposed. The majority of land in 1D flows to adjoining municipality but is included in Hazle Township's planning area and loading calculations.

<u>2 Park Crest SWS1</u>: This drainage area contains the majority of the Chapel Hill Development, entrance to the Hazle Township Community Park, Community Park soccer fields, Park Crest Development and commercial development along SR 93. All drainage systems within the two residential developments are owned and maintained by the Township. Commercial development along the State ROW flows to the PaDot SR93 drainage system and is not part of the Township MS4. The Padot ROW and developed area tied directly to that system are therefor parsed out of this analysis.



2 Park_Crest_SWS_1										
	FID	Shape *	OBJECTID	Id	gridcode	Shape_Leng	Shape_Area	Acres	Watershed	Descriptio
۲	1	Polygon	6480	2	0	9286.664926	1549713.89739	36	2 Park_Crest_SWS_1B	Parsed Out No MSSS Drains to Padot
	0	Polygon	6480	2	0	14103.686194	4665623.86218	107	2 Park_Crest_SWS_1A	Twp MS4 BMPs Added
	2	Polygon	6480	2	0	1039.621879	41527.097781	1	2 pARK_CREST SWS_1C	Twp MS4 Drains to PaDot

<u>Proposed BMP's</u>: This drainage area discharges to a large piped outfall. The proposed BMPs' include replacing existing pipe with a vegetated open swale discharging to infiltration wet pond with wetlands.

<u>3 Lake Irena SWS2</u>: This drainage area is part of the lands of Hazle Township Community Park and is located just south of Lake Irena. The land is predominantly wooded and undeveloped. An existing Community Park Road cuts across the very south end of the drainage area. Existing rock swales and cross pipes installed by the Township to handle surface stormwater flow from this drainage area.



FID	Shape *	OBJECTID	ld	gridcode	Shape_Leng	Shape_Area	Acres	Watershed	Descriptio
(Polygon	6589	3	3296	14499.372602	4553628.21099	77	3 Lake_Irena_SWS_2A	Natural Wooded Area
1	Polygon	6589	3	3296	14499.372602	4553628.21099	9	3 Lake_Irena_SWS_2B	Twp Road Improvement
1	Potygon	6589	3	3296	14499.372602	4553628.21099	27	3 Lake Irena SWS 2C	Natural Wooded Area

<u>Proposed BMP's</u>: This drainage area discharges to existing rock lined swales and typical open cross pipe. The proposed BMPs' include replacing rock swales with vegetated open infiltration swales, outfall protection and bio-retention area.
<u>4 Lake Irena SWS1</u>: This is a large drainage watershed and includes significant development. Extending from the far north line of the Township this area includes the residential development of Woodlawn Park, commercial development along the Airport Beltway (PaDot), lands of the Hazleton Airport (parsed since Federally regulated), Walmart, Hazleton Auto Mall, the Laurel Mall, and the north part of the Hazle Township Community Park. The PaDot right of way of the Airport Beltway is parsed out of this watershed. All drainage flows is via pipes and swales to the headwaters to tributaries to Lake Irena and are critical to the water quality of this lake.



VIEW OF OVERALL DRAIANGE AREA



LANDS OF HAZLETON AIRPORT PARSED OUT OF THIS ANALYSIS



NATURALLY WOODED LANDS OF COMMUNITY PARK PARSED OUT OF THIS ANALYSIS

	FID	Shape *	OBJECTID	ld	gridcode	Shape_Leng	Shape_Area	Watershed	Derscripti	Area_Acres
۲	1	Polygon	6584	4	2903	31418.867553	163.045258	4 Lake_Irena_SWS_2	Drainage to new infiltration swale	163
ľ	2	Polygon	6584	4	2903	31418.867553	15.029965	4 Lake_Irena_SWS_3	Padot ROW Parsed Out	15
	5	Polygon	6584	4	2903	31418.867553	2.612878	4 Lake_Irena_SWS_6	Twp North Park Drive	3
	6	Polygon	6584	4	2903	31418.867553	24.254386	4 Lake_Irena_SWS_7	Developed area to stream	24
	9	Polygon	6584	4	2903	31418.867553	7.937281	4 Lake_Irena_SWS_10	Private Development No MS4	8
	0	Polygon	6584	4	2903	31418.867553	62.384044	4 Lake_Irena_SWS_1	Laurel Mall - Upgrade Pond - Potential Parse Area	62
	3	Polygon	6584	4	2903	31418.867553	168.188108	4 Lake_Irena_SWS_4	Airport Lands Parsed Out No Twp MS4	168
	4	Polygon	6584	4	2903	31418.867553	49.77812	4 Lake_Irena_SWS_5	Community Park Parsed Out No MS4	50
	7	Polygon	6584	4	2903	6687.806569	2081662.47072	4 Lake_Irena_SWS_8	Auto Mall Upgrade Pond- Potential Parse Area	48
	8	Polygon	6584	4	2903	31418.867553	28.642601	4 Lake_Irena_SWS_9	Wallmart Upgrade Pond- Potential Parse Area	29
	10	Polygon	6584	4	2903	31418.867553	18.172856	4 Lake_Irena_SWS_11	Upgrade Existing Ponds - Potential Parse Area	18

<u>Proposed BMP's</u>: This drainage area includes a wide variety of existing private, public and facilities. Some facilities are within PaDot right of way. Infrastructure includes ponds, swales and unprotected open cross pipes. The proposed BMPs' include entering into a cooperative agreement with private developers owning the various stormwater ponds in order to upgrade to wet ponds, wetlands or extended detention basins. Grass lined and rock swales will be upgraded to vegetated open infiltration swales, outfall protection and bio-retention areas.

5 Hollywood SWS1

This drainage area includes part of the Village of Hollywood, a large BAMR reclaimed area and the PaDot Airport Beltway. The PaDot right of way of the Airport Beltway has been parsed out of this watershed analysis. All drainage flows via sheet flow, pipes and swales to the PaDot right of way and drainage system which is not a Municipal Stormwater System. Stormwater for these drainage areas then discharges to a large open mine pit via PaDot pipes and is totally disconnected from the stream of this analysis. Therefore, this entire drainage area has been parsed out and excluded from this analysis.



ollyw	ood_SWS_	1							
FID	Shape *	OBJECTID	ld	gridcode	Shape_Leng	Shape_Area	Acres	Watershed	Descriptio
0	Polygon	6446	5	1547	17801.545872	4727559.39102	109	5 Hollywood_SWS_1	Village of Hollywood
1	Polygon	6446	5	1547	17801.545872	671800.089276	15	5 Hollywood_SWS_2	Padot ROW & Draiange Area No MS4
2	Polygon	6446	5	1547	17801.545872	2234259.26022	51	5 Hollywood SWS 3	BAMR Mine Reclamation Area No MS4

<u>Proposed BMP's</u>: The PaDot and BAMR reclamation site has no Township MS4 and these areas have been parsed from the analysis. This Hollywood drainage area includes municipal strets and storm system and is included in the ms4. Grass lined and rock swales will be upgraded to vegetated open infiltration swales, outfall protection and bio-retention areas.

6 Airport North SWS1

This drainage area includes part of the Village of Milnesville, a large strip pit, PaDot right of way, Township Old Airport Road and part of the Lands of the City of Hazleton Airport which is under a separate NPDES Permit. This entire area drains to an open mine pit and is disconnected from any stream. and has been parsed out and excluded from this analysis. Padot ROW, private non MS\$ land draining to Padot, area without an MS4 and the Airport Land have been parsed from the analysis.



FID	Shape *	Acres	Watershed	Descriptio
0	Polygon	49	6 Airport_North_SWS_1	Mine land & Undeveloped to pit
1	Polygon	51	6 Airport_North_SWS_2	Airport Part of Indiv NPDES Permit - Parsed
2	Polygon	13	6 Airport_North_SWS_3	Priv land to Padot - No MS4 in this area
3	Polygon	3	6 Airport_North_SWS_4	Turkey Hill to Pit but included in MS4
4	Polygon	10	6 Airport_North_SWS_5	Part of Milnesville drains to pit part of MS4
5	Polygon	1	6 Airport_North_SWS_6	Twp Road Part of MS4
6	Polygon	16	6 Airport_North_SWS_7	Priv Land of Airport drains to Padot No MS4
7	Polygon	2	6 Airport_North_SWS_8	Twp Road Part of MS4
8	Polygon	15	6 Airport_North_SWS_9	PaDot ROW to pit excluded from MS4
9	Polygon	2	6 Airport_North_SWS_10	Twp Road Part of MS4
10	Polygon	39	6 Airport_North_SWS_11	Undev Land drains to Padot No Twp MS4
11	Polygon	3	6 Airport North SWS 12	Twp Road Part of MS4 drains to Padot

<u>Proposed BMP's:</u> . Grass lined and rock swales will be upgraded to vegetated open infiltration swales, outfall protection and bio-retention areas are proposed.

Airport South SWS1

This drainage area includes a large part of the City of Hazleton Airport Lands which is not under the control of the Township and parsed out of this analysis. A small section in the North East corner near 36'th Street and North Vine Street which has a drainage system installed by the Township. It appears that the area along 36'th and Vine Street is tied into the piping and swales of the Airport North SWS1 drainage area which discharges to a disconnected open min pit and has also been parsed out. All PaDot right of way is parsed form this drainage area analysis. The remaining area of development along 30'th Street drains to an open swale and eventually to Black Creek.



	Shape_Leng	FID	Shape_Area	acres	Watershed	Descriptio
•	24793.510164	1	920363.675087	21	7 South_Airport_SWS_2	Woodlawn Park Outfalls to Adjacent Area
	24793.510164	2	85647.477107	2	7 South_Airport_SWS_3	Padot ROW Parsed Out
	24793.510164	3	655991.552258	15	7 South_Airport_SWS_4	Part Milnesville - drains N. to Adjent mined area
	24793.510164	4	370631.080774	9	7 South_Airport_SWS_5	Developed area
	24793.510164	0	9977303.59405	229	7 South_Airport_SWS_1	Wooded Land of Hazleton City Airport Indiv NPDES
-						

<u>Proposed BMP's</u>: The MS4 drainage area along 30'th Street discharges to the headwaters of Black Creek via pipes and swales. The proposed BMPs' include vegetated open infiltration swales, outfall protection and bio-retention areas. These BMP's are in adjacent drainage area #8.

8 Turkey Hill SWS1

This area includes the drainage area near Turkey Hill and southwest along the north side of Black Creek. A private geriatrics care and housing facility is located within this area and parsed out of this analysis. A part of Community Park Road is located along the north edge of the drainage area. Two auto sales lots are located adjacent to and draining to the PaDot SR 309 ROW are parsed out of this analysis. All PaDot right of way is parsed form this drainage area analysis.



8 Turkey_Hill_SWS_1

F	ID	Shape_Leng	Shape_Area	Acres	Watershe	Descriptio
	0	3161927.14311	3161927.14311	73	8 Turkey_Hill_SWS_1	Draiange Area of 8 Turkey Hill SWS 1
1	1	407622.47313	407622,47313	9	8 Turkey_Hill_SWS_2	Twp Road Area Drains to PaDot
	2	62770.407083	62770.407083	1	8 Turkey_Hill_SWS_3	Parsed Out PaDot ROW
	3	169907.952917	169907.952917	4	8 Turkey_Hill_SWS_4	Twp Road Area Drains to PaDot
1	4	38256.684709	38256.684709	1	8 Turkey_Hill_SWS_5	Parsed Out PaDot ROW
	5	136267.664081	136267.664081	3	8 Turkey_Hill_SWS_6	Private Lands Sheet Flow To Stream
	6	1056343.83215	1056343.83215	24	8 Turkey_Hill_SWS_7	Private Development mixed with Twp MS4
1	7	843983.848921	843983.848921	19	8 Turkey_Hill_SWS_8	Draiange Area of 8 Turkey Hill SWS 8
	8	850379.284557	850379.284557	20	8 Turkey_Hill_SWS_9	Draiange Area of 8 Turkey Hill SWS 9
	9	339163.182683	339163.182683	8	8 Turkey_Hill_SWS_10	Draiange Area of 8 Turkey Hill SWS 10
-					•	

<u>Proposed BMP's</u>: The MS4 drainage area along 30'th Street from adjacent drainage area discharges to the headwaters of Black Creek via pipes and swales. The proposed BMPs' include vegetated open infiltration swales, outfall protection and bio-retention areas.

This drainage area includes lands of the Hazleton Area School District. Hazle Township has no Municipal Storm Sewer System in this area. This private non-municipal drainage area is completely parsed form the overall PRP analysis. An existing old stormwater pond exists in the rear of the school which may be an asset for future water quality control.



9 N22_Street_SWS_3

E	Т	FID	Shape *	OBJECTID	ld	gridcode	Shape_Leng	Shape_Area	Acres	Parsed	Reason	Watershed
Г	۱.	0	Polygon	2248	9	1403	11524.561788	1951747.47972	45	Parsed Out	Combined	9 N22_Street_SW

<u>Proposed BMP's</u>: This drainage area is a private non-municipal system and therefore no BMP's are proposed.

This drainage area is part of a combined sanitary/storm sewer system and is adjacent to the northern boundary of the City of Hazleton. The system is owned, operated and managed by the GHJSA including the CSO to Black Creek. This area contains no qualifying Municipal Stormwater System.



10 N22	Street	SWS 2

												1
	FID	Shape *	OBJECTID	ld	gridcode	Shape_Leng	Shape_Area	Acres	Watershed	Reason	Parsed	Ĩ
	1	Polygon	1659	10	808	23306.416729	9925363.93542	126	10 N22_Street_SWS_1	GHJSA Combined Sewer System	Parsed Out	
	3	Polygon	1659	10	808	23306.416729	967264.421386	22	10 N22_Street_SWS_2	GHJSA Combined Sewer System	Parsed Out	
	0	Polygon	1659	10	808	23306.416729	2280435.59952	52	10 N22_Street_SWS_3	GHJSA Combined Sewer System	Parsed Out	
F												

<u>Proposed BMP's</u>: This drainage area is part of an approved and permitted combined sewer system and therefore no BMP's are proposed.

This drainage area is part of a combined sanitary/storm sewer system and is adjacent to the northern boundary of the City of Hazleton. The system is owned, operated and managed by the GHJSA including the CSO to Black Creek.



-												
11	N22_St	treet_SWS_4										
	FID	Shape *	OBJECTID	ld	gridcode	Shape_Leng	Shape_Area	Acres	Name	Parsed	Reson	Watershed
	0	Polygon	2305	11	2123	13272.153307	2664910.266713	61	11A	Parsed Out	GHJSA Combined Sewer System	11 N22_Street_SWS_1
	1	Polygon	2305	11	2123	13272.153307	949819.898102	22	11A	Parsed Out	GHJSA Combined Sewer System	11 N22_Street_SWS_2
	2	Polygon	2305	11	2123	13272.153307	981518.952215	23	11A	Parsed Out	GHJSA Combined Sewer System	11 N22_Street_SWS_3
Þ												

<u>Proposed BMP's</u>: This drainage area is part of an approved and permitted combined sewer system and therefore no BMP's are proposed.

This drainage area is part of a combined sanitary/storm sewer system and is adjacent to the northern boundary of the City of Hazleton. The system is owned, operated and managed by the GHJSA including the CSO to Black Creek



	FID	Shape_Leng	Shape_Area	Acres	Parsed	Reason	Watershed
1	0	8195.869844	1275275.15605	29	Parsed Out	Combined Sewer	11 N22_Street_SWS_1
1	1	8195.869844	911055.127282	21	Parsed Out	Combined Sewer	11 N22_Street_SWS_2
]	2	8195.869844	66747.744268	2	Parsed Out	PaDot ROW	11 N22_Street_SWS_3
]	3	8195.869844	648338.88049	15	Parsed Out	Combined Sewer	11 N22_Street_SWS_4
-	4	8195.869844	59436.774908	1	Parsed Out	PaDot ROW	11 N22_Street_SWS_5
1	5	8195.869844	171674.345899	4	Parsed Out	Combined Sewer	11 N22_Street_SWS_6

<u>Proposed BMP's</u>: This drainage area is part of an approved and permitted combined sewer system and therefore no BMP's are proposed.

13 Ridgewood SWS2

This drainage area includes part of the Village of Harleigh along SR 940 as well as part of the Churchview development. State Route SR 940 cuts thru the lower section of this drainage area and is parsed out of this analysis. An old abandoned railroad track runs along the south border of this drainage area. An old former railroad swale appears to collect surface water and direct it to a pipe along SR 940 which leads to Black Creek near the Church Hill Mall. Improvements to this swale are proposed as the BMP for this drainage area. State Road ROW has been parsed from this analysis.



	13 F	Ridgev	vood_SWS_2								
		FID	Shape *	OBJECTID	ld	gridcode	Shape_Leng	Shape_Area	Acres	Watershed	Descriptio
1		0	Polygon	4230	12	4166	13428.529586	3652840.20346	46	13 Ridgewood_SWS_1	Developed Area
1		1	Polygon	4230	12	4166	73967.202004	73967.202004	2	13 Ridgewood_SWS_2	PaDot ROW Parsed Out
		2	Polygon	4230	12	4166	13428.529586	421508.819418	10	13 Ridgewood_SWS_3	Harleigh Development

<u>Proposed BMP's</u>: The MS4 drainage area flows along the abandoned railroad swale and discharges to the headwaters of Black Creek via pipes and swales. The proposed BMPs' include vegetated open infiltration swales, outfall protection and bio-retention areas.

14 Church Hill Mall SWS1

This drainage area includes several sub areas that have been altered by development over the years. This includes a large wooded area without development which drains naturally to a stream, large commercial parcels which do not have a municipal storm system and which drain to the PaDot right of way. Lands of Hazle Township and adjacent car dealership drain to an open mine pit disconnected from any stream and are parsed. State Route SR 309 cuts north/south along this area and is parsed out of this analysis. Non municipal areas and disconnected mine pits have been pared out of this analysis. Based on available information the Church View Development stormwater is piped south along SR 940 to Black Creek.



14 Churchhill_Mall_SWS_1

FID	Shape_Area	Acres	Watershed	Descriptio
0	2062131.18256	33	14 Churchhill_Mail_SWS_1	Parsed No MS4 Priv Dev drains to Padot
1	1081749.34153	25	14 Churchhill_Mall_SWS_2	Developed area drains to pipe system
2	1159104.05621	26	14 Churchhill_Mall_SWS_3	Parsed No MS4 Priv Dev
3	2062131.18256	11	14 Churchhill_Mall_SWS_4	29'th Street Twp Road to Padot MS4
4	1159104.05621	1	14 Churchhill_Mall_SWS_5	Parsed PaDot no Twp MS4
5	2062131.18256	3	14 Churchhill_Mall_SWS_6	Twp Road part of MS4
7	1159104.05621	26	14 Churchhill_Mall_SWS_3	Part of MS4

<u>Proposed BMP's:</u> Replacement of pipe with open vegetated infiltration swales are proposed as the BMP for this drainage area. A constructed wetland or infiltration pond is possible near the headwaters of Black Creek via pipes and swales.

15 Lattimer SWS4

This drainage area includes part of the Ridgewood Development and part of the Village of Lattimer. A section along the north side drains away from the Hazle Township road and has no MS4 and is parsed out of this analysis. The Township stormwater piping system currently discharges to the existing Little Black Creek Stream. BMP's are proposed to address water quality to meet this PRP.



D Sha	pe_Leng	Shape_Area	Acres	Watershed	Descriptio
				trater one a	Descriptio
0 117	713.091508	2870027.01693	66	15 Lattimer_SWS_1	Developed Area to new Infil BMP
1 117	713.091508	1080981.66006	25	15 Lattimer_SWS_2	Drains away from road no MS4 Parsed
	1 117	1 11713.091508	1 11713.091508 2870027.01093	1 11713.091508 1080981.66006 25	1 11713.091508 1080981.66006 25 15 Lattimer_SWS_2

<u>Proposed BMP's:</u> Replacement of last section of pipe with open vegetated infiltration swales and infiltration pond are proposed as the BMP for this drainage area. This area also has the possibility of stream restoration.

16 Milnesville East SWS1

This drainage area includes the eastern section of the Village of Milnesville east of SR 309. Several private commercial improvements are located in this drainage area that do not have a municipal storm water system. In addition, a major PaDot highway falls along the western side. Sections of the residential development along SR309 drain directly to the State right of way and do not have a Township Municipal Storm System. In addition, a large section in the north is directed to an active mining area and flow is disconnected from the stream in this analysis. All the areas listed above have been parsed out of this analysis.



F	FID	Shape_Area	Acres	Name	Watershed	Descriptio	
	0	1228822.9122	28	16	16 Milnesvill_East_SWS_1	Developed Area MS4	
	1	132920.414799	3	16	16 Milnesvill_East_SWS_2	Parsed PaDot ROW	
	2	1027548.17227	24	16	16 Milnesvill_East_SWS_3	Private Dev Drains to Padot No MS4	
	3	873833.754747	20	16	16 Milnesvill_East_SWS_4	Wooded Private Land No Twp MS4	
	4	1107807.77088	25	16	16 Milnesvill_East_SWS_5	Developed Area MS4	
	5	123684.926864	3	16	16 Milnesvill_East_SWS_6	Developed Area MS4	

<u>Proposed BMP's</u>: The Township stormwater piping/swale system that currently discharges to the existing Little Black Creek Stream will have proposed BMP's to address water quality to meet this PRP including open vegetated infiltration swales and infiltration pond. This area also has the possibility of stream restoration.

17 Pardeesville area of Hazle Township (General) SWS 17 thru 23

The overall Pardeesville drainage area is located along the north east section of the municipality along the Butler Township Boundary. A very large active mining operation sits in the hollow just south and between this drainage area and the stream of analysis. The entire drainage area is disconnected from the stream. A large mine pool collects surface water and is used to wash and clean in the mining operations. The entire Pardeesville area is parsed out of this municipal PRP. Drainage areas 17 thru 23 are pictured below for reference.



7 Parde	esville_SW	S_1				-
FID	Shape *	Shape_Leng	Shape_Area	Acres	Watershed	Descriptio
0	Polygon	19986.822697	3720735.85986	42	17 Pardeesville_SWS_1	Parsed - Private No Twp MS4



18	Parde	esville_SWS_2					
	FID	Shape_Leng	Shape_Area	Acres	Watershed	Descriptio	
	0	10172.795495	1483519.82819	32	18 Pardeesville_SWS_2	Part of Twp MS4	
۲							



FID	Shape *	OBJECTID	Id	gridcode	Shape_Leng	Shape_Area	Acres	Watershed
0	Polygon	1714	17	1666	8613.385456	1740568.46888	32	Twp MS4



FID	Shape_Leng	Shape_Area	Acres	Watershed	Descriptio
0	23747.893169	4773040.191952	110	20 Pardeesville_SWS_4	Parsed - No Twp MS4
1	23747.893169	796907.288664	18	20 Pardeesville SWS 4	Twp MS4



1	Parde	esville_SWS_5				
T	FID	Shape_Leng	Shape_Area	Acres	Watershed	Descriptio
T	0	6154.153587	1366182.249882	31	21 Pardeesville_SWS_5	Twp MS4
1	1	7008.585023	849254.32395	19	21 Pardeesville_SWS_5	No Twp MS4 in this Area
T			1	-		

This drainage area includes the entrance to Pardeesville off of SR 309. The drainage area is to an active open surface mining operation and is disconnected from the stream. This entire drainage area is therefore parsed out of this calculation.



FID	Shape_Leng	Shape_Area	Acres	Name	Watershed	Descriptio
0	18209.617755	11137930.47140	256	22A	22 Pardeesville_SWS_6	No Twp MS\$ in this area
1	9333.216188	1748396.68165	40	22B	22 Pardeesville_SWS_6	Twp MS4 Area

This drainage area includes the entrance to Pardeesville off of SR 309. The drainage area is to an active open surface mining operation and is disconnected from the stream. This entire drainage area is therefore parsed out of this calculation.



_					
FID	Shape_Leng	Shape_Area	Acres	Watershed	Descriptio
0	10490.600179	2201049.59995	42	23 Pardeesville_SWS_7	Part of Twp MS4

North East Section of Hazle Township includes the Lattimer area SWS 24 thru 26

This area of Lattimer drains to the Headwaters of Little Black Creek. There appear to be three disctinc sub areas for which each is analyzed and appropriate BMP's selected. Draiange areas 24 thru 26 are pictured below.



24 Lattimer SWS1

Proposed BMP's: The Township stormwater piping/swale system that currently discharges to the existing Little Black Creek Stream will have proposed BMP's to address water quality to meet this PRP including open vegetated infiltration swales and infiltration pond. This area also has the possibility of stream restoration.

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25 Lattimer SWS2



25	Lattim	er_SWS_2								
	FID	Shape *	OBJECTID	ld	gridcode	Shape_Leng	Shape_Area	Acres	Watershed	Γ
Þ	0	Polygon	6747	21	2839	14183.633248	3162578.98189	54	25 Lattimer_SWS_2	

<u>Proposed BMP's</u>: The Township stormwater piping/swale system that currently discharges to the existing Little Black Creek Stream will have proposed BMP's to address water quality to meet this PRP including open vegetated infiltration swales and infiltration pond. This area also has the possibility of stream restoration.

26 Lattimer SWS3



26	Lattin	ner_SWS_3								
	FID	Shape *	OBJECTID	ld	gridcode	Shape_Leng	Shape_Area	Acres	Watershed	Descriptio
	0	Polygon	2729	20	2619	20360.368965	2726754.14687	63	26 Lattimer_SWS_1	Developed Area of MS4
	1	Polygon	2729	21	2619	10338.870378	1715934.02831	39	39.3925824625402	No Twp MS4 this area
	2	Polygon	2729	22	2619	20360.368965	207025.089243	5	26 Lattimer_SWS_3	Parsed Out 50' from Stream Area

<u>Proposed BMP's:</u> The mining area north of the stream as well as 50 feet either side of the stream have been parsed out of this analysis. The Township stormwater piping/swale system that currently discharges to the existing Little Black Creek Stream will have proposed infiltration BMP's to address water quality to meet this PRP including open vegetated infiltration swales and infiltration pond. This area also has he possibility of stream restoration.

27 Ridgewood SWS 1C

This drainage area includes the entrance to Ridgewood Development along SR 940 south of the natural ridge (break) where water begins to flow north to Little Black Creek. Based on Pa Emap there is a permitted Township outfall at this location. Evaluation indicates that this entire area flows from the pipe to an open swale leading directly to an open mine pit water pool. This pool of water is part of and used in the active mining operation and is totally disconnected from the stream. Therefor this entire drainage area is parsed form the analysis currently.



27	Ridgewoo	d_SWS_1C		_						
П	Shape *	OBJECTID	ld	gridcode	Shape_Leng	Shape_Area	Acres	Watershed	Descriptio	
	Polygon	2944	22	2839	13493.906839	5611144.76322	129	27 Ridgewood_SWS_3	Part of Twp MS4	
	Polygon	2944	22	2839	13493.906839	623017.686828	14	27 Ridgewood_SWS_1	Part of Twp MS4	
	Polygon	2944	22	2839	13493.906839	318590.450312	7	27 Ridgewood_SWS_2	Part of Twp MS4	

<u>Proposed BMP's</u>: This drainage area is disconnected from the stream at this time and therefore no BMP's are proposed.

28 Valmont SWS 1 and 29 Valmont SWS2

This drainage area includes the southwest edge of Valmont Industrial Park in Hazle Township. There are two distinct areas both of which appear to have permitted NPDES outfalls which have been parsed out of this analysis. A wooded undeveloped area, PPL right of way and the developed area which drains to the adjacent West Hazleton Municipality have all been parsed out of this analysis. Half of the Township road in this drainage area is an MS4 and is addressed in drainage area 29 below.



28 Valmont SWS 1

I	FID	Shape_Leng	Shape_Area	Label	Description	Acres
T	0	36853.920577	1275121.80625	28 Valmont SWS 1	Parsed Karchner Indus Disch Permit ID 328761	29
Ì	1	36853.920577	618524.982844	28 Valmont SWS 2	Parsed out No Twp MS4 in This area	14
Ì	2	36853.920577	232989.103931	28 Valmont SWS 3	Parsed Out PPI ROW no Twp MS4	5
Ì	3	36853.920577	655700.076422	28 Valmont SWS 4	Drains to West Hazleton Included in Twp MS4	15
T	4	36853.920577	56483.505781	28 Valmont SWS 5	Twp Road MS4	1
Γ	5	36853.920577	115689.93063	28 Valmont SWS 6	Part of MS4 Draisn to Twp Road	3

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29 Valmont SWS2

29	HT_	Valn	nont	SW	S 2
			a series and the series of the		_

	FID	Shape_Leng	Shape_Area	Label	Descriptio	Acres
	0	60462.179764	3450233.04821	29 Valmont SWS 1	Developed Industrial Park Part of MS4	79
	1	60462.179764	98049.72211	29Valmont SWS 2	Drains to West Hazleton MS4 but part of Twp MS4	2
	2	60462.179764	109545.326963	29 Valmont SWS 3	Hazle Twp Road MS4	3
	3	60462.179764	596879.447794	29 Valmont SWS 4	Disch Permit Sandusky Meta Prod & Truth Hdwr	14
	4	60462.179764	36226.343969	29 Valmont SWS 5	Drains to West Hazleton MS4 but part of Twp MS4	1
1						

<u>Proposed BMP's</u>: There appears to be three Township roads picking up stormwater in this area and discharging to open swales. The Township stormwater piping/swale system that currently discharges to the existing Black Creek Stream will have proposed infiltration BMP's to address water quality to meet this PRP including open vegetated infiltration swales and infiltration pond.

30 Garfield SWS 1 and 31 Garfield SWS2

This drainage area includes the north east urbanized area of the Township close to the City of Hazleton. There are two distinct areas both of which appear to drain from dead end roads to wooded areas above Black Creek. Therefor this drainage area includes required BMp's.



Garfield_14th_St										
		FID	Shape *	ld	Watershed	Acres				
	Þ	0	Polygon	0	Garfield_14thSt_SWS_1	18				
		1	Polygon	0	Garfield_14thSt_SWS_2	13				

<u>Proposed BMP's</u>: There appears to be two Township roads picking up stormwater in this area and discharging to open swales discharges to the headwaters of Black Creek. Infiltration BMP's are proposed in each location to address water quality to meet this PRP including open vegetated infiltration swales and infiltration pond.

32 HT Southwest SWS 1 thru 4

This drainage area includes the south west section of HT which is identified as UA. The UA is bounded by PaDot ROW on the south and the west. An active railroad right of way bisects the drainage area. Several private commercial facilities are along SR 309 and enter a PaDot drain or flows to open waters These commercial parcels have no MS4 associated with them. A small area in the very north includes a Township road and drainage system. This area sheet flows or drains to an existing swale which discharges to an active mining area. The mining area is disconnected from the stream. Therefore, all areas in this drainage location have been parsed out of this analysis at this time.



1											
3	12 HT_SouthWest_SWS_1										
E	FID	Shape *	OBJECTID_1	ld	gridcode	Shape_Leng	Shape_Le_1	Shape_Area	Watershed	Acres	Descriptio
E	• 0	Polygon	14	590	4095	11776.62454	5375.844335	415006.590672	32 HT_SouthWest_SWS_	10	Parsed No MS4 PaDot drains to private body water
E	1	Polygon	14	590	4095	11776.62454	5375.844335	467392.520561	32 HT_SouthWest_SWS_	11	Parsed No MS4 Open Body Water
L	2	Polygon	14	590	4095	11776.62454	5375.844335	89830.614509	32 HT_SouthWest_SWS_	2	Parsed - Railroad ROW No MS4
E	3	Polygon	14	590	4095	11776.62454	5375.844335	323943.792529	32 HT_SouthWest_SWS_	7	Parsed - MS4 drains to mine - disconnected
	-						I				

<u>Proposed BMP's</u>: This drainage area is disconnected from the stream at this time and therefore no BMP's are proposed.

33 HT Southwest SWS

This drainage area includes the south west section of HT which is identified as UA. The UA is bounded by PaDot ROW on the north and the west. An active railroad right of way is located along the entire east side. A large open pit mine area is in the center of the drainage area and disconnects surface flow from the stream headwaters. A small area along the north and the Village of Honeybrook drain to the disconnected mine area. Since the mining area is disconnected from the stream, all areas in this drainage location have been parsed out of this analysis at this time.

33 HT Southwest SWS - North Section

33 HT Southwest SWS - South Section

FID	Shape_Leng	Shape_Le_1	Shape_Area	Watershed	Descriptio	Acres
0	11776.62454	14838.600579	4365658.5971	33 HT_SouthWest_SWS_1	Parsed Open Mining Disconnected from stream	100
1	11776.62454	14838.600579	538221.264494	33 HT_SouthWest_SWS_2	Parsed Railroad right of way	12
2	11776.62454	14838.600579	1731688.32625	33 HT_SouthWest_SWS_3	Twp MS4 Area but disconnected drains to mine area	40
3	11776.62454	14838.600579	771850.489708	33 HT_SouthWest_SWS_4	Twp MS4 Area but disconnected drains to mine area	18
4	11776.62454	14838.600579	921849.408748	33 HT_SouthWest_SWS_5	Twp MS4 Area but disconnected drains to mine area	21
-						

<u>Proposed BMP's</u>: This drainage area is disconnected from the stream at this time and therefore no BMP's are proposed.

34 HT Southwest SWS 1

This drainage area includes a small UA west of SR 309. A large open pit mine area is in the center of the drainage area disconnects these stream headwaters from the stream flow. Since the mining area is disconnected from the stream, the area in this drainage location have been parsed out of this analysis at this time.



34 HT_SouthWest_SWS_3												
	FID	Shape *	OBJECTID_1	OBJECTID	ld	gridcode	Shape_Leng	Shape_Le_1	Shape_Area	Watershed	Area	
ΠĒ	· 0	Polygon	11	5617	561	3970	15265.848925	3671.037022	638498.145111	HT_SouthWest_SWS_3	15	

<u>Proposed BMP's</u>: This drainage area is disconnected from the stream at this time and therefore no BMP's are proposed.

35 HT Cranberry SWS 1

This drainage area includes a small UA south of 924 and including part of the Village of Cranberry. This area includes the beginning of Cranberry Creek which was recently restored by BAMR and also includes a railroad right of way. The BAMR stream restoration and railroad right of way have been parsed out of this analysis.



35 HT_Cranberry_SWS_1											
	F	ID	Shape *	OBJECTID	ld	gridcode	Shape_Leng	Shape_Area	Watershed	Descriptio	Acres
		0	Polygon	4943	494	3793	37513.781953	981662.863246	35 HT_Cranberry_SWS_2	Village of Cranberry	23
	•	1	Polygon	4943	494	3793	37513.781953	547124.47926	35 HT_Cranberry_SWS_1	Parsed - Railroad and Stream	13

<u>Proposed BMP's</u>: There appears to be a drainage swale to Cranberry Creek in the southeast corner of this drainage area. Infiltration BMP's are proposed at this location to address water quality to meet this PRP including open vegetated infiltration swales and infiltration pond.

36 HT Cranberry SWS 2

This drainage area includes a small UA south of 924 and including part of the Village of Hollars Hill. This area includes a recently restored by BAMR project. The BAMR area has been parsed out of this analysis.



36	HT	Cra	nbe	ernv	SV	VS 2	1
~~		~					•

FID		Shape_Leng	Shape_Area	Acres	Watershed	Descriptio
	0	2457.142757	1344873.72715	31	36 HT_Cranberry_SWS_3	No Twp MS4 - Does nto drian to MS4
	1	2457.142757	215850.429651	5	36 HT_Cranberry_SWS_2	Part of Twp MS4
1.1.1	2	2457.142757	215784.951424	5	36 HT_Cranberry_SWS_1	Part of Twp MS4

<u>Proposed BMP's</u>: There appears to be a drainage swale to Cranberry Creek along the existing road. Infiltration BMP's are proposed at this location to address water quality to meet this PRP including open vegetated infiltration swales and infiltration pond.

37 HT Hollars Hill SWS 1

This drainage area includes a small UA south of 924 and including a small part of the Village of Hollars Hill. Surface flow is to an existing PaDot cross pipe. Infiltration BMP's are proposed at the upstream side of the cross pipe.



3	7 HT_HollarsHill_SWS_1										
Г	FID	Shape *	OBJECTID	ld	gridcode	Shape_Leng	Shape_Area	Area	Watershed	Descriptio	
E	• 0	Polygon	5599	4	5502	276.584839	2910.73782	9	37 HT_HollarsHill_SWS_1		

<u>Proposed BMP's</u>: There appears to be a drainage swale to Cranberry Creek along the existing PaDot highway and cross pipe. Infiltration BMP's are proposed at this location to address water quality to meet this PRP including open vegetated infiltration swales and infiltration pond.

38 HT Hollars Hill SWS 2

This drainage area includes a small UA south of 924 and including a small part of the Village of Hollars Hill. Drainage area flows to PaDot cross pipes under SR 924. Various BMP's are proposed prior to these cross pipes.



38	38 HT_HollarsHill_SWS_2										
Г	FID	Shape *	OBJECTID	ld	gridcode	Shape_Leng	Shape_Area	Acres	Watershed	Descriptio	Γ
Þ	0	Polygon	1515	151	1357	533.450934	6737.428583	22	38 HT_HollarsHill_SWS_2		
Ľ											

<u>Proposed BMP's</u>: There appears to be a drainage swale to Cranberry Creek along the existing PaDot highway and cross pipe. Infiltration BMP's are proposed at this location to address water quality to meet this PRP including open vegetated infiltration swales and possible infiltration pond.

39 HT Harwood SWS 1

This drainage area includes a small UA south of 924 and including a small part of the Village of Harwood. The entire drainage area flows south to a series of existing abandoned open mine pits which are disconnected from the stream. This entire area has therefore been parsed out of this analysis.



39 HT_Harwood_SWS_1							
Т	FID	Shape_Leng	Shape_Area	Acres	Watershed		Descriptio
+	0	31637.765339	6008385.28304	31	39 HT_Harwood_SWS_1	Part of Twp MS4	

<u>Proposed BMP's</u>: This drainage area is disconnected from the stream at this time and therefore no BMP's are proposed.
This drainage area includes a small UA along North Street in the Village of Greenridge. The drainage area includes a small section outside the UA. All drainage discharges to an existing storm pipe in the wooded area at end of the alley. New infiltration BMP's are proposed.



-											
40	40 HT_Greenridge_SWS_1										
Г	FID	Shape *	OBJECTID	ld	gridcode	Shape_Leng	Shape_Area	Acres	Watershed	Descriptio	Γ
F	0	Polygon	3896	389	3488	4647.675157	221223.194432	5	Drainage Area	Existing Pipe Outfall retrofit BMP	1
E	1	Polygon	3896	389	3488	4647.675157	99166.152792	2	Area outside UA to BMP	Existing Pipe Outfall retrofit BMP	

<u>Proposed BMP's</u>: There appears to be a drainage pipe to the end of an alley discharging to a wooded area. Infiltration BMP's are proposed at this location to address water quality to meet this PRP including open vegetated infiltration swales and possible infiltration pond.

This drainage area includes a small UA along the north side of Ridge Avenue. All surface flow is directed to inlets, piping and discharge in West Hazleton Borough outside the Township Boundary. All drainage discharges to an existing storm pipe in the wooded area at end of the alley and to an open mine pit disconnected from the stream under analysis. This area is parsed out since it a drainage area to West Hazleton and is also disconnected from the stream.



FID	Shape_Leng	Shape_Area	Acres	Watershed	Descriptio
0	4185.175864	520166.953197	8	41 HT_Greenridge_SWS_2	Part of Twp MS4

This drainage area includes a small UA along the south side of North Street at the end of Ridge Avenue. All surface flow is directed to an existing storm swale in the wooded area west of the Village. This drains to drainage area south of this location which is disconnected from stream and therefore parsed form this analysis. (Also see drainage area 43)



4	42 HT_Greenridge_SWS_3											
Γ	FID	Shape *	OBJECTID	ld	gridcode	Shape_Leng	Shape_Area	Acres	Watershed	Descriptio		
Γ	• 0	Polygon	4177	417	3675	8215.862031	907643.124811	2	HT Greenridge SWS 3	Drains to existing swale		

This drainage area includes a small UA along the south side of North Street at the end of Ridge Avenue. All surface flow is directed to an existing storm swale in the wooded area west of the Village and to an open mine pit disconnected from the stream.



4	43 HT_Greenridge_SWS_4										
Γ	F	ID	Shape *	OBJECTID	ld	gridcode	Shape_Leng	Shape_Area	Acres	Watershed	Descriptio
IC		0	Polygon	4440	444	4300	969.63246	24214.492447	17	HT Greenridge SWS 4	Drains to exisitng swale

This drainage area includes an Urbanized area which is primarily wooded and includes part of the Village of Jeansville. This area drains to an active open mine area which is disconnected from the stream. Therefore, this area is parsed out of this analysis.



44	14 HT_SouthEast_SWS_1												
	FID	Shape_Leng	Shape_Area	Acres	Watershed	Descriptio							
	0	40866.362405	46905075.8485	434	44 HT Southeast SWS 1	This area not within Cheasapeak Bay Watershed							
۲		0											

This drainage area includes an Urbanized area which is primarily wooded and includes part of the Village of New Coxesville. This drainage area sits on a ridge which directs all surface flow back to the PaDot ROW and drainage system. Hazle Township has no MSS in this area. This area drains to an existing PaDot cross pipe not under Township control. Therefore, this area is parsed out of this analysis.



45	HT_SouthEa	st_SV	VS_2						
Π	OBJECTID	Id	gridcode	Shape_Leng	Shape_Area	Acres	Watershed	Descriptio	_
	313	313	168	37866.658511	20122832.3653	10	45 HT Southeast SWS 2	This area not within Cheasapeak Bay Watershed	
F									

This drainage area includes an Urbanized area which is primarily wooded and includes part of the Village of New Coxesville. This drainage area sits on a ridge which directs all surface flow back to the PaDot ROW and drainage system. Hazle Township has no MSS in this area. This area drains to an existing PaDot cross pipe not under Township control. Therefore, this area is parsed out of this analysis



46 HT_SouthEast_SWS_3											
1	OBJECTID	ld	gridcode	Shape_Leng	Shape_Area	Acres	Watershed	Descriptio			
1	313	313	168	37866.658511	20122832.3653	35	46 Southeast SWS 4	This area is not in the Chesapeake Bay Watershed.			
-											

This drainage area includes a small Urbanized area which does not include a Township MSS. Therefore, this area is parsed out of this analysis.



FID	Shape *	OBJECTID	Id	gridcode	Shape_Leng	Shape_Area	Acres	Watershed	Descriptio
0	Polygon	1492	149	1047	17590.935252	517889.261019	12	47 HT SE SWS 1	This area not in Cheasapeak Watershed
1	Polygon	1492	149	1047	17590.935252	82040.410076	2	47 HT SE SWS 2	This area not in Cheasapeak Watershed
2	Polygon	1492	149	1047	17590.935252	276751.792616	6	47 HT SE SWS 3	This area not in Cheasapeak Watershed

48 HT East SWS1

This drainage area includes the urbanized area along Diamond Avenue (Padot) and along the City of Hazleton border. A large section along the City boundary drains to the City storm system and to a currently permitted MS4 outfall. This area and the PaDot ROW are therefore parsed out of this analysis. One UA drainage area is part of the Hazle Springs Development and discharges to an existing private stormwater detention pond. In addition, a section of Hazle Springs that drains to this pond is outside the UA. This entire area drains to an open active mining area just south of the Diamond Avenue and is disconnected from the stream. Therefore, this entire area is parsed out of this analysis at this time.



48	HT	East	SWS1	r

FID	Shape *	OBJECTID	ld	gridcode	Shape_Leng	Shape_Area	Area	Watershed
0	Polygon	0	0	0	7923.13878	1991457.15678	46	Area not in Cheasapeak Watershed
1	Polygon	0	0	0	4774.336375	1139610.60663	26	Area not in Cheasapeak Watershed
2	Polygon	0	0	0	4152.007755	41651.185065	1	Area not in Cheasapeak Watershed
3	Polygon	0	0	0	3641.354361	598164.962665	14	Area not in Cheasapeak Watershed
	1			1				

DRIFTON AREA OF TOWNSHIP

The Drifton section of Hazle Township borders Butler Township, Foster Township, Freeland and Jeddo Borough. Watershed areas outside Hazle Township Municipality have been excluded from this analysis.

<u>49 Drifton SWS1</u>: SWS1 is the norther most watershed in Drifton and only contains a small section of Township Roadway and part of a private cemetery. Surface stormwater flow is predominately sheet flow north to the creek headwaters. SWS1 eventually drains to a mine pit disconnected from the Stream and is therefore parsed out of this analysis.



49 Drifton_SWS1											
F	ID	Shape *	Area_Acre	ID	Shape_Leng	Shape_Area	Watershed	Descriptio	Reason		
	0	Polygon	8.915312	34	11006.747349	388349.455699	49 Drifton_SWS1 A	Outside UA No MS4	Drains to Woods		
	1	Polygon	4.192336	34	11006.747349	182617.427999	49 Drifton_SWS1 B	UA Drainage Area	Infil BMP		
_	_		-								

<u>Proposed BMP's</u>: This drainage area is disconnected from the stream at this time and therefore no BMP's are proposed. If necessary, an infiltration trench BMP may be installed along the north side of the Township road.

<u>50 Drifton SWS2</u>: This area includes a large drainage watershed outside the Municipal Boundary which drains to a BAMR installed rock lined swale in Foster Township. SWS2 contains the current outfall from SWS1, SWS2 SWS3 and SWS4 which is to a disconnected open mine pit. Since these watersheds are disconnected from the stream, they have all been parsed out of this plan.



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	FID	Shape *	Area_Acre	ID	Shape_Leng	Shape_Area	Watershed	Descriptio
Þ	0	Polygon	45.379283	39	11779.23619	1976713.68223	50 Drifton_SWS1	Drainage to PaDot Cross Pipe
	1	Polygon	2.013214	39	11779.23619	87695.269318	50 Drifton_SWS2	Parsed PaDot ROW
	2	Polygon	13.050057	39	11779.23619	568458.226624	50 Drifton_SWS3	Drainage to Open Swale

<u>51 Drifton SWS3</u>: This area includes a large drainage watershed in the Township developed area along SR 940 adjacent to Foster Township. A large section is outside the Municipal Boundary and drains to an existing BAMR rock swale. Stormwater from this area is collected to a small broken up stormwater piping system which discharges to a large open BAMR swale south of SR 940 and eventually to the disconnected outfall. Since this watershed is also disconnected from the stream, it has been parsed out of this plan.



51	Dr	ifton	SW	/ S3

FID	ID	Shape_Leng	Shape_Area	Area	Watershed	Descriptio
0	38	13048.453591	396793.735237	9	51 Drifton_SWS 1	Sheet flow to mine pit
1	38	13048.453591	298226.858658	7	51 Drifton_SWS 2	To Barner Swale to min pit

<u>52 Drifton SWS4:</u> This drainage area is completely wooded and undeveloped with a small section of PaDot roadway. Since this area has no Municipal Stormwater System and naturally drains to the same disconnected outfall it has been parsed out of this analysis.



5	2 Drif	fton	_SWS4					
Г	FI	ID	Shape *	ld	Area	Watershed	Descriptio	Γ
Г		0	Polygon	4	14	52 Drifton_SWS4	Parsed Drains to Open Pit Disconnected from stream]
								7

<u>53 Drifton SWS5:</u> This area includes a large municipal drainage watershed in the Village of Drifton. This drainage area enters PaDot coss pipes and continues thru 57 Drifton SWS 6 to a discharge swale. PaDot Right of Way has been parsed from this drainage area. The MS4 outfall is an open pipe discharge to a swale. See 56 Drifton SWS 6 below.



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FID	Area_Acre	ID	Shape_Leng	Shape_Area	Area	Watershed	Descriptio
0	0	4	7084.394604	1231645.56767	28	53 Drifton_SWS 1	
2	0	4	3014,107634	42085.26896	1	53 Drifton_SWS 3	Parsed PaDot ROW

<u>Proposed BMP's</u>: This drainage area discharges across PaDot ROW. Therefore, are no BMP's are proposed within this watershed.

<u>54 rifton SWS6</u>: This area includes a small drainage area which includes part of the Village of Drifton along SR 940. The MS4 is piped across the PaDot ROW to a new infiltration BMP and outfall.



54 Drifton_SWS6

Γ	Area_Acre	Area_SqMi	AveSlope	ID	Shape_Leng	Shape_Area	Area	Watershed	Descriptio
Г	36.269787	0.056672	0	5	8731.235851	1406302.84551	32	54 Drifton_SWS 1	
E	36.269787	0.056672	0	5	8731.235851	29391.445092	1	54 Drifton_SWS 2	Parsed PaDot ROW
E	36.269787	0.056672	0	5	8731.235851	144211.318735	3	54 Drifton_SWS 3	
Г									

<u>Proposed BMP's</u>: There appears to be a drainage pipe to the end of an alley discharging to a wooded area. Infiltration BMP's are proposed at this location to address water quality to meet this PRP including open vegetated infiltration swales and possible infiltration pond.

<u>55 Drifton SWS7</u>: This drainage area includes the highest part of the Village of Drifton near the existing ASA Softball Complex. There is no existing storm piping in this area. Stormwater sheet flows north along existing residential lots and [public streets until it reaches old swales remaining from former surface mining operations. The accumulated flow then discharges to two existing surface pits and do not connect to the stream under analysis. Since this watershed is disconnected from the stream, it has been parsed out of this plan.



55 Drifton SWS7

FID	Shape *	ld	Area	Watershed	Descriptio
1	Polygon	7	33	55 Drifton_SWS7A	No Municipal Twp MS4 in this area - Outside UA
0	Polygon	7	33	55 Drifton_SWS7B	Part of Twp MS4

<u>56 Drifton SWS8</u>: This drainage area includes the existing ASA Softball Complex and the drainage area south thru part of the Village of Oakdale. There is no existing storm piping in the area of the ASA Softball Complex. The MS4 collects flow on the north side of SR 940, connects to the PaDot pipe system then discharges to swales along the existing Norfolk Southern Railroad. Existing railroad piping under the tracks discharge all surface flow to an existing open pit mining activity. Since this watershed is disconnected from the stream, it has been parsed out of this plan.



56	Driftor	n_SWS8				
	FID	Shape *	ld	Area	Watershed	Descriptio
Þ	0	Polygon	8	55	56 Drifton_SWS 1	
	1	Polygon	8	2	56 Drifton_SWS 2	Parsed PaDot ROW
E	2	Polygon	8	6	56 Drifton_SWS 3	
	3	Polygon	8	0	56 Drifton_SWS 4	Parsed Railroad ROW
E	4	Polygon	8	1	56 Drifton_SWS 5	

Hazle Township

<u>57 Drifton SWS9</u>: This drainage area includes the existing eastern end of the Village of Oakdale. Most of this area is undeveloped without a municipal storm system or part of an active open mining. The MS4 collects flow on the north side of SR 940, connects to the PaDot pipe system then discharges to swales along the existing Norfolk Southern Railroad. Existing railroad piping under the tracks discharge all surface flow to an existing open pit mining activity. A small part of this drainage area on the far south east end is outside of Hazle Township. Since this watershed is disconnected from the stream, it has been parsed out of this plan.



57	Drift.	00 51	N/S0
51	DIIII	011_3	11.35

Τ	FID	Area_Acre	ID	Shape_Leng	Shape_Area	Watershed	Descriptio
	0	35.27574	11	17858.968747	1536605.0966	57 Drifton_SWS 1	
	1	43.855517	11	17858.968747	1910338.68626	57 Drifton_SWS 2	
	2	2.733481	11	17858.968747	119069.945636	57 Drifton_SWS 3	Parsed PaDot ROW
	3	5.363003	11	17858.968747	233611.473706	57 Drifton_SWS 4	
	4	1.037772	11	17858.968747	45205.156917	57 Drifton_SWS 5	Parsed Railroad ROW

<u>58 Drifton SWS10:</u> This drainage area includes a large wooded former open mine area. This area is undeveloped without a municipal storm system and an active open mining. The small MS4 swales collects flow on teach side of the road to Jeddo Borough and connects to an pipe system which discharges to the existing Norfolk Southern Railroad. Existing railroad piping under the tracks discharge all surface flow to an existing open pit mining activity. Since this watershed is disconnected from the stream, this drainage area has been parsed out of this plan.



58	Drifto	n_SWS10						
T	FID	Area_Acre	ID	Shape_Leng	Shape_Area	Watershed	Descriptio	
I	0	42.911943	12	12087.30142	1869236.7631	58 Drifton_SWS10	No Twp Owned MS4 in this area	
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10.0 Appendix C: Sewershed Estimated Simplified Load Analysis

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Panel	NOLDINECTROLUT	17 LUS. 28 LUS.	6.0		a a		3.9	4.0		1.0	64	2.8	64	10	64	00 57	4.0	10	113 12 113 13
	Applicate MIX Wateraled Area	e d Acres	60		*		63	20		140	84.	30	hd	2.0	84	14 60	60	مە	a.e. a.e.
	H12_31/W7_3/														1.10				
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Passel	NULTIWE CONTLA	22. 29%	63		×		2.8	4.8		2.8	D.8	-	9.0	80	24	0.0 B.8	10	0.0	. ao 20
Faturel	MOD STANK (1993) I RESIZEDW	2 15	5.2	5	*		62	2.5	4	az	61	84	64	60	64	00 00	4.0		00 2
Passel	NOT STANKE SHOLEN HADAL ROW	4 38	6.0		*		.61	4.1	44	1.0	8.8	63	0.0	10	88	4.0 2.4	2.0	0.0	1 40
Paturi	NELSON CONTON	2 1 18	60		ai	16-1	114	===	1.11	8.8	E.J	28		40	es	22			as
	Applicable Mild Webschell Area	o 3 Adm	53				14	3.0	an	an	62	0.0		40		50 CZ	-64	m	00 0
38	Ralgenerosi_1993_2	18 2006	1.00	8.00° - 10	00 E.00	scores of	11.M HLMPS	12002.87 26.78 42.589	4. 23480.72 9.42 36.07%	0.30 0.05%	2.40 0.42%	897518 6.21 30.72%	2.00 1.00%	0.08 0.00%	1.30 3.00%	5.30 5.00% 5.00 5.00	6 0.08 0.00%	340 0.008	n 540 5400 NX
Mit	Regressed, 285.1. Regressed, 280.1.	a 38.	Id				94.5	18.4	7.8	ab	55	U	D.C.	20	- 0.5	0.0 0.0	8.0	aa	100 de
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18	ChardMd, Mal, 190	# 100h	2.00	200	a 1.05	100105.14	LART SLOPE	10017641 24.27 26.489	4. 4006.71 Di.D* 16.004	11181-06 12.MR 12.MR	11m147 2.08 2.006	114660.A1 28.85 28.836	3.00 1.02%	3.05 0.00%	530 330N	D20 D200 D200 D20	3.05 0.00%	300 5.00	N DE C30% W
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and a	Association for Two Read part of MDA Application MDA Watershell Area	• # A08	14		14		62	112			1.4	388	64	40		20 00 00	60		
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	Apple site MIN Watershed Area	o at Ann	14		×		51.0	18.5	5.8	80	25.4	78.0	14	10	14	30. 14	10	60	an mi
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MDA	Mineroli, San JW1. Developed Land and Mid	28 229	53		*		54	7.4	- 18	ise .	42	78	ist .	20		14	20	60	30 28
Faced	Refer Real No. Tay Mit. Microsoft, Sant, JW 87149	* **	5.5				1.2	4.9	84	01	61	0.8	64			20 20	4.0	an	100 H
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NGE	Descripted Area Tags Mith	5 128.	12				1.4	1.9	50	0.1	61 13	0.8	Eat .	- 54	54	10 III	£n.		
		A NOR	6.0																
12	Partiencelle, 1991, 3 Ani Tanp Mild. Spalani in Liki amin	42 1306	10000y 8.840	833 B	at 1.00	1004	2.01 6.79%	5000 1.11 2.62N	80% 2.00 8.708	1986 2.66 A.796	50% 1.13 2.67%	159727 38-95 stats	520 52 8 %	5.48 0.00%	0.30 3.00N	5.8 5.0% 5.00 £.8		300 500	n 100 530% 42
Passel	Minerall (Sect, JW 1 Private for Tage Mild System	47 HML		4	ai -		38	53	20	24	14	34	50	6.0	64	30 30	6.0	00	42
-	Applicable Mild Watershell Alles	0 3 Arm	2.5		20		1.2	4.0	30	a0	40	0.0	10	4.0	- 12	0.0	60	0.0	0.0

a,	Shadowi Carlo Nov. wanari Cove al' Turgi Land Cove Watangladi Alialysis for Unit Terratoria d	n Tiges (Deta take	e las wit	Stated Land Dr Actes of Will We	Calls Recovered Farmer and Acres - Data Rased overall cover in Second charge Academic (Coverant Cardinat Academic)	i dense Caricalina Fan personalage of related (Datase Rock			Mantai Calo R penantaga of s Analysis	spinner I MM Calculated Lan overall cover in Securities to	al Cover Auro Dalla Ras dan from Will Waters	-																		
	1ª Subscript	-	ere stel	Oper V	-	1.11			Developed Open Space		Developes Gravitizenally		Developed Vectors totansity		Developed wightin personally		Ramerican	Devaluations in the		Tangant Tasac	-	ific)	Sheak Sanda	in second Herei	Namina (May	CLENNIN CHIM	1.1	woody wetania	megalanis websi	s fication Casi
100	Deigrated Sever Shel	Arm	S. (a)	~ ~	ni Novena		Area S.C.		Ares	s cherap	Arma R.C	-	Aven B.Cove		Ares B Garrier		Am	Area A Coverage of Acres	& Coverage	n" Area Streetige	art Ann	* Comage	al ¹ Aire Scientige	n" Airm B Coverage	ant Adres Sciences	P at Area	LCountier	al Arm Rowage	n Ann S	Gronage
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MSA	Particentile_2005_2 Sup Mile Application Mile Watershell Area ++++	а ж	LITH.	0			04		- 913 - 913		61 83		83	-	114 . 0.9		80°.	up np		54	20 20		10	38	ut Lt	60 60		an nn	dib ILI	tr E
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															ut												-			
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- 21	Parimeter 240,3	- 10	100% 100		HA 8.09		1.8 1	20 Mail	Lit	11.606 AD5	235	L3P5 (839)	1.00 1.00	s 194	Lot age		2.11	A195 129777 28.80	18.70%	3.00 1.00%	5.06	0.00%	1.0 1.05	1.0 1.05	1.00 1.00	2.05	0.00%	1.01 0.03%	tuto (1.00 .00
Pasad	Parlamentar, 1801,6 No Turp Mild in the area		205	1			pa	12	44				11		Ð	1	88			0.0	ÉD	1. 1. 1.	8.0	50	84	ta		0.0	an	29
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2	Terrismistic 2001,6 "Desiratio films of indication"	210	1.00% 545		e en		3.00 8	8 62D	207	sam mer	8.17	1.041 6250	3.0 4.1	n ingi	1.81 2.619		10.M	27.078 88.079 61.09	10.785	1.01 C.05	6279 19.29	8368	2.0 1.05	101 0.055		0.00	-	0.00 1.00%	-	125 20
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	Applicate MM Watersheld Area	ai a	Acies				ea.		33	5 4 A	4.5	52	1.5	1	az		m	320		5.5	22		U	40		6a		na		-40
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-	Application active Watered and Arman and	-	Acres		8		0.0		2.8		3.0		+4		aie		68	31		ot	E.A		et	30	-0.0	Ea		nn	un	42
-28	Latione_Swo_1	a	2006		io 5.00.		540 S	81 15331.43	8.82	18.96% ADDRA.17	12.60	6.32% NEW.78	5.86 A.M		6.00 2.008	600.67	1.01	2.80% #6381.84 21.90	A0.248 2	WLM 24F LAPS	0.00	0.00%	636 SBM	0.30 1.80%	LOC LOOM	2.05	il atom	3.00 6.00%	2.00	6.30% 8/
NOL	tation j001_1. Applicatio Mid Waterslad Area	47 100 47	Lans. Asim	5 5	a. a	-	1.20		43 83		to# to#		1.8		an an		м м	109 109		87	ea ea	-	11 11	as as	63 63	ea ea		an	435 435	er er
	Lattack_SND_4	*	1285	-	-	-	8.00 S	B 6180.75	3.0	SLIPS. TOSELIS	18.18	1.47% 1882.41	3.88 1.8	×	1.0 1.0	UMART		N.1896. NUK26.72 25.40	21.845	8.00 G.ID%	0.05	11285	130 1.0%	130 0.0%	510 - 610%	0.0	123156	0.00 1.20%	cat	0.00% H4
Mic	Lattine (1981) 3 Application Mild Waterslad Area	38 10	1896. Alima	3 0	4		9.38 5.30		ska Ska		18.2	-	LA LA	_	0.0 3.0		48	333		DE bt	2.0 2.0		ta ha	34	50 ht	ta ta		uu aa	an an	95 .M.
	140mm 100 2		205	1.5		-	1.00	37584.75	2.0	15.075 39051.01	21.90	2 104 2123-14	a.21 3.00	-	6.00	Zinci m.	16.79	14.705 341647.88 83.47	0.05	3.00				14	300	0.00	-	0.00		100
MDA	Latinar_2001				*		1.00				14.8		-		30		11.0				20	1000		*		10		0.0	30	-
Passel	ter Tag Mild das area Latines-Jief) k within 60 of Minam				4		\$.00		1.0		11		0.4		0.0	1	0.0°	10 11		84	10		64	20	84	La		aa		a
	Apple alia Mid to atorcial Area and	40 H	Rom				\$30		111	-	14.4		40		0.0	-		21.1	-	54			54	26	54	E.O.		0.0		
22	"Duin is crupture" "but is crupture" "but Stream" "Associati"	18	1926		ao.		3.8	14.04.09	21.00	25.20% 35.350	20,41 1	1.30% 2.851	8.30 8.60	•	6.20	6280	5.00	1.00% .27%0# #2.40	63.20%	840	5.66		-18	220	5.00	3.8		a di	5.60	56
MQ4	Malgrowood, YMS I.	34					5.80		3.5		4.8	1	dA.		ñő.		p.t.			84	10	-	14	46	84	2.0		0.0	an	34,
Mot	Rignwood_3003.2. Application Mild Watershell Acase ++++		Anime .	0 11	a a		0.00		14 173		5.8 81.8	-	82		as as		1.0	82		64	20		1.2 E.1	35 0.0	14 6.5	10 64		m	an an	500
.28	W]_Veimer(_).	N	1976	-			1.00	88196.27	420	12.00% AARON.76	15.08 3	Lath 2017.10	858 563		50.86 56.20		1.00	11086.18 27.27	40.796	1,0	2.05		1.0	10	446	3.06		640		87
Passel	HT, Valencer T. Under Eacher fielus Marmonater Period. HT, Valencer J.	.29			*	1	1.00				er -		10		A.7	1	0.0	11.8	1	9.0	20	* ******	-	35	14	E0		0.0	30	29
Passel	No Top Mid in Orkeanse HT_Valmont 3. No Top Mid in Orkeanse				*		6.00						0.7		0.8		68	20		64	6.0	12.0	68	30	-62	6.0		àà	0.0	
MD4 MD4	HCVArentA	44 2	728. 136	0	a a		1.30		1.8		3,8		84	-	3A 0.3		84 84	4.1 54		5.4	20		5.0 5.2	32	nd .	10		0.0	0.0 0.0	34.
101	HT_Statement #		-	n 6	a a		8.80 5.2		10		5.9 6.1		10		a3 34		8.8 5.0	12		E.E	си 20		63 10	as st	6.8 14	5.0 5.0		110 0.0	311 3.0	1
	af annia 1	1	ten								1100 1			-				10000 72 8.00			100									-
MQE	H _ Sales of SM11.						5.00		2.8	1.00	36.8		12.0	n tonut	36.1			.22.8		14	20			34	14	2.0		0.0	an	
MOA MOA	M_statement WMS23 M_statement 200523	4	*	-	ə ə	-	5.8		50 11.8		#4 #4	-	34	-	52		84. 64	13	_	64	62 54		td tt	36	ta .	er tr	-	ao	db WR	2
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-	Sarfael & 1838 32		100%			-	1.00	20173-W	8.50	6.60% 82082.08	12.88 1	LINN. BACILLOT	31.28 21.5	N. KDINLAL	20.00 20.00		2.05	ALIM ALMA	0.05	1.8	2.05	-		5.80	200	20.6	-	340	5.40	-
NOT	sariel stratus	и	108.		3		1.00		12		2.8				U	3 2	-			-	20	-		2.0	-	-ca	4	m	120	- 28
NGE	Application Mild Watershed Area		Arm	n D	*		5.30		11		40		5		84		54	33.6		84	20	-	68	35	54 B	60 60		3.0	ap	28
	W.Jatimers		1.005 0070	ue 2	10.2 GUT		0.00	2945,48	6.67	2.0% 1866.8	444 1	1.13% 14046.16	5W 168	n 9973	121 1.68		3.00	72766.06 12:15	16.8%	525	0.00	1-1	538	-520	500	0.06		0.00	6.8	E
Parsel	HT_builteent 1	30	30%	0	2		1.80		.63		11		18		0.7		88. 88			6.6	80		1.0	50	n#	8.0		0.0	an	ta D
Pagani	Ht_Josthymet 1	à		4	*		1.00	11-1-	6.0		=		ar	1, 1	a1	12	6.0	u		64	50					4.0				i
Pagani	HT_Louthwest 4. Application shift Watersheet Almon-	*	228. Arm	5	*		1.00		6.0 8.0		8.8		0.8		as 110		6.0 9.0	6.3 38		54	20		64 14	as st		60	-	3.0	40 40	1
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	Startes fails recovered Concel Total Land Con Watersteel Analysis for the Secondard_	nei Typen (Data talein fran Witt	Radio Gale Source of Parad Area Ind Cover Areas - Data Bandia (oran area of count areas - Data Bandia) per area of count areas - Data Bandia (or Mitt Material Analysis)	Calculated Configural Kien Form	Daniel (Als Barmer) MR. Analysh	<u>Skilletel Long Cover Aus</u> e Data Ramat un Seventiled Calass Room Will: Materialed													
	1	Salt Lance Shell	Open Walker	Percental Long Terrory	Caveloped Open Spane	Developed. Low Michaelly	Georged Mediate Measury	Developed High indeviday	Barray Land	Deviations himses	freegreet funet)	Mirel have	Stationed	Passarilitets	Probable Parts	Cuttive Corps	Woody Wellance	fraged work. Wetlands	Deale Auro-
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-	W.Jackers.)	780 1385	7586145. 5.40 mm	1.00	witjaki Skat 2.136	9629645 JEAT 12.099	7188891 8.82 2.80%	Zers to the	2.40% 2.00099.75 #1.61 X2.30%	KD0272.MA 79.3A 41.72M	1806.82 8.88 1.87%	18	8.40	100	110	360	- 2400	8.0	(38)
Fanel	MC_Stadfiel Tag: Mid System MC_Stadfiel Tag: Mid System MC_Stadfiered21	38 505	14	1.0	15	11.0	28	84	@.5	4L7	1.8	20	10	62) 1120	102	30	0.0	96	300
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Beld.	W Jackweit K	33 84	CX.	6.8		žu.	na -	ux		13	nt	3.0	13	uv.	13	30	0.0	88	28
seia	W.Jadlawill's	21 128	0.4	6.8	14	2.8		ILL.			364	80	13	110 ·	83	80	0.0		n
	Applicates Mid Watershel Area we	Aures Aures	12	63		4.7	14	- 44	3.7	42.8	14	24	6.9	40	63	8.0	24	30	
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804	1,3eefactin	25 3295	84	2.20	62	4.2	an	0.0	.03	83	63	24	63	40	63	8.4	bd	1.0	
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Note: <td>Designated Sector Unit Territorial Acrise X</td> <td>Game New New Mail New</td> <td>Developed Openingen Stationage Stationa</td> <td>Orablysi Malilla Sacally a' Arm Norage a' Arm Standard</td> <td>Remister Distribution Imagen from: New New<td>Meet time State State State</td><td>Needen Herit. Period Needen Herit. Period Needen Herit. Period Needen Herita National Nationa</td><td>Cuthand Days Work Weters Area Area According Area Area According According</td><td>Inergel Herb Watands Total Aves 5ns Norm Ritcentage</td></td>	Designated Sector Unit Territorial Acrise X	Game New New Mail New	Developed Openingen Stationage Stationa	Orablysi Malilla Sacally a' Arm Norage a' Arm Standard	Remister Distribution Imagen from: New New <td>Meet time State State State</td> <td>Needen Herit. Period Needen Herit. Period Needen Herit. Period Needen Herita National Nationa</td> <td>Cuthand Days Work Weters Area Area According Area Area According According</td> <td>Inergel Herb Watands Total Aves 5ns Norm Ritcentage</td>	Meet time State State State	Needen Herit. Period Needen Herit. Period Needen Herit. Period Needen Herita National Nationa	Cuthand Days Work Weters Area Area According Area Area According	Inergel Herb Watands Total Aves 5ns Norm Ritcentage
	Transform Series Tells (Hand by Land Types" 20147 Transmission Series 1012 2022 Land Des Designation to Inspersional Periods Acres								
here	Periori (%) Perseux	5.0% 5.0	2108 0.08	nus intes	200.5% 2.0% 2.0%	1810N 1813N	12.05 20.05	18.0N 18.0N	20.05
And a A	jingund term thei Alter X	Dyser Willing Preventig tog/Scione Apres Acces Acces a ² Acces Acces Acces	Developed Developed Developed Service Provider P	benkpel Deviced Melica United alter Anno Microsoft Alter alter Anno Microsoft Alter alter Anno Microsoft Alter	Anno Link: Decision France: Surgrams France) Area Area Area Area a ¹ Kuses Nones Nones None	New Area North Rowinge	nameni Hers. Pedarfee Anti-Ante Scorenge <u>a</u> " Ang. Scorenge	Collisation (Solijan Anna Anna Science Anna Science Sc	trangel Hells Wellands Hulla filme
	Estimated Th Daily	* * *******							
And a	Imperiation Developed at 25.43 Splaulys		1,899	2800 X800	503 503 503	8,8 NA	16/X	14,0. N.M.	N/A
i conditie <td>Penoisa Developei a 18.48 B/a/pr</td> <td></td> <td>42M 4,01</td> <td>жа (д. 1996) с</td> <td>NR NR</td> <td>N/A. N/A</td> <td>50 50</td> <td>NA</td> <td>8/6</td>	Penoisa Developei a 18.48 B/a/pr		42M 4,01	жа (д. 1996) с	NR NR	N/A. N/A	50 50	NA	8/6
Variati <td>Condensaryed on Collecte DB 120 B/ac/pr</td> <td>- NA</td> <td>3(5. 9(6.</td> <td>5/2 5/3</td> <td>1,887 30,238 306</td> <td></td> <td>208 355</td> <td></td> <td>8/4</td>	Condensaryed on Collecte DB 120 B/ac/pr	- NA	3(5. 9(6.	5/2 5/3	1,887 30,238 306		208 355		8/4
	National Of Safe								
number definition number de	reperiod as Developed as 6.5 K/w/je-	aja, aja	227 81	44) 200	8/8 8/8 8/6	R(A. 8)8	N/A N/A	9(5) agin	80 ⁴
none none<	Pervisos Developed al 49.8/sc/g:	A0	15A (5A	10 N	8.8 5.8	N/A	AUR	8,9	84
1 <td< td=""><td>underweisigent of Duration U.S., 50 Kp/ac/or</td><td>-AA</td><td>- A/0 - B/A</td><td>504 A/A</td><td>N/A N/A N/A</td><td>8,0</td><td>5/5</td><td>5,0</td><td>4.4</td></td<>	underweisigent of Duration U.S., 50 Kp/ac/or	-AA	- A/0 - B/A	504 A/A	N/A N/A N/A	8,0	5/5	5,0	4.4
	Additional Sectional Serve	T ()) () (
	Impervises Developed at 1448 Kg/ag/e	5/3. 5/3	134,642 198,008	287,473 547,468	N/A N/R N/A	N/A N/A	NUK NUK	9(8	40.
	Period as a Developerty of 225 bit style		5,257 6,607	998 0	NO NO NO	NA NA	NS NS	NA	N2.
newstrangener 1 <td< td=""><td></td><td></td><td></td><td></td><td>-</td><td>~</td><td></td><td></td><td>244</td></td<>					-	~			244
	Networks Trick Tri Dayly Trim along Annuary	· · ·	740 005	00 UB			•		• a.e.
	Secreted Totel 19 Bully from elseri mentary	e e ek	160 HR	10. 20.				0. 1	8
Televent Tele V and Televente Annual Plater Annual Plater Annual Plater Annual Plater Annual Plater Annual Plater	Minetal Total Schweid By/y Tree wave scenary	4 6 M	36.00 (M/M	277,004 517,001			ē		i unuar
	Antimated Table Th Societ and the Mark	a 22,81 Negati IV Security.							
Normal Tarl Tarly with the Automatic Strategy and Automatic St	Seturated Total TP Safey within Med.	- 1.25. Nagred 25 Relation.							
Restand for failure for white for a statute of the	National Title Section is Du/y which the	4 1020 Ng/Nd 18 Galantes		Target Kassand for 1874 Marrs.					

11.0 Appendix D: Simplified Load Removal Analysis

Count	ty	Cate	gony		Acres		TAL	то		TO	- 1- 1							
Luzeri	ty	Cate	aony				I IN	IP		15	S (Sed	iment)						
Luzeri	luon or		BOLÀ			lb/a	cre/yr	lb/acre/y	'r		lb/acr	e/yr		Applic	cation	-		
Luzeri	Imper	vious	developed		5857	2	0.43	3			1,64	18	TSS	S Loadi	ng values	-		
	ne Pervi	ious d	leveloped	1	3483	1	9.46	0.98			22	1		used be	elow to			
	Outside	of Ur	banized Area		All		10	0.33			234	.6	calo	ulate a	annual lbs			
		0. 0.	builleou / ii ou															
							Simp	lified Method for Est	imating See	liment Rer	noval			_				
											Тү	NCLD 2011	ment Based on GIS Land Use Designati	data evaluat on to imperv	ion and Conversion fi ious/Pervious Acres	rom		
	Designated Sewer Shed	Total Acres	Proposed BMP	Estimated Acres	BN	AP Effectiven	ess Values		Estima Dev	ted sedime eloped Ope Developm	nt removal en Space ent	Estimated s Low Intens	ediment removal sity Development	Estimated Medium Int	sediment removal tensity Development	Estimated se High	diment removal Intensity	Estimated Total Sediment reduction (Ibs/year) Based on BMP Effectivenes
				To BMP	TN	TP	SEDIMENT	1.1.0	19% Imperv		81% Pervious	49% Imperv.	51% Pervious	79% Imperv.	21% Pervious	100% Imperv.	0% Pervious	Values
1	Laurel_Mall_South_SWS	68			-		_				-							
Parsed	Laurel_Mall_South_SWS D	46	NO BMP PROPOSI	ED	0	0	0		N/A			N/A		N/A		N/A		N/A
Parsed	Laurel_Mall_South_SWS B	15	NO BMP PROPOSI	ED	0	0	0	1	N/A	-	-	N/A		N/A		N/A		N/A
Parsed	Laurel_Mall_South_SWSC	4	Add Permeable pavers along	ED	U	0	0		N/A	+		N/A		N/A		N/A		N/A
MS4	Laurel_Mail_South_SWS A	3	swale (C/D Soil)	0.5	0.10	0.20	0.55		-	-	-	222	31				-	253
Applicab	ble Total MD4 Watershed Area anares	49																
2	Park_Crest_SWS_1	144						2		~								
MS4 T	Part of Chapel Hill Developemtn Township Applicable MS4 Watershed	107	Bioretention/Rain garden and Vegetated Open Channels (C/D Soil) - Lower Value Used	25	0.10	0.10	0.50	-	1,957		1,119	5,047	352	0	0	o	0	8,475
Parsed	Laurel_Mall_South_SWS D	7	NO BMP PROPOSI	ED	0	0	0		N/A			N/A		N/A		N/A		N/A
Applicab	ble Total M54 Watershed Area ====>	108							-									
3	Lake Irena SWS 2	113		_	-							-						
Parsed	Lake_Irena_SWS_2.A	77	NO BMP PROPOSI	ED	0	0	0		N/A	1	1	N/A		N/A		N/A	11 11	N/A
MS4	Lake_Irena_SWS_2.B	9	Vegetated Open Channels	3	0.10	0.10	0.50	6	470		269	0	0	0	0	0	0	738
Parsed	Lake_irena_SWS_2 C	27	NO BMP PROPOSI	ED	0	0	0		N/A			N/A		N/A		N/A		N/A
Applicab	ble Total MS4 Watershed Area =====>	113																
4	Lake_Irena_SWS_1	588																
MS4	Lake_Irena_SWS_1 Laurel Mail and Regal Cinema	62	Upgrade existing detention pond to extended detention with low flow infiltration and bioretention raingarden	10	0.10	0.10	0.50							6,510	873			7,383
MS4	Lake_Irena_SWS_2 Development North of Beltway	163	Vegetated Open Channels (C/D Soil)	10	0.20	0.20	0.60					4,845	676					5,521
Parsed	Lake_Irena_SWS_3 (Padot)	15	NO BMP PROPOSI	ED	0	0	0		N/A			N/A		N/A		N/A		N/A
Parsed	Lake_Irena_SWS_4 (Airport)	168	NO BMP PROPOSI	ED	0	0	0		N/A			N/A		N/A		N/A		N/A
Parsed	Lake_Irena_SWS_5 (Lake No MS4)	50	NO BMP PROPOSI	ED	0	0	0		N/A			N/A		N/A		N/A		N/A
MS4	Lake_Irena_SWS_6 Twp North Park Drive	3	Vegetated Open Channels (C/D Soil)	1.5	0.10	0.10	0.50	e						976	131			1,107
MS4 C	Lake_Irena_SWS_7 Development Along Old Airport Road	24	Vegetated Open Channels (C/D Soil)	1	0.20	0.20	0.60	0				485	68					552
MS4	Lake_Irena_SWS_8 Lands of Car Dealerships	48	Upgrade existing detention pond to extended detention with low flow infitration and bioretention raingarden	10	0.20	0.20	0.60	6				4,845	676				-	5,521
MS4	Lake_Irena_SWS_9 Lands Of Wallmart	29	Upgrade existing detention pond to extended detention with low flow infiltration and bioretention raingarden	10	0.20	0.20	0.60	6				4,845	676					5,521
Parsed	Lake_Irena_SWS_10	8	NO BMP PROPOSI	ED	0	0	0		N/A			N/A		N/A		N/A		N/A
MS4	Lake_Irena_SW5_11 Lands of LHVH	18	Upgrade existing detention pond to extended detention with low flow infiltration and	3	0.20	0.20	0.60	-				1,454	203					1,656

UNEXPECTIVE UNEXPECTIVE <th colspan="6" th="" unexp<=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>Simplified</th><th>d Method for Est</th><th>timating Sedir</th><th>ment Removal</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></th>	<th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>Simplified</th> <th>d Method for Est</th> <th>timating Sedir</th> <th>ment Removal</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>													Simplified	d Method for Est	timating Sedir	ment Removal							
Partial line line line line line line line lin											Ţ	ype of Deve NCLD 20	lopment Based on GIS 11 Land Use Designati	data evalua on to Imper	tion and Conversion t vious/Pervious Acres	from								
Image: Control (0, 0) Org OR Org OR Org SOME	Desig	ignated Sewer Shed	Total Acres	Proposed BMP	Estimated Acres	в	MP Effective	iness Values		Estimate Develo D	d sediment removal oped Open Space levelopment	Estimate Low Int	ed sediment removal tensity Development	Estimate Medium Ir	d sediment removal ntensity Development	Estimate	ed sediment removal High Intensity	Estimated Total reduction (Ib: Based on BMP Efi						
1 Maxed 34.1 17 Maxed 34.1 18 Maxed 34.1					To BMP	TN	TP	SEDIMENT	_	19% Imperv.	81% Perviou	49% s Imperv.	51% Pervious	79% Imperv.	21% Pervious	100% Imperv.	0% Pervious	Values						
Image No. Mage No. MA NA	H	Hollywood_SW5_1 s to Mine pit not stream*	177	1.00						-														
Imply and High 14 MORM PRODUCT 0 0 0 NA NA NA NA Parel Regime 2013 3 NO RM PRODUCT 0 0 0 0 NA	H	Hollywood SWS 1	109	NO BMP PROPOSE	ED	0	0	0		N/A		N/A		N/A		N/A		N/A						
Image and addition of the second o	H	Hollywood SWS 2 Pathot ROW Parced	15	NO BMP PROPOSE	ED	0	0	0		N/A		N/A		N/A		N/A		N/A						
Applicable Tates MSR Reserved See	BAN	Hollywood SWS 3	51	NO BMP PROPOSE	ED	0	0	0		N/A		N/A		N/A		N/A		N/A						
Approx March 301 Mod Moder March 301 Mode March 301	tal M	MS4 Watershed Area ====>	109							1		-				-								
"Parted Marker storegard DP Predict Auger Nam, No.2 9 NO BMF PROPOSED 0 0 0 N/A N/A <td>Airp</td> <td>irport_North_SW5_1</td> <td>104</td> <td></td>	Airp	irport_North_SW5_1	104																					
Parent Argen Turn, NY1 93 NO BMP RNOTSED 0 0 0 0 0 NA NA NA NA NA Parent 44gen Turn, NY1 44 NO BMP RNOTSED 0 0 0 0 NA	rains	s to Mine pit not stream*	204				1	1	r.	di se al		T		1		1		1						
Pared Appr Non-Non-Non-Non-Non-Non-Non-Non-Non-Non-	Air	Airport North SWS 1	93	NO BMP PROPOSE	ED	0	0	0		N/A		N/A		N/A		N/A		N/A						
Image Image <th< td=""><td>Air</td><td>Airport North SWS 2</td><td>68</td><td>NO BMP PROPOSE</td><td>ED</td><td>0</td><td>0</td><td>0</td><td>-</td><td>N/A</td><td></td><td>N/A</td><td></td><td>N/A</td><td></td><td>N/A</td><td></td><td>N/A</td></th<>	Air	Airport North SWS 2	68	NO BMP PROPOSE	ED	0	0	0	-	N/A		N/A		N/A		N/A		N/A						
Description Description <thdescription< th=""> <thdescription< th=""></thdescription<></thdescription<>	Air	Airport North SWS 4	25	NO BMP PROPOSE	ED	0	0	0		N/A		N/A		N/A		N/A		N/A						
Applicable Test 255 Bioconde Aue aname To Image: Control of the second Aue aname To Image: Control of the second Aue aname To Image: Control of the second Aue aname Total N/A	Air	Airport North SWS 5	10	NO BMP PROPOSE	ED	0	0	0		N/A		N/A		N/A		N/A		N/A						
7 Sect. Suppr. Col. 5 21 NO MP PROPOSED 0 0 0 0 N/A N/A N/A N/A MSG Appent Soc. 500.11 228 NO MP PROPOSED 0 0 0 N/A	tal M	MS4 Watershed Area =====>	70		-	1 -	1	1	-	1		1	1 1			1		1						
7 Seen_Jappa Scali. XXI, 2 276 V Pared Mappa Scali. XXI, 2 NO EMP PROPOSED 0 0 0 NA																								
Parted Alogendands 2005 2.20 NOM MPPROPOSED 0 0 0 0 N/A N/A N/A N/A MMS Parted Manuschends Derstenent 41 Versited Open Canadity 0 0.00 0.00 0.00 0.00 0.00 0.00 0.00 N/A V/A 0 N/A 0<	Sou	outh_Airport_SWS_1	276	in the second second	1		-									×		(
Mag Application VV22 (U) Series Vegetive Opin Channels (U) Series 8 0.10 0.00 N/A 3,230 451 V V V Pirade Magnetisation VV23 2 NO BMP PROPOSED 0 0 0 N/A	Air	Airport South SW5 1	229	NO BMP PROPOSE	ED	0	0	0		N/A		N/A		N/A		N/A		N/A						
Period Model and Declagation O O O N/A N/A N/A N/A M44 Argent Sub, SVS 4 15 NO BMP PROPOSED 0 0 0 N/A	Ai	AirportSouth SWS 2	21	Vegetated Open Channels	8	0.10	0.10	0.50				3.230	451					3,681						
Pres Appendix Non Sing 3 2 In Control Non Sing 3 2 0	of Wo	Voodiwn Park Developemnt		(C/D Soil)	ED.	0	0	0		N/A		M/A		61/0		N/A		N/A						
Mcd Augent Saud SVS	AU	Airport South SWS &	15	NO BMP PROPOSE	FD	0	0	0		N/A		N/A		N/A		N/A		N/A						
Applicable Total MS4 Watershed Area manon, do 4 Tutker_Hill_SMS_1 198	Air	Airport South SWS 5	9	NO BMP PROPOSE	ED	0	0	0		N/A		N/A		N/A		N/A		N/A						
B Turkey MIL_SNS_1 498 Image: SNS_1 (No.Add data data data data data data data d	tal M	MS4 Watershed Area =====>	45							5		2		2		0								
a Turkey, HIL, Wei, J. Work, J. Work, HIL, Wei, J. Wei, HIL, WEI, J. Wei, HIL, WEI, J. Wei, J. Work, HIL, WEI, J. WEI, J. Wei, HIL, WEI, J. WEI, J. Wei, HIL, WEI, J. WEI, J																		·						
Parset Tuting, RE, WA, RE, MA, 2 (Working the density and out of any marked of the Channels) (C(D Sen) 4 0.10 0.10 0.50 N/A N/A N/A N/A N/A Parset Tuting, RE, SMS, 2 (Work Alang St. 50) 9 Vegetisted Open Channels (C(D Sen)) 4 0.10 0.10 0.50 1.615 225 0 0 N/A Parset Tuting, RE, SMS, 3 (Mode Mandred) 1 NO BMP PROPOSED 0 0 0 N/A N/A N/A N/A Parset Tuting, RE, SMS, 5 (Color Mandred) 1 NO BMP PROPOSED 0 0 0 N/A N/A N/A N/A Parset Tuting, RE, SMS, 5 (Color Mandred) 1 NO BMP PROPOSED 0 0 0 N/A N/A N/A N/A Parset Tuting, RE, SMS, 5 (Color Mandred) 3 NO BMP PROPOSED 0 0 0 N/A N/A N/A N/A N/A Parset Tuting, RE, SMS, 5 (Color Mandred) 3 NO BMP PROPOSED 0 0 0 N/A N/A N/A N/A N/A Parset Tuting, RE, SMS, 3 (Mode Mandred) 34 Vegetisted Open Channels (C(D Son) 5 0.10 0.10 0.50	-	Turkey_Hill_SWS_1	193		-			1	T	1		1	1 1	1		1	1							
Prized Tuter, ML MVL (16 w Mung MVL) (10 w Mung MVL) (10 MUP ROPOSED 0 0 0 0.10 0.50 N/A N/A N/A N/A Parzed Tuter, ML MVL (16 w Mung MVL) (10 W Mung MVL) (10 W MUP ROPOSED 0 0 0 N/A N/A N/A N/A N/A Parzed Tuter, ML MVL (16 w Mung MVL) (10 W MUP ROPOSED 0 0 0 N/A N/A N/A N/A Parzed Tuter, ML MVL (16 w Mung MVL) (10 W MUP ROPOSED 0 0 0 N/A N/A N/A N/A Parzed Tuter, ML MVL (16 w Mung MVL) (10 W MP ROPOSED 0 0 0 N/A N/A N/A N/A Parzed Tuter, ML MVL (16 w Mung MVL) (10 W PR ROPOSED 0 0 0 0 0 N/A N/A N/A N/A Parzed Tuter, ML MVL (16 W MUR ML MVL MURG MUNL) 3 NO BMP ROPOSED 0 0 0 0 0 0 0 N/A N/A N/A N/A 0 0 <td< td=""><td>HILS</td><td>_SWS_1 (Wooded no development)</td><td>73.</td><td>Veretated Open Channels</td><td>ED</td><td>0</td><td>0</td><td>0</td><td></td><td>N/A</td><td></td><td>N/A</td><td></td><td>N/A</td><td></td><td>N/A</td><td></td><td>N/A</td></td<>	HILS	_SWS_1 (Wooded no development)	73.	Veretated Open Channels	ED	0	0	0		N/A		N/A		N/A		N/A		N/A						
Parced Tarker, ML, SW, S, Pholin Ruskey) 1 NO BMP PROPOSED 0 0 0 0 0 N/A N/A N/A N/A Parced Tarker, ML, SW, S, Pholin Ruskey) 4 NO BMP PROPOSED 0 0 0 N/A N/A N/A N/A N/A Parced Tarker, ML, SW, S, Pholin Ruskey) 1 NO BMP PROPOSED 0 0 0 N/A N/A N/A N/A Parced Tarker, ML, SW, S, Pholin Ruskey) 3 NO BMP PROPOSED 0 0 0 N/A N/A N/A N/A Parced Tarker, ML, SW, S, Pholin Ruskey 3 NO BMP PROPOSED 0 0 0 3,230 451 N/A	Sey_H	Hil_SWS_2 (Dev Along SR 309)	3	(C/D Soil)	4	0.10	0.10	0.50				1,615	225			-		1,840						
Parsed Tutkey, MS, SM, Lifthy Ford Databashig) 4 NO BMP PROPOSED 0 0 0 0 N/A N/A N/A N/A N/A Parsed Tutkey, MS, SM, Lifthy Ford Databashig) 1 NO BMP PROPOSED 0 0 0 N/A	rkey_H	Hill_SWS_3 (PaDot Roadway)	1	NO BMP PROPOSE	ED	0	0	0		N/A		N/A		N/A		N/A		N/A						
Parced Turkey, ML, SMS, S (Nach Radwey) 1 NO BMP PROPOSED 0 0 0 0 N/A N/A N/A N/A Parced Turkey, ML, SMS, S (Car Log Down) 3 NO BMP PROPOSED 0 0 0 N/A N/A N/A N/A N/A Parced Turkey, ML, SMS, S (Car Log Down) 34 Vegetated Open Channels (C/D Soil) 8 0.10 0.10 0.50 3.230 451 0	ey_HII	HIL_SWS_4 (Priv Ford Dealership)	4	NO BMP PROPOSE	ED	0	0	0		N/A		N/A		N/A		N/A		N/A						
Parced Inverse National Na	rkey_t	Hill_SWS_5 (PaDot Roadway)	1	NO BMP PROPOSE	ED	0	0	0		N/A		N/A		N/A		N/A	-	N/A						
Parced Turkey, KHI_SWS_8 (Wooded Area ma Dee) 34 C (C/D Soil) 8 0.10 0.10 0.50 N/A N/A N/A N/A Parced Turkey, KHI_SWS_8 (Wooded Area ma Dee) 15 N/O BMP PROPOSED 0 0 0 0 N/A N/A N/A N/A Parced Turkey, KHI_SWS_8 (Wooded Area ma Dee) 15 N/O BMP PROPOSED 0 0 0 0 0 0 0 N/A N/A N/A N/A Parced Turkey, KHI_SWS_8 (Wooded Area ma Dee) 15 0.10 0.10 0.50 2.019 2.82	and 2	Cure 2442 6 (car rod browing)	-	Vegetated Open Channels		0	0	0		N/A		N/A		N/A		NA		IVA						
Parsed Turkey_RRL_SWS_8 (Wooded Areas and Day) 15 NO BMP PROPOSED 0	Turkey_	y_Hill_SWS_7 (Genietries Cut)	24	(C/D Soil)	8	0.10	0.10	0.50		-		3,230	451					3,681						
Parsed Turkey, HII_SWS_0 (Gorden KasCe) 20 Vegetated Open Channels (C/D Soil) 5 0.10 0.10 0.50 2.019 282 10 10 Parsed Turkey, HII_SWS_0 (Gorden KasCe) 8 Vegetated Open Channels (C/D Soil) 2 0.10 0.10 0.50 808 113 10 10 Applicable Total MS4 Watershed Area 9 N22_Street_SWS_3 (Removed drains to CSO) 44 2 0 0 0 0 0 N/A N/A N/A Parsed N22_Street_SWS_3 (Removed drains to CSO) 44 2 0 0 0 0 0 N/A N/A N/A 10 N22_Street_SWS_2 10 164 2 164 2 164	на на	il_SWS_8 (Wooded Area no Dev)	19	NO BMP PROPOSE	ED	0	0	0		N/A		N/A		N/A		N/A		N/A						
Parced Turkey_H0_SWS_L0(0/with/ws.Cb) s Vegetabel Open Channels (C/D Soil) 2 0.10 0.10 0.50 808 113 Image: Control with with with with with with with with	key_H	Hill_SWS_9 (Twp Road & MS4)	. 20-	(C/D Soil)	5	0.10	0.10	0.50				2,019	282					2,301						
Applicable Total MS4 Watershed Area =====> 61 9 N22_Street_SWS_3 (Removed drains to CSO) 44 Parsed N22_Street_SWS_3 45 NO BMP PROPOSED 0 0 0 N/A N/A N/A 4pplicable Total MS4 Watershed Area =====> 0 0 0 0 N/A N/A N/A N/A	urkey_	y_HIL_SWS_L0 (Genietrics Ctr.)	8	Vegetated Open Channels (C/D Soil)	2	0.10	0.10	0.50				808	113					920						
9 N22_Street_SWS_3 (Removed drains to CSO) 44 Parsed N22_Street_SWS_3 45 NO BMP PROPOSED 0 0 N/A N/A N/A N/A 40 N22_Street_SWS_2 0 0 0 0 0 N/A N/A N/A N/A 10 N22_Street_SWS_2 164	tal M	MS4 Watershed Area =====>	61									0												
(Removed drains to CSO) Inclusion Inclusion </td <td>N</td> <td>N22_Street_SW5_3</td> <td>44</td> <td></td>	N	N22_Street_SW5_3	44																					
Parsed NZ2_Street_SWS_3 45 NO BMIP PROPOSED 0 N/A N/A N/A Applicable Total MS4 Watershed Area =====> 0<	(Rem	moved drains to CSO)			-			1	-	1 11/4		1				1 1/2		1						
10 N22_Street_SWS_2 164	N. tal M	MS4 Watershed Area =====>	45	NU BMP PROPUSE	ED		U	1 0	_	NyA		I N/A	1 1	N/A		IN/A		I N/A						
10 N22_Street_SW5_2 164				-																				
(Removed drains to CSO)	Ni (Rem	N22_Street_SWS_2 moved drains to CSO)	164	1		_																		
Parsed N22_Street_SWS2_1 52 NO BMP PROPOSED 0 0 0 N/A N/A N/A	N2	V22_Street_SWS2_1	52	NO BMP PROPOSE	ED	0	0	0		N/A		N/A		N/A		N/A		N/A						
Parsed N22_Street_SWS2_2 126 NO BMP PROPOSED 0 0 0 N/A N/A N/A	N2	122_Street_SWS2_2	126	NO BMP PROPOSE	ED	0	0	0		N/A		N/A		N/A		N/A		N/A						
Parsed N22_Street_SWS2_3 22 NO BMP PROPOSED 0 0 0 N/A N/A N/A	N2	122_Street_SW52_3	22	NO BMP PROPOSE	ED	0	0	Q		N/A		N/A	1	N/A	A	N/A	19 19 19 19	N/A						
Applicable Total MS4 Watershed Area +++++> 0	icable 1	e Total MS4 Watershed Area +++++>	٥																					

l Sediment ps/year) ffectiveness

							omprined the	and for Est	1	e nemo var	_						
										Тур	NCLD 2011	ment Based on GIS Land Use Designation	data evaluati in to imperv	ion and Conversion f ious/Pervious Acres	rom		
	Designated Sewer Shed	Total	Proposed BMP	Estimated Acres	BI	MP Effective	ness Values		Estimated se Developed Deve	diment removal d Open Space lopment	Estimated Low Inter	sediment removal sity Development	Estimated Medium Int	sediment removal tensity Development	Estimated Hig	sediment removal gh Intensity	Estimated Total Se reduction (Ibs/) Based on BMP Effer
				To BMP	TN	TP	SEDIMENT		19% Imperv.	81% Pervious	49% Imperv.	51% Pervious	79% Imperv.	21% Pervious	100% Imperv.	0% Pervious	Values
n	N22_Street_SW5_4 (Removed drains to CSO)	164															
Parsed	N22_Street_SWS4_1	61	NO BMP PROPOS	SED	0	0	0		N/A		N/A		N/A		N/A	-	N/A
Parsed	N22_Street_SWS4_2	22	NO BMP PROPOS	SED	0	0	0		N/A		N/A		N/A		N/A		N/A
Parsed	N22_Street_SWS4_3	23	NO BMP PROPOS	SED	0	0	0		N/A	1.5	N/A		N/A		N/A		N/A
Applic	able Total M54 Watershed Area =====>	> 0															
-		1 20	1														
12	N22_Street_SWS_1	72	NO PMP PROPOS	ern 1				1	T and		1 av/a 1		and T				1 1/4
Parsed	N22_Street_SWS1_1	29	NO BMP PROPOS	SED SED	0	0	0		N/A	_	N/A		N/A		N/A		N/A
Darred	N22_SUBEL_SWS1_2	21	NO BMP PROPOS	SED	0	0	0	-	N/A	_	N/A		N/A		N/A		N/A
Parsed	N22 Street SWS1 4	15	NO BMP PROPOS	SED	0	0	0		N/A	_	N/A		N/A		N/A		N/A
Parsed	N22 Street SWS1 5	1	NO BMP PROPOS	SED	0	0	0	-	N/A	_	N/A		N/A		N/A		N/A
Parsed	N22 Street SWS1 6	4	NO BMP PROPOS	SED	0	0	0	_	N/A	_	N/A		N/A		N/A		N/A
Applic	able Total M54 Watershed Area =====>) G		1		-		-	1								
13	Ridgewood_SW5_2	58			_								_				
MS4	Ridgewood_SWS 1	46	Vegetated Open Channels	10	0.10	0.10	0.50				4,038	564					4,601
Parsed	Ridgewood SWS 1	2	NO BMP PROPOS	SED	0	0	0		N/A	_	N/A		N/A		N/A		N/A
MSA	Ridgewood SWS1	10	Vegetated Open Channels	Å	0.10	0.10	0.50				1.615	225					1.840
	weBenede 2002		(C/D Soil)		0.20	0.10		_	1	_	1,015	225			-	-	-,010
Аррии	able total MD4 Watershed Area	> >0															
14	Churchhill Mall SWS	99				-											
Parsed	Churchhill Mall SWS 1	47	NO BMP PROPOS	SED	0	0	0		N/A		N/A		N/A		N/A	-	N/A
M54	Churchhill Mall SWS 2	25	Vegetated Open Channels	8	0.10	0.10	0.50				3.230	451					3.681
Presed	Churchhill Mall SWS 2	27	(C/D Soil)	SED	Ó.	0	0	-	N/A		N/A	275	N/A		N/A		N/A
Applic	able Total MS4 Watershed Area	65	No bini Thoro.	500				-	1 10/0		11/2		11/4	-	iya		in the
15	Lattimer_SWS	91															
MS4	Lattimer SWS 1	66	Vegetated Open Channels	10	0.10	0.10	0.50				4.038	564					4,601
Parced	Lattimer SWS 2	25	NO BMP PROPOS	SED	Ó	0	0		N/A	_	N/A		N/A	-	N/A		N/A
Applic	able Total MS4 Watershed Area	66			-	-		-	1 100	_	1 10/0		11/10		19/0	_	1
		1															
16	Milnesvill_East_SWS_1 *Drains to Mine pit not stream*	100															
MS4	Milmesvill_East_SW 1 (MS4 to Crk)	28	Vegetated Open Channels	10	0.10	0.10	0.50				4,038	564		1.1.1			4,601
Parsed	Milnesvill_East_SW 2 (PaDot Road)	3	NO BMP PROPOS	SED	0	0	0		N/A		N/A		N/A		N/A.		N/A
MS4	Milnesvill_East_SW 3 (Twp road to PaDot)	24	Vegetated Open Channels	8	0.10	0.10	0.50				3,230	451			1		3,681
M54	Milnesell_East_SW 4 (All Wooded no MS4)	20	Vegetated Open Channels (C/D Soil)	8	0.10	0.10	0.50				3,230	451					3,681
Parsed	Minesvil_East_SW 5 (Drains to Mine Pit)	25	NO BMP PROPOS	SED	0	0	0	-	N/A		N/A		N/A	1	N/A		N/A
Applic	able Total MS4 Watershed Area	56				-			1			-1				1	
17	*Drain to strip mine*	42				-	_	1									-
Parsed	Milnesvill_East_SW 1	42	NO BMP PROPOS	SED	0	0	0		N/A		N/A		N/A		N/A		N/A
Applic	able Total M54 Watershed Area =====>	> 0															



							Simplif	hed Method for Es	timating Se	diment	t Removal			_					
			_								Ту	pe of Devel NCLD 20	lopment Basi 11 Land Use	ed on GIS Designati	data evalua on to Imper	tion and Conversion vious/Pervious Acres	from		
	Designated Sewer Shed	Total Acres	Proposed BMP	Estimated Acres	В	MP Effective	eness Values		Estima Dev	ated sed veloped Devel	diment removal 1 Open Space lopment	Estimate Low Int	ed sediment tensity Devel	removal opment	Estimated Medium In	d sediment removal itensity Developmen	Estimate	d sediment removal ligh Intensity	Estimated Total Se reduction (Ibs/ Based on BMP Effe
				To BMP	TN	TP	SEDIMENT		19% Imperv	v	81% Pervious	49% Imperv.		51% Pervious	79% Imperv.	21% Pervious	100% Imperv.	0% Pervious	Values
18	Pardeesville_SWS_2	32						-			- 0	0							
Parsed	Pardeesville_SWS_2	32	NO BMP PROPOS	SED	0	0	0		N/A	1.17		N/A	1		N/A		N/A		N/A
Appli	cable Total MS4 Watershed Area =====>	32														And Annual States			
19	Pardeesville_SWS_3 *Drains to Mine pit not stream*	32	-																
Parsed	Pardeesville_SW5_3	32	NO BMP PROPOS	ED	0	0	0		N/A	T		N/A		-	N/A		N/A		N/A
Appli	cable Total MS4 Watershed Area =====>	32							1	-									
	2.0.0.0.0.0.					_				_									
20	Pardeesville_SW5_4 "Drains to Mine pit not stream"	138					-			-									
Parsed	Pardeesville_SWS_4	128	NO BMP PROPOS	SED	0	0	0		N/A			N/A			N/A		N/A		N/A
Appli	cable Total MS4 Watershed Area =====>	18																	
21	Pardeesville_SWS_5 *Drain to strip mine*	50	1			-				_		y						-	
Parsed	Pardeesville_SW5_5	51	NO BMP PROPOS	SED	0	0	0		N/A		1.	N/A			N/A		N/A		N/A
Appli	cable Total MS4 Watershed Area =====>	31																	
	the same the second		T																
22	Pardeesville_SWS_6 *Drains to Mine pit not stream*	296																	
Parsed	Pardeesville_SW5_6	296	NO BMP PROPOS	ED	0	0	0		N/A	1		N/A			N/A		N/A		N/A
Applie	cable Total MS4 Watershed Area =====>	40						1											
	P	-																	
23	*Drains to Mine pit not stream*	42																	
Parsed	Pardeesville_SW5_7	42	NO BMP PROPOS	SED	0	0	0		N/A			N/A			N/A		N/A		N/A
Applie	cable Total MS4 Watershed Area =====>	42																	
74	Lattimer SWS 1	47	1		_														
24	catomer_3w3_1	/	Bioretention/Rain garden and		1.1.00	T	1	1	1	1	-	1	1		1	T	T		
MS4	Lattimer_SW5_1	23	Vegetated Open Channels (C/D Soil) - Lower Value Used	10	0.10	0.10	0.50					4,038		564					4,601
Appli	cable Total MS4 Watershed Area =====>	47																	
25	Lattimer SWS 3	54										_		_	_		_		
	Cataline Straigs		Bioretention/Rain garden and			1 4 4 4	1	-	1			1 James					1		
MS4	Lattimer_SW5_3	54	Vegetated Open Channels (C/D Soil) - Lower Value Used	10	0.10	0.10	0.50					4,038		564					4,601
Applie	cable Total M54 Watershed Area =====>	54															A		
76	the state of	105	1																
20	Lattimer_SW5_28	105	Bioretention/Rain garden and		-	-	1		1			1	-		-		r -		1
MS4	Lattimer_SW5 1	63	Vegetated Open Channels (C/D Soil) - Lower Value Used	20	0.10	0.10	0.50					8,075		1,127					9,202
Parsed	Lattimer_SWS 2	39	NO BMP PROPOS	SED	0	0	0		N/A	1		N/A		_	N/A		N/A		N/A
Parsed	Lattimer_SWS 3	5	NO BMP PROPOS	SED	0	0	0		N/A	11.		N/A		_	N/A	_	N/A		N/A
eppin	cable fotal most watershed Area	0.5																	
27	Ridgewood_sws_10 *Drain to strip mine*	150																	
Parsed	Ridgewood_SWS 3	129	NO BMP PROPOS	SED	0	0	0		N/A	T		N/A	1	-	N/A		N/A		N/A
Parsed	Ridgewood_SWS 1	14	NO BMP PROPOS	SED	0	0	0		N/A			N/A			N/A		N/A		N/A
Parsed	Ridgewood_SWS 2	7	NO BMP PROPOS	SED	0	0	0	-	N/A			N/A	1.0		N/A		N/A	1	N/A
Applie	cable Total MS4 Watershed Area =====>	150																	



1.1							Simplified Metho	od for Estimating Sedim	nent Removal							
									Тү	pe of Developm NCLD 2011 La	ent Based on GIS nd Use Designati	data evaluatio on to Impervio	on and Conversion fr ous/Pervious Acres	rom		
	Designated Sewer Shed	Total	Proposed BMP	Estimated Acres	в	MP Effective	ness Values	Estimated Develo De	l sediment removal ped Open Space evelopment	Estimated see Low Intensit	diment removal y Development	Estimated si Medium Inter	ediment removal nsity Development	Estimated see High I	diment removal Intensity	Estimated Tota reduction (I Based on BMP F
				To BMP	TN	TP	SEDIMENT	19% Imperv.	81% Pervious	49% Imperv.	51% Pervious	79% Imperv.	21% Pervious	100% Imperv.	0% Pervious	Value
28	HT_Valmont_1	67							-							
MS4	HT_Valmont 1	29	NO BMP PROPOSE	D	0	0	0	N/A		N/A		N/A		N/A		N/A
Parsed	HT_Valmont 2	14	NO BMP PROPOSE	D	0	0	0	N/A		N/A	- 14	N/A		N/A		N/A
Parsed	HT_Valmont 3	5	NO BMP PROPOSE	D	0	0	0	N/A		N/A		N/A		N/A		N/A
Parsed	HT_Valmont 4	15	NO BMP PROPOSE	D	0	0	0	N/A		N/A		N/A		N/A		N/A
MS4	HT_Valmont 5	1	Bioretention/Rain garden and Vegetated Open Channels (C/D Soil) - Lower Value Used	0.5	0.10	0.10	0.50			202	28					230
MS4	HT_Valmont 6	3	Bioretention/Rain garden and Vegetated Open Channels (C/D Soil) - Lower Value Used	1.5	0.10	0.10	0.50			606	85					690
Applica	able Total M54 Watershed Area =====>	19														
20	AT MARKING S	00	1													
29 Parend	HT Valmont_2	99	NO BMB BBODOO	D	1 0	0	0	1 1 1/2	-	N/A	1	N/A I	1 1	N/A	1	1 N/A
MSA	HT_Valmont SWS2 1	2	NO BMP PROPOSE	D D	0	0	0	N/A	_	N/A		N/A	_	N/A	_	N/A
MS4	HT_Valmont SWS2 3	3	Bioretention/Rain garden and Vegetated Open Channels	1.5	0.10	0.10	0.50	11/0		606	85	11/0		11/0		690
Parred	HT Valmont SWS2.4	14	(C/D Soil) - Lower Value Used NO BMP PROPOSE	D	0	0	a	N/A		N/A		N/A		N/A		N/A
MS4	HT Valmont SWS2 5	1	NO BMP PROPOSE	D	0	0	0	N/A		N/A		N/A		N/A		N/A
Applica	able Total MS4 Watershed Area =====>	85		-	. ~	1		1 1 200		1					_	1
			1													
30 & 31	Garfield & 14 th St	99						-		0				_		á
MS4	Garfield & 14'th St 1	18	Bioretention/Rain garden and Vegetated Open Channels (C/D Soil) - Lower Value Used	6	0.10	0.10	0.50	939	537							1,47
MS4	Garfield & 14'th St 2	13	Bioretention/Rain garden and Vegetated Open Channels (C/D Soil) - Lower Value Used	4	0.10	0.10	0.50	626	358							984
Applica	able Total MS4 Watershed Area =====>	31														·
32	HT_Southwest_1	30				_										
Parsed	HT_Southwest 1	10	NO BMP PROPOSE	D	0	0	0	N/A		N/A		N/A		N/A		N/A
Parsed	HT_Southwest 2	11	NO BMP PROPOSE	D	0	0	0	N/A		N/A		N/A		N/A		N/A
Parsed	HT_Southwest 3	2	NO BMP PROPOSE	D	0	0	0	N/A		N/A		N/A		N/A		N/A
Parsed	HT_Southwest 4	7	NO BMP PROPOSE	D	0	0	0	N/A		N/A		N/A		N/A		N/A
Applica	able Total MS4 Watershed Area =====>	0														
33	HT Southwest 2	190										_				
Parsed	HT Southwest? 1	100	NO BMP PROPOSE	D	0	0	0	N/A		N/A		N/A		N/A	1	N/A
Parsed	HT Southwest2 2	12	NO BMP PROPOSE	D	0	0	0	N/A		N/A		N/A		N/A	_	N/A
Parsed	HT Southwest2 3	40	NO BMP PROPOSE	D	0	0	0	N/A		N/A		N/A		N/A	and and the	N/A
Parsed	HT_Southwest2.4	18	NO BMP PROPOSE	D	0	0	0	N/A		N/A		N/A		N/A		N/A
Parsed	HT_Southwest2 5	21	NO BMP PROPOSE	D	0	0	0	N/A		N/A		N/A		N/A		N/A
Applica	able Total MS4 Watershed Area =====>	0														
34	HT_Southwest_3	15														
Parsed	HT_Southwest_3	15	NO BMP PROPOSE	D	0	0	0	N/A		N/A		N/A		N/A		N/A
Applica	able Total MS4 Watershed Area =====>	0				-										
			1													
35	HT_Cranberry_1	35	Bioretention/Rain sames and	-	Ť	1	1	i i i	1	1		1		-	1	1
M54	HT_Cranberry 1	23	Vegetated Open Channels (C/D Soil) - Lower Value Used	10	0.10	0.10	0.50			4,038	564					4,60
Parsed	HT_Cranberry 2	13	NO BMP PROPOSE	D	0	0	0	N/A		N/A	1.1	N/A		N/A		N/A
Applica	able Total MS4 Watershed Area =====>	23														



							Simplified	Method for E	stimating Sedir	nent Kem	loval			_				
											Тур	pe of Devel NCLD 20	opment Based on GIS 11 Land Use Designat	data evalua on to Impen	tion and Conversion vious/Pervious Acre	from		
	Designated Sewer Shed	Total Acres	Proposed BMP	Estimated Acres	в	MP Effective	ness Values	1	Estimate Develo D	d sedimen oped Oper evelopme	nt removal n Space ent	Estimate Low Int	ed sediment removal ensity Development	Estimated Medium In	d sediment removal ntensity Developmer	Estimater t H	d sediment removal ligh Intensity	Estimated Total reduction (Ib Based on BMP Ef
				To BMP	TN	TP	SEDIMENT		19% Imperv.		81% Pervious	49% Imperv.	51% Pervious	79% Imperv.	21% Perviou	100% Imperv.	0% Pervious	Value
36	HT_Cranberry_SWS_2	41				_								_				
Parsed	HT_Cranberry_SW52 1	31	NO BMP PROPOS	ED	0	0	0		N/A	-	-	N/A		N/A	1000	N/A		N/A
M54	HT_Cranberry_SWS2_2	5	(C/D Soil)	2	0.20	0.20	0.60					969	135					1,104
MS4	HT Cranberry SWS2 3	5	Vegetated Open Channels	2	0.20	0.20	0.60					969	135					1,104
Applic	able Total MS4 Watershed Area =====>	10	(C/D Soil)					1	-			1				-		
			1															
57	HT_Hollarshill_1	9	Veretated Open Channels	-		T shows	1	1	-	_		I Lobert		_		1		1
MS4	HT_Hollarshill_1	9	(C/D Soil)	3	0.10	0.10	0.50					1,211	169					1,380
Applic	able Total MS4 Watershed Area =====>	9																
38	HT_Hollarshill_2	22														-		
MS4	HT_Hollarshill_2	22	Vegetated Open Channels	8	0.10	0.10	0.50					3,230	451					3,681
Applic	cable Total MS4 Watershed Area =====>	22	(0/0/500)	-		- uparti			-	-	-	1.444	1	-		-		
39	HT_Harwood_1	31				1			1		-			1		1		
Parsed	HT_Harwood_1 able Total MS4 Watershed Area	31	NO BMP PROPOS	ED	0	0	0		N/A	_		N/A		N/A		N/A		N/A
40	HT_Greenridge_1	7						4			-	ĩ.				-		r
MS4	HT_Greenridge 1	5	Bioretention/Rain garden and Vegetated Open Channels (C/D Soil) - Lower Value Used	2	0.10	0.10	0.50					808	113					920
M54	HT_Greenridge 2 Area Outside MS4	2	Bioretention/Rain garden and Vegetated Open Channels (C/D Soil) - Lower Value Used	1	0.10	0.10	0.50					57	60					117
Applic	able Total MS4 Watershed Area anaaas	7						-								0		
41	HT Greenridge 2	8													-	1		
Parsed	HT_Greenridge_2	8	NO BMP PROPOS	ED	0	0	0		N/A			N/A		N/A		N/A		N/A
Applic	able Total M54 Watershed Area =====>	8																
42	HT_Greenridge_3	Z			_													
Parsed	HT_Greenridge_3	2	NO BMP PROPOS	ED	0	0	0		N/A			N/A		N/A		N/A		N/A
Applic	able Total MS4 Watershed Area =====>	2									-	1						
43	HT Greenridze 4	17																
Parsed	HT_Greenridge_4	17	NO BMP PROPOS	ED	0	0	0		N/A			N/A		N/A		N/A		N/A
Applic	able Total MS4 Watershed Area =====>							~								-		
44	HT Coutboard 1	505																
Parsed	HT_Southeast 1	434	NO BMP PROPOS	ED	0	0	0	T	N/A	-	1	N/A		N/A		N/A		N/A
Applic	cable Total MS4 Watershed Area =====>	0				1 5 1	-	-	1							1		
45	HT Southeast 2	10															_	
Parsed	HT_Southeast_2	10	NO BMP PROPOS	ED	0	0	0	1	N/A			N/A		N/A		N/A		N/A
Applic	able Total MS4 Watershed Area	0																



							Simplified	Method for Est	timating Sedi	ment Removal	1.1.1						-		
1.5											Type of Development Based on GIS data evaluation and Conversion from NCLD 2011 Land Use Designation to Impervious/Pervious Acres								
	Designated Sewer Shed	Total Acres	Proposed BMP	Estimated Acres To BMP	BMP Effectiveness Values				Estimate Devel	ed sediment remov loped Open Space Development	al Estimate Low Int	Estimated sediment removal Low Intensity Development		Estimated sediment removal Medium Intensity Development		l sediment removal igh Intensity	Estimated Total S reduction (Ibs/ Based on BMP Effe		
					TN	TP	SEDIMENT		19% Imperv.	81% Pervio	49% us Imperv.	51% Pervious	79% Imperv.	21% Pervious	100% Imperv.	0% Pervious	Values		
46	HT_Southeast_3	35			-		2						-				1		
M54	HT_Southeast_3	35	Vegetated Open Channels (C/D Seill	10	0.10	0.10	0.50				4,038	564					4,601		
Appli	cable Total MS4 Watershed Area =====	> 0	(et a seri)	1	-	1		-			1.000		-				1		
47	HT_Southeast_4	19																	
M54	HT_Southeast 1	12	Vegetated Open Channels (C/D Soil)	4	0.10	0.10	0.50				1,615	225					1,840		
Parsed	HT_Southeast 2	2	NO BMP PROPOS	ED	0	0	0		N/A		N/A		N/A		N/A		N/A		
MS4	HT_SoutheasTt 3	6	Vegetated Open Channels	3	0.10	0.10	0.50				1,211	169					1,380		
Appli	cable Total MS4 Watershed Area =====	> 0	(c/b soil)			4		+	*		1		-		1 1	-			
-			<u> </u>																
48	HT_East SWS 1 Hazle Springs	87																	
MS4	HT_East SWS 1	46	NO BMP PROPOS	ED	0	0	0	1	N/A		N/A	T T	N/A		N/A	ľ	N/A		
Parsed	HT_East SWS 2	26	NO BMP PROPOS	ED	0	0	0		N/A		N/A		N/A		N/A		N/A		
Parsed	HT_East SWS 3	1	NO BMP PROPOS	ED	0	0	0		N/A	· · · · · · ·	N/A		N/A		N/A		N/A		
Parsed	HT_East SWS 4	14	NO BMP PROPOS	ED	0	0	0		N/A		N/A		N/A	2	N/A		N/A		
Appli	cable Total MS4 Watershed Area =====	> 86											-						
	2007 2000	1				_													
49 Berned	Drifton_SWS1	10	NO PMP PPOPOS	ED.	0	0	0	1	N/4		N/8	1	N/A		1 11/5		N/A		
Parsed	Drifton_SWS 1	9	Vegetated Open Channels		0.10	0.10	0.50	-	N/A	45	N/A		N/A		N/A		122		
NU34	Dirition_SWS 2		(C/D Soil)	0.5	0.10	0.10	0.50	_	10	43									
Арры	cable Total M54 Watershed Area =====	> 15																	
50	Drifton_SWS2	60						-											
Parsed	Drifton_SWS 1	45	NO BMP PROPOS	ED	0	0	0		N/A		N/A		N/A	1	N/A		N/A		
Parsed	Drifton_SWS 2	2	NO BMP PROPOS	ED	0	0	0		N/A		N/A		N/A	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	N/A		N/A		
Parsed	Drifton_SWS 3	13	NO BMP PROPOS	ED	0	0	0	-	N/A		N/A		N/A		N/A		N/A		
Appli	cable Total MS4 Watershed Area =====	> 58																	
51	Drifton SWS3	76				_													
Parsed	Drifton SW53 1	9	NO BMP PROPOS	ED	0	0	0	1	N/A		N/A		N/A		N/A	1	N/A		
Parsed	Drifton SW53 2	7	NO BMP PROPOS	ED	0	0	0		N/A		N/A		N/A		N/A	1	N/A		
Appli	cable Total MS4 Watershed Area =====	> 76				-		-	1		1				1				
52	Drifton_SWS4	14					v		-										
Parsed	Drifton_SW54 1	4	NO BMP PROPOS	ED	0	0	0		N/A		N/A		N/A		N/A		N/A		
Appli	cable Total M54 Watershed Area =====	> 0																	
53	Drifton SWS5	29									-								
M54	Drifton SWS5	28	NO BMP PROPOS	ED	0	0	Ó	1	N/A		N/A		N/A		N/A		N/A		
M54	Drifton_SWS5	1	Bioretention/Rain garden and Vegetated Open Channels	0.5	0.10	0.10	0.50				202	28					230		
Parsed	Drifton SWS5	1	NO BMP PROPOS	ED	0	0	0	-	N/A		N/A		N/A		N/A		N/A		

Applicable Total MS4 Watershed Area



							Simplified I	Method for Est	imating Sedimen	t Removal							
				Type of Development Based on GIS data evaluation and Conversion from NCLD 2011 Land Use Designation to Impervious/Pervious Acres													
	Designated Sewer Shed	Total Acres	Proposed BMP	Estimated Acres To BMP	BMP Effectiveness Values				Estimated sediment removal Developed Open Space Development		Estimated sediment removal Low Intensity Development		Estimated sediment removal Medium Intensity Development		Estimated sediment removal High Intensity		Estimated Total Ser reduction (Ibs/y
					TN	TP	SEDIMENT		19% Imperv.	81% Pervious	49% Imperv.	51% Pervious	79% Imperv.	21% Pervious	100% Imperv.	0% Pervious	Values
54	Drifton_SWS6	29															
MS4	Drifton_SWS6 1	32	Bioretention/Rain garden and Vegetated Open Channels (C/D Soil) - Lower Value Used	3	0.10	0.10	0.50				1,211	169					1,380
Parsed	Drifton_SWS6 2	1	NO BMP PROPOSED		0	0	0		N/A		N/A		N/A		N/A		N/A
Parsed	Drifton_SWS6 3 Drains to Open Pit	3	NO BMP PROPOSED		0	0	0		N/A		N/A		N/A		N/A		N/A
Appli	able Total MS4 Watershed Area =====>	32															
			(
55	Drifton_SWS-7	66															
Parsed	Drifton_SWS 7	33	NO BMP PROPOS	ED	0	0	0		N/A		N/A		N/A	· · · · · · · · · · · · · · · · · · ·	N/A		N/A
Applicable Total MS4 Watershed Area		33		1000					0							1 A A	
56	Drifton SWS8	63															
Parsed	Drifton_SWS8 2	55	NO BMP PROPOS	ED	0	0	0		N/A		N/A		N/A		N/A		N/A
Parsed	Drifton_SWS8 2	2	NO BMP PROPOS	ED	0	0	0		N/A		N/A		N/A		N/A		N/A
Parsed	Drifton_SWS8 3	6	NO BMP PROPOS	ED	0	0	0		N/A		N/A		N/A		N/A		N/A
Parsed	Drifton_SWS8.4	1	NO BMP PROPOS	ED	0	0	0		N/A		N/A		N/A		N/A		N/A
Parsed	Drifton_SWS8 5	1	NO BMP PROPOS	ED	0	0	0		N/A		N/A		N/A		N/A		N/A
Applie	able Total MS4 Watershed Area =====>	62										-		<u> </u>		-	
		_															
57	Drifton_SWS 57	88											-				
Parsed	Drifton_SWS7 1	35	NO BMP PROPOS	ED	0	0	0		N/A		N/A		N/A		N/A		N/A
Parsed	Drifton_SWS7 2	44	NO BMP PROPOS	ED	0	0	0		N/A		N/A		N/A	· · · · · · · · · · · · ·	N/A		N/A
Parsed	Drifton_SWS7 3	3	NO BMP PROPOS	ED	0	0	0		N/A		N/A		N/A		N/A		N/A
Parsed	Drifton_SWS7_4	5	NO BMP PROPOS	ED	0	0	0		N/A		N/A		N/A		N/A		N/A
Parsed	Drifton_SWS7 5	1	NO BMP PROPOS	ED	0	0	0		N/A		N/A		N/A		N/A		N/A
Appli	able Total MS4 Watershed Area annany	84															
58	Drifton_SWS10	48															
Parsed	Drifton_SWS10	42	NO BMP PROPOS	ED	0	0	0		N/A		N/A		N/A		N/A		N/A
						-											





12.0 Appendix E: MS4 BMP Outfall Summary

<u>Outfall 101 - 1 Laurel Mall South SWS 1A:</u> This area drains to a series of storm inlets. No outfall is located within this area, surface flow drains to existing inlets. Outfall noted as inserts may be used.



<u>Outfall 102 & 103 - 2 Park Crest SWS1:</u> This drainage includes outfall 102 from BMP to address athletic fields and parking as well as 103 for the BMP addressing Park Crest Development stormwater.



<u>Outfall 104 - 4 Lake Irena SWS1:</u> Address erosion and discharge form existing cross pipe from Auto-Mall stormwater system.



<u>Outfall 105 - 4 Lake Irena SWS1:</u> Address erosion from existing 36" cross pipe from Wallmart and Laurel Mall



<u>Outfall 106 - 4 Lake Irena SWS1:</u> Remove concrete low flow swale and upgrade pond.



Outfalls 107,108 & 109 - 7 Airport South SWS1: New BMP's to address outfall from existing pipes.


Outfalls 110,111 & 112 - 8 Turkey Hill SWS1: New BMP's to address outfall from existing pipes.



Outfalls 113 & 114 - 8 Turkey Hill SWS1: New BMP's to address outfall from existing pipes.



Outfalls 115 - 8 Turkey Hill SWS1: New BMP's to address outfall from existing pipes.



<u>Outfalls 116 & 117 - 8 Turkey Hill SWS1</u>: New BMP's to address outfall from existing roadside swales at Black Creek.



<u>Outfalls 118 - 8 Turkey Hill SWS1:</u> New BMP's to address outfall from existing roadside swales and cross pipe at Black Creek.



<u>Outfall 119 - 13 Ridgewood SWS2:</u> Outfall from conversion of old swale to infiltration swale.



Outfall 120 - 14 Church Hill Mall SWS1: Outfall from conversion of old pipe to infiltration swale.



<u>Outfall 121 - 15 Lattimer SWS4</u> and <u>Outfall 122 - 16 Milnesville East SWS1</u>: Outfalls from new BMP's to address runoff piping from Ridgewood and swales from Milnesville.



Outfall 123 - 24 Lattimer SWS1: Outfall from new BMP to address stormwater flow from Lattimer



Outfall 124 - 25 Lattimer SWS2: Outfall from new BMP to address stormwater flow from Lattimer



<u>Outfalls 125, 126 and 127 - 26 Lattimer SWS3:</u> Outfall from new BMP's to address stormwater flow from Lattimer.



<u>Outfalls 128, 129 and 130 - 28 Valmont SWS 1 and 29 Valmont SWS2</u>: BMP outfalls to address surface flow from urbanized areas in Valmont Industrial Park



Outfalls 131 & 132 - 30 Garfield SWS 1 and 31 Garfield SWS2: New BMP outfalls to address stormwater runoff from existing pipes.



Outfall 133 - 35 HT Cranberry SWS 1: New BMP outfall for Village of Cranberry.



Outfall 134 - 36 HT Cranberry SWS 1: New BMP outfall for Village of Cranberry



Outfall 135 - 37 HT Hollars Hill SWS 1: New BMP with Outfall to existing PaDot cross pipe.



Outfalls 136, 137, 138 & 139 - 38 HT Hollars Hill SWS 2: New BMP's with Outfall to existing PaDot cross pipes.



Outfall 140 - 40 HT Greenridge SWS1: Outfall from new BMP in Greenridge.



<u>Outfall 141 - 49 Drifton SWS1:</u> New BMP outfall from roadside swale.



Outfall 142 - 54 Drifton SWS1: New BMP outfall from roadside drainage system in Village of Drifton.

Outfall Number	Sewershed	Surface Waters	Estimated Acres	Description	OutfallType	Ch_93_Exis	Impaired	Latitude	Longitude	Land Owner
101	1 Laurel Mall South SWS_1A	Tributary to Black Creek	3	BMP Outfall along roadside swale	Inlet Inserts	Trib to CWF	Yes	40.98161148	-76.01275546	BMP on Private Lands
102	2 Park Crest SWS1	Black Creek	107	New BMP Outfall at Community Park Fields	Level Lip Spreader from Infiltration Pond	Trib to CWF	Yes	40.97560707	-76.00649416	BMP on Private Lands
103	2 Park Crest SWS1	Black Creek	9	New BMP Outfall from Park Crest Development	Level Lip Spreader from Infiltration Pond	Trib to CWF	Yes	40.97307447	-76.0089984	BMP on Private Lands
104	4 Lake Irena SWS1	Black Creek	99	North Park Drive cross pipe from Car Dealer	Pipe from existing Ponds	Trib to CWF	Yes	40.98806035	-76.00672673	BMP on Private Lands
105	4 Lake Irena SWS1	Black Creek	100	North Park Drive outlet from Chapel Hill/Laurel Mall Swale	Pipe from existing Ponds	Trib to CWF	Yes	40.983255	-76.007045	BMP on Private Lands
106	4 Lake Irena SWS1	Black Creek	98	Laurle Mall Stormwater Pond Outfall	Convert Existing Pond	Trib to CWF	Yes	40.98292412	-76.0108478	BMP on Private Lands
107	7 Airport South SWS1	Black Creek	7	Woodlawn Park and 30'th Street	Swale/Pipe	Trib to CWF	Yes	40.98086752	-75.98362182	BMP on Private Lands
108	7 Airport South SWS1	Black Creek	7	Woodlawn Park midway down 30'th Street to swale	Swale/Pipe	Trib to CWF	Yes	40.98060909	-75.98546828	BMP on Private Lands
109	7 Airport South SWS1	Black Creek	7	Woodlawn Park at end of 30'th Street	Swale/Pipe	Trib to CWF	Yes	40.98042881	-75.98762119	BMP on Private Lands
110	8 Turkey Hill SWS1	Black Creek	13	Hazle Twp Blvd at right turn north near Geriatrics Center	Pipe	Trib to CWF	Yes	40.97670566	-75.98705198	BMP on Private Lands
111	8 Turkey Hill SWS1	Black Creek	13	Community Park Drive cross pipe from area north of road	Pipe	Trib to CWF	Yes	40.97889425	-75.98947266	BMP on Private Lands
112	8 Turkey Hill SWS1	Black Creek	13	Community Park Srice Cross Pipe	Pipe	Trib to CWF	Yes	40.9788112	-75.99006875	BMP on Private Lands
113	8 Turkey Hill SWS1	Black Creek	13	Community Park Drive cross pipe from area north of road	Pipe	Trib to CWF	Yes	40.97726133	-75.99258278	BMP on Private Lands
114	8 Turkey Hill SWS1	Black Creek	13	Community Park Drive cross pipe from area north of road	Pipe	Trib to CWF	Yes	40.976898	-75.99340951	BMP on Private Lands
115	8 Turkey Hill SWS1	Black Creek	13	BMP Outfall at Community Park Drive Cross Pipe	Pipe	Trib to CWF	Yes	40.97506912	-75.99791423	BMP on Private Lands
116	8 Turkey Hill SWS1	Black Creek	13	Swale Outfall to Black Creek	Level Lip Spreader from Infiltration Pond	Trib to CWF	Yes	40.97510731	-76.0044562	BMP on Private Lands
117	8 Turkey Hill SWS1	Black Creek	12	Swale Outfall to Black Creek	Level Lip Spreader from Infiltration Pond	Trib to CWF	Yes	40.97508681	-76.00470577	BMP on Private Lands
118	8 Turkey Hill SWS1	Black Creek	13	BMP Outfall to Black Creek	Level Lip Spreader from Infiltration Pond	Trib to CWF	Yes	40.97393885	-76.00733968	BMP on Private Lands
119	13 Ridgewood SWS2	Black Creek	56	Harleigh near post office SR 940 ROW	Infiltration Swale	Trib to CWF	Yes	40.97933014	-75.9755409	BMP on Private Lands
120	14 Church Hill Mall SWS1	Black Creek	25	New BMP Outfall from Churchview Development	Change pipe to infiltration swale	Trib to CWF	Yes	40.97720401	-75.97558829	BMP on Private Lands
121	15 Lattimer SWS4	Black Creek	66	New BMP Outfall from Ridgewood	Level Lip Spreader from Infiltration Pond	Trib to CWF	Yes	40.98724582	-75.97657625	BMP on Private Lands

OUTFALL SUMMARY

Outfall Number	Sewershed	Surface Waters	Estimated Acres	Description	OutfallType	Ch_93_Exis	Impaired	Latitude	Longitude	Land Owner
122	16 Milnesville East SWS1	Black Creek	28	Hillside Road and Lattimer Road	Level Lip Spreader from Infiltration Pond	Trib to CWF	Yes	40.98733878	-75.97671239	BMP on Private Lands
123	24 Lattimer SWS1	Little Black Creek	23	New BMP Outfall Lattimer	Level Lip Spreader from Infiltration Pond	Trib to CWF	Yes	40.99498413	-75.95773795	BMP on Private Lands
124	25 Lattimer SWS2	Black Creek	54	Near Lattimer Monument	Level Lip Spreader from Infiltration Pond	Trib to CWF	Yes	40.99219803	-75.96794562	BMP on Private Lands
125	26 Lattimer SWS3	Little Black Creek	21	New BMP Outfall Lattimer	Level Lip Spreader from Infiltration Pond	Trib to CWF	Yes	40.99490775	-75.96229272	BMP on Private Lands
126	26 Lattimer SWS3	Little Black Creek	21	New BMP Outfall Lattimer	Level Lip Spreader from Infiltration Pond	Trib to CWF	Yes	40.9945175	-75.96400569	BMP on Private Lands
127	26 Lattimer SWS3	Little Black Creek	21	Behind HCA Lattiemr Pump Station	Level Lip Spreader from Infiltration Pond	Trib to CWF	Yes	40.99396751	-75.96643964	BMP on Private Lands
128	28 Valmont SWS 1	Unnamed Tributary to Cranberry Creek	1	End of Jaycee Drive from Valmont	Level Lip Spreader from Infiltration Pond	Trib to CWF	Yes	40.96301993	-76.02695679	BMP on Private Lands
129	29 Valmont SWS2	Unnamed Tributary to Cranberry Creek	3	BMP Private Outfall	Level Lip Spreader from Infiltration Pond	Trib to CWF	Yes	40.96598256	-76.02191914	BMP on Private Lands
130	29 Valmont SWS2	Unnamed Tributary to Cranberry Creek	3	BMP Private Outfall	Level Lip Spreader from Infiltration Pond	Trib to CWF	Yes	40.9685596	-76.02261684	BMP on Private Lands
131	30 Garfield SWS 1	Hazle Creek	18	17'th and Hayes Northgate No Pipe	Level Lip Spreader from Infiltration Pond	Trib to CWF	Yes	40.97148431	-75.96870026	BMP on Private Lands
132	31 Garfield SWS 2	Hazle Creek	13	17'th and Evans Court Northgate No Pipe	Level Lip Spreader from Infiltration Pond	Trib to CWF	Yes	40.97215963	-75.96556449	BMP on Private Lands
133	35 HT Cranberry SWS 1	Unnamed Tributary to Cranberry Creek	23	BMP Outfall near Train Trestle Cranberry	Level Lip Spreader from Infiltration Pond	Trib to CWF	Yes	40.95238948	-75.99793903	BMP on Private Lands
134	36 HT Cranberry SWS 1	Unnamed Tributary to Cranberry Creek	5	BMP Outfall Hollars Hill	Pipe	Trib to CWF	Yes	40.95116966	-75.99989067	BMP on Private Lands
135	37 HT Hollars Hill SWS 1	Unnamed Tributary to Cranberry Creek	9	BMP Outfall thru PaDot Cross Pipe	Infiltration BMP to Padot Cross Pipe	Trib to CWF	Yes	40.95005124	-76.00984403	BMP on Private Lands
136	38 HT Hollars Hill SWS 2	Unnamed Tributary to Cranberry Creek	5	BMP Outfall thru PaDot Cross Pipe	Infiltration BMP to Padot Cross Pipe	Trib to CWF	Yes	40.94964764	-76.01079389	BMP on Private Lands
137	38 HT Hollars Hill SWS 2	Unnamed Tributary to Cranberry Creek	5	BMP Outfall thru PaDot Cross Pipe	Infiltration BMP to Padot Cross Pipe	Trib to CWF	Yes	40.94881212	-76.01260929	BMP on Private Lands
138	38 HT Hollars Hill SWS 2	Unnamed Tributary to Cranberry Creek	5	BMP Outfall thru PaDot Cross Pipe	Infiltration BMP to Padot Cross Pipe	Trib to CWF	Yes	40.94757603	-76.01521096	BMP on Private Lands
139	38 HT Hollars Hill SWS 2	Unnamed Tributary to Cranberry Creek	5	BMP Outfall thru PaDot Cross Pipe	Infiltration BMP to Padot Cross Pipe	Trib to CWF	Yes	40.94650969	-76.01742524	BMP on Private Lands
140	40 HT Greenridge SWS1	Unnamed Tributary to Cranberry Creek	7	BMP Outfall Greenridge	Level Lip Spreader from Infiltration Pond	Trib to CWF	Yes	40.9600373	-76.0071402	BMP on Private Lands
141	49 Drifton SWS1	Tributary to Black Creek	3	BMP Outfall along roadside swale	Infiltration Swale	Trib to CWF	Yes	41.01090622	-75.90715779	BMP on Private Lands
142	54 Drifton SWS1	Black Creek	32	Drifton at east end discharge to mine drainage swale	Level Lip Spreader from Infiltration Pond	Trib to CWF	Yes	41.00010454	-75.90246428	BMP on Private Lands

Check One

Yes No N/A

13.0 Appendix F: Visual Site Inspection Report

3800-FM-BCW0271d Rev. 12/2019 Inspection Report Pennsylvania Bewinner or Bewinceren COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF CLEAN WATER

CHAPTER 102 VISUAL SITE INSPECTION REPORT

GENERAL INFORMATION							
Inspection Date: Inspection Time:	AN	/ PM Inspection No.:					
Inspection Type: Prec	ipitation in Pre	vious 24 hours: inche	s				
Current Site Conditions: 🔲 Active Earth Disturbance 🔲 Fully Stabilized 🔲 Snow Covered							
Current Weather Conditions: 🔲 Rain/Sleet/Snow 🔲 Overcast 🔲 Sunny/Partly Sunny							
Permittee Name:	Inspector Name:						
Permittee Address:	Inspec	tor Phone:					
City, State, ZIP:	Insp	ector Firm:					
Project Name:	Insp	ector Title:					
Municipality:		County:					
Permit Type: PAG-02 IP ESCGP ESP	F	Permit No.:					
INSPECTION INF	ORMATION						
Areas for Inspection	Check if Inspected	Problems Observed					
 Areas that have been cleared and grubbed, graded, excavated, or otherwise disturbed and are not yet stabilized. 		-					
2. BMPs installed to comply with permit.							
 Material, waste, borrow and equipment storage and maintenance areas covered by permit or E&S Plan approval. 							
 Areas where stormwater flows within the site, including drainageways designed to divert, convey and/or treat stormwater. 							
5. Discharge points on-site.							
6. Locations where stabilization measures have been implemented.							

9.	Are E&S BMPs properly installed, operational, and working as intended?	🔲 Yes	🔲 No	🔲 N/A
10.	Are PCSM BMPs properly installed, operational, and working as intended?	🔲 Yes	🔲 No	🔲 N/A
11.	Has a PPC Plan been prepared, implemented, and available on-site?	🔲 Yes	🔲 No	🔲 N/A
12.	Is all earth disturbance within the permitted limit of disturbance?	🔲 Yes	🔲 No	🔲 N/A
13.	Have all disturbed areas in which disturbance has ceased for more than 4 days been stabilized?	🔲 Yes	🔲 No	🔲 N/A

Questions

Are the approved E&S Plan and drawings available on-site?
 Are the approved PCSM Plan and drawings available on-site?

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Questions		Check One				
14. Is the approved construction sequence being followed?		Yes No N/A				
15. Are areas intended for PCSM BMPs being protected from runoff?	compaction and sediment laden	Yes No N/A				
16. For Questions 7 through 15, explain any answers of "No" in the space below or on a separate sheet.						
17. Are there signs of visible accelerated erosion and sedimenta site?	. Are there signs of visible accelerated erosion and sedimentation due to discharges from the site?					
18. Are there any unauthorized non-stormwater discharges occurr	ing from the site?	Yes No N/A				
19. Do stormwater discharges, if occurring during inspection, cor sheen, or substances that result in observed deposits or prod color, taste, odor or turbidity of the receiving water?	ntain floating solids, foam, scum, luce an observable change in the	Yes No N/A				
20. Were any instances of non-compliance observed during the in	spection?	🔲 Yes 🔲 No				
21. For Questions 17 through 20, explain any answers of "Yes" in the space below or on a separate sheet.						
22. Are critical stages of implementation of the PCSM Plan occurr	Yes No N/A					
23. If No. 22 is "Yes", is or was a licensed professional present on	Yes 🔲 No					
24. Has any fill material excavated on-site, imported to the site, tested for clean fill since the last inspection? (if "Yes" attach	Yes No					
 Identify the names and addresses of all new operators that have commenced work on the project site since the last inspection was conducted (see 25 Pa. Code § 102.1 for the definition of "operator"). 						
Name:	Name:					
Address:	Address:					
City, State, ZIP:	City, State, ZIP:					
For new operators listed above, has the Transferee/Co-Permit and submitted?	tee Application been completed	Yes 🔲 No				
26. Corrective Action – Describe any corrective actions that should be taken by the permittee to comply with the permit.						
27. Have photograph(s) been taken during the inspection and are	Yes No					
28. Are additional pages attached to this report?		Tes No				
I certify under penalty of law (see 18 Pa.C.S. § 4904 (relating to unsworn falsification)) that the information reported herein was prepared under my						

direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the information, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Date of Signature