CITY OF NEWARK
STORMWATER PLAN
DRAFT NOVEMBER 2016

NEWARK
DELAWARE

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Executive Summary (Why is Stormwater Important?)

The City of Newark desires to develop a Comprehensive Stormwater Plan (Plan). The plan aims to discuss quantity and quality of stormwater and surface water and recognize them as important resources to our community. This Plan has been developed, in part, to meet the regulatory requirements of the National Pollutant Discharge Elimination System (NPDES) Phase II Rule, which the City of Newark is a permit holder. This plan is also a tool that the City can use for day-to-day operation of the stormwater system and as a public reference document. In addition to addressing regulatory issues, this plan addresses protection of property from flooding and erosion, identifies health and safety issues related to water resources, and presents recommendations for the enhancement and preservation of environmental and aesthetic benefits to the community. The main components of this plan are identifying system inventory needs, regulatory compliance, a facilities maintenance program and a capital improvement program. As of October 10, 2016, a stormwater utility analysis is currently being performed, which would provide an equitable funding mechanism for items contained within this plan. This plan shall be a living document, revised from time to time with new information as it becomes available.

The City of Newark is located within two watersheds. Portions of the City drain to the Christina Creek and the White Clay Creek. The White Clay Creek eventually drains into the Christina River near Churchmans Marsh, Southeast of Wilmington, DE. These are important water resources as they provide drinking water and recreation for a large number of residents in New Castle County.

Goals

The goals of this plan are to provide information to staff, residents, and public officials to allow them to make decisions on consistent and stable funding and prioritization of projects in order to achieve the following:

- Maintain compliance with the regulatory requirements of current and future NPDES Phase 2 Permit as well as other state and federal mandates
- Prevent and/or reduce flooding and stormwater problems
- Achieve Level of Service goals defined within this Plan
- Improve water quality in the White Clay Creek and Upper Christina River watersheds
- Reduce soil erosion and sedimentation throughout the City
- Perform routine maintenance and inspections on the entire stormwater system
- Plan and implement capacity enhancement projects
- Sustainably manage existing and future stormwater related assets

Water Quantity

Much of the flooding within the City of Newark is, in general, a result of capacity problems within the municipal storm system, meaning the pipes or inlets are not sized according to the amount of water that is being sent to them and are quickly overwhelmed during a high intensity rain storm. Much of our system was designed and installed prior to modern engineering analysis and stormwater considerations. Most longer duration storms do not exceed the capacity of the municipal system and small streams in Newark. The large streams running through the city are generally in considerable flood plains, therefore, the streams may rise, however, except for several locations along the Christina, they are typically within parkland or designated floodplains, which is an appropriate location for flood storage. Local control over large stream flooding is limited in that upstream impacts are far greater in scale than what the city system

contributes. Due to the complex nature of hydrologic analyses, engineering studies will be necessary for each project and are included in Capital Improvement Project cost estimates, where applicable.

Water Quality

Pollutants are present in all of the rainwater that enters our stormwater system and ultimately our streams, rivers and oceans. Runoff from rain events carries pollutants from roadways, streets, lawns and parking lots to our stream and rivers. Minimizing or eliminating these pollutants is a top priority for the stormwater management program in the City. The City of Newark's NPDES Phase II Permit deals largely with Water Quality. Permit compliance has been and will continue to be a major driver of stormwater quality initiatives undertaken in the City of Newark.

Definitions and Acronyms

The following list of definitions and acronyms will assist the reader with the terminology used when describing many of the aspects of stormwater and stormwater management.

BMP: Best Management Practice, refers to stormwater management practices that provide the most benefit to both quality and quantity management of runoff.

Catch basin: Junction box covered with a grate in curbline or swale designed to catch and remove water from roadways, grass areas, etc. and transfer to storm sewer system. These are also referred to as storm inlets. Photographic examples are included below.



Delaware Sediment and Stormwater Regulations: Regulations which govern the land disturbance activities in Delaware. The current regulations are attached in **Appendix 6**.

Delegated Agency: Agency delegated by the DNREC Sediment and Stormwater Program to administer the Delaware Sediment and Stormwater Regulations' elements consisting of plan review, construction inspection and maintenance inspection with a prescribed geographic boundary of the state. The City of Newark is a delegated agency for activity within the corporate boundaries of Newark.

Flood Plain: Area of inundation designated by FEMA on Flood Insurance Rate Maps.

Illicit Discharge: Non-stormwater discharge into a MS4.

Impervious Surface: A hard surface area which either prevents or retards the entry of water into the soil mantle as under natural conditions prior to development; and/or a hard surface area which causes water to run off the surface in greater quantities or at an increased rate of flow from the flow present under natural conditions prior to development. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, gravel roads, packed earthen materials or other surfaces which similarly impede the natural infiltration of surface and storm water runoff.

Municipal Separate Storm Sewer System (MS4): According to The Federal Environmental Protection Agency 40 CFR 122.26(b)(8):

> "municipal separate storm sewer means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or stormdrains):
>
> (1) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law)...including special districts under State

law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of the Clean Water Act that discharges into the waters of the United States." (Note: "Waters of the United States" refers to surface water only.)

(2)Designed or used for collecting or conveying storm water

(3)Which is not a combined sewer; and

(4)Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2"

National Pollutant Discharge Elimination System (NPDES): A permit which authorizes the discharge from a point source into waters of the US, usually containing discharge limits, monitoring and reporting requirements.

Point Source: A distinct, confined and discrete conveyance, such as a pipe, ditch, vessel or channel from which pollutants may be discharged.

Storm Sewer: Series of pipes designed to move water from streets and swales to streams and ponds. Corrugated Metal Pipes (CMP), Reinforced Concrete Pipe (RCP) and High Density Polyethylene (HDPE) are common materials. RCP is typically used under roadways. HDPE is typically used off street and is a relatively new product in street and drainage construction. CMP is not specified in new construction within the City of Newark.

Stormwater Management Facility: Area designated for treatment or containment of Stormwater. The following list are types of facilities typically found in the City of Newark:

Pond: Depression designed and built to catch and retain water. Can either be wet or dry or a combination of both.

Wet Pond: Pond that continually holds water. Additional water drains into the pond during rain events and slowly drains out, leaving the permanent pool of water between events.

Dry Pond: Pond that only holds water during rain events. Water drains to the pond during a rain event and is slowly released from the pond, eventually releasing all of the runoff that it catches.

Infiltration Pond: Pond that only holds water during rain events and is designed to drain the runoff by percolation through the underlying soils.

Bioretention Area: A specially designed type of pond that is planted with shrubs and non-woody vegetation planted in a special soil mix in order to filter pollutants from the stormwater.

Biofiltration Swale: A depression that accepts runoff and conveys it through a special vegetation mix at a specified depth in order to filter pollutants from stormwater.

Underground Detention System: A subsurface, structural dry pond designed to catch runoff and release slowly, eventually releasing all of the runoff. Can be combined with infiltration in order to reduce the volume of water released.

Standard Operating Procedures (SOPs): A set of step-by-step instructions to help workers carry out routine operations. SOPs aim to achieve efficiency, quality output and uniformity of performance.

Water Quality: The amount of pollutants entering our streams and rivers through stormwater.

Water Quantity: The amount of stormwater entering our streams and rivers. Used to describe the rate and volume of the water.

Stormwater Organization and Community Involvement

Organization

Under the direction of the Director of PWWR, the City of Newark Stormwater Fund is administered by the Public Works and Water Resources Department. See **Appendix 2** for a complete organization chart.

Contacts and Resource Information

City of Newark Personnel

Public Works and Water Resources Staff, City Council and City Manager's Office can all be reached at 302.366.7000 or by email at stormwater@newark.de.us .

City Stormwater Resources

City of Newark Stormwater information can be found at the following website:

http://www.cityofnewarkde.us/index.aspx?nid=237

State Stormwater Resources

DNREC MS4 Program information can be found at the following website:

http://www.dnrec.delaware.gov/wr/information/swdinfo/pages/ms4.aspx

DNREC Sediment and Stormwater can be found at the following website:

http://www.dnrec.delaware.gov/swc/pages/sedimentstormwater.aspx

New Castle Conservation District information can be found at the following website:

http://newcastleconservationdistrict.org/

Federal Stormwater Resources

Federal MS4 Program information can be found at the following website:

https://www.epa.gov/npdes

Water Quality and Drainage Improvements

Drainage complaints registered by city residents are directed to the Planning and Design Engineer who will, in conjunction with PWWR inspection staff, investigate the claim and suggest remedies or direct the homeowners to the proper resources. The city does not perform work on private property, but will consult with the landowner on possible remedies. Drainage complaints will be mapped on the City Surface Water Master Plan GIS System.

If the drainage complaint is under City jurisdiction or on a larger scale, City Staff will recommend the project for inclusion in the Capital Improvement Plan for future years. It will then be evaluated based on criteria set for these projects in the Capital Projects Section of this report.

Residents are able to implement water quality practices on their individual lot or suggest practices for public spaces, by contacting the Planning and Design Engineer and Stormwater Coordinator to review the proposed project. If the project is located on public or City owned land, it may be eligible for inclusion in the Capital Improvement Plan, and will be evaluated and prioritized. If the project is on private property, the City will assist with coordination with the New Castle Conservation District for possible cost sharing options for the landowner.

Conservation Advisory Committee

According to the City website, the Conservation Advisory Committee (CAC) function is 'To advise Council in the development, management and protection of its natural resources with appropriate consideration of Newark's human and economic resources.' To this end, this committee can be a valuable resource in the execution and ongoing development of Newark's Stormwater Plan.

Collaboration

Collaboration is key in a city like Newark, as many recognized experts live, work and teach in within our community. We currently share resources with the University of Delaware on many projects, including our NPDES Permit and Annual Reporting. We also partner with students and staff from the UD College of Engineering Civil and Environmental Engineering Department and the UD College of Agricultural and Natural Resources on applicable projects. The Public Works and Water Resources Department has implemented a Summer Intern Program, utilizing mostly University of Delaware students for a variety of tasks in all of the department's operating units. Each year since 2014, we aim to bring on Two (2) students to focus on Stormwater Related tasks for varying tenures during their summer break.

Current State of Newark's Stormwater Infrastructure

Surface Water Master Plan

A comprehensive record of the storm and surface water drainage system is an important element of a municipality's data and knowledge base. The Public Works and Water Resources Department began an effort to modernize recordkeeping and document all surface water assets within the city utilizing a Geographic Information System (GIS). Concurrent with the development of the Stormwater Plan, the City contracted an engineering consultant, Johnson, Mirmiran and Thompson, to develop the GIS framework to be populated with survey data as it is field collected. As of October 2016, the framework is nearing completion and data continues to be collected, adjusted and corrected as new data points are gathered and verified. The database creation was partially funded through a Surface Water Planning Grant from the DNREC Revolving Loan Program. Since 2013, the City has also utilized several Summer Interns from the University of Delaware in order to collect and verify this data. The resulting GIS database for all stormwater infrastructure will allow us to catalog and retain information about current condition, maintenance, repairs, new construction, blockage history and any other information pertinent to the storm system. It will also allow us to begin to accurately model the stormwater system in order to identify capacity restrictions or necessary improvements. This database is located on the City of Newark servers and maps are available for viewing at the City of Newark PWWR Department.

Stormwater Facility Inventory

The following table details the current, as of the date of this plan, Stormwater Inventory within the City of Newark Stormwater System. The data is reviewed and verified on a continuous basis, therefore, the numbers in this table are subject to change with each update to this plan. This list is intended to include more categories and information as the database develops.

Inventory Item	Quantity	Notes
Storm Pipe – Corrugated Metal	26,499 Linear Feet	Inspected 2016
Storm Pipe – Other Material	372,634 Linear Feet	Concrete, RCP, Clay
Stormwater Management Areas	401 Facilities	Detention Basin, Bioretention, Sand Filter, Swale, Etc.

Corrugated Metal Pipes (CMP)

The City has roughly five (5) miles of corrugated metal pipe (CMP) that is at or beyond the observed life of the material. CMP was installed in parts of the City at different points in time with the expectation that it was a long lasting product and more cost effective than concrete pipes. The pipes have begun to fail prematurely and have required significant time and repairs by City crews and in some cases, full replacement. We have identified all of the CMP inventory within the City and have contracted our consultant, JMT, to video inspect the pipes and prepare a conditions assessment for the CMP inventory.

This inspection is expected to be complete by the end of 2016. An analysis of the inspection videos will then begin in order to identify and prioritize repair and replacement schedules. The report will be included within **Appendix 8**.

Desired State of Newark's Stormwater Infrastructure

This Plan will be used as a guidance document to maintain Newark's Stormwater Infrastructure, address deficiencies, and maintain acceptable levels of service similar to the City's other utility funds. The Plan will outline procedures for operations, maintenance, upgrades and replacement/rehabilitation efforts. Similar to the other utilities in Newark, a comprehensive review of the current state of the stormwater system will yield a programmatic path forward for a sustainable stormwater system for Newark.

Levels of Service

Levels of service are important to establish for the purpose of sustainably managing the stormwater infrastructure. Each item requiring a level of service includes recommendations to council in order to meet or maintain these stated levels of service as well as options for increasing and decreasing the level of service and the consequences of each option. Level of Service documents can be found in **Appendix 3**.

National Pollutant Discharge Elimination System (NPDES) Programs

Industrial Stormwater

A permit program to minimize the impact of stormwater runoff from an industrial facility by emphasizing good housekeeping practices, as well as monitoring and inspection procedures. The City of Newark currently has industrial stormwater permit coverage for its Maintenance Yard facility. Compliance with this permit includes quarterly maintenance inspections and stormwater event sampling.

Municipal Separate Storm Sewer System (MS4)

The City of Newark is currently permitted under an administratively extended MS4 Phase II permit which expired in 2008. It is anticipated that a new permit will be in effect by early 2017 and will require water quality improvements in both the Christina and White Clay watersheds within the City. The current MS4 Permit is included in **Appendix 4**, and a link to the required Annual Report can be found on the stormwater webpage.

Standard Operating Procedures (SOP's)

Standard Operating Procedures (SOPs) related to Stormwater Quality will be developed as part of this plan. A sample template for Stormwater SOPs is included in **Appendix 5**. Each SOP, and subsequent update, will follow this form and be included in future updates to the Plan.

Capital Improvements

Capital Improvement Projects which focus on stormwater quality are detailed within the NPDES Water Quality CIP Sheet.

Stormwater System Improvement Projects

The City, with the help of our engineering consultants, will identify critical stormwater infrastructure problems and potential solutions. Each project will be presented in a Capital Improvement Plan sheet. Projects that are currently underway as well as identified, yet unfunded projects are listed in **Appendix 8**.

Prioritization

Staff will create a prioritized list of the potential projects to address stormwater in Newark. The following are items which need to be taken into account:

How many people are affected and for how long?

Severity of Impact

Recurrence Frequency?

Does a study need to be done?

Is it shovel ready?

Is there funding to match the level of investment necessary?

Another Level of prioritization will be specifically for water quality items and if it would affect our current MS4 requirements. The City is awaiting a new Phase II NPDES permit and we will be legally bound to perform projects which improve water quality in both watersheds.

Strategic purchases may become available from time to time and the locations align with the goals of this Plan. For example, the possible availability of the UD Rodney Dorm parcel will affect the priority ranking for flooding mitigation. Availability of this type of substantial purchase are not usually anticipated, but the City should be properly prepared to act when they are available. Properties of particular interest to the City are those that are located within floodplain or within a watershed without adequate stormwater management.

As part of a surface water planning grant for the year 2014, JMT performed a prioritization of BMP retrofit sites. Basins across the city were examined to determine their suitability for possible retrofit for water quality benefits. The basins were categorized and ranked. Sites agreed upon by the consultant and staff were investigated further and select types of retrofits were recommended. We are currently under the umbrella of an extended MS4 permit that was set to expire in 2008. It is anticipated that the new permit will be in effect by early 2017 and will require water quality improvements in both watersheds. The BMP Retrofit Prioritization report will be a good starting point for identifying projects to help with compliance with the permit. This report can be found in **Appendix 8**.

Cost Estimates

Projects will be chosen depending on funding and priority level. Cost estimates may be developed in house or as part of a design performed by a consultant.

Operations and Maintenance

The basic function of a storm sewer system is to transport stormwater from roads and other surfaces to a pond or other treatment facility or directly into the rivers and streams. Regular maintenance and repair are necessary to keep the system functioning at or near design performance. Regular maintenance also increases the expected life of the asset, whether it is a pipe, basin or facility while reducing overall capital costs of replacement.

Standard Operating Procedures

Development of a comprehensive set of Standard Operating Procedures (SOPs) for all maintenance and operations related to stormwater systems and facilities will be developed during the timeframe of this plan. A list of current and desired SOPs, along with the standard form are included in **Appendix 5**.

Levels of Service

Appendix 3 contains Level of Service information for each of the maintenance items discussed below.

Storm Sewers and Catch Basins

The City currently employs one service vehicle for maintenance of storm sewer system, which is a vacuum truck with power washer capabilities for cleaning out catch basins. There is no storm sewer flushing capabilities on this truck, however, combined with our Sewer Utility jetter truck, we can effectively clean a storm sewer pipe blockage. The City is broken up into Four (4) routes for basin cleaning. The basins are inspected according to a checklist (**Appendix XX**) each time they are cleaned. A list of basins in need of repair and the type of repair is prepared from this inspection. Rebuilding and patching catch basins is handled through our street construction crews. It is anticipated that once the GIS Master Plan is complete, these inspections will be completed electronically and the information will be uploaded to our GIS database for review and cataloging.

Street and Sidewalk Sweeping

Street and sidewalk sweeping helps keep large and small debris from entering the storm sewer system and ultimately, out of the streams and rivers. The City street sweeper cleans all areas of the city at least once per year and focuses on the downtown area on a weekly basis. The sidewalks and curbline along East Main Street are cleaned by hand and vacuum at least 5 days per week.

Stormwater Management Facilities

PWWR Inspectors perform annual inspections on all stormwater management facilities. A list of maintenance items are generated and given to the owners of all stormwater management areas, including City owned facilities. This list of items in City owned facilities is then prioritized and undertaken by our streets division crews, if possible.

Funding Sources

Current Funding Source: General Fund and Water Utility Combination

As of October 2016, current funding for Stormwater Operating Expenses (Opex) and Capital Projects (CIP) comes from the General Fund, which includes transfers from the Water Utility. Some water quality items are directly funded by the water utility due to the nexus between surface water quality and drinking water.

Alternate Proposed Funding Source 1: Sewer Utility

There is a nexus between stormwater activities and sanitary sewer collection and transmission. It is therefore recommended to investigate the possibility of funding all stormwater activities through the Sewer Utility.

Alternate Proposed Funding Source 2: Proposed Stormwater Utility

How does a stormwater utility work?

A stormwater utility generates funding through user fees that are typically based on the impervious surfaces (e.g., roofs, roads, driveways, parking lots) of each property within the stormwater utility service area. Revenues generated from the user fees are placed in a dedicated fund to implement a stormwater program that directly supports maintenance and upgrades of existing storm drain systems, development of drainage plans, flood control measures, and water quality programs that service the users. The funds in stormwater utilities can be used for catch basin cleaning, street sweeping, stormwater infrastructure upgrades, and a variety of other stormwater management activities, in addition to the administrative costs of running a stormwater program. Stormwater utilities are similar to the dedicated municipal funds for public water and sewer utilities.

Fees and Fee Structure

The Stormwater Utility funding is proposed as a fee. A tax would not capture all of the users as a large percentage of city properties are tax exempt. As of July 2016, the City has commissioned a Stormwatrer Utility rate study by Black and Veatch, in conjunction with a Water and Sewer Utility Rate Study. The results of this rate study will assist staff and Council to set an appropriate fee and fee structure for possible implementation.

Project Grants

Grants are anticipated to be included in the Utility at a set percentage of the total collected on a yearly basis. The grant money will be made available to any property owner subject to paying a utility fee. The grant applications will be available from the PWWR Dept. and accepted on rolling basis to be evaluated annually. Each year, the PWWR Department will review and recommend projects to the Conservation Advisory Committee (CAC). The CAC will vote on which projects will be awarded the grant, with concurrence from the Director of PWWR. The grants will be limited to a maximum of $5000 for each applicant. In the event all grant money is not awarded in any given year, special consideration will be given to community projects with several applicants. This grant money will also be available for city

sponsored equipment and design services such as rain barrel giveaways and on lot rain garden design services.

Flooding and erosion on private property is, by code, specifically excluded from City jurisdiction. Council could dedicate a funding stream from the grant program toward providing additional matching funding for private stormwater issues such as erosion and flooding on private property. Staff could solicit applications, review and rank them, then provide Council with a recommendation for dedication of funding. Since the New Castle Conservation District generally provides a 1:1 match for homeowners, staff suggests a cap of local funding no higher than 25 percent, or half of the homeowner's match. This would go a long way toward reducing the burden on homeowners without a large City outlay. This could also be used to provide funding toward privately owned driveway culvert repairs.

Staff suggests that City Council appoint a committee that would review all grant related projects and make recommendations for grant awards. It has been suggested that the Conservation Advisory Committee be involved as either the prioritization committee or help to select the committee.

On-Site SWM Credits

New projects that have complied with the Delaware Sediment and Stormwater Regulations on certain parcels may only be considered for a credit if the system installed is designed and installed to a level above and beyond the current stormwater regulations **(See Appendix 6)**. Most of the properties built out are only designed to treat or handle the runoff in excess of what was existing. In many cases in the City of Newark, the existing site was partially built out or had some level of impervious that was accounted for in the pre-developed calculations. Providing documentation that they are eligible for a credit will be the developer's responsibility and shall be at their cost.

City Code and Ordinance Revisions

The current City Code relating to Stormwater is spread out within several other sections of the code, specifically Chapters 14A, 26 and 27. As the utility develops, the code sections with regard to stormwater should be consolidated into a utility section, similar to water and sewer utilities. The current sections of code are located in **Appendices 9, 10, 11, 12** and the proposed ordinance placeholder for a Stormwater Utility is included in the **Appendix 1**.

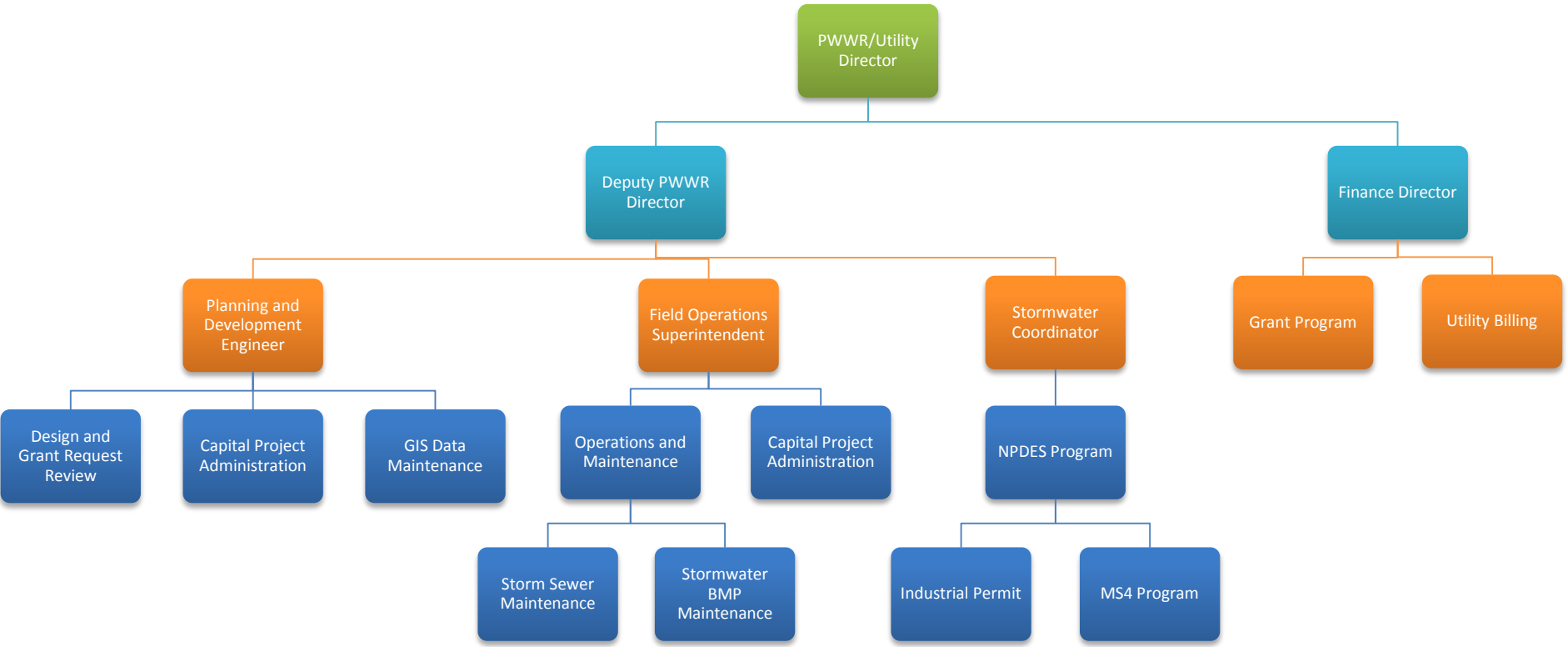
Appendices

1. Reserved - Stormwater Utility Ordinance (placeholder for future document)
2. Stormwater Utility Organization Chart
   SWM Utility Org Chart
3. Stormwater Levels of Service
   Stormwater Levels of Service
4. MS4 Phase II General Permit
   NPDES Final Permit 2003-2008
5. Standard Operating Procedures
   SOP Template
6. Current DNREC Sediment and Stormwater Regulations (October 2016)
   DE Sediment and Stormwater Regs
7. Stormwater Utility Enabling Legislation
   Stormwater Utility Enabling Legislation
8. Stormwater Improvement Projects and Reports
   Note: Capital Projects/Names below are subject to revision based on budget hearings.
   Q0101 - NPDES Phase II Stormwater Quality Program 2017
   Q1701 Storm System Study and Repair
   Q1702 Stormwater Utility Implementation
   Q1703 - Parks to Ponds Initiative
   Water Quality BMP Retrofit Final Report
   2013 Partial Storm System Investigation - Pennoni
9. Newark Municipal Code Chapter 14A – Floodplains
   CHAPTER 14A__Floodplains
10. Newark Municipal Code Chapter 26 – Article VI – Drainage Swales and Ditches
    Chapter 26 ARTICLE VI. DRAINAGE_SWALES_AND_DITCHES
11. Newark Municipal Code Chapter 27 Subdivisions - Appendix III – Drainage Code
    Chapter 27 APPENDIX_III.___DRAINAGE_CODE
12. Newark Municipal Code Chapter 27 Subdivisions - Appendix IV – Sediment and Stormwater Management
    Chapter 27 APPENDIX_IV.___SEDIMENT_AND_STORMWATER_MANAGEMENT
13. City of Newark List of Routine Flooding streets
    Flood Prone Streets
14. Rain Event Hotlist Maps (Not included at this time. GIS Maps to be created)
15. Drainage Area Maps/Watershed Maps (Not included at this time. GIS Maps to be created)

Appendix 1

Appendix 2

Stormwater Fund
Organization Chart



Appendix 3

Activity	Current Level of Service	Level of Service Options	Staff Notes and Recommended Level of Service
NPDES Permit Compliance	The City of Newark is compliant with the current permit, issued in 2008, which has been admistratively extended. This permit is the driver for our Stormwater Program in place since 2002.	Reduce: Fall in to non-compliance by reducing staff time and resources.	A reduction in LOS would result in substantial fines from DNREC and EPA.
		Maintain: Continue current program and remain compliant with current permit.	Recommended New permit is expected in 2017, therefore, additional requirements may increase the level of effort and expense required to maintain LOS.
		Increase: Continue current program with the addition of junior level staff or consultant contract in order to increase awareness and project development.	An increase in LOS would maintain compliance, however, expenses would increase as a result of additional FTE or contractual work required for the increased effort.

Activity	Current Level of Service	Level of Service Options	Staff Notes and Recommended Level of Service
Stormwater Facility Inspection	PWWR Infrastructure Inspectors perform annual inspections on all stormwater management facilities within the City. A list of maintenance items requiring attention are generated and provided to the owners of all stormwater management areas, including City owed facilities.	Reduce: Inspect one-half of the stormwater facilities in the city each year.	A reduction in LOS would result in less maintenance performed, which could result in more significant repairs if delayed.Rules for DNREC Delegation may preclude our ability to lower frequency.
		Maintain: Continue current program. Investigate possibility of allowing facility owners to hire a 3rd party inspector and provide the City with the inspection report.	Recommended
		Increase: Continue current program with the addition of letting contract for the maintenance items identified by the inspection and billing the owners for the work completed.	An increase in LOS would require more staff time and potentially additional staff to manage the contract, however, it would guarantee that the work is completed to the City's standards each year.

Activity	Current Level of Service	Level of Service Options	Staff Notes and Recommended Level of Service
Stormwater Facility Maintenance (City Owned)	PWWR Infrastructure Inspectors perform annual inspections on all stormwater management facilities. A list of items are generated and given to the owners of all stormwater management areas, including City owned facilities. The list of City-owned facilities is then prioritized and undertaken by our streets division crews, if possible.	Reduce: Fall in to non-compliance by reducing staff time and resources.	A reduction in LOS would result in premature failures, degradation of facility function, and possibly result in non-compliance with our DNREC Delegated Agency requirements.
		Maintain: Continue current program. All recommended maintenance is not completed.	Maintaining the current level of service puts the city at risk for future failures and degrades facility function.
		Increase: Continue current program with the goal of completing all recommended maintenance each year.	Recommended. Management to repurpose field crews, add staff or contract work during slow to complete maintenance. Material, personnel and contractual cost could increase as a result of work completed.

Activity	Current Level of Service	Level of Service Options	Staff Notes and Recommended Level of Service
Surface Water Master Plan	PWWR has commissioned the development of a surface water master plan. A combination of staff and Summer Interns gather new data in order to populate the information fields within the Geographic Information System Database. The database is maintained and verified by an in-house engineering technician.	Reduce: Utilize current data without upgrades and data integrity verifications.	A reduction in LOS would negate substantial investments already made in the upgrading of our data collection and management infrastructure.
		Maintain: Continue current program and staffing levels, including summer interns.	Recommended
		Increase: Continue current program with the addition of junior level staff in order to complete data verification within two year timeframe.	An increase in LOS would increase expenses as a result of additional FTE or contractual work required for the increased effort.

Activity	Current Level of Service	Level of Service Options	Staff Notes and Recommended Level of Service
Routine Storm Sewer Maintenance	The City currently employs one service vehicle with 2 FTE for cleaning out catch basins and one service vehicle and 1.5 FTE for repairs. Combined with our Sewer Utility jetter truck, we can effectively clean a storm sewer pipe blockage. The storm sewer systemis broken into four (4) routes for basin cleaning. The basins are inspected according to a checklist each time they are cleaned. A list of basins in need of repair is prepared from this inspection.	Reduce: Fall in to non-compliance by reducing staff time and resources.	A reduction in LOS would result in non-compliance with our NPDES Permit requirements and potential fines from DNREC and EPA.
		Maintain: Continue current program and remain compliant with current permit.	Recommended
		Increase: Continue current program with an additional service vehicle and 1.5 FTE for basin inspection and repair.	An increase in LOS would maintain compliance, however, expenses would increase as a result of additional FTE or contractual work required for the increased effort.

Activity	Current Level of Service	Level of Service Options	Staff Notes and Recommended Level of Service
Street Sweeping	Street sweeping helps keep large and small debris from entering the storm sewer system and ultimately, out of the streams and rivers. The City street sweeper cleans all areas of the city at least once per year and focuses on the downtown area on a weekly basis, weather permitting. Our current NPDES permit does not require that we sweep at a certain frequency, however, our current frequency has been accepted as part of our annual report and the future lermit is anticipated to establish a minimum frequency.	Reduce: The current permit does not state a frequency for sweeping, however, we risk moving toward non-compliance by reducing frequency.	A reduction in LOS would result in non-compliance with our NPDES Permit requirements and potential fines from DNREC and EPA.
		Maintain: Continue current program and remain compliant with current permit. Ongoing adjustments to equipment and schedule are anticipated.	Recommended
		Increase: Continue current program with additional sweeping by a 3rd party contractor or additional city equipment to increase frequency to 7 days per week.	An increase in LOS would maintain compliance, however, expenses would increase as a result of contractual work or city staff and equipment required for the increased effort.

Activity	Current Level of Service	Level of Service Options	Staff Notes and Recommended Level of Service
Sidewalk Sweeping	Sidewalk sweeping helps keep large and small debris from entering the storm sewer system and ultimately, out of the streams and rivers. The sidewalks and curbline along East Main Street are cleaned by a combination of hand sweeping and vacuum a minimum of 5 days per week, weather permitting.	Reduce: The current permit does not state a frequency for sweeping, however, we risk moving toward non-compliance by reducing frequency.	A reduction in LOS would result in non-compliance with our NPDES Permit requirements and potential fines from DNREC and EPA.
		Maintain: Continue current program and remain compliant with current permit. Ongoing adjustments to equipment and schedule are permitted.	Recommended
		Increase: Continue current program with additional sweeping by a 3rd party contractor in order to increase frequency to 7 days/week.	An increase in LOS would maintain compliance, however, expenses would increase as a result of additional FTE or contractual work required for the increased effort.

Activity	Current Level of Service	Level of Service Options	Staff Notes and Recommended Level of Service
Storm Sewer Pipe Inspection	Inspections are completed on an as needed basis. Reports of blockages and drainage complaints typically result in an inspection of the pipes in the area. Due to service life concerns, in 2016, the City has contracted for a video inspection of all of the known Corrugated Metal Pipe (CMP), approximately 25,000 linear feet.	Reduce: Respond to complaints and failures.	A reduction in LOS would result in continued asset deterioration with no direction for use of resources.
		Maintain: Continue current program.	System will continue to deteriorate, however, we will slowly begin to assess the problems with our system for resource allocation.
		Increase: Continue current program with the addition of contractual storm pipe video inspection of 1/5th of the system annually over a 5 year period in order to establish conditions and future inspection frequency.	Recommended: An increase in LOS would increase our knowledge of service life remaining on the storm system assets and provide information to be utilized in a rehabilitation and replacement programs as well as increase costs due to additional FTE or contractual work.

Activity	Current Level of Service	Level of Service Options	Staff Notes and Recommended Level of Service
Storm Sewer Replacement and Rehabilitation Program	Pipe Rehabilitation and Replacements are completed on an as-needed basis or as the result of a pipe failure, or imminent failure.	Reduce: Only respond to pipe failures as they arise.	A reduction in LOS would result in unknown, unbudgeted costs in the event of a failure
		Maintain: Continue current program of periodic rehabilitation/replacement of identified issues or known failures. Capital Improvement Plan budget updated in order to accommodate projects.	Maintaining current LOS would not prevent failures, however, addressing known issues may prevent catastophic failures in the future.
		Increase: Prepare pipe rehabilitation program using end of life estimates and video inspections in order to generate a proactive replacement and rehabilitation program. Prepare Capital Improvement Plan budget according to prescribed life cycle of storm sewer.	Recommended: An increase in LOS would increase expenses required to prepare the prioritization schedule and pay for the rehabilitation and replacement of designated segments.

Activity	Current Level of Service	Level of Service Options	Staff Notes and Recommended Level of Service
Stormwater Quality Best Management Practices/Retrofits	PWWR undertakes stormwater quality BMP retrofitting on a case by case basis, typically as a result of outside funding source, such as grants or communilty matching funds. Part of the scope of Surface Water Planning Grant in 2014 included a Prioritization of 21 possible sites for stormwater quality retrofit projects. Performing water quality projects is required under our NPDES Permit.	Reduce: Fall in to non-compliance by reducing staff time and resources.	A reduction in LOS would result in non-compliance with our NPDES Permit requirements and potential fines from DNREC and EPA.
		Maintain: Continue current program and remain compliant with current permit.	Recommended New permit is expected in 2017, therefore, additional requirements may increase the level of effort and expense required to maintain LOS.
		Increase: Continue current program with the addition of selected stormwater quality retrofits. Capital Improvement Plan to be updated for additional design and construction cost.	An increase in LOS would maintain compliance, however, expenses would increase as a result of additional FTE or contractual work required for the increased effort.

Activity	Current Level of Service	Level of Service Options	Staff Notes and Recommended Level of Service
Drainage	Drainage within the City of Newark is governed by the municipal code Chapter 27 - Appendix III - Drainage Code. Design Criteria for new construction is found in this section.	Reduce: Fall in to non-compliance by reducing staff time and resources.	A reduction in LOS would result in increased flooding and drainage complaints. Portions also state and federally mandated.
		Maintain: Continue compliance with current City code.	Recommended. Full review of code section is warranted.
		Increase: Continue current program with the addition of additional staff or contractor to review full code sectionand recommend revisions. Establish offsite upgrade requirements for projects impacting areas identified as needigng improvements within the is SW Plan.	An increase in LOS would maintain compliance, however, expenses would increase as a result of additional FTE or contractual work required for the increased effort.

Activity	Current Level of Service	Level of Service Options	Staff Notes and Recommended Level of Service
Stormwater Management for New Construction	Stormwater management is required for all new contruction, within the City of Newark, which is subject to the Delaware Sediment and Stormwater Regulations.	Reduce: Fall in to non-compliance by reducing staff time and resources.	A reduction in LOS would result in loss of delegated agency status from DNREC, increasing costs and loss of oversight of new development within city.
		Maintain: Continue current program and remain compliant with state law.	Recommended
		Increase: Continue current program with the addition of administrative staff for record keeping and project administration.	An increase in LOS would maintain compliance, however, expenses would increase as a result of fractional FTE or contractual work required for the increased effort.

Appendix 4

State Permit Number: WPCC 3025/03
NPDES Permit Number: DE 0051152
Effective Date: July 1, 2003
Expiration Date: June 30, 2008

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM AND THE LAWS OF THE STATE OF DELAWARE

In compliance with the provisions of the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 and the Water Quality Act of 1987 (33 U.S.C. 1251 et seq.), hereinafter referred to as "the Act", and pursuant to the provisions of Title 7, Del.C., §6003,

The City of Newark
220 Elkton Road
P.O. Box 390
Newark, Delaware 19715-0390

is authorized to discharge storm water from/through all portions of the municipal separate storm sewer system that are located in the City of Newark, New Castle County, Delaware, within the area designated by the United States Census Bureau as the "Philadelphia, PA - NJ - DE - MD Urbanized Area", and that are owned or operated and maintained by the City of Newark, to waters of the State in New Castle County, within and adjacent to the City of Newark, specifically, White Clay Creek, the Christina River and tributaries to White Clay Creek and the Christina River, in accordance with the comprehensive storm water management program, the discharge limitations, monitoring requirements and other provisions set forth in Parts, I, II, III, IV and V hereof.

This permit and the authorization to discharge under the National Pollutant Discharge Elimination System shall become effective on July 1, 2003 and shall expire at midnight, on June 30, 2008.

_____ _____

R. Peder Hansen, P.E. Date Signed
Manager, Surface Water Discharges Section
Division of Water Resources
Delaware Department of Natural Resources
and Environmental Control

Part I Discharges Authorized By This Permit

A. Area Covered

This permit covers all areas located within the corporate boundary of the City of Newark, New Castle County, Delaware, that have been designated by the United States Census Bureau as the "Philadelphia, PA – NJ – DE - MD Urbanized Area", served by or otherwise contributing to discharges from, the municipal separate storm sewers owned or operated and maintained by the City of Newark.

B. Authorized Discharges

1. This permit authorizes all existing or new point source discharges of storm water to State waters from those portions of the municipal separate storm sewer system that are located within the City of Newark, Delaware and owned or operated and maintained by the City of Newark. This permit also authorizes the discharge of storm water commingled with flows contributed by process wastewater, non-process wastewater or storm water associated with industrial activity provided such discharges are authorized under separate NPDES permits or covered under the Department's NPDES General Permit Program regulations.

2. Limitations on Coverage
   The following discharges, whether discharged separately or commingled with municipal storm water, are not authorized by this permit:

   a. Non-storm water and Industrial Storm Water:
      Discharges of materials other than storm water, discharges of storm water associated with industrial activity or other storm water discharges required to obtain an NPDES permit, except where such discharges are:
      (1) regulated by a separate NPDES permit or the discharger has applied for such permit;
      (2) covered under the Department's NPDES General Permit Program regulations; or
      (3) identified by and in compliance with Part II.A.3.g.

   b. Spills:
      Where the discharge of materials resulting from a spill is necessary to prevent loss of life, personal injury, or severe property damage, the permittee shall take, or insure that the party responsible for the spill takes, all reasonable steps to minimize or prevent any adverse effects on human health or the environment. This permit does not transfer the liability for the spill itself from the party(ies) responsible for the spill nor relieve the party(ies) responsible for the spill from the reporting requirements under 7 Del.C. §6028.

c. Discharges of pollutants in quantities that would cause or contribute to an exceedance of any applicable surface water quality criterion or that would cause or contribute to a violation of any applicable surface water quality standard for the receiving waters, including:
   (1) Discharges of substances or materials in amounts that are toxic, or that would be toxic to humans, fish, aquatic life or wildlife;
   (2) Discharges of floatable debris, oils, scum, foam, or grease in other than trace amounts; and
   (3) Discharges that cause or contribute to degradation or loss of State-designated beneficial uses of the receiving waters.

d. Discharges of storm water from any entity or from any municipal storm sewer system within the City of Newark other than that which is owned by or under the direct operational control of the City of Newark.

C. Discharge Limitations

1. To the maximum extent practicable, all storm water discharges from the municipal storm sewer system covered by this permit shall be managed, treated or otherwise controlled, through full implementation of the comprehensive Storm Water Management Program ("SWMP") outlined in Part II, to comply with the following:

   a. No discharge of pollutants in quantities that would cause a violation of ambient surface water quality standards.

   b. No discharge of substances or materials in amounts that are toxic, or that would be toxic to humans, fish, aquatic life or wildlife.

   c. No discharge of floatable debris, oils, scum, foam, or grease in other than trace amounts.

   d. No discharge of non-storm water (except as provided in Part II.A.6.).

   e. No degradation or loss of State-designated beneficial uses of receiving waters as a result of storm water discharges from the municipal separate storm sewer system.

2. If it is determined that any of the preceding discharges persist, notwithstanding implementation of the SWMP and other requirements of this permit, the permittee shall notify the Department and thereafter, shall prepare and submit a report that:

a. Identifies and describes all BMPs currently being employed in that portion of the municipal separate storm sewer system where the offending discharge(s) persist;

b. Assesses the effectiveness of those existing BMPs; and

c. Identifies any improvements to be made or any additional BMPs or control measures to be employed to address the conditions noted, including a schedule for implementing those improvements or additional measures.

3. The assessment report specified herein may be incorporated into the annual SWMP evaluation that is prescribed in Part IV.A., unless the Department directs an earlier submission. In addition, a copy of the assessment report shall be included with the annual report to be prepared and submitted to the Department in accordance with Part IV.B.

Part II Storm Water Management Program ("SWMP")

The permittee shall develop and implement a comprehensive storm water management program ("SWMP") that will accomplish the following: effectively prohibit the discharge into the municipal separate storm sewer system of any materials other than storm water; reduce the discharge of pollutants from/through the municipal separate storm sewer system to the maximum extent practicable ("MEP"); protect water quality; and satisfy the water quality requirements of the Act and the State of Delaware Surface Water Quality Standards. The permittee shall employ a variety of techniques, including the employment of pollution prevention measures, best management practices, treatment technologies or pollutant removal techniques, among others, to meet the objectives herein and to control the quality of the storm water discharged from/through the municipal separate storm sewer system referenced herein. The SWMP shall be implemented in accordance with Section 402(p)(3)(B) of the Act and the applicable federal NPDES storm water regulations in 40 CFR Parts 122.26 and 122.33 through 122.35.

The SWMP shall cover the term of this permit and shall be updated as necessary, or as required by the Department, to ensure compliance with the statutory requirements of Section 402(p)(3)(B) of the Act. Modifications to the SWMP shall be made in accordance with Parts IV.A.2. and IV.A.3. The proposed SWMP submitted with the application, dated November 21, 2002, and all updates or modifications made in accordance with Parts IV.A.2. and IV.A.3. are hereby incorporated by reference.

Implementation of the SWMP may be achieved through participation with other public or private entities. The permittee may rely upon such other entities to satisfy the requirements herein in lieu of creating duplicate program elements. The permittee remains responsible for compliance with this permit and implementation of the SWMP, however, in the event the other public or private entity fails to do so. For this reason, a legally binding contract, MOU, or other similar means should be executed between the permittee and the other party to avoid conflicts resulting from noncompliance with this permit.

The SWMP shall include the six minimum control measures described in Part II.A. For each minimum measure, the permittee shall identify the measures, controls or best management practices (BMPs) to be employed, measureable goals (narrative or numeric standards to be used to assess and gauge the effectiveness of each measure), including time lines and milestones, and the person or entity responsible for implementation.

All elements of the SWMP shall be fully implemented by the expiration date of this permit.

The SWMP, taken as a whole, shall achieve the "effective prohibition of non-storm water discharges" and "MEP" standards from Section 402 (p)(3)(B) of the Act.

A. Storm Water Management Program Elements

The SWMP shall include the following minimum control measures:

1. *Public Education and Outreach*
   The permittee shall continue to develop and implement a public education program to distribute educational materials to its employees, its contractors, individuals using its facilities and the general public. The public education program shall provide information concerning the impact of storm water discharges on water quality. It must address steps and/or activities that can be taken to reduce pollutants in storm water runoff.

   The permittee's education and outreach efforts shall address the following:

   a. Activities that occur at City of Newark facilities, any BMPs employed and any pollution prevention efforts at those facilities;

   b. Residential activities;

   c. Illegal dumping into storm drains; and

   d. The proper disposal of litter, pet waste, used oil and household hazardous wastes; the proper use and disposal of fertilizer and pesticides and the impact of impervious areas on neighboring water bodies.

   The public education program must include coordination with local groups (i.e., watershed associations, schools, civic groups, etc.) and other State and local government officials. Materials for outreach and education may be in any form that is appropriate for the target audience and may include pamphlets, fact sheets, brochures, the permittee's website, public service announcements, educational displays, informational meetings, storm drain markers, newsletters and newspaper advertisements.

2. *Public Involvement and Participation*
   The permittee shall provide opportunities for the public to participate in the development, implementation and review of its SWMP.

   a. Activities may include recruiting volunteers for stream monitoring, formation of a storm water management committee, workshops, participation in the development of pollution control strategies for watersheds impacted by any discharges from the permittee's MS4 (i.e., participation on the Tributary Action Team when one is formed to address water quality problems in White Clay Creek and the Christina River basin).

3. *Illicit Discharge Detection and Elimination*
The permittee shall develop and implement a program to detect and eliminate illicit discharges. An illicit discharge is any discharge to the municipal separate storm sewer system that is not composed entirely of storm water. Exceptions are discharges that are covered by an individual NPDES permit or under the Department's NPDES General Permit Program regulations, allowable non-storm water discharges described in Part II.A.3.g. and discharges resulting from fire fighting activities.

    a. The permittee shall continue to review all existing and readily available information, including project plans, records, drainage maps and field surveys to verify that which is shown on the storm sewer system map submitted with its application. The permittee shall update its storm sewer system map periodically. At a minimum, the map shall show the location of all outfalls and drainage outlets and the names and location of all waters that receive discharges from those outfalls.

    b. The permittee shall effectively prohibit, through an ordinance or other appropriate regulatory mechanism, non-storm water discharges into the permittee's storm sewer system. The permittee shall evaluate existing procedures, policies, ordinances and authorities pertaining to connections to its storm sewer system. If a regulatory mechanism does not currently exist, development and adoption of such mechanism must be included as part of the SWMP.

    c. The permittee shall develop, implement and adequately fund a program to detect and address non-storm water discharges, including illegal dumping, to its separate storm sewer system.
        1. This program shall include both proactive and reactive measures to detect illicit discharges and improper disposal into the storm sewer system, e.g. visual screening of outfalls for dry weather discharges, promoting public reporting of suspicious discharges and investigating reports of such discharges, conducting smoke tests or dye tests to locate illicit connections to the storm sewer system, etc. This program shall establish priorities and schedules for screening the entire municipal separate storm sewer system at least once during the five-year term of this permit.
        2. This program shall outline the investigative procedures to be followed or actions to be taken to locate and identify suspect discharges, determine whether or not a discharge is illicit, track down its source and effect its elimination in a timely manner.
        3. The permittee may solicit the Department's assistance in pursuing any of the enforcement remedies available under State law for illicit discharges to the permittee's separate storm sewer system.

d. The permittee shall inform its employees, contractors and the general public of the hazards associated with illegal discharges and improper disposal of wastes.

e. The permittee shall promote - through education, public information and other appropriate measures - the proper management and disposal of used motor vehicle fluids (at a minimum, oil and antifreeze) and household hazardous waste materials (including paint, solvents, pesticides, herbicides, and other hazardous materials). The permittee shall coordinate such efforts with the Delaware Solid Waste Authority, the Department's Division of Air and Waste Management and the Recycling Public Advisory Council. The permittee shall explore opportunities to facilitate existing recycling and household hazardous waste collection programs and identify ways to encourage more participation.

f. The permittee shall implement a program to limit the discharge of floatables (e.g., litter and other human-generated solid refuse) to the maximum extent practicable. The floatables control program shall include source controls and, where necessary, structural controls.

g. Unless identified as a significant source of pollutants to waters of the State, the following non-storm water discharges need not be prohibited from entering the municipal separate storm sewer system, provided such sources are identified and appropriate control measures to minimize the impacts of such sources, are developed under the SWMP:
   (1) water line flushing;
   (2) landscape irrigation;
   (3) diverted stream flows;
   (4) rising groundwaters;
   (5) uncontaminated groundwater infiltration to separate storm sewers;
   (6) uncontaminated pumped groundwater;
   (7) discharges from potable water sources;
   (8) foundation drains;
   (9) air conditioning condensate;
   (10) irrigation water;
   (11) springs;
   (12) water from crawl space pumps;
   (13) footing drains;
   (14) lawn watering;
   (15) individual residential vehicle washing;
   (16) flows from riparian habitats and wetlands;
   (17) dechlorinated swimming pool discharges;
   (18) street wash waters; and
   (19) discharges or flows from emergency fire fighting activities.

h. The permittee shall maintain, and update as necessary, a list of dischargers to the municipal separate storm sewer system that have been issued an NPDES permit. The list shall include the name, location and NPDES permit number for the discharger.

i. The permittee shall maintain, and update as necessary, a list of dischargers to the municipal separate storm sewer system that have sought coverage under the Department's NPDES General Permit Program regulations.

4. *Construction Site Storm Water Runoff Control*
The permittee shall continue to implement and enforce a program to reduce, to the maximum extent practicable, the discharge of pollutants from construction sites, including:
   a. Requirements for the use and maintenance of appropriate structural and nonstructural sediment and erosion controls and other best management practices to reduce pollutant discharges to the municipal separate storm sewer system during the time when construction is underway;
   b. Requirements for construction site operators to control wastes such as discarded construction or building materials, concrete truck washout, chemicals, litter and sanitary waste;
   c. Sanctions to ensure compliance;
   d. Procedures for site planning which incorporate considerations for potential short term and long term water quality impacts and which minimize those impacts, to the maximum extent practicable;
   e. Procedures for receipt and consideration of information submitted by the public;
   f. Procedures for inspection of construction sites and enforcement of control measures; and
   g. Appropriate education and training measures for construction site operators.

   Title 7, Delaware Code, Chapter 40 and the Department's Sediment and Stormwater Regulations establish a statewide sediment and stormwater program designed to control the quantity and quality of storm water runoff during construction or any land disturbing activities and post-construction. These authorities encourage and make provision for delegating the sediment and stormwater program to either the Conservation Districts, local governments or other state agencies. The Department has delegated the authority to administer a sediment and stormwater program to the permittee. Satisfactory performance of the permittee's delegated responsibilities will be considered compliance with this component of the SWMP.

5. *Post-Construction Storm Water Management in Newly Developed Areas and in Redeveloped Areas*

The permittee shall continue to implement and enforce a program to address storm water runoff from new development and redevelopment projects that disturb areas greater than or equal to one acre, including projects that disturb less than one acre that are part of a larger common plan of development, and that discharge to the storm sewer system. The post construction program must include:

a. An ordinance or other regulatory mechanism to address post construction runoff from new development or redevelopment;
b. Strategies for addressing post-construction storm water quality and limiting the discharge of pollutants via storm runoff; and
c. Procedures to ensure adequate long term operation and maintenance of any best management practices employed.

Title 7, Delaware Code, Chapter 40 and the Department's Sediment and Stormwater Regulations establish a statewide sediment and stormwater program designed to control the quantity and quality of storm water runoff during construction or any land disturbing activities and post-construction. These authorities encourage and make provision for delegating the sediment and stormwater program to either the Conservation Districts, local governments or other state agencies. The Department has delegated the authority to administer a sediment and stormwater program to the permittee. Satisfactory performance of the permittee's delegated responsibilities will be considered compliance with this component of the SWMP.

6. *Pollution Prevention and Good Housekeeping*

The permittee shall continue to develop and implement an operation and maintenance program with a goal of preventing and/or reducing discharges of pollutants associated with the permittee's operations (in addition to those that constitute storm water discharges associated with industrial activity). The program must at a minimum, include the following:

a. An employee training program;
b. Maintenance activities and procedures or pollution prevention measures to prevent or limit discharges of pollutants associated with the following: open space, park and recreational area maintenance, roadside vegetation management, fleet and building maintenance, equipment and vehicle washing, de-icing material storage, new construction and land disturbance, storm drain system maintenance;

c. Schedules for performing the maintenance activities and pollution prevention measures listed in paragraph b above; and
d. Inspection procedures and schedules for any stormwater management facilities, structural controls or best management practices employed.

B. <u>Area-specific Storm Water Management Program Requirements</u>

The following SWMP requirements apply only to the following areas, discharges, subbasins, basins or watersheds specified:

(Reserved for system-specific; watershed-specific; or water quality-related program elements or requirements.)

Part III Schedules of Compliance

All elements of the SWMP shall be fully developed and implemented by the expiration date of this permit.

Part IV Program Evaluation, Recordkeeping and Reporting Requirements

A. Storm Water Management Program Evaluation

1. *Storm Water Management Program Evaluation*
   The permittee shall periodically review its current SWMP and assess its effectiveness in meeting the goals and requirements herein. This review shall be accomplished at least once each calendar year this permit is effective and shall involve:
   a. A review of the status of developing or implementing each of the SWMP's minimum control measures;
   b. An assessment of the appropriateness and effectiveness of the selected measures, controls and best management practices outlined in the SWMP;
   c. A review of any information collected, including any monitoring data;
   d. An assessment of the need to modify the SWMP to comply with the statutory requirement under Section 402 (p)(3)(B)(iii) of the Act to reduce the discharge of pollutants to the municipal separate storm sewer system to the maximum extent practicable; and
   e. An assessment of the need to modify the SWMP to meet any applicable surface water quality standards for the receiving waters and to protect the designated uses for those waters.

2. *Program Modification and Update*
   The SWMP incorporated herein shall not be modified without the prior approval of the Department, unless in accordance with items a. through c., below:

   a. Portions of the SWMP not specifically required by Part II.A. may be modified upon written notification to the Department.

   b. Changes adding (but not subtracting or replacing) components, controls, or requirements to the SWMP may be made at any time upon written notification to the Department.

   c. Changes replacing an ineffective or infeasible best management practice or BMP specifically identified in the SWMP with an alternate may be requested at any time. Unless denied by the Department, changes proposed in accordance with the criteria specified below shall be deemed approved and may be implemented within 60 days from submittal of the request. Such requests shall include the following:
      (1) An analysis of why the BMP is ineffective or infeasible (cost may be a factor);
      (2) Expectations on the effectiveness of the replacement BMP; and
      (3) An analysis of why the replacement BMP is expected to achieve the goals of the BMP to be replaced.

Modifications made under this paragraph, other than those made in accordance with a., b. or c., above, shall not become enforceable regulatory requirements until such time as the modifications are formally approved.

Any requests to modify the SWMP or any notification of changes made to the SWMP shall be signed in accordance with Part V.

3. *Changes or Updates Required by the Department*
   Upon notification from the Department that the SWMP does not adequately address the requirements herein, the permittee shall modify the plan and submit the changes to the Department within the timeframe specified in the notice.

B. Preparation and Submission of an Annual Report

The permittee shall annually prepare and submit to the Department a report summarizing the results of its evaluation of the SWMP (prescribed in Part IV.A.). Each annual report shall be submitted no later than the anniversary of the effective date of this permit and shall cover all activities related to this permit during the preceding calendar year. *(The first annual report shall cover activities from January 1, 2003, through December 31, 2003, and shall be submitted no later than July 1, 2004.)*

The annual report shall be submitted to the Department at the following address:

STATE OF DELAWARE DEPT. OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL, DIVISION OF WATER RESOURCES, SURFACE WATER DISCHARGES SECTION, R & R BUILDING, 89 KINGS HIGHWAY, DOVER, DELAWARE 19901
TELEPHONE: (302) 739-5731 FACSIMILE: (302) 739-8369

The annual report shall include the following information:

1. The status of developing and implementing each of the minimum measures outlined in Part II.A.; a summary of the progress towards achieving the measureable goals for each minimum measure and the objective of this permit (i.e., reducing the discharge of pollutants to the “maximum extent practicable”);
2. An assessment of the appropriateness and effectiveness of the controls and best management practices identified in the SWMP;
3. Proposed changes to the SWMP, if any, including any changes to any measures, controls or BMPs or to any identified measureable goals;
4. A summary of any information collected and analyzed during the reporting year, including any monitoring data, used to assess the success of the SWMP in meeting its goals; and
5. A summary of the activities planned for the following year.

C. Certification and Signature of Reports

All reports required herein and other information requested by the Department shall be signed in accordance with Part V.

D. Representative Sampling

Any samples collected and any measurements taken to assess compliance with this permit or in conjunction with the permittee's SWMP shall be representative of the volume and nature of the monitored discharge.

E. Flow Measurement

In the event the permittee chooses to monitor flow or discharge volume, appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to insure the accuracy and reliability of any measurements. The devices shall be installed, calibrated and maintained to insure that the accuracy of the measurements is consistent with the accepted capability of that type of device.

F. Test Procedures

Test procedures for the analysis of pollutants shall conform to the applicable test procedures identified in 40 CFR, Part 136, unless otherwise specified in this permit.

G. Penalties for Tampering

State law, 7 Del. C. §6013, provides that any person who falsifies or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall upon conviction, be punished by a fine of not more than $5,000 or by imprisonment for not more than 6 months, or by both.

H. Record Contents

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

1. The date, exact place, time and method of sampling or measurements;
2. The individual(s) who performed the sampling or measurements;
3. The date(s) and time(s) analyses were performed;
4. The individual(s) who performed each analysis;
5. The analytical techniques or methods used; and
6. The results of such analyses; and
7. Any quality assurance information.

I. Retention of Records

All records and information resulting from the monitoring activities required by this permit, all records of analyses performed, records of calibration and maintenance of instrumentation, all original strip chart recordings from continuous monitoring instrumentation and copies of all reports required by this permit shall be retained for three (3) years. This period of retention shall be extended automatically during the course of any unresolved litigation regarding the regulated activity or regarding control standards applicable to the permittee, or as requested by the Department.

Part V Standard Permit Conditions

A. Duty to Comply

The permittee must comply with all the conditions of this permit. All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant more frequently than, or at a level in excess of that identified and authorized herein shall constitute a violation of the terms and conditions of this permit.

The violation of any effluent limitation or of any other condition specified in this permit shall be grounds for enforcement as provided in 7 Del. C. §§6005, 6013 and 6018; for loss of authorization to discharge pursuant to this permit; for permit revocation and reissuance or modification pursuant to Part V.H.; or for denial of a permit renewal application. Pursuant to 7 Del.C. §6019, the Department may seek voluntary compliance by way of warning, notice or other educational means. However, the law does not require that such voluntary means be used before proceeding by way of compulsory enforcement.

B. Facilities Operation

The permittee shall at all times maintain in good working order and operate as efficiently as possible all structural controls, collection and treatment facilities and systems (and related appurtenances) installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes, but is not limited to effective performance (based upon the facilities' design), adequate funding, effective management, adequate operator staffing and training and adequate laboratory and process controls including appropriate quality control procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems, when necessary, to achieve compliance with the terms and conditions of this permit.

C. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact on the environment resulting from noncompliance with this permit. This includes such accelerated or additional monitoring as necessary to determine the nature and extent of the noncompliant discharge.

D. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of collection or treatment of the discharges authorized herein shall be disposed of in a manner such as to prevent any pollutant from such materials from entering surface waters or groundwaters.

E. Right of Entry

The permittee shall allow the Secretary of the Department of Natural Resources and Environmental Control, the EPA Regional Administrator, and their authorized representatives, jointly and severally, upon the presentation of credentials and such other documents as may be required by law:

1. To enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where any records are required to be kept under the terms and conditions of this permit; and
2. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring method required in this permit; to inspect any structural controls, collection, treatment, pollution management, or discharge facilities required under this permit; and to sample any discharge of pollutants.

F. Duty to Provide Information Requested by the Department

The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine compliance with this permit or to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit. The permittee shall also furnish, upon request, copies of records required to be kept by this permit.

G. Duty to Provide Information Found to be Missing or Inaccurate

When the permittee discovers that it failed to submit any relevant facts in a permit application or that it submitted any incorrect information in any permit application or in any report to the Department, it shall promptly submit such facts or information.

H. Availability of Reports

Except for any data and information that is deemed to be confidential and claimed as such when submitted, and that is entitled to protection as trade secrets under State law, all reports prepared in accordance with the terms and conditions of this permit shall be available for public inspection at the Department's offices. This permit, the permit application and any information submitted to support the application (other than information that is entitled to protection as trade secrets under State law) and any effluent or discharge monitoring data shall not be considered confidential and any claims of confidentiality shall be denied. Knowingly making any false statement in any such report may result in the imposition of criminal penalties as provided for under 7 Del.C. §6013.

I. Signatory Requirements

All applications, monitoring reports, storm water management program reports, certifications or other information required by this permit, whether submitted to the Department or maintained by the permittee, shall be signed as follows:

1. By a principal executive officer or ranking elected official; or
2. A duly authorized representative of that person. A person is a duly authorized representative only if:
   a. The authorization is made in writing by the person described above and is submitted to the Department.
   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for environmental matters. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

For purposes of this paragraph, the principal executive officer of a federal, state, or public agency includes: (i) The chief executive officer of the agency (e.g., cabinet secretary); or (ii) A senior executive officer having responsibility for the overall operation of a principal geographic unit of the agency (e.g., the Regional Administrator of EPA).

If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new notice satisfying the requirements of this paragraph must be submitted to the Department prior or together with any reports, information, or applications to be signed by an authorized representative.

J. Permit Modification, Revocation and Reissuance, and Termination

1. After notice and opportunity for a hearing, this permit may be modified, terminated, or revoked and reissued in whole or in part during its term for cause including, but not limited to, the following:
   a. Violation of any terms or conditions of this permit;
   b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;
   c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge(s);
   d. A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination.

2. In addition, this permit may be modified, revoked and reissued in whole or in part, but not terminated, after notice and opportunity for a hearing, for cause including, but not limited to, the following:

    a. Facility modifications, additions, and/or expansions that are not otherwise sanctioned either by this permit or by the program administered by the permittee in accordance with this permit;
    b. Material and substantial changes or additions to the permittee's operation or activities which justify the application of permit conditions that are different or absent from this permit;
    c. Information newly acquired by the Department, including but not limited to the results of the studies, planning, or monitoring described and/or required by this permit;
    d. Revision, withdrawal or modification of State surface water quality standards or effluent limitations guidelines promulgated by the Department or the United States Environmental Protection Agency, but only when the permit term or condition requested to be modified or revoked was based on a State water quality standard or an effluent limitation guideline duly promulgated by the Department or the United States Environmental Protection Agency that was revised, withdrawn or modified;
    e. Judicial remand of effluent limitation guidelines promulgated by the United States Environmental Protection Agency, if the remand concerns that portion of the guidelines on which the permit term or condition was based and the request is filed within ninety (90) days of the judicial remand;
    f. Any modification or revocation and reissuance of permits specifically authorized by the Clean Water Act;
    g. To comply with any applicable standard or limitation promulgated or approved under sections 301(b)(2)(C) and (D), 304(b)(2) and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
        (i) Contains different conditions or is otherwise more stringent than any effluent limitations in the permit; or
        (ii) Controls any pollutant not limited in the permit.
        The permit as modified or reissued under this subparagraph shall also contain any other requirements of the Act then applicable;
    h. To contain a schedule of compliance leading to termination of the direct discharge by a date which is no later than the statutory deadline;
    i. To modify a schedule of compliance in an issued permit for good and valid cause by a date which is no later than the statutory deadline.

3. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition. When a permit is modified, only conditions subject to modification are reopened.

K. Transfer of Permit

This permit is not transferable, except after notice to and with the concurrence of the Department.

In the event of any change in ownership or control of facilities from which the authorized discharges emanate, this permit may be transferred to another person if:

1. The current permittee notifies the Department, in writing, of the proposed transfer, in advance; and
2. The notice includes a written agreement between the transferor and the transferee, indicating a specific date for transfer of permit responsibility, coverage, and liability; and
3. The Department within thirty (30) days of receipt of the notification of the proposed transfer does not notify the current permittee and the new permittee of intent to modify, revoke and reissue, or terminate the permit and require that a new application be submitted.

The permittee is encouraged to provide as much advance notice as possible of any proposed transfer, to allow sufficient time for the Department to modify this permit to identify the new permittee and to incorporate such other requirements as may be necessary under State law or the Act.

L. Reapplication for a Permit

The permittee must apply for and obtain a new permit if the permittee wishes to continue the activity regulated by this permit beyond its expiration date.

At least 180 days before the expiration date of this permit, the permittee shall submit a new application for a permit. In the event that a timely and sufficient reapplication has been submitted and the Department is unable, through no fault of the permittee, to issue a new permit before the expiration date of this permit, the terms and conditions of this permit are automatically continued and remain fully effective and enforceable.

M. Civil and Criminal Liability

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

N. Discharge of Pollutants

Any person who causes or contributes to the discharge of a pollutant into waters of the State or the United States either in excess of any condition specified in this permit or in the absence of a specific permit condition, shall report such an incident to the Department as required under 7 Del.C. §6028.

O. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under 7 Del. C. Chapter 60 or any other State law or regulation.

P. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

Q. Construction Authorization

This permit does not authorize or approve the construction of any onshore or offshore physical structures or facilities or the undertaking of any work in any navigable waters.

R. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected.

Part VI Definitions

"Act" means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or the Federal Water Pollution Control Act Amendments of 1972) Pub.L. 92-500, as amended Pub.L. 95-217, Pub.L. 95-576, Pub.L. 96-483, Pub.L. 97-117, Pub. L. 100-4 (the Water Quality Act of 1987), Pub. L. 100-688, Pub. L. 100-581, Pub.L. 102-580, Pub. L. 102-240; 33 U.S.C. 1251 et.seq.

"Best Management Practices" ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants. BMPs also include treatment requirements, operating procedures and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs can be applied before, during or after pollution generating activities to reduce or eliminate the introduction of pollutants into receiving waters.

"CFR" means the Code of Federal Regulations in effect on January 1, 2003.

"Department" means the State of Delaware Department of Natural Resources and Environmental Control.

"Discharge" for the purpose of this permit, when used without qualification, refers to the discharge of a pollutant.

"Discharge of a pollutant" means any addition of any pollutant, or combination of pollutants, to State waters.

"Illicit connection" means any man-made conveyance connecting an illicit discharge directly to a municipal separate storm sewer.

"Illicit discharge" means any discharge to a municipal separate storm sewer that is not composed entirely of storm water except those sanctioned by a NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from fire fighting and other activities referenced in Part II.A.3. of this permit.

"Land application unit" means an area where wastes are applied onto or incorporated into the soil surface (excluding manure-spreading operations) for treatment or resource utilization.

"Land disturbing activities" means a land change or construction activity for residential, commercial, silvicultural, industrial, and institutional land use which may result in soil erosion from water, or wind or movement of sediments or pollutants into State waters or onto lands in the State, or which may result in accelerated storm water runoff, including but not limited to, clearing, grading, excavating, transporting, and filling of land.

“Landfill” means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well, or waste pile.

“Maximum extent practicable” or “MEP” means a level of performance that reflects the best effort possible after taking into consideration cost, feasibility, existing technology and logistics in light of overall facility operations or project purposes.

“MS4” refers to a Municipal Separate Storm Sewer System.

“Municipal Separate Storm Sewer” means a conveyance, or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) owned or operated by a city, town, county, district, association, or other public body created by or pursuant to State law having jurisdiction over the disposal of wastes, storm water, or other wastes, storm water management, drainage or flood control.

“Permittee” refers to the entity listed on the title page of this permit (i.e., the City of Newark).

"Person" means any individual, trust, firm, corporation (including a government corporation), partnership, association, institution, enterprise, federal agency, state, municipality, commission, agency, political subdivision of a state or an interstate body, or an agent or employee thereof.

“Point Source” means any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

“Pollutant” means any substance, radioactive material, or waste heat, which causes or contributes to, or may cause or contribute to, pollution. The term includes dredge spoil and other dredged materials, fill material, solid waste, incinerator residue, filter backwash, sewage, garbage, sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, hydrocarbons, oil, product chemicals, and industrial, municipal, agricultural and other wastes discharged into water. It does not mean sewage from vessels.

"Pollution" or "water pollution" means the man-made or human-induced alteration of the physical, chemical, biological or radiological properties of any State waters as will create or is likely to create a nuisance or render such waters:

(i) Harmful or detrimental or injurious to the public health, safety, or welfare, or to the health of animals, fish, or aquatic life;
(ii) Unsuitable for use as present or possible future sources of public water supply; or
(iii) Unsuitable for recreational, commercial, industrial, agricultural, or other reasonable uses.

"Practicable" means available and capable of being done after taking into consideration cost, feasibility, existing technology and logistics in light of overall facility operations or project purposes.

"SWMP" is an acronym for Storm Water Management Program.

"Secretary" means the Secretary of the State of Delaware Department of Natural Resources and Environmental Control.

"Section 313 water priority chemical" means a chemical or chemical categories which:
1. Are listed at 40 CFR 372.65 pursuant to Section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986, also titled the Emergency Planning and Community Right-to-Know Act of 1986;
2. Are present at or above threshold levels at a facility subject to SARA Title III, Section 313 reporting requirements; and
3. That meet at least one of the following criteria: (i) Are listed in Appendix D of 40 CFR 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols) or Table V (certain toxic pollutants and hazardous substances); (ii) Are listed as a hazardous substance pursuant to section 311 (b)(2)(A) of the CWA at 40 CFR 116.4; or (iii) Are pollutants for which EPA or the Department has published acute or chronic water quality criteria.

"Significant materials" means substances, products, or wastes that can contribute pollutants to storm water runoff because they are or may be exposed to precipitation. This term includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous oil or hazardous substances in excess of reportable quantities under section 311 of the Clean Water Act (see 40 CFR 110.10 and CFR 117.21) or section 102 of CERCLA (see 40 CFR 302.4) or State regulations promulgated pursuant to 7 Del. C., Chapter 60, §6028.

"Significant redevelopment" means:

- an activity that substantially degrades the character and/or increases the volume of storm water runoff;
- any reconstruction, rehabilitation, addition or other improvement of a structure, the cost of which equals or exceeds fifty (50) percent of the market value of the structure before the start of construction of the improvements;
- any construction or alteration that increases the number of travel lanes on an existing roadway; any construction or alteration that reclaims for public use previously abandoned bridges or roadway alignments; or
- any capital improvement budgeted in the DelDOT System Expansion budget as authorized in the Annual Bond and Capital Improvements Act that has such effects.

"Storm Water" means storm water run-on or runoff, snow melt, surface runoff and drainage.

"Structural controls" means curbs, dikes, berms, walls, sheds, impervious pads, ditches, diversions or other structures which limit the contribution or transport of significant materials and pollutants to storm water.

"Waste pile" means any non-containerized accumulation of solid, nonflowing waste.

"Waters of the State" or "State waters" means all water, on the surface and under the ground, wholly or partially within, or bordering the State of Delaware, or within its jurisdiction including but not limited to:

(a) Waters which are subject to the ebb and flow of the tide including, but not limited to, estuaries, bays and the Atlantic Ocean;
(b) All interstate waters, including interstate wetlands;
(c) All other waters of the State, such as lakes, rivers, streams,(including intermittent and ephemeral streams), drainage ditches, tax ditches, creeks, mudflats, sandflats, wetlands, sloughs, or natural or impounded ponds;
(d) All impoundments of waters otherwise defined as waters of the State under this definition;
(e) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in (a)-(d).

Waste and storm water treatment systems that would otherwise meet this definition, are not "waters of the State" or "State waters".

Appendix 5

PUBLIC WORKS & WATER RESOURCES
CITY OF NEWARK

220 South Main Street · Newark, Delaware 19711
302.366.7000 · Fax 302.366.7160 · www.cityofnewarkde.us

City of Newark PWWR Standard Operating Procedure
Insert Title or Maintenance Type

Introduction and Purpose
This standard operating procedure illustrates the best management practice for x. Describe the essential function of sop.
This standard operating procedure will provide a concise, detailed procedure for this topic to ensure consistency and proper maintenance.

Training
- Supervisors are to train personnel associated with x to comply with this standard operating procedure
- Training explains to employees the best practice for this facility maintenance in order to limit stormwater pollution.

Equipment and Materials
- List of items necessary to complete task

Frequency
- Insert frequency for the maintenance or inspection.

Procedure
- Describe in depth the procedure for completing this task.

Record Keeping and Documentation
- Record any information and medium for recording, paper, gis, phone call, email, etc.

Contact Information
- Provide contact information for more information regarding this sop.

Appendix 6

DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
DIVISION OF WATERSHED STEWARDSHIP

5101 Sediment and Stormwater Regulations

1.0 General Provisions

1.1 Findings of Fact

1.1.1 It is determined that:

1.1.1.1 Erosion and sedimentation and delivery of other nonpoint source pollutants such as nutrients through stormwater runoff continue to present serious problems throughout the State.

1.1.1.2 The removal of a stable ground cover in conjunction with the decrease in the infiltration capability of soils resulting from the creation of additional impervious areas such as roads and parking lots has accelerated the process of soil erosion and sediment deposition and nonpoint source runoff of other pollutants resulting in pollution of waters of the State. This damages domestic, agricultural, industrial, recreational, fish and wildlife and other resource uses.

1.1.1.3 Accelerated stormwater runoff increases flood flows and velocities, contributes to erosion, sedimentation and degradation of water quality, overtaxes the carrying capacity of streams and storm sewers, greatly increases the cost of public facilities in carrying and controlling stormwater, undermines floodplain management and flood control efforts in downstream communities, reduces groundwater recharge, and threatens public health, welfare and safety.

1.1.2 The regulation of stormwater runoff from land development activities will control stormwater runoff, soil erosion and nonpoint source pollution and will mitigate the adverse effects of stormwater runoff from development and will reduce threats to public health and safety.

1.2 The purpose of this regulation is to enhance and extend the present erosion and sediment control activities and programs of the State for both rural and urban lands and to provide for control and management of stormwater runoff consistent with sound water and land use practices. These activities will reduce, to the maximum extent practicable, adverse effects of stormwater runoff on the water and lands of the State.

1.3 Applicability

1.3.1 On and after January 1, 2014, unless a particular activity is exempted by these regulations, a person shall not disturb land without an approved Sediment and Stormwater Management Plan from the Department or Delegated Agency. A Sediment and Stormwater Management Plan shall not be approved for a property unless it is consistent with the following items:

1.3.1.1 These regulations;

1.3.1.2 7 **Del.C.** Ch. 40, relating to erosion and sediment control and stormwater management;

1.3.1.3 7 **Del.C.** Ch. 60, relating to the development, utilization, and control of the land, water, underwater and air resources of the State, and;

1.3.1.4 *Regulations Governing the Control of Water Pollution*, Section 9.1.02, known as Special Conditions for Stormwater Discharges Associated with Construction Activities.

1.3.2 Applicability of these regulations for plans that have been approved to comply with previous regulations shall be consistent with the following:

1.3.2.1 Plans approved to comply with previous regulations where construction has not commenced on January 1, 2014 may have the plan approval extended under the requirements of the previous regulations in subsequent three-year approval periods. Any plan approved to comply with previous regulations must commence construction no later than December 31, 2019. A plan approved to comply with previous regulations where construction has not commenced by December 31, 2019 shall expire and a new plan in compliance with these regulations shall be submitted to the Department or Delegated Agency for review and approval before commencement of construction.

1.3.2.2 Plans approved to comply with previous regulations where construction has commenced may be extended based on the requirements in place at the time of original Plan approval.

1.3.2.3 In no case shall the plan extension supersede the sunset provisions of the county or local government.

1.3.2.4 Commencement of construction means that the construction of the approved Plan is visible with the construction of a structure or infrastructure, including but not limited to roads, water and sewer lines, and stormwater management systems. General earth moving is not considered commencement of construction.

1.4 The following activities are exempt from both sediment control and stormwater management requirements established by these regulations:

1.4.1 Agricultural land management practices having a soil and water conservation plan unless the Department or Delegated Agency determines that a new or updated soil and water conservation plan is required, and the Owner or operator of the land has refused either to apply to a Conservation District for the development of a conservation plan, or to implement a conservation plan developed by a Conservation District.

1.4.2 Developments or construction that disturbs less than 5,000 square feet. Individual disturbances of less than 5,000 square feet that accumulate to exceed 5,000 square feet are not exempt and may be subject to the provisions of these regulations as determined by the Department or Delegated Agency on a case-by-case basis.

1.4.3 With written agreement of the Department, land development activities which are regulated with respect to erosion and sediment control and stormwater management under other specific State or Federal laws.

1.4.4 Commercial forest harvesting operations that meet the requirements of the Department of Agriculture under 3 **Del.C.** Ch. 10, Subchapter VI.

1.4.5 Permitted land application of biosolids and residuals.

1.5 Variances

1.5.1 The Department may grant a variance from any requirement of these regulations in accordance with the provisions of 7 **Del.C.** §6011.

1.5.2 The Department may grant a temporary emergency variance from any requirement of these regulations in accordance with the provisions of 7 **Del.C.** §6012.

1.5.3 Excluding items covered by 1.7 Offset Provisions, the Department shall consider and decide applications for a variance from the provisions of these Regulations if all of the following are established by the applicant.

1.5.3.1 The variance sought will not be detrimental to the environment or contrary to law, or these Regulations.

1.5.3.2 Owing to special conditions or an unusual situation, a literal interpretation of these Regulations will result in hardship to the owner of the property in question.

1.5.3.3 If the variance were granted, the goals of these Regulations and the technical documents will be met with respect to the property in question.

1.5.4 The applicant must submit a request for a variance to the Sediment and Stormwater Program of the Department that sets forth and explains the need for the variance.

1.5.5 The Secretary or his designee shall publish his decision on the requested variance and the decision shall be effective immediately.

1.5.6 Any person whose interests are substantially affected may appeal to the Environmental Appeals Board within 15 days of publication of the Secretary's decision.

1.5.7 The variance shall be effective from the date of its approval until a final plan is approved unless the nature and scope of the project for which it was granted has changed.

1.6 Fees and Financial Guarantees

1.6.1 Fees

1.6.1.1 The Delegated Agency has the authority to require fees to support local program implementation, including overall program management, plan review, construction review, enforcement, and maintenance responsibilities. An Owner seeking approval of a Sediment and Stormwater Management Plan shall pay a fee as prescribed by the Department or Delegated Agency. When the Department is the approval agency, the fees shall not exceed $80.00 per disturbed acre per project.

1.6.1.2 The establishment of fees, not involving stormwater utilities, shall be in accordance with the following items:

1.6.1.2.1 The number of needed personnel and the direct and indirect expenses associated with those personnel shall be developed by the agencies requesting delegation in a specific jurisdiction in conjunction with and with the concurrence of the Department. Those expenses will then form the basis for determining plan review, construction review and maintenance review costs.

1.6.1.2.2 The fee schedule and revisions to the fee schedule of the Delegated Agency shall be subject to applicable State or local public notice requirements. State public notice requirements shall be governed by 7 **Del.C.** §6004.

1.6.2 Financial Guarantee

1.6.2.1 The Department or Delegated Agency may require and implement a financial guarantee for construction of the elements of the approved Sediment and Stormwater Management Plan. The Owner shall submit when required to the Department or Delegated Agency a financial guarantee before the onset of construction activities. The financial guarantee will ensure that action can be taken by the Department or Delegated Agency to complete required elements of the approved Sediment and Stormwater Management Plan, at the Owner's expense, should the Owner fail to initiate, complete, or maintain those measures identified in the approved Sediment and Stormwater Management Plan after being given proper notice and within a reasonable time specified by the Department or Delegated Agency.

1.6.2.2 Following approval of the Department, the financial guarantee provisions of the Delegated Agency shall be subject to applicable State or local public notice requirements. State public notice requirements shall be governed by 7 **Del.C.** §6004.

1.7 Offset Provisions

1.7.1 The Department may require an offset as an alternative to full or partial compliance with the Resource Protection Event requirements as provided in Sections 5.2 and 5.6.3 of these regulations.

1.7.2 Offset requirements shall be subject to Departmental review and approval as well as to the public notice requirements of 7 **Del.C.** §6004.

1.7.3 Procedures for determining offset options may be developed by the Department and published in the technical document supplement to these regulations.

1.8 These regulations are adopted pursuant to authority conferred by and in accordance with 7 **Del.C.** Ch. 40 and 7 **Del.C.** Ch. 60.

1.9 These regulations are not intended to interfere with, abrogate, or annul any other ordinance, rule or regulation, statute, or other provision of law. The requirements of these regulations should be considered minimum requirements, and where any provision of these regulations imposes restrictions different from those imposed by any other ordinance, rule or regulation, or other provision of law, whichever provisions are more restrictive or impose higher protective standards for human health or the environment shall be considered to take precedence.

1.10 If any section, subsection, sentence, clause, phrase or portion of these regulations is for any reason held invalid or unconstitutional by any court or competent jurisdiction, such provision and such holding shall not affect the validity of the remaining portions of these regulations.

1.11 Any person who undertakes or causes to be undertaken any land disturbing activities shall ensure that soil erosion, sedimentation, increased pollutant loads and changed water flow characteristics resulting from these activities are controlled so as to minimize pollution of state waters. The requirements of these regulations are minimum standards and a person's compliance shall not relieve the person from the duty of enacting all measures necessary to minimize pollution of, or detrimental impacts to state waters.

1.12 The conduct of all hearings conducted pursuant to these regulations shall be in accordance with the relevant provisions of 7 **Del.C.** Ch. 60.

1.13 The Department is responsible for the implementation and supervision of the sediment and stormwater program which is established by 7 **Del.C.** Ch. 40. The program shall be administered pursuant to these regulations. The Department may also develop and maintain a Technical Document to serve as a guide for the regulated community and Delegated Agencies in complying with Chapter 40 and these regulations.

1.14 Technical Document

1.14.1 The Technical Document may include policies, procedures, technical specifications and other advisory documents as deemed necessary by the Department to carry out implementation and supervision of the sediment and stormwater program.

1.14.2 The Technical Document, as well as any revisions or subsequent updates, shall be adopted following public notice requirements in accordance with 7 **Del.C.** §6004.

1.14.3 The Technical Document may be utilized as a reference for all activities subject to these regulations. Alternative measures that provide functional equivalency to the policies, procedures, technical specifications and other advisory provisions contained in the Technical Document and meet the provisions of these regulations may be considered on a case-by-case basis following Departmental review and approval.

18 DE Reg. 396 (11/01/14)

2.0 Definitions

The following words and terms, when used in this regulation, shall have the following meaning unless the context clearly indicates otherwise:

"Adequate conveyance" means any system having sufficient capacity to transport the runoff generated during the Resource Protection Event, Conveyance Event, and Flooding Event; functions and discharges in a non-erosive manner; and does not adversely impact any offsite properties, conveyance system, stormwater facility, or State Waters.

"Adverse impact" means a negative impact resulting from a construction or development activity. The negative impact may include, but is not limited to, increased risk of flooding; degradation of water quality; increased sedimentation; reduced groundwater recharge; negative impacts on aquatic habitat; or threatened public health and safety.

"Agricultural land management practices" means those methods and procedures generally accepted by the Conservation Districts and used in the cultivation of land in order to further crop and livestock production and conservation of related soil and water resources.

"Agricultural structure" means a structure on a farm used solely for agricultural purposes in which the use is exclusively in connection with the production, harvesting, storage, drying, or raising of agricultural commodities, including the raising of livestock. Structures used for human habitation, public use, or a place of employment where agricultural products are processed, treated, or packaged are not considered agriculture structures for the purposes of these regulations.

"Applicant" means a person who has requested approval of a Sediment and Stormwater Management Plan through submittal of an application in accordance with these regulations or who has requested permission to conduct any activity subject to these regulations.

"Best Available Technology (BAT)" means a level of technology based on the very best (state of the art) sediment and stormwater control and treatment measures that have been developed or are capable of being developed and that are economically achievable.

"Best Management Practices (BMPs)" means schedules of activities, prohibition of practices, maintenance procedures, and other management practices or measures to prevent or reduce the discharge of pollutants. BMPs include the following, among other practices and measures: structural and non-structural controls; treatment requirements; operating procedures and practices to control site runoff.

"Biosolids" means solid or semi-solid material obtained from treated wastewater or animal manure.

"Brownfield" means any vacant, abandoned or underutilized real property the development or redevelopment of which may be hindered by the reasonably held belief that the real property may be environmentally contaminated.

"Certified Construction Reviewer" or "CCR" means those individuals, having passed a Departmental sponsored or approved training course and holding current certification, which provide on-site construction review for sediment control and stormwater management in accordance with these regulations.

"Conservation plan" means a customized document that outlines the use and best management practices of the natural resources on a parcel of land.

"Conveyance Event" means the runoff event produced by a storm having an annual probability of occurrence of 10%.

"Conveyance Event Volume (Cv)" means the volume of runoff generated by the Conveyance Event that is not otherwise reduced for the Resource Protection Event.

"Dedication" means transferring ownership of a stormwater management system to a delegated agency, public utility, municipality, stormwater utility, or private entity, along with all associated easements, escrow funds, and maintenance responsibilities.

"Delegated Agency" means the Conservation District, county, municipality, or State agency that has accepted responsibility in a jurisdiction for implementation of one or more elements of the Sediment and Stormwater Program within that jurisdiction.

"Delegation" means the acceptance of responsibility by a Conservation District, county, municipality, or State agency for the implementation of the Sediment and Stormwater Program.

"Department" means the Department of Natural Resources and Environmental Control.

"Designated Watershed or Subwatershed" means a watershed or subwatershed proposed by a conservation district, county, municipality, or State agency and approved by the Department. The Department may establish additional requirements due to existing water quantity or water quality problems. These requirements shall be implemented on an overall watershed or subwatershed master plan developed for water quality or water quantity protection.

"Detailed plan" means a plan developed by a Licensed Professional in the State of Delaware which does not meet standard plan criteria.

"Drainage area" means that area contributing runoff to a single point measured in a horizontal plane, which is enclosed by a ridge line.

"Easement" means a grant or reservation by the Owner of land for the use of land by others for a specific purpose or purposes, and which must be included in the conveyance of land affected by the easement.

"Effective imperviousness", for the purposes of these Regulations, means the equivalent percentage of a site's impervious area that directly contributes stormwater runoff during the Resource Protection Event after all runoff reduction practices have been implemented.

"Erosion and sediment control" means the control of solid material, both mineral and organic, during a land disturbing activity, to prevent its transport out of the disturbed area by means of wind, water, gravity, or ice.

"**Final stabilization"** means that:

(1) All soil disturbing activities at the site have been completed and either of the two following criteria are met:
   (a) A uniform (e.g. evenly distributed, without large bare areas) perennial vegetative cover with a density of 70% of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures, or
   (b) Equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed.

(2) When background native vegetation will cover less than 100% of the ground (e.g., arid areas, beaches), the 70% coverage criteria is adjusted as follows: if the native vegetation covers 50% of the ground, 70% of 50% (0.70 X 0.50 = 0.35) would require 35% total coverage for final stabilization. On a beach with no natural vegetation, no stabilization is required.

(3) For individual lots in residential construction, final stabilization means that either:
   (a) The homebuilder has completed final stabilization as specified above, or
   (b) The homebuilder has established temporary stabilization including perimeter controls for an individual lot prior to occupation of the home by the homeowner and informing the homeowner of the need for, and benefits of, final stabilization.

(4) For construction projects on land used for agriculture purposes (e.g., pipelines across crop or range land, staging areas for highway construction, etc.) final stabilization may be accomplished by returning the disturbed land to its preconstruction agriculture use. Areas disturbed that were not previously used for agricultural activities, such as buffer strips immediately adjacent to a "water of the United States" and areas which are not being returned to their preconstruction agricultural use must meet the final stabilization criteria (1) or (2) above.

"Financial guarantee" means a bond, security, letter of credit, etc. provided by the Owner to serve as a payment source should the Owner fail to meet the obligations and requirements of the approved Sediment and Stormwater Management Plan.

"Flooding Event" means the runoff event produced by a storm having an annual probability of occurrence of 1.0%.

"Flooding Event Volume (Fv)" means the volume of runoff generated by the Flooding Event that is not otherwise reduced for the Resource Protection Event and the Conveyance Event.

"Functional Equivalency" means alternative measures that are consistent with the policies, procedures, technical specifications, and advisory provisions found in the Technical Document, and which satisfy these Regulations.

"Impervious surface" means a surface which either prevents or retards the entry of water into the soil.

"Infiltration" means the passage or movement of water into the soil profile.

"Land disturbing activity" means a land change or construction activity for residential, commercial, industrial, and institutional land development which may result in soil erosion from water or wind, or the movement of sediments or pollutants into state waters or onto lands in the State; or which may result in accelerated stormwater runoff, including, but not limited to, clearing, grading, excavating, transporting and filling of land.

"Licensed Professional in the State of Delaware" means a design professional licensed under 24 **Del.C.** Ch. 2, 24 **Del.C.** Ch. 27, or 24 **Del.C.** Ch. 28.

"Maintenance" means the work of keeping stormwater management systems including access routes and appurtenances (grade surfaces, walls, drains, dams and structures, vegetation and other protective devices) in a safe and functioning condition as the system was designed. Routine or minor maintenance includes grass mowing and trimming, debris removal, minor sediment removal, filling eroded areas and animal burrows, and removal of trees and shrubs on embankments. Non-routine or major maintenance includes structural repair, major sediment removal and major erosion repair, and invasive aquatic vegetation removal.

"Maximum Extent Practicable" means, for the purpose of these Regulations, using stormwater management measures, techniques and methods that are available and capable of being implemented while taking into consideration cost, available technology, and project site constraints.

"Notice of Completion" means a document issued by the Department or Delegated Agency at the end of project construction when all items and conditions of the approved Sediment and Stormwater Management Plan have been satisfied, post construction verification documents demonstrate that the stormwater management systems have been constructed in accordance with the approved Sediment and Stormwater Management Plan, and final stabilization of disturbed areas on the site has been achieved.

"Offset" means an alternate to strict adherence to the regulations including, but not limited to trading, banking, fee-in-lieu, or other similar program that serves as compensation when the requirements of these regulations cannot be reasonably met on an individual project basis.

"Operation and Maintenance Plan" means the plan which identifies required maintenance for stormwater management systems.

"Owner" means a person who has a legal interest in lands of this State, or who has an equitable interest in lands of this State, except when a person holds an interest in those lands as a security interest, unless through foreclosure or other action the holder has taken possession of those lands, and who undertakes, or for whose benefit, activities subject to these regulations are commenced or carried out on those lands, or the person responsible for maintenance of stormwater management systems constructed to comply with these regulations on those lands.

"Performance-based approach" means a stormwater quantity management technique that utilizes an analytical process to determine compliance.

"Person" means a State or federal agency, individual, partnership, firm, association, joint venture, public or private corporation, trust, estate, commission, board, public or private institution, utility, cooperative, municipality or other political subdivision of this State, an interstate body or any other legal entity.

"Permanent stabilization" means the establishment of perennial vegetation by application of soil amendments, seed, and mulch in accordance with methods accepted by the Department on disturbed areas that have reached final grade in order to stabilize the soil, prevent erosion, and reduce sediment and runoff to downstream or offsite areas.

"Post construction verification documents" means a set of surveyed plans reflecting the as-built condition of stormwater management measures and may also include supporting computations and specifications as required by the Department or the Delegated Agency.

"Redevelopment", including brownfield development, means a construction, alteration or improvement, including but not limited to the demolition or building of structures, filling, grading, paving, or excavating, where existing land use is residential, commercial, industrial, or institutional. Ordinary maintenance activities, remodeling of existing buildings, resurfacing of paved areas, and exterior changes or improvements are typically not considered redevelopment activities for the purposes of these regulations.

"Resource Protection Event" means the runoff event produced by a storm having an annual probability of occurrence of 99%.

"Resource Protection Event Volume (RPv)" means the annualized volume of runoff generated by the Resource Protection Event.

"Responsible personnel" means a foreman or superintendent who is in charge of on-site clearing and land disturbing activities for sediment and stormwater control associated with a construction project.

"Runoff reduction practices" means stormwater best management practices that reduce total runoff volume from a developed site through canopy interception, surface recharge, evaporation, rainfall harvesting, engineered infiltration, or evapotranspiration and may include practices that delay the delivery of stormwater to a surface discharge.

"Sediment" means soils or other surficial materials transported or deposited by the action of wind, water, ice or gravity as a product of erosion.

"Sediment and Stormwater Management Plan" means a plan for the control of soil erosion, sedimentation, stormwater quantity, and water quality impacts resulting from a land disturbing activity, through both the construction and post construction phases of development.

"Standard plan" means a set of pre-defined standards or specifications for minor land disturbing activities that may preclude the need for the preparation of a detailed plan under specific conditions.

"Standards-based approach" means a stormwater quantity management technique that utilizes a pre-determined discharge rate to determine compliance.

"State waters" means any and all waters, public or private, on the surface of the earth which are contained within, flow through or border upon the State or any portion thereof.

"Stormwater" means the runoff of water from the surface of the land resulting from precipitation, or snow or ice melt.

"Stormwater management" means:

(a) For water quantity control, a system of vegetative, structural, and other measures that controls the volume and rate of stormwater runoff which may be caused by land disturbing activities upon the land; and

(b) For water quality control, a system of vegetative, structural, and other measures that controls adverse effects on water quality that may be caused by land disturbing activities upon the land.

"Stormwater management system" means vegetative, structural, and other facilities or measures, singularly or in combination, that provide stormwater management.

"Stormwater utility" means an administrative organization that has been established for the purposes of funding sediment control, stormwater management or flood control planning, design, construction, maintenance, and overall resource needs by authorized and imposed charges.

"Temporary stabilization" means planting quick-growing vegetation and applying anchored straw mulch or other means to stabilize the soil and prevent erosion of a disturbed area until permanent vegetation or other stabilization measures can be established.

"Tidal waters" means any water that alternately rises and falls in a predictable and measurable rhythm or cycle due to the gravitational attraction of the moon and sun and is under the regulatory authority of 7 **Del.C.** Ch. 72.

"Transfer" means to convey responsibility for maintenance of a stormwater management system to a new Owner.

"Variance" means a permitted deviation from an established rule or regulation, or plan, or standard or procedure.

"Water quality" means those characteristics of stormwater runoff from a land disturbing activity that relate to the chemical, physical, biological, or radiological integrity of water.

"Water quantity" means those characteristics of stormwater runoff that relate to the rate, volume and duration of flow to downstream areas resulting from land disturbing activities.

"Watershed" means the drainage area contributing stormwater runoff to a single point.

"Watershed plan" means a comprehensive study of the activities and sources that contribute to water quality or water quantity problems and identifies the location of those problem areas within a specific watershed boundary. It also serves as a framework for how, where and what stormwater management tools will be applied to address those water quality or water quantity problems.

3.0 Plan Approval Procedures and Requirements

3.1 All projects requiring approval of a detailed Sediment and Stormwater Management Plan are subject to a three-step approval process. Step 1 of the plan approval process is scheduling and conducting the project application meeting. Step 2 of the plan approval process is submission of the preliminary Sediment and Stormwater Management Plan. Step 3 of the plan approval process is submission of the Sediment and Stormwater Management Plan.

3.1.1 Authorization from the Department or Delegated Agency is required to proceed from the current step to the subsequent step in the plan approval process.

3.1.2 If significant changes, as determined by the Department or Delegated Agency, are proposed on the subsequent submittal from the submittal that received authorization to proceed, the Owner may be required to repeat the previous step in the plan approval process.

3.2 Project Application Meeting

3.2.1 All Owners are required to hold a project application meeting with the Department or Delegated Agency, unless the requirement for a project application meeting is waived in writing by the Department or Delegated Agency as determined on a case-by-case basis.

3.2.2 Before scheduling the project application meeting, the Owner shall submit a Stormwater Assessment Study to the Department or Delegated Agency.

3.2.3 At the project application meeting the Stormwater Assessment Study will be reviewed as well as potential approaches for stormwater management and opportunities to reduce runoff rates, volumes, and pollutant loads.

3.2.4 A document listing the topics of discussion and items agreed upon will be developed during the meeting and concurred by all attendees.

3.2.5 A Stormwater Assessment Report will be completed by the Department or Delegated Agency based on the Stormwater Assessment Study and project application meeting discussion. The Stormwater Assessment Report will be submitted to the local land use approval agency.

3.3 Preliminary Sediment and Stormwater Management Plan

3.3.1 The preliminary Sediment and Stormwater Management Plan submittal shall include preliminary plans for the site, as well as the schematic erosion and sediment control plan, with supporting hydrologic and hydraulic calculations necessary for the Department or Delegated Agency to determine compliance with these regulations.

3.3.2 If significant changes are proposed on the preliminary Sediment and Stormwater Management Plan from the plan that was discussed at the project application meeting, such as a change in land use or changes that result in a different rating on the Stormwater Assessment Report, the Owner may be required to repeat the project application meeting step of the process.

3.4 Sediment and Stormwater Management Plan

3.4.1 The Sediment and Stormwater Management Plan submittal shall consist of the following elements: Construction Site Stormwater Management Plan, Post Construction Stormwater Management Plan, final hydrologic and hydraulic computations, Operation and Maintenance Plan, and a copy of the preliminary Record Plan as required by the local land use approval agency.

3.4.2 If significant changes are proposed on the Sediment and Stormwater Management Plan from the preliminary Sediment and Stormwater Management Plan, such as a change in the size or location of proposed BMPs, the Owner may be required to repeat the preliminary Sediment and Stormwater Plan step of the process.

3.4.3 Failure by the Owner to demonstrate that the Sediment and Stormwater Management Plan meets the requirements of these regulations, as determined by the Department or Delegated Agency, shall be reason to deny approval of the Sediment and Stormwater Management Plan.

3.5 Review Procedures for Plan Submittals

3.5.1 The Department or Delegated Agency shall have 30 calendar days from receipt of either the preliminary Sediment and Stormwater Management Plan or final Sediment and Stormwater Management Plan to complete the review and have either the approval or review comments transmitted to the Owner, unless the 30-calendar day period cannot be met, in which case the Department or Delegated Agency shall notify the Owner in writing of the reasons for delay, and an expected time period not to exceed an additional 30 calendar days, for when that review will be completed.

3.5.2 The Department or Delegated Agency shall have the right to reject an incomplete application at any time during the 30-calendar day review period. If an application is rejected for incompleteness, the Owner will be informed in writing of the information necessary to complete the application.

3.5.3 In cases where modifications are required to approve the plan, the Department or Delegated Agency shall have an additional 30 calendar days to review the revised plan from the initial and any subsequent resubmission dates.

3.5.4 The sediment and stormwater management plan shall not be considered approved without the inclusion of an original approval stamp on the plans with signature and date by the plan approval agency. If the plan is approved, a minimum of one (1) copy bearing the signed approval stamp shall be returned to the Owner or Owner's agent. If the plan is not approved, the Owner shall be notified in writing of the reasons.

3.5.5 No changes shall be made to an approved plan without review and written approval by the Department or Delegated Agency. The Department or Delegated Agency may request additional data with a plan amendment as may be necessary for a complete review of the plan and to ensure that changes to the plan will comply with the requirements of these regulations.

3.5.6 Administratively complete sediment and stormwater management plans, as determined by Department policy, that have been submitted for review and ultimate approval before January 1, 2014 shall be subject to the regulations in effect at the time that the plan was first submitted to the Department or Delegated Agency. Unless administratively extended by the Department, a plan undergoing the review process on January 1, 2014 but is not approved within eighteen months of January 1, 2014 shall be subject to these regulations.

3.6 Expiration of Plan Approval

3.6.1 Approved plans remain valid for 3 years from the date of an approval, unless specifically extended by the Department or Delegated Agency. The basis for extension may include, but is not limited to, the following items:

3.6.1.1 Failure to initiate the approved project for reasons acceptable to the Department or Delegated Agency such as funding or other agency permit delays; or

3.6.1.2 Time duration for a type of activity that typically exceeds three years.

3.6.2 The Department or Delegated Agency may extend plan approval following a written request for extension providing justification for the extension request. Plan approval extension may be granted no more than 90 days before plan expiration, and will be granted for a maximum extension of an additional 3 years. In no case shall the plan extension supersede the sunset provisions of the county or local government.

3.6.3 Plan extension requests for projects that have not commenced construction shall be granted for a maximum of one additional 3-year period.

3.6.4 Plan extension requests for projects that have commenced and have been actively under construction within the latest approval or extension period will not be limited in the number of extensions that may be approved.

3.7 Standard Plans

3.7.1 The Department may develop criteria for standard plans when a detailed plan is deemed not necessary. Project types that may qualify for a standard plan include, but are not limited to, individual parcel construction or improvements, tax ditch maintenance, minor linear disturbances, stormwater facility maintenance, agricultural structure construction, or other activities approved by the Department.

3.7.2 All standard plans shall contain standard conditions for construction site stormwater management and may contain standard conditions for post construction stormwater management.

3.7.3 The inclusion of an activity into the standard plan classification does not exclude that activity from the requirements of 7 **Del.C.** Ch. 40. Rather, the standard plan precludes that activity from the necessity of a detailed plan review for a qualifying project.

3.7.4 Failure to implement control practices pursuant to conditions included in the standard plan may necessitate appropriate enforcement action as provided in 7 **Del.C.** Ch. 40 and these regulations.

3.7.5 A detailed plan may be required for a site that would otherwise meet standard plan criteria as deemed appropriate by the Department or Delegated Agency on a case-by-case basis.

3.8 Plan Certifications

3.8.1 All detailed plans submitted for review shall be prepared, signed, dated, and sealed by a Licensed Professional in the State of Delaware. It is the obligation of the Licensed Professional in the State of Delaware to ensure that the design of construction site stormwater management best management

practices (BMPs) and post construction stormwater management systems meet the requirements in these regulations.

3.8.2 All Sediment and Stormwater Management Plans submitted for approval shall contain certification by the Owner stating that clearing, grading, construction, and development will be accomplished pursuant to the plan.

3.8.3 All Sediment and Stormwater Management Plans for projects having a land disturbance greater than or equal to one acre shall contain a certification by the Owner stating that responsible personnel involved in the land disturbance will have attended and successfully completed the Departmental-sponsored Contractor Training Program before initiation of the project.

3.8.4 All Sediment and Stormwater Management Plans shall contain certification by the Owner granting the right of either the Department or Delegated Agency or both to conduct on-site construction reviews.

3.9 Approvals issued in accordance with these regulations do not relieve the Owner of responsibility for obtaining other necessary permits or approvals from other federal, state, or local agencies. If the requirements of applicable federal, state, or local agencies vary, the most environmentally protective shall apply.

3.10 Before project completion the Owner shall submit a final post construction stormwater management Operation and Maintenance Plan for the entire stormwater management system. Operation and Maintenance Plans remain valid for the life of the stormwater management system.

3.11 Post construction verification documents shall be submitted to the Department or Delegated Agency within 60 calendar days of completion for stormwater management systems. The post construction verification documents shall compare the designed and constructed elements of the stormwater management system, and bear the seal of a Licensed Professional in the State of Delaware. A final construction review and approval by the Department or Delegated Agency is required before a financial guarantee shall be released, and before a Notice of Completion may be issued.

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4.0 Performance Criteria for Construction Site Stormwater Management

4.1 The Technical Document may be utilized as a reference for the design and preparation of construction site stormwater management plans. Alternative measures that provide functional equivalency may be considered on a case-by-case basis in accordance with Section 1.14 of these Regulations.

4.2 A sequence of construction shall be provided on plans describing the relationship between the implementation and maintenance of erosion and sediment controls, including permanent and temporary stabilization and the various stages or phases of earth disturbance and construction.

4.3 Best available technology (BAT) shall be employed to manage turbid discharges in accordance with requirements of 7 **Del.C.** Ch. 60, *Regulations Governing the Control of Water Pollution*, Section 9.1.02, known as Special Conditions for Stormwater Discharges Associated with Construction Activities, and Department policies, procedures, and guidance.

4.4 Limits on Land Disturbance

4.4.1 Use of standard details from the Delaware Erosion and Sediment Control Handbook for design of construction site stormwater management BMPs is limited to sites where no more than 20 acres draining to a common discharge point will be disturbed at one time.

4.4.2 Construction site stormwater management BMPs intended to manage areas greater than 20 acres shall have supporting design computations, including but not limited to storage, conveyance, stability, and treatment capabilities.

4.4.3 In no case shall the area of disturbance draining to a common discharge point exceed 20 acres. Grading of subsequent sections within that drainage area shall not proceed unless temporary or permanent stabilization has been accomplished such that the 20 acre limit of disturbance is maintained.

4.4.4 All plans shall include a limit of disturbance line (L.O.D.) establishing the maximum necessary extent of land disturbance required to implement and accomplish the permitted site construction for land disturbing activities subject to these Regulations.

4.5 Stabilization

4.5.1 Following soil disturbance or re-disturbance, Permanent or Temporary Stabilization shall be completed for perimeter sediment controls, topsoil stockpiles, and all other disturbed or graded areas on the project site within 14 calendar days unless more restrictive Federal requirements apply.

4.5.2 Documentation of soil testing and materials used for temporary or permanent stabilization including but not limited to soil test results, seed tags, soil amendment tags, etc. shall be provided to the Department or Delegated Agency to verify that the permanent or temporary stabilization has been completed in accordance with the approved plan.

4.5.3 The Department or Delegated Agency may require additional soil testing and reapplication of permanent or temporary stabilization in accordance with the specifications in the Delaware Erosion and Sediment Control Handbook, or alternative measures that provide functional equivalency.

4.5.4 Release of either a financial guarantee or issuance of Notice of Completion or both shall not occur until final stabilization of exposed areas is achieved.

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5.0 Performance Criteria for Post Construction Stormwater Management

5.1 The Technical Document may be utilized as a reference for the design and preparation of post construction stormwater management plans. Alternative measures that provide functional equivalency may be considered on a case-by-case basis in accordance with Section 1.14 of these Regulations.

5.1.1 Stormwater management designs shall reduce runoff, mimic natural watershed hydrologic processes, and cause no adverse impact to property. This shall be accomplished by treating runoff at the source, disconnecting impervious surfaces, preserving or enhancing natural flow paths and vegetative cover, conserving or enhancing natural open spaces and riparian areas, and other measures that simulate natural watershed hydrologic processes.

5.1.2 Residential, commercial, institutional or industrial developments shall apply these stormwater management criteria to land development as a whole. Smaller sites, such as individual residential lots in new subdivisions that are part of a larger, common plan of development or sale shall be subject to these requirements as part of that larger plan.

5.1.3 No portion of a stormwater system that is owned and maintained by a joint ownership such as a homeowner's association or maintenance corporation in a residential development shall be located on private property, except for those areas designated as common areas, community open space, community-owned property, jointly owned property, or within a recorded easement dedicated to public use. A stormwater system owned by a single Owner, as in the case of a commercial, institutional or industrial development, may be located on that Owner's private property.

5.1.4 If runoff from a land development will flow to a permitted or non-permitted municipal separate storm sewer system (MS4) or other drainage infrastructure, the land development applicant shall notify the system's owner of the intent to discharge into the system before plan approval. The Department, Delegated Agency, or system's owner may require the land development applicant to demonstrate that the system has adequate conveyance.

5.1.5 All applications that propose to use infiltration or natural recharge shall include a soils investigation to determine the appropriate design criteria.

5.1.6 Water quality and water quantity management shall be provided in accordance with the requirements set forth in this section unless the proposed project is limited to reconstruction of existing paved areas, re-grading and replacement of existing pervious areas, or rebuilding or repairing of structures damaged by fire, flood, wind, or other natural disaster and where the disturbed area will return to the original hydrologic condition and land cover at the conclusion of the project.

5.2 Resource Protection Event Criteria

5.2.1 The Resource Protection Event criteria provide runoff management measures to reduce the volume of stormwater runoff generated on a site, recharge groundwater, minimize impacts to downstream channels from runoff leaving the site, and reduce pollutant loads discharged into receiving waters.

5.2.2 The Resource Protection Event Volume (RPv) is the post-development annualized volume of runoff produced by the storm having a ninety-nine percent (99%) probability of occurrence, or the 1-year, 24-hour rainfall event.

5.2.3 Compliance with this section shall be accomplished to the maximum extent practicable through the following provisions:

5.2.3.1 Runoff from disturbed areas that were wooded or meadow in the pre-developed condition shall be reduced using runoff reduction practices to an equivalent wooded condition.

5.2.3.2 All remaining disturbed areas shall employ runoff reduction practices to achieve an equivalent 0% effective imperviousness. For those cases in which the minimum runoff reduction requirements are not met:

5.2.3.2.1 The allowable discharge for any remaining runoff shall not exceed the equivalent 24-hr detention time of the RPv, and

5.2.3.2.2 An offset shall be provided for the portion of the RPv that does not meet the minimum runoff reduction requirements.

5.2.3.3 Additional water quality treatment BMPs may be provided if the runoff reduction requirements of this section are not sufficient to meet Total Maximum Daily Load (TMDL) requirements for the receiving water. Pollutant reductions achieved through the use of these treatment BMPs may be used to partially reduce a runoff reduction offset requirement provided in accordance with Section 5.2.3.2.2 above.

5.2.4 Projects that qualify for and meet standard plan criteria developed by the Department shall be considered in compliance with the Resource Protection Event criteria.

5.3 Conveyance Event Criteria

5.3.1 The Conveyance Event criteria provide runoff management measures to minimize impacts to downstream properties, channels, and structures by optimizing watershed conveyance and hydrograph timing.

5.3.2 The Conveyance Event Volume (Cv) is the volume of runoff produced by the post-development storm having a ten percent (10%) annual probability of occurrence, or the 10-year, 24-hour rainfall event, less any volume reduction achieved for the RPv in accordance with Section 5.2.

5.3.3 Compliance with this section shall be accomplished through the following provisions:

5.3.3.1 The Cv shall be reduced to the maximum extent practicable using runoff reduction practices. For any portion of the Cv that is not reduced, quantity management shall be provided using either a standards-based or performance-based approach such that there is no adverse impact; or

5.3.3.2 Provisions will be made or exist for a non-erosive conveyance system to tidal waters by either a closed drainage system or by open channel flow that has adequate conveyance for the Cv; or

5.3.3.3 Demonstration that the location of a project within a watershed would aggravate flooding or channel erosion by the imposition of peak control requirements, as evidenced by a downstream analysis approved by the Department or Delegated Agency; or

5.3.3.4 The proposed project will generate only a de minimis discharge and will have no adverse impact on the receiving wetland, watercourse or downstream property as determined on a case-by-case basis.

5.3.4 Projects that qualify for and meet standard plan criteria developed by the Department shall be considered in compliance with the Conveyance Event criteria.

5.4 Flooding Event Criteria

5.4.1 The Flooding Event Criteria provide runoff management measures to reduce downstream flooding by optimizing watershed storage and hydrograph timing.

5.4.2 The Flooding Event Volume (Fv) is the volume of runoff produced by the post-development storm having a one percent (1%) probability of occurrence, or the 100-year, 24-hour rainfall event less any volume reduction achieved for the RPv and Cv in accordance with Sections 5.2 and 5.3.

5.4.3 Compliance with this section shall be accomplished through the following provisions:

5.4.3.1 The Fv shall be reduced to the maximum extent practicable using runoff reduction practices. For any portion of the Fv that is not reduced, quantity management shall be provided using either a standards-based or performance-based approach such that there is no adverse impact; or

5.4.3.2 Provisions will be made or exist for a non-erosive conveyance system to tidal waters by either a closed drainage system or by open channel flow that has adequate conveyance for the Fv; or

5.4.3.3 Demonstration that the location of a project within a watershed would aggravate downstream flooding or channel erosion by the imposition of peak control requirements, as evidenced by a downstream analysis approved by the Department or Delegated Agency; or

5.4.3.4 The proposed project will generate only a de minimis discharge and will have no adverse impact on the receiving wetland, watercourse, or downstream property as determined on a case-by-case basis.

5.4.4 Projects that qualify for and meet standard plan criteria developed by the Department shall be considered in compliance with the Flooding Event criteria.

5.5 Alternative Criteria

5.5.1 Land development that discharges to State Waters included in a Designated Watershed, or other watershed management plan approved in accordance with these Regulations, shall meet the alternative criteria identified in the approved watershed plan.

5.5.2 The Department or Delegated Agency, at its discretion, may require alternative stormwater treatment practices or criteria if a receiving waterbody has been identified as impaired, or designated with a specific pollutant reduction target necessary to meet State of Delaware water quality regulations.

5.5.3 The Department or Delegated Agency, at its discretion may require alternative stormwater treatment practices designed to reduce pollutant loading from a specific source.

5.6 Redevelopment Criteria

5.6.1 The Department recognizes the benefits of redevelopment. The requirements under this section are intended to encourage redevelopment while establishing compliance criteria that meet the overall goals and intent of these regulations.

5.6.2 In the case of development of a contaminated site or Brownfield, a remediation plan approved by the Department may meet the stormwater management goals and the intent of these regulations with prior consent and subsequent approval by the Department.

5.6.3 Compliance with the Resource Protection Event as defined in 5.2.2 shall be accomplished to the maximum extent practicable for redevelopment projects through the following provisions:

5.6.3.1 Runoff from redeveloped areas within the project limit of disturbance that were wooded or meadow in the existing condition shall be reduced to an equivalent wooded condition using runoff reduction practices.

5.6.3.2 All remaining redeveloped areas within the project limit of disturbance shall employ runoff reduction practices to achieve a 30% reduction in the effective imperviousness based on the existing condition. For those cases in which the minimum runoff reduction requirements are not met:

5.6.3.2.1 The allowable discharge for any remaining runoff shall not exceed the equivalent 24-hr detention time of the RPv, and

5.6.3.2.2 An offset shall be provided for any portion of the RPv that does not meet the minimum runoff reduction requirements.

5.6.3.3 Additional water quality treatment BMPs may be provided if the runoff reduction requirements of this section are not sufficient to meet Total Maximum Daily Load (TMDL) requirements for the receiving water. Pollutant reductions achieved through the use of these treatment BMPs may be used to partially reduce a runoff reduction offset requirement provided in accordance with Section 5.6.3.2.2 above.

5.6.4 Any redevelopment project that increases the rate, volume or duration of flow to a new or existing point of discharge during the Conveyance Event shall comply with the requirements of Section 5.3.

5.6.5 Any redevelopment project that increases the rate, volume or duration of flow to a new or existing point of discharge during the Flooding Event shall comply with the requirements of Section 5.4.

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6.0 Construction Review of Sediment and Stormwater Management Plan

6.1 Owner Responsibilities

6.1.1 The Owner shall ensure that all elements of the approved Sediment and Stormwater Management Plan are implemented and construction site stormwater management BMPs and post construction stormwater management systems are installed and maintained in accordance with that plan. All construction sites shall comply with these regulations.

6.1.2 The Owner may refer to the specifications contained in the Handbook or take functionally equivalent measures to install and maintain construction site stormwater management BMPs in accordance with the approved plan.

6.1.3 The Owner shall comply with the requirements contained in Chapter 60 of Title 7 of the Delaware Code Section 9.1.02 of Delaware's Regulations Governing the Control of Water Pollution, 7 **DE Admin. Code** 7201.

6.1.3.1 The Owner or Owner's representative shall conduct weekly construction reviews of the construction site stormwater management BMPs and post construction stormwater management systems.

6.1.3.2 The Owner or Owner's representative shall conduct construction reviews of the construction site stormwater management BMPs and post construction stormwater management systems following rainfall events producing runoff.

6.1.3.3 The Owner or Owner's representative shall maintain written records of all construction reviews at the construction site.

6.1.3.4 The Owner or Owner's representative shall maintain the approved Sediment and Stormwater Management Plan at the construction site.

6.1.4 The Department or Delegated Agency shall have the authority to require revisions to the approved Sediment and Stormwater Management Plan. The Owner is responsible for implementation of plan revisions when deficiencies are noted on the site by the Department or Delegated Agency construction reviewer.

6.1.5 The Owner shall certify to the Department or Delegated Agency that responsible personnel involved in the construction project have successfully completed the Contractor Training Program before initiation of a land disturbing activity. Responsible personnel shall implement the Sediment and Stormwater Management Plan fully through daily oversight of the construction site and guidance of construction personnel while a land disturbing activity is taking place.

6.1.6 For projects developing 20 acres or greater, and including those projects that require discharge monitoring for the maximum daily discharge limitation under Federal requirements, the Owner shall acquire the services of a Certified Construction Reviewer to perform weekly construction reviews of the approved Sediment and Stormwater Management Plan elements as well as construction reviews of installation of stormwater management systems. Any project, regardless of its size, may be required by the Department or Delegated Agency, to have a Certified Construction Reviewer on a case-by-case basis. Sediment and Stormwater Management Plans approved by the Department shall have a Certified Construction Reviewer. The Department or Delegated Agency may, at its discretion and following a written request, modify Certified Construction Reviewer reporting frequency for a particular site if site conditions warrant.

6.1.7 All costs and fees associated with the use of Certified Construction Reviewers shall be the responsibility of the Owner.

6.1.8 The Certified Construction Reviewer shall be responsible for reviewing construction activities and reporting on the adequacy of construction in accordance with the approved Sediment and Stormwater Management Plan, in addition to the following items:

6.1.8.1 Provision of a construction review on at least a weekly basis until released from review responsibility by the Department or Delegated Agency;

6.1.8.2 Provision of a construction review of stormwater management system construction at a frequency as needed to accurately complete the stormwater BMP construction checklist.

6.1.8.3 Inform the Department or Delegated Agency, the Owner, and the contractor, by a written construction review report of site conditions including any inconsistencies with or inadequacies of the approved plan within five calendar days of the construction review.

6.1.8.4 Referral of the project through the Delegated Agency to the Department for appropriate enforcement action if the Owner fails to address the items contained in the written construction review report. Verbal notice shall be made to the Department within two calendar days and written notice shall be provided to the Department within five calendar days.

6.1.9 The Owner shall notify the Department or Delegated Agency any time a new Certified Construction Reviewer begins providing construction review for the site.

6.1.10 Upon written notice by the Department, Delegated Agency, or Certified Construction Reviewer, any portion of the work which does not comply with the approved Sediment and Stormwater Management Plan or these regulations shall be corrected by the Owner within the time period specified in the written notice.

6.2 Contractor Training Program

6.2.1 A certificate of attendance shall be issued to Responsible Personnel who have attended and successfully completed the Contractor Training Program sponsored or approved by the Department.

6.2.2 Training shall be required of a foreperson or superintendent who is in charge of on-site clearing and land disturbing activities for construction projects subject to the requirements of these regulations.

6.2.3 The Contractor Training Program certification shall be valid until the Department notifies the individual or announces in local newspapers that additional training is required due to a change in course content.

6.2.4 The Department shall provide public notification of the date and location of training programs for attendance by responsible personnel and other interested persons.

6.2.5 Enrollment of existing and future responsible personnel is the responsibility of individuals or their employers.

6.3 Certified Construction Reviewer Requirements

6.3.1 The Certified Construction Reviewer shall function under the direction of a registered professional engineer licensed to practice engineering in the State of Delaware.

6.3.2 Certified Construction Reviewers shall attend and successfully complete the Departmental sponsored or approved Certified Construction Reviewer course. The Certified Construction Reviewer shall be responsible for reviewing construction activities and reporting on the adequacy of construction in accordance with the approved Sediment and Stormwater Management Plan, these regulations, and training received in the Certified Construction Reviewer training course.

6.3.3 Certification as a CCR shall be valid for five years. Recertification may extend certification for an additional five years.

6.3.4 A Certified Construction Reviewer who is not performing the duties prescribed by Section 6.1.8 of these regulations may be referred by the local Delegated Agency to the Department for action by providing written notification to the Department and supporting documentation.

6.3.5 In a situation where a Certified Construction Reviewer's certification is being suspended or revoked, an opportunity for hearing before the Secretary or his designee shall be provided. During a suspension, the Certified Construction Reviewer shall not be allowed to provide construction reviews in accordance with these regulations on any construction sites within the state.

6.4 Department or Delegated Agency Construction Reviews

6.4.1 The Department or Delegated Agency may, at a reasonable time, visit a site subject to these regulations to determine compliance with these regulations, including implementation of the Sediment and Stormwater Management Plan.

6.4.2 The Department or Delegated Agency shall conduct regular reviews of the construction site at a frequency to ensure that all elements of the approved Sediment and Stormwater Management Plan are implemented and all construction site stormwater management BMPs and post construction stormwater management systems are installed and maintained in accordance with that plan.

6.4.3 All Department or Delegated Agency construction reviews shall be documented in writing with a copy provided to the Owner. The review report shall document site conditions relevant to the Sediment and Stormwater Management Plan, identify deficiencies that warrant correction, and provide a time period for the Owner to take corrective action.

6.4.4 When the Department or Delegated Agency determines a deficiency in the approved Sediment and Stormwater Management Plan, a revision to the approved plans may be required. A change to the approved Sediment and Stormwater Management Plan shall be approved by the Department or Delegated Agency before construction.

6.5 Required Construction Reviews and Notification Steps

6.5.1 The Owner shall notify the Department or Delegated Agency in writing at least five calendar days before the initiation of construction. The notification shall include the contact information for the responsible person. The notification shall verify that the Sediment and Stormwater Management Plan for the project has been approved and that permit coverage for Storm Water Discharges Associated with Construction Activity has been gained through submittal of a Notice of Intent to the Department. If there is a Certified Construction Reviewer requirement for the site, the application for Certified Construction Reviewer shall be included with the notification.

6.5.2 A pre-construction meeting shall be required. The pre-construction meeting shall be held on site, unless another location is approved by the Department or Delegated Agency on a case-by-case basis.

6.5.3 The Department or Delegated Agency shall determine when Standard Plan applications require a pre-construction meeting and construction reviews based on the project type and land disturbance on a case-by-case basis.

6.5.4 Upon completion of installation of perimeter controls, the Department or Delegated Agency shall conduct a perimeter control review before commencement of bulk grading or other construction activities on the site.

6.5.5 All stormwater management systems shall be reviewed during construction with enough frequency to document that the system has been constructed in accordance with the approved Sediment and Stormwater Management Plan, the design specifications, and the appropriate stormwater management system construction checklist. The Owner shall provide adequate notice to the Department or Delegated Agency and Certified Construction Reviewer, if applicable, before initiating construction of stormwater management systems. The Department, Delegated Agency, or Certified Construction Reviewer shall be responsible for conducting and documenting these reviews, as required.

6.5.6 Upon project completion a final construction review shall be conducted by the Department or Delegated Agency to ensure compliance with the approved Sediment and Stormwater Management Plan. The Department or Delegated Agency shall issue a Notice of Completion for a project when all of the following criteria have been met:

6.5.6.1 All items and conditions of the approved Sediment and Stormwater Management Plan have been satisfied.

6.5.6.2 Post construction verification documents demonstrate that the stormwater management systems have been constructed in accordance with the approved Sediment and Stormwater Management Plan and accepted by the approving agency.

6.5.6.3 Operation and Maintenance Plan has been approved by the Department or Delegated Agency.

6.5.6.4 Final stabilization of disturbed areas on the site has been achieved.

6.5.6.5 A copy of the approved Record Plan showing easements or maintenance notes associated with the approved Sediment and Stormwater Management Plan has been submitted to the Department or Delegated Agency.

18 DE Reg. 396 (11/01/14)

7.0 Post Construction Maintenance of Stormwater Management Systems

7.1 Stormwater management systems constructed to comply with 7 **Del.C.** Ch. 40 and these regulations shall be maintained in accordance with the provisions of this section.

7.1.1 Maintenance responsibility lies with the Owner until the time that a legal transfer of ownership has been executed. Prior notice of the transfer shall be provided to the Department or Delegated Agency 30 business days before the transfer occurs.

7.1.2 The stormwater management system shall run with the land and be binding upon the landowner and any successors in interest. Maintenance of these systems shall ensure that the stormwater management system is performing in accordance with the approved engineered design, within the tolerances of the accepted post construction verification documents, and in compliance with these regulations.

7.1.3 The Owner of a stormwater management system established in accordance with these regulations may offer for dedication to a delegated agency, public entity, municipality, stormwater utility, or private entity, a stormwater management system, together with the easements and appurtenances as may be reasonably necessary for the proper functioning of the system.

7.2 Owner Responsibilities

7.2.1 The Owner shall conduct regular maintenance reviews of stormwater management systems to determine that routine maintenance obligations are being met. The frequency of the reviews will be contained in the Operation and Maintenance Plan.

7.2.2 The Owner shall ensure that the stormwater management system is functioning in accordance with the approved engineering design, within the tolerances of the accepted post construction verification documents, and in compliance with these regulations. The Owner will promptly repair and restore stormwater management systems.

7.2.2.1 Such repairs, restoration, or maintenance shall be conducted in accordance with the approved Sediment and Stormwater Management Plan, the Operation and Maintenance Plan, Standard Guidelines for Operation and Maintenance of Stormwater Management Systems, and directions provided by the Department or Delegated Agency.

7.2.2.2 When the Department or Delegated Agency gives direction for maintenance, those maintenance activities shall be conducted by the Owner within the time period established by the Department or Delegated Agency.

7.2.3 Any change made to the stormwater management system shall require the Owner to obtain approval of the Department or Delegated Agency, including updating of the Operation and Maintenance Plan as necessary.

7.2.4 The Owner shall submit a scope of work for non-routine maintenance to the Department or Delegated Agency for approval prior to implementation.

7.2.5 Maintenance responsibilities may be shared through a legal agreement between the Owner and another entity such as a delegated agency, public utility, municipality, stormwater utility, maintenance company, or other private entity. Responsibility for maintenance shall be joint and several among the parties to the agreement to share those responsibilities.

7.2.6 If the Sediment and Stormwater Management Plan includes structural or nonstructural stormwater management measures located within a tax ditch right-of-way the Owner shall enter into an agreement with the tax ditch organization for maintenance of those stormwater management measures.

7.3 Maintenance Reviews

7.3.1 The Department, Delegated Agency, or duly authorized agent shall conduct maintenance reviews of completed stormwater management systems. The Department, Delegated Agency, or duly authorized agent shall have the right of entry and access at reasonable times to perform stormwater management system maintenance reviews.

7.3.2 The maintenance review performed by the Department, Delegated Agency, or duly authorized agent shall document maintenance and repair needs and any discrepancies from the Operation and Maintenance Plan. A copy of the review shall be provided to the Owner.

7.3.3 The Owner of the stormwater management system shall comply with the conditions of the maintenance review within the timeframe specified by the Department or Delegated Agency.

7.4 Enforcement of Maintenance Responsibilities

7.4.1 The Department may seek enforcement action against an Owner deemed negligent in fulfilling the requirements of Section 7 of these regulations.

7.4.2 Enforcement will be conducted in accordance with Section 8 of these regulations.

8.0 Enforcement and Penalties

8.1 Any action or failure to act, which violates any of the following: the provisions of this regulation, the requirements of an approved Sediment and Stormwater Management Plan, permit, Notice of Intent, construction review report, notice of violation, or the requirements of a final Operation and Maintenance Plan, may be subject to the provisions of any of the following: 7 **Del.C.** §§4012, 4013, 4015, and 4016; 7 **Del.C.** §§6005, 6013, and 6018.

8.2 The Delegated Agency may, in addition to local enforcement options, refer a site violation to the Department for additional enforcement action. Referral of a site violation to the Department may initiate a Departmental construction review of the site to verify site conditions. That construction review may result in the following actions:

8.2.1 Notification through appropriate means to the Owner and the contractor to comply with the approved Sediment and Stormwater Management Plan within a specified time frame; or

8.2.2 Notification of plan inadequacy and the establishment of a date certain for the Owner to submit a revised Sediment and Stormwater Management Plan to the Department or Delegated Agency and to receive its approval with respect thereto. The Department shall notify the Delegated Agency in a timely manner of what enforcement action is taken on the site.

8.3 Failure of the person engaged in the land disturbing activity or the contractor to comply with Departmental requirements may result in the following actions in addition to other penalties as provide in Chapter 40 of Title 7 of the Delaware Code.

8.3.1 The Department shall have the power to issue a cease and desist order to a person violating any provision of Chapter 40 of Title 7 of the Delaware Code or these Regulations by ordering the person to cease and desist from any site work activity other than those actions necessary to achieve compliance with any administrative order.

8.3.2 The Department may request that the appropriate plan approval agency refrain from issuing any further building or grading permits to the person having outstanding violations until those violations have been remedied.

9.0 Delegation of Program Elements

9.1 The provisions of these regulations may be delegated to the Conservation Districts, counties, municipalities, or State agencies. Initial consideration regarding delegation of program elements shall be given to the Conservation Districts.

9.1.1 Program elements that are delegated shall be implemented according to Chapter 40 of Title 7 of the Delaware Code and these Regulations.

9.1.2 Any Delegated Agency may submit documentation to the Department for determination of functional equivalency to the requirements contained in these regulations.

9.2 A Conservation District, county, municipality, or State agency requesting or renewing delegation shall submit a written request to the Secretary on or before January 1 of the year immediately preceding the fiscal year for which delegation or renewal of delegation is sought. The request for delegation shall contain sufficient information to determine whether the agency may be considered capable of implementing program elements in accordance with Chapter 40 and these regulations. The Department shall provide guidance to agencies requesting delegation of program elements as to information that shall be submitted with the delegation request.

9.3 The Secretary shall grant delegation of program elements to a Conservation District, county, municipality, or State agency seeking delegation that is found capable of implementing program elements in accordance with Chapter 40 and these regulations.

9.4 The Secretary shall, in writing, grant or deny delegation on or before April 1 of the year during which delegation is sought. The Secretary shall not deny a request for delegation unless opportunity has been afforded to the appropriate officials from the agency requesting delegation to present arguments. Delegation shall be effective July 1 of that year and extend no more than three years, unless renewed. In the event that the Department does not act on the renewal request by April 1, the Delegated Agency submitting the request would be entitled to continue operating for a subsequent three year time period unless action is taken by the Department to suspend the program.

9.5 Delegation of program elements shall be granted for a maximum time period of three years. After three years a new application to the Department must be made. During the period for which delegation has been granted, the Department will evaluate delegation implementation, coordinate review findings with the Delegated Agency, and determine if the new delegation should be granted.

9.6 Based on the Department's evaluation of Delegated Agency performance, the Department may determine that re-delegation of program elements may be granted for a time period of less than three years. A delegation period of less than the maximum of three years shall be considered a probationary delegation and specific improvement items shall be provided to the Delegated Agency. If program implementation is not improved during the probationary delegation, delegation may not be renewed beyond the probationary delegation period.

9.7 A Delegated Agency may establish alternative requirements which are compatible with or are more stringent than Departmental requirements. These alternative requirements may be established through local ordinance or statutes. Alternative requirements that are not codified in local statute must have approval of the Department following compliance with the public notice of 7 **Del.C.** §6004.

9.8 A Delegated Agency may enter into a cooperative agreement or contract with a third party to assist with program implementation only after Departmental concurrence.

10.0 Criteria for Implementation of a Stormwater Utility

10.1 The implementation of a stormwater utility will necessitate the development of a local utility ordinance prior to its implementation.

10.2 The financing of a stormwater utility must be reasonable and equitable so that each user within the stormwater utility jurisdiction, including state agencies, contributes to the financing according to the users' pro rata share of runoff.

10.3 The intent of the utility must be clearly defined regarding program components that are to be funded through the utility. Those components may include but are not limited to the following: program administration, planning and engineering, maintenance operations, regulation and enforcement, and capital construction.

10.4 The authority for the creation of the stormwater utility and the imposition of charges to finance sediment and stormwater activities is conferred in 7 **Del.C.** Ch. 40. The implementation of a stormwater utility by means of a local ordinance shall not be deemed a limitation or repeal of any other powers granted by State statute.

7 DE Reg. 1147 (3/1/04)
8 DE Reg. 1172 (2/01/05)
10 DE Reg. 735 (10/01/06)
17 DE Reg. 240 (08/01/13)
18 DE Reg. 396 (11/01/14)

Appendix 7

Stormwater Utility

Creation of a Stormwater Utility is allowed by the following enabling legislation:

TITLE 7 NATURAL RESOURCES & ENVIRONMENTAL CONTROL

DELAWARE ADMINISTRATIVE CODE

DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
DIVISION OF WATERSHED STEWARDSHIP
5101 Sediment and Stormwater Regulations

10.0 Criteria for Implementation of a Stormwater Utility

10.1 The implementation of a stormwater utility will necessitate the development of a local utility ordinance prior to its implementation.

10.2 The financing of a stormwater utility must be reasonable and equitable so that each user within the stormwater utility jurisdiction, including state agencies, contributes to the financing according to the users' pro rata share of runoff.

10.3 The intent of the utility must be clearly defined regarding program components that are to be funded through the utility. Those components may include but are not limited to the following: program administration, planning and engineering, maintenance operations, regulation and enforcement, and capital construction.

10.4 The authority for the creation of the stormwater utility and the imposition of charges to finance sediment and stormwater activities is conferred in 7 **Del.C.** Ch. 40. The implementation of a stormwater utility by means of a local ordinance shall not be deemed a limitation or repeal of any other powers granted by State statute.

Appendix 8

CITY OF NEWARK, DELAWARE
CAPITAL BUDGET - PROJECT DETAIL

DEPARTMENT:	Public Works and Water Resources	DIVISION:	Water

PROJECT NO:	PROJECT TITLE:	PROJECT LOCATION:
T0101	NPDES Stormwater Quality Program	Various Locations

PROJECT STATUS (SELECT FROM DROP DOWN):

PRIORITY: 1 - Highest Priority Level — Project underway and must be completed

COMPREHENSIVE DEVELOPMENT PLANNING VISION ELEMENT: Sustainable Community

Charter § 806.1(2) DESCRIPTION & JUSTIFICATION:

Per the 1999 NPDES Phase II Stormwater Quality Regulations, the City of Newark is required to meet approved standards to improve stormwater quality. in 2014-2015 we received and implemented a surface water planning grant which included a BMP retrofit prioritization which will be used to guide future project selection.

We chose not to complete a 2015 project due to uncertainty associated with impending changes to our permit which was provided in draft form for review in late 2015. We skipped 2016 funding with the intention of using prior funds in 2016 if and when we receive our final permit. We are planning on $40,000 annually starting in 2017 which we will revise as necessary based on the prioritization developed through our planning grant once we know the scope of requirements included with the final MS4 permit.

Depending on the type of facility constructed, ongoing maintenance will be required including mowing, invasive weed removal, inspections, etc. I have assumed $5000 per year per facility in maintenance costs.

§ 806.1(3) SUMMARY OF PROJECT DATA	
First Year in Program	2009
Est. Completion Date	Perpetual
Est. Useful Life (in years)	20
Est. Total Cost	200,000
Est. Spend @ 12/31 (if underway)[1]	-
Balance to be funded[1]	200,000
% Complete (if underway)	

PROJECT COST BY CATEGORY		
CLASSIFICATION	ACCOUNT NUMBERS	AMOUNT
Labor		
Materials		
Other Contracts	3063006.9720	$ 200,000
Total Project Cost		$ 200,000

[1]For ongoing projects, we must estimate total spent since inception through current year to derive the balance to be funded thereafter.

PROJECT FINANCING BY PLAN YEAR

§ 806.1(3) SOURCE OF FUNDS	PRIOR[2]	2017	2018	2019	2020	2021	TOTAL
CURRENT RESOURCES		40,000	40,000	40,000	40,000	40,000	200,000
CAPITAL RESERVES							-
EQUIPMENT REPLACEMENT							-
BOND ISSUES							-
GRANTS (Specify)							-
OTHER (Specify)							-
OTHER (Specify)							-
TOTAL	**-**	**40,000**	**40,000**	**40,000**	**40,000**	**40,000**	**200,000**

[2]"Prior" refers to that portion of project funding that was authorized in a prior year but which is not expected to be spent through 12/31 of the current year. Accordingly, Council is not required to authorize budget year funding for that portion, but that portion of the project will indeed represent a cash outflow in the budget year and/or "out years."

§ 806.1(4) ESTIMATED ANNUAL COST OF OPERATING / MAINTAINING PROJECT OR ASSET

OPERATING IMPACT	2017	2018	2019	2020	2021	TOTAL
INCREMENTAL COSTS (NET SAVINGS)	5,000	10,000	15,000	20,000	25,000	75,000

CITY OF NEWARK, DELAWARE
CAPITAL BUDGET - PROJECT DETAIL

DEPARTMENT:	Public Works and Water Resources	DIVISION:	Stormwater

PROJECT NO:	PROJECT TITLE:	PROJECT LOCATION:
T1701	Storm System Study and Repairs	Citywide

PROJECT STATUS (SELECT FROM DROP DOWN):

PRIORITY: 2 - High Priority Level — Critical need to remediate failing service, prevent failure, or generate savings

COMPREHENSIVE DEVELOPMENT PLANNING VISION ELEMENT: Sustainable Community

Charter § 806.1(2) DESCRIPTION & JUSTIFICATION:

The City has determined that the condition of the storm sewer and overall stormwater system citywide is in need of repairs to alleviate flooding and improve water quality. There are some problem areas that have been identified, however, a comprehensive review of all stormwater assets has not been completed. This project will begin the necessary studies and complete identified repairs in order to prioritize and fix the defects in the system. The project combines the study portion of the project with project H1301 - Storm Sewer Repairs from previous CIP.

The following locations have been identified for review and investigation:
Paper Mill Road at Old Paper Mill Road
Timberline Drive
Swarthmore Drive
Shull Drive

§ 806.1(3) SUMMARY OF PROJECT DATA	
First Year in Program	2017
Est. Completion Date	Ongoing
Est. Useful Life (in years)	50+
Est. Total Cost	1,810,253
Est. Spend @ 12/31 (if underway)[1]	-
Balance to be funded[1]	1,810,253
% Complete (if underway)	

PROJECT COST BY CATEGORY		
CLASSIFICATION	ACCOUNT NUMBERS	AMOUNT
Labor		
Materials		
Other Contracts	6006006.9622	$ 1,810,253
Total Project Cost		$ 1,810,253

[1]For ongoing projects, we must estimate total spent since inception through current year to derive the balance to be funded thereafter.

PROJECT FINANCING BY PLAN YEAR

§ 806.1(3) SOURCE OF FUNDS	PRIOR[2]	2017	2018	2019	2020	2021	TOTAL
CURRENT RESOURCES			420,000	441,000	463,050	486,203	1,810,253
CAPITAL RESERVES							-
EQUIPMENT REPLACEMENT							-
BOND ISSUES							-
GRANTS (Specify)							-
OTHER (Specify)							-
OTHER (Specify)							-
TOTAL	**-**	**-**	**420,000**	**441,000**	**463,050**	**486,203**	**1,810,253**

[2]"Prior" refers to that portion of project funding that was authorized in a prior year but which is not expected to be spent through 12/31 of the current year. Accordingly, Council is not required to authorize budget year funding for that portion, but that portion of the project will indeed represent a cash outflow in the budget year and/or "out years."

§ 806.1(4) ESTIMATED ANNUAL COST OF OPERATING / MAINTAINING PROJECT OR ASSET

OPERATING IMPACT	2017	2018	2019	2020	2021	TOTAL
INCREMENTAL COSTS (NET SAVINGS)						-

CITY OF NEWARK, DELAWARE
CAPITAL BUDGET - PROJECT DETAIL

DEPARTMENT:	Public Works and Water Resources	DIVISION:	Stormwater

PROJECT NO:	PROJECT TITLE:	PROJECT LOCATION:
T1702	Stormwater Utility Implementation	Citywide

PROJECT STATUS (SELECT FROM DROP DOWN):

PRIORITY: 2 - High Priority Level — Critical need to remediate failing service, prevent failure, or generate savings

COMPREHENSIVE DEVELOPMENT PLANNING VISION ELEMENT: Sustainable Community

Charter § 806.1(2) DESCRIPTION & JUSTIFICATION:

In order to complete the funding mechanisms and billing units for the stormwater utility to be enacted effective Jan. 1 2018, this project will hire a consultant to set up the billing and utility rates during 2017. The fund will collect fees based on impervious cover beginning in 2018. This project will also cover the stormwater utility costs for the first 6 months of 2018. Reserves will be paid back over a 5 year period. We expect to apply for a grant through the Surface Water Planning Grant Program from DNREC.

§ 806.1(3) SUMMARY OF PROJECT DATA

First Year in Program	2017
Est. Completion Date	2017
Est. Useful Life (in years)	Ongoing
Est. Total Cost	1,150,000
Est. Spend @ 12/31 (if underway)[1]	
Balance to be funded[1]	1,150,000
% Complete (if underway)	

PROJECT COST BY CATEGORY

CLASSIFICATION	ACCOUNT NUMBERS	AMOUNT
Labor		
Materials		
Other Contracts	6006006.9622	$ 1,150,000
Total Project Cost		$ 1,150,000

[1]For ongoing projects, we must estimate total spent since inception through current year to derive the balance to be funded thereafter.

PROJECT FINANCING BY PLAN YEAR

§ 806.1(3) SOURCE OF FUNDS	PRIOR[2]	2017	2018	2019	2020	2021	TOTAL
CURRENT RESOURCES			125,000	125,000	125,000	125,000	500,000
CAPITAL RESERVES		250,000	350,000				600,000
EQUIPMENT REPLACEMENT							-
BOND ISSUES							-
GRANTS (Specify)		50,000					50,000
OTHER (Specify)							-
OTHER (Specify)							-
TOTAL	**-**	**300,000**	**475,000**	**125,000**	**125,000**	**125,000**	**1,150,000**

[2]"Prior" refers to that portion of project funding that was authorized in a prior year but which is not expected to be spent through 12/31 of the current year. Accordingly, Council is not required to authorize budget year funding for that portion, but that portion of the project will indeed represent a cash outflow in the budget year and/or "out years."

§ 806.1(4) ESTIMATED ANNUAL COST OF OPERATING / MAINTAINING PROJECT OR ASSET

OPERATING IMPACT	2017	2018	2019	2020	2021	TOTAL
INCREMENTAL COSTS (NET SAVINGS)						-

CITY OF NEWARK, DELAWARE
CAPITAL BUDGET - PROJECT DETAIL

DEPARTMENT:	Public Works and Water Resources	DIVISION:	Stormwater

PROJECT NO:	PROJECT TITLE:	PROJECT LOCATION:
T1705	Parks to Ponds Initiative (P2PI)	Various Locations

PROJECT STATUS (SELECT FROM DROP DOWN):

PRIORITY: 3 - Medium-High — The City would be taking a calculated risk in the deferral of this item

COMPREHENSIVE DEVELOPMENT PLANNING VISION ELEMENT: Sustainable Community

Charter § 806.1(2) DESCRIPTION & JUSTIFICATION:

The City has ownership of numerous parks throughout the city, some of which are simply maintained as open area and are very underutilized. Several of those parks are around or near critical drainageways and the opportunity exists to design detention basins or water quality facilities at those locations. The parks department could realize savings by removing the maintenance responsibilities and the public works and water resources department could utilize these areas to mitigate flooding and water quality issues throughout the City. The areas were identified for a number of reasons, including, but not limited to, location within a watershed, level of probable benefit, ease of construction, reduction in maintenance burden on Parks staff and aesthetic benefit of plantings. Parks Dept. has been consulted and will work with PWWR to determine availability of property. Grant opportunities also exists to incorporate innovative design and new technologies to study the effect on the watershed. Funding shown below is estimasted for design in 2018 and 2020 with construction of one or more facilities in 2019 and 2021. The following parks have been identified for further review and study:

1. Park off of Short Lane
2. Lewis Park
3. Handloff Park (NE Corner)
4. Kells Park
5. Devon Park

§ 806.1(3) SUMMARY OF PROJECT DATA	
First Year in Program	2017
Est. Completion Date	2026
Est. Useful Life (in years)	30
Est. Total Cost	480,000
Est. Spend @ 12/31 (if underway)[1]	-
Balance to be funded[1]	480,000
% Complete (if underway)	

PROJECT COST BY CATEGORY			
CLASSIFICATION	ACCOUNT NUMBERS		AMOUNT
Labor			
Materials			
Other Contracts	3063006.9720	$	480,000
Total Project Cost		$	480,000

[1]For ongoing projects, we must estimate total spent since inception through current year to derive the balance to be funded thereafter.

PROJECT FINANCING BY PLAN YEAR

§ 806.1(3) SOURCE OF FUNDS	PRIOR[2]	2017	2018	2019	2020	2021	TOTAL
CURRENT RESOURCES			40,000	150,000	40,000	150,000	380,000
CAPITAL RESERVES							-
EQUIPMENT REPLACEMENT							-
BOND ISSUES							-
GRANTS (Specify)			50,000		50,000		100,000
OTHER (Specify)							-
OTHER (Specify)							-
TOTAL	**-**	**-**	**90,000**	**150,000**	**90,000**	**150,000**	**480,000**

[2]"Prior" refers to that portion of project funding that was authorized in a prior year but which is not expected to be spent through 12/31 of the current year. Accordingly, Council is not required to authorize budget year funding for that portion, but that portion of the project will indeed represent a cash outflow in the budget year and/or "out years."

§ 806.1(4) ESTIMATED ANNUAL COST OF OPERATING / MAINTAINING PROJECT OR ASSET

OPERATING IMPACT	2017	2018	2019	2020	2021	TOTAL
INCREMENTAL COSTS (NET SAVINGS)	5,000	10,000	15,000	20,000	25,000	75,000

Appendix 9

CHAPTER 14A - FLOODPLAINS

ARTICLE I. - GENERAL PROVISIONS

Sec. 14A-1. - Findings.

The Federal Emergency Management Agency (FEMA) has identified special flood hazard areas within the boundaries of the City of Newark, Delaware ("city"). Special flood hazard areas are subject to periodic inundations which may result in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety and general welfare. Development that is inadequately elevated, improperly floodproofed, or otherwise unprotected from flood damage also contributes to the flood loss.

The city, by resolution, agreed to meet the requirements of the National Flood Insurance Program and was accepted for participation in the program on March 29, 1974. Subsequent to that date or the initial effective date of the City of Newark Flood Insurance Rate Map, all development and new construction as defined herein, are to be compliant with the city's floodplain management regulations in effect at the time of constructions, and all development, new construction, and substantial improvements subsequent to the effective date of those regulations shall be compliant with these regulations and, as applicable, the flood load and flood-resistant construction provisions of the building code, including specific amendments adopted by the city.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-2. - Statement of purpose.

It is the purposed of these regulations to promote the public health, safety and general welfare, and to:

(a) Protect human life, health and welfare;

(b) Encourage the utilization of appropriate construction practices in order to prevent of minimize flood damage in the future;

(c) Minimize flooding of water supply and sanitary sewage disposal systems;

(d) Maintain natural drainage;

(e) Reduce financial burdens imposed on the community, its governmental units and its residents, by discouraging unwise design and construction of development in areas subject to flooding;

(f) Minimize the need for rescue and relief efforts associated with flooding and generally

undertaken at the expense of the general public;

(g) Minimize prolonged business interruptions;

(h) Minimize damage to public facilities and other utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges;

(i) Reinforce that those who build in and occupy special flood hazard areas should assume responsibility for their actions;

(j) Minimize the impact of development on adjacent properties within and near flood prone areas;

(k) Provide that the flood storage and conveyance functions of the floodplain are maintained;

(l) Minimize the impact of development on the natural and beneficial functions of the floodplain;

(m) Prevent floodplain uses that are either hazardous or environmentally incompatible; and

(n) Meet community participation requirements of the National Flood Insurance Program as set forth in the Code of Federal Regulations at 44 C.F.R. Section 59.22.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-3. - Areas to which these regulations apply.

These regulations shall apply to all special flood hazard areas within the jurisdiction of the City of Newark, Delaware, as identified in section 14A-4.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-4. - Basis for establishing special flood hazard areas.

For the purposes of these regulations, and for the purpose of establishing flood hazard area in the building code section 1612.3 and the residential code Table R301.2(1), the following are adopted by reference as a part of these regulations and serve as the basis for establishing special flood hazard areas:

(a) The FEMA Flood Insurance Study for New Castle County, Delaware and Incorporated Areas dated February 4, 2015 and all subsequent amendments and/or the most recent revision thereof.

(b) The FEMA Flood Insurance Rate Map for New Castle County, Delaware and Incorporated Areas dated February 4, 2015 and all subsequent amendments and/or the most recent revision thereof.

(c) Other hydrologic and hydraulic engineering studies and/or maps prepared pursuant to these regulations or for other purposes if approved by city council, and which establish base flood elevations, delineate 100-year floodplains, floodways or other areas of special flood hazard.

(d) The city may identify and regulate new local flood hazard or ponding areas. These areas should be delineated and adopted on a "local flood hazard map" using best available topographic data and locally derived information such as flood of record, historic high water marks or approximate study methodologies.

(e) Where field surveyed topography indicates that ground elevations are below the closest applicable base flood elevation, even in areas not delineated as a special flood hazard area on a flood hazard map, the area shall be considered as special flood hazard area.

Maps and studies that establish special flood hazard areas are on file at the planning and development department in the Newark Municipal Building, Newark, Delaware.

(Ord. No. 15-02, Amend. No. 7, 1-12-15; Ord. No. 16-05, Amend. No. 1, 1-25-16)

Sec. 14A-5. - Abrogation and greater restrictions.

These regulations are not intended to repeal or abrogate any existing ordinances including subdivision regulations, zoning ordinances or building codes. In the event of a conflict between these regulations and any other ordinance, the more restrictive shall govern. These regulations shall not impair any deed restriction, covenant or easement, but the land subject to such interests shall also be governed by these regulation.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-6. - Interpretation.

In the interpretation and application of these regulations, all provisions shall be:

(a) Considered as minimum requirements;

(b) Liberally construed in favor of the governing body;

(c) Deemed neither to limit nor repeal any other powers granted under state statutes; and

(d) Where a provision of these regulations may be in conflict with a state or federal law, such state or federal law shall take precedence, where more restrictive.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-7. - Warning and disclaimer of liability.

The degree of flood protection required by these regulations is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by man-made or natural causes. These regulations do

not imply that land outside of the special flood hazard areas or uses that are permitted within such areas will be free from flooding or flood damage. These regulations shall not create liability on the part of the city, any officer or employee thereof, or the Federal Emergency Management Agency, for any flood damage that results from reliance on these regulations or any administrative decision lawfully made thereunder.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-8. - Severability.

Should any section or provision of these regulations be declared by the courts to be unconstitutional or invalid, such decision shall not affect the validity of the regulations as a whole, or any part thereof other than the part so declared to be unconstitutional or invalid.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

ARTICLE II. - DEFINITIONS

Sec. 14A-9. - Definitions.

Unless specifically defined below, words or phrases used in these regulations shall be interpreted so as to give them the meaning they have in common usage and to give these regulations the most reasonable application. Where terms are not defined in these regulation and are defined in the building code, such terms shall have the meanings ascribed to them in that code.

(a) Accessory structure. For the purposes of these regulations, a structure on the same lot with, and of a nature customarily incidental and subordinate to, the principal structure.

(b) Area of shallow flooding. A designated Zone AO on a community's flood insurance rate map with a one percent annual chance or greater of flooding to an average depth of one to three feet where a clearly defined channel does not exist, where the path of flooding is unpredictable, and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.

(c) Base flood. The flood having a one percent chance of being equaled or exceeded in any given year; the base flood also is referred to as the 100-year flood or the one-percent annual chance flood.

(d) Base flood discharge. The volume of water resulting from a base flood as it passes a given location within a given time, usually expressed in cubic feet per second (cfs).

(e) Base flood elevation. The elevation of the base flood, including wave height, relative to the National Geodetic Vertical Datum (NGVD), North American Vertical Datum (NAVD) or other

datum specified on the community's flood insurance rate map.

(f) Basement. Any area of the building having its floor subgrade (below ground level) on all sides.

(g) Building code. The family of building codes specifically adopted by the City of Newark in the 2012 ICC Codes, as amended, and future ICC Codes as amended and adopted, for chapter 7, Building, and chapter 14, Fire prevention. The code that applies to one- and two-family dwellings is referred to as the "residential code."

(h) Development. Any manmade change to improved or unimproved real estate, including but not limited to buildings or other structures, placement of manufactured homes, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials.

(i) Dry floodproofing. A combination of measures which results in a structures, including attendant utilities and equipment, being watertight with all elements substantially impermeable and with structural components having the capacity to resist flood loads.

(j) Elevation certificate. The National Flood Insurance Program, Elevation Certificate (FEMA Form 086-0-33), used to document building elevations and other information about buildings. When required to be certified, the form shall be completed by a licensed professional land surveyor.

(k) Federal Emergency Management Agency (FEMA). The federal agency with the overall responsibility for administering the National Flood Insurance Program.

(l) FEMA Technical Bulletin. A series of guidance documents published by FEMA to provide guidance concerning building performance standards of the National Flood Insurance Program. See sections where specific TBs are identified.

(m) Flood or flooding. A general and temporary condition of partial or complete inundation of normally dry land areas from:

(1) The overflow of inland or tidal waters, and/or

(2) The unusual and rapid accumulation or runoff of surface waters from any source.

(n) Flood damage-resistant materials. Any construction material capable of withstanding direct and prolonged contact with floodwaters without sustaining any damage that requires more than cosmetic repair. See FEMA Technical Bulletin #2 - Flood Damage-Resistant Materials Requirements and FEMA Technical Bulletin #8 - Corrosion Protection for Metal Connectors in Coastal Areas.

(o) Flood insurance rate map (FIRM). An official map on which the Federal Emergency Management Agency (FEMA) has delineated both the special flood hazard areas and the risk premium zones applicable to the community.

(1) Zone A: Special flood hazard areas inundated by the one-percent annual chance flood; base flood elevations are not determined.

(2) Zone AE: Special flood hazard areas subject to inundation by the one-percent annual chance

flood; base flood elevations are determined; floodways may or may not be determined.

(3) Zone AO: Areas of shallow flooding, with or without a designated average flood depth.

(4) Zone X (shaded): Areas subject to inundation by the 500-year flood (0.2 percent annual chance); areas subject to the one-percent annual chance flood with average depths of less than one foot or with contributing drainage area less than one square mile; and areas protected by levees from the base flood.

(5) Zone X (unshaded): Areas determined to be outside the one-percent annual chance flood and outside the 500-year floodplain.

(6) Zone VE: Special flood hazard areas subject to inundation by the one-percent annual chance flood and subject to high velocity wave action (also referred to as coastal high hazard areas).

(p) Limit of moderate wave action (LiMWA). The inland limit of the area affected by waves greater than one and one-half feet during the base flood. Base flood conditions between the Zone VE and the LiMWA will be similar to, but less severe than, those in the Zone VE.

(q) Flood insurance study. The official report provided by the Federal Emergency Management Agency (FEMA) containing the flood insurance rate map (FIRM), the flood boundary and floodway map (FBFM), the water surface elevations of the base flood and supporting technical data.

(r) Floodplain. Any land area susceptible to being inundated by water from any source (see "flood" or "flooding").

(s) Floodproofing certificate. The National Flood Insurance Program, Floodproofing Certificate for Non-Residential Structures (FEMA Form 86-0-34), used by registered professional engineers and architects to certify dry floodproofing designs.

(t) Floodway. The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to pass the base flood discharge such that the cumulative increase in the water surface elevation of the base flood discharge is no more than a designated height.

(u) Functionally dependent use. A use which cannot perform its intended purpose unless it is located or carried out in close proximity to water; the term includes only docking facilities, port facilities that are necessary for the loading and unloading of cargo or passengers, and ship building and ship repair facilities, but does not include long-term storage or related manufacturing facilities.

(v) Highest adjacent grade. The highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

(w) Historic structure. Any structure that is:

(1) Individually listed in the National Register of Historic Places (a listing maintained by the U.S.

Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register; or

(2) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district.

(3) Individually listed in section 7-19, historic buildings.

(x) Hydrologic and hydraulic engineering analysis. An analysis performed by a professional engineer, licensed in the State of Delaware, in accordance with standard engineering practices as accepted by FEMA, used to determine the base flood, other frequency floods, flood elevations, floodway information and boundaries, and flood profiles.

(y) Letter of map change. A letter of map change is an official FEMA determination, by letter, to amend or revise an effective flood insurance rate map, flood boundary and floodway map, and flood insurance study. Letters of map change include:

(1) Letter of map amendment (LOMA): An amendment based on technical data showing that a property was inadvertently included in a designated special flood hazard area. A LOMA amends the current effective flood insurance rate map and establishes that a specific property is not located in a special flood hazard area.

(2) Letter of map revision (LOMR): A revision based on technical data that may show changes to flood zones, flood elevations, floodplain and floodway delineations, and planimetric features. One common type of LOMR, a letter of map revision based on fill (LOMR-F), is a determination that a structure or parcel of land has been elevated by fill above the base flood elevation and is, therefore, no longer exposed to flooding associated with the base flood; in order to qualify for this determination, the fill must have been permitted and placed in accordance with these regulations.

(3) Conditional letter of map revision (CLOMR): A formal review and comment as to whether a proposed flood protection project complies with the minimum National Flood Insurance Program requirements for such projects with respect to delineation of special flood hazard areas. A CLOMR does not amend or revise effective flood insurance rate maps, flood boundary and floodway maps, or flood insurance studies; upon submission to and approval of certified as-built documentation, a letter of map revision may be issued.

(z) Lowest floor. The lowest floor of the lowest enclosed area, including basement, but excluding any unfinished or flood-resistant enclosure, usable solely for vehicle parking, building access or limited storage provided that such enclosure is not built so as to render the structure in violation of the non-elevation requirements specified in the building code for enclosures below the lowest floor.

(aa) Manufactured home. A structure, transportable in one or more sections, which is built on a

permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. The term "manufactured home" does not include a "recreational vehicle".

(bb) New construction. Buildings and structures for which the "start of construction" commenced on or after March 29, 1974, including any subsequent improvements to such structures.

(cc) Person. An individual or group of individuals, corporation, partnership, association, or any other entity, including state and local governments and agencies.

(dd) Recreational vehicle. A vehicle which is built on a single chassis, 400 square feet or less when measured at the largest horizontal projection, designed to be self-propelled or permanently towable by a light duty truck, and designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.

(ee) Special flood hazard area. The land in the floodplain subject flood hazards and shown on a flood insurance rate map as Zones A, AE, AO, and Zone VE. The term includes areas shown on other flood hazard maps that are specifically listed or otherwise described in section 14A-4.

(ff) Start of construction. The date of issuance of permits for new construction and substantial improvements to existing structures, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, or other improvement was within 180 days after the date of issuance. The actual start means the first placement of permanent construction of a building (including a manufactured home) on a site, such as the pouring of a slab or footings, installation of pilings, or construction of columns. Permanent construction does not include land preparation (such as clearing, grading and filling), the installation of streets or walkways, excavation for a basement, footings, piers, or foundations, the erection of temporary forms or the installation of accessory buildings such as garages or sheds not occupied as dwelling units or not part of the main building. For a substantial improvement, the actual "start of construction" means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

(gg) Structure (or building). That which is built or constructed.

(hh) Substantial damage. Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

(ii) Substantial improvement. Any repair, alteration, reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before improvement or repair is started as determined through assessment records or by a bona fide property appraiser to be submitted to the planning and development department. If the structure has sustained substantial damage, any repairs are considered substantial improvement regardless of the actual repair work performed. The term does not,

however, include any project for improvement of a building required to correct existing health, sanitary, or safety code violations identified by the building official and that are the minimum necessary to assure safe living conditions.

(jj) Violation. The failure of a structure or other development to be fully compliant with the community's flood plain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in these regulations is presumed to be in violation until such time that documentation is provided.

(Ord. No. 15-02, Amend. No. 7, 1-12-15; Ord. No. 16-05, Amend. No. 2, 1-25-16)

ARTICLE III. - ADMINISTRATION

Sec. 14A-10. - Designation of the floodplain administrator.

The planning and development director, or his or her designee, is hereby appointed to administer and implement these regulations and is referred to herein as the floodplain administrator.

The floodplain administrator is authorized to:

(a) Fulfill the duties and responsibilities set forth in these regulations;

(b) Delegate duties and responsibilities set forth in these regulations to qualified technical personnel, plan examiners, inspectors, and other employees; or

(c) Enter into a written agreement or written contract with another jurisdiction or agency, or private sector entity to administer specific provisions of these regulations. Administration of any part of these regulations by another entity shall not relieve the community of its responsibilities pursuant to the participation requirements of the National Flood Insurance Program as set forth in the Code of Federal Regulations at 44 C.F.R. Section 59.22.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-11. - Duties and responsibilities of the floodplain administrator.

The duties and responsibilities of the floodplain administrator shall include but are not limited to:

(a) Coordinate with the building official to support administration, interpretation, and enforcement of the flood load and flood-resistant construction provisions of the building code.

(b) Review applications for permits to determine whether proposed activities will be located in special flood hazard areas.

(c) Interpret floodplain boundaries and provide flood elevation and flood hazard information.

(d) Review applications to determine whether proposed activities will be reasonably safe from flooding.

(e) Review applications to determine whether all necessary permits have been obtained from those federal, state or local agencies from which prior or concurrent approval is required.

(f) Verify that applicants proposing to alter or relocate a watercourse have notified adjacent communities and the Delaware Department of Natural Resources and Environmental Control (Division of Watershed Stewardship), and have submitted copies of such notifications to the Federal Emergency Management Agency.

(g) Issue permits to develop in special flood hazard areas when the provisions of these regulations have been met, or disapprove the same in the event of noncompliance.

(h) Inspect special flood hazard areas to determine compliance with these regulations or to determine if noncompliance has occurred or violations have been committed.

(i) Review submitted elevation certificates for completeness.

(j) Submit to FEMA data and information necessary to maintain flood hazard maps, including hydrologic and hydraulic engineering analyses prepared by or for the City of Newark, corrections to labeling or planimetric details, etc.

(k) Maintain and permanently keep all records for public inspection that are necessary for the administration of these regulations including flood insurance rate maps, letters of map amendment and revision, records of issuance and denial of permits, determinations of whether development is in or out of special flood hazard areas for the purpose of issuing permits, elevation certificates, other required certifications, variances, and records of enforcement actions taken for violations of these regulations.

(l) Enforce the provisions of these regulations.

(m) Assist with and coordinate flood hazard map maintenance activities.

(n) Conduct, with the building official, determinations as to whether existing buildings and structures damaged by any cause and located in special flood hazard areas, have been substantially damaged.

(o) Make reasonable efforts to notify owners of substantially damaged buildings and structures of the need to obtain a permit prior to repair, rehabilitation, or reconstruction, and to prohibit the non-compliant repair of substantially-damaged buildings except for temporary emergency protective measures necessary to secure a property or stabilize a structure to prevent additional damage.

(p) Undertake other actions which may include but are not limited to: issuing press releases, public service announcements, and other public information materials related to permit requests and

repair of damaged structures; coordinating with other Federal, state, and local agencies to assist with substantial damage determinations; providing owners of damaged structures materials and other information related to the proper repair of damaged structures in special flood hazard areas; and assisting owners with National Flood Insurance program claims for increased cost of compliance payments.

(q) Notify the Federal Emergency Management Agency when the corporate boundaries of the City of Newark have been modified.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-12. - Permits required.

It shall be unlawful for any person or entity to begin construction or other development which is wholly within, partially within, or in contact with any identified special flood hazard area, as established in section 14A-4, including but not limited to: subdivision of land, filling, grading, or other site improvements and utility installations; placement or replacement of a manufactured home; recreational vehicles; installation or replacement of storage tanks; or alteration of any watercourse, until a permit is obtained from the city. These regulations are intended to be administered and enforced in conjunction with the building code. No permit shall be issued until the requirements of these regulations and, as applicable, the flood load and flood-resistant construction provisions of the building code, have been met.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-13. - Application required.

Application for a permit shall be made by the owner of the property or his/her authorized agent, herein referred to as the applicant, prior to the actual start of construction. The application shall be on a form furnished for that purpose. For applications for buildings and structures, these required minimum contents of the application are in addition to the requirements of the building code and other applicable city plan review requirements.

(a) Application contents. At a minimum, applications shall include:

(1) Site plans drawn to scale showing the nature, location, dimensions, existing and proposed topography of the area in question, the limits of any portion of the site that was previously filled, and the location of existing and proposed structures, excavation, filling, storage of materials, drainage facilities, and other proposed activities.

(2) Elevation of the existing natural ground where structures are proposed, referenced to the datum on the flood insurance rate map, and an elevation certificate that shows the ground

elevation and proposed building elevations (identified in Section C of the elevation certificate as "construction drawings").

(3) Delineation of special flood hazard areas, floodway boundaries, flood zones, and base flood elevations. Where surveyed natural ground elevations are lower than the base flood elevations, base flood elevations shall be used to delineate the boundary of special flood hazard areas. If proposed, changes in the delineation of special flood hazard areas shall be submitted to and approved by FEMA in accordance with subsection 14A-13(b). Where special flood hazard areas are not delineated or base flood elevations are not shown on the flood hazard maps, the floodplain administrator has the authority to require the applicant to use information provided by the floodplain administrator, information that is available from other sources, or to determine such information using accepted engineering practices.

(4) For subdivision proposals and development proposals containing at least 50 lots or at least five acres, whichever is the lesser, and where base flood elevations are not shown on flood insurance rate maps, hydrologic and hydraulic engineering analyses and studies as required by subsection 14A-19(d).

(5) Elevation of the lowest floor, including basement, or elevation of the bottom of the lowest horizontal structural member, as applicable to the flood zone, of all proposed structures, referenced to the datum on the flood insurance rate maps.

(6) Such other material and information as may be requested by the floodplain administrator necessary to determine conformance with these regulations.

(7) For work on an existing structure, including any improvement, addition, repairs, alterations, rehabilitation, or reconstruction, sufficient information to determine if the work constitutes substantial improvement, including:

a. Documentation of the market value of the structure before the improvement is started or before the damage occurred.

b. Documentation of the actual cash value of all proposed improvement work, or the actual cash value of all work necessary to repair and restore damage to the before damaged condition, regardless of the amount of work that will be performed.

(8) Certifications and/or technical analyses prepared or conducted by an appropriate design professional licensed in the State of Delaware, as appropriate to the type of development activity proposed and required by these regulations and the building code:

a. Floodproofing certificate for dry floodproofed non-residential structures, as required by the building code.

b. Certification that flood openings that do not meet the minimum requirements for non-engineered openings are designed to automatically equalize hydrostatic flood forces, as required by the building code.

c. Technical analyses to document that the flood carrying capacity of any watercourse alteration or relocation will not be diminished and documentation of maintenance assurances as required in subsection 14A-29(c).

d. Hydrologic and hydraulic engineering analyses demonstrating that the cumulative effect of proposed development, when combined with all other existing and anticipated development will not increase the water surface elevation of the base flood in special flood hazard areas where the Federal Emergency Management Agency has provided base flood elevations but has not delineated a floodway, as required by subsection 14A-29(b).

e. Hydrologic and hydraulic engineering analyses of any development proposed to be located in an identified floodway, as required by subsection 14A-29(a).

f. Hydrologic and hydraulic engineering analyses to develop base flood elevations for subdivisions and large-lot developments, as required by subsection 14A-19(d) or otherwise required by the floodplain administrator.

(b) Right to submit new technical data. The applicant has the right to seek a letter of map change and to submit new technical data to FEMA regarding base maps, topography, special flood hazard area boundaries, floodway boundaries, and base flood elevations. Such submissions shall be prepared in a format acceptable by FEMA and the floodplain administrator shall be notified of such submittal. Submittal requirements and processing fees shall be the responsibility of the applicant.

(c) Requirement to submit new technical data. The floodplain administrator shall notify FEMA of physical changes affecting flood hazard areas and flooding conditions by submitting technical or scientific data as soon as practicable, but not later than six months after the date such information becomes available. The floodplain administrator has the authority to require applicants to submit technical data to FEMA for letters of map change.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-14. - Review, approval or disapproval.

(a) Review. The floodplain administrator shall:

(1) Review applications for development in special flood hazard areas to determine the completeness of information submitted. The applicant shall be notified of incompleteness or additional information required to support the application.

(2) Review applications for compliance with these regulations after all information required in section 14A-13 or identified and required by the floodplain administrator has been received.

(3) Review all permit applications to assure that all necessary permits have been received from

those federal, state or local governmental agencies from which prior approval is required. The applicant shall be responsible for obtaining such permits, including but not limited to:

a. Permits issued by the U.S. Army Corps of Engineers under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act, and the Delaware Environmental Protection Agency under Section 401 of the Clean Water Act.

b. Permits required by the State of Delaware.

(b) Approval or disapproval. The floodplain administrator shall approve applications that comply with the applicable requirements of these regulations. The floodplain administrator shall disapprove applications for proposed development that do not comply with the applicable provisions of these regulations and shall notify the applicant of such disapproval, in writing, stating the reasons for disapproval.

(c) Expiration of permit. A permit is valid provided the actual start of construction occurs within 180 days of the date of permit issuance. If the actual start of construction is not within 180 days of the date of permit issuance, the permittee may submit a request for extension in writing. Upon reviewing the request and the permit for continued compliance with these regulations, the floodplain administrator may grant, in writing, one or more extensions of time, for periods not more than 180 days each.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-15. - Inspections.

The floodplain administrator shall make periodic inspections of development permitted in special flood hazard areas, at appropriate times throughout the period of construction in order to monitor compliance. In addition to the inspections required by the building code, such inspections may include:

(a) Stake-out inspection, to determine location on the site relative to the special flood hazard area and floodway.

(b) Foundation inspection, upon placement of the lowest floor and prior to further vertical construction, to collect information or certification of the elevation of the lowest floor.

(c) Enclosure inspection, including crawlspaces, to determine compliance with applicable provisions.

(d) Utility inspection, upon installation of specified equipment and appliances, to determine appropriate location with respect to the base flood elevation.

(e) Storage of materials.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-16. - Submissions required prior to issuance of a certificate of occupancy.

The following certifications are required to be submitted by the permittee for development that is permitted in special flood hazard areas prior to the issuance of a certificate of occupancy:

(a) For new or substantially improved residential structures or nonresidential structures that have been elevated, an elevation certificate that shows the ground elevation and finished elevations (identified in Section C of the elevation certificate as "finished construction").

(b) For nonresidential structures that have been dry floodproofed, a floodproofing certificate based on "finished construction" (identified in Section II).

(c) For all development activities subject to the requirements of subsection 14A-13(b), a letter of map revision shall be provided.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-17. - Flood insurance rate map use and interpretation.

The floodplain administrator shall make interpretations, where needed, as to the exact location of special flood hazard areas, floodplain boundaries, and floodway boundaries. The following shall apply to the use and interpretation of special flood hazard maps and data:

(a) In FEMA-identified special flood hazard areas where base flood elevation and floodway data have not been identified and in areas where FEMA has not identified special flood hazard areas, any other flood hazard data available from a federal, state, or other source shall be reviewed and reasonably used. When a preliminary flood insurance rate map has been provided by FEMA to identify base flood elevations where such elevations where not previously shown, the base flood elevations on the preliminary flood insurance rate map shall be used.

(b) Special flood hazard area delineations, base flood elevations, and floodway boundaries on FEMA maps and in FEMA studies shall take precedence over delineations, base flood elevations, and floodway boundaries by any other source that reflect a reduced special flood hazard area, reduced floodway width and/or lower base flood elevations.

(c) Other sources of data shall be reasonably used, with the approval of the floodplain administrator, if they show increased base flood elevations and/or larger floodway areas than are shown on FEMA flood maps and studies.

(d) Where field surveyed topography indicates that ground elevations are below the base flood elevation, even in areas not delineated as a special flood hazard on a flood hazard map, the area shall be considered as special flood hazard area.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

ARTICLE IV. - REQUIREMENTS IN ALL SPECIAL FLOOD HAZARD AREAS

Sec. 14A-18. - Application of requirements.

The general requirements of this section apply to all development proposed within special flood hazard areas identified in section 14A-4. For permitted uses, refer to the city zoning code, section 32-96.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-19. - Subdivisions and developments.

(a) All subdivision and development proposals shall be consistent with the need to minimize flood damage and are subject to all applicable standards in these regulations.

(b) All subdivision and development proposals shall have utilities and facilities such as sewer, gas,

electrical, and water systems located and constructed to minimize flood damage.

(c) All subdivision and developments proposals shall have adequate drainage provided to reduce exposure to flood damage.

(d) All subdivision proposals and development proposals containing at least 50 lots or at least five acres, whichever is the lesser, in FEMA-delineated special flood hazard areas where base flood elevation data are not available, shall be supported by hydrologic and hydraulic engineering analyses that determine base flood elevations and floodway delineations. The analyses shall be prepared by a licensed professional engineer in a format required by FEMA for a conditional letter of map revision or letter of map revision. Submittal requirements and processing fees shall be the responsibility of the applicant.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-20. - Protection of water supply and sanitary sewage systems.

(a) New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the systems.

(b) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into systems and discharges from systems into floodwaters.

(c) On-site waste disposal systems shall be located to avoid impairment to or contamination from them during conditions of flooding.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-21. - Buildings and structures.

New construction or substantial improvements to existing buildings and structures that are located, in whole or in part, in special flood hazard areas shall comply with flood load and flood-resistant construction requirements of the building code.

New construction or substantial improvements to existing buildings and structures that are located, in whole or in part, in special flood hazard areas shall have the lowest floor elevated a minimum of 18 inches above the 100-year flood. All accompanying utility and sanitary equipment shall be flood proofed up to the same floor elevation. Basements are not permitted.

(Ord. No. 15-02, Amend. No. 7, 1-12-15; Ord. No. 16-05, Amend. No. 3, 1-25-16)

Sec. 14A-22. - Fill.

(a) Disposal of fill, including but not limited to rubble, construction debris, woody debris, and trash, shall not be permitted in special flood hazard areas.

(b) Where permitted by the building code (Zones A, AE, and AO), fill placed for the purpose of raising the ground level and to support a building or structure shall meet the following requirements:

(1) Extend laterally from the building footprint to provide for adequate access, as a function of use; the floodplain administrator may seek advice from the city fire marshal's office and/or the local fire services agency.

(2) Placed and compacted to provide for stability under conditions of rising and falling floodwaters and resistance to erosion, scour, and settling, to be designed by a certified soil engineer and inspected by a third-party soil engineer firm.

(3) Consist of soil or rock materials only.

(4) Sloped no steeper than one vertical in two horizontal, unless approved by the floodplain administrator.

(5) Designed with provisions for adequate drainage and no adverse effect on adjacent properties.

(c) Fill placed for a purpose other than to support a building or structure shall meet the requirements of subsections 14A-22(b)(2) through (b)(5).

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-23. - Historic structures.

As specified by the building code, repair, alteration, or rehabilitation of historic structures shall be subject to the requirements of the building code unless a determination is made that compliance will preclude a structure's continued designation as a historic structure and a variance is granted in accordance with article V and such variance is the minimum necessary to preserve the historic character and design of the structure.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-24. - Recreational vehicles.

Recreational vehicles in special flood hazard areas shall be fully licensed and ready for highway use, and shall be placed on a site for no more than 180 consecutive days.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-25. - Gas or liquid storage tanks.

(a) Underground tanks in special flood hazard areas shall be anchored to prevent flotation, collapse or lateral movement resulting from hydrostatic loads, including the effects of buoyancy, during conditions of the base flood.

(b) Above-ground tanks in special flood hazard areas shall be elevated and anchored to or above the base flood elevation plus 18 inches or shall be anchored at- grade and designed and constructed to prevent flotation, collapse, or lateral movement resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, during conditions of the base flood.

(c) In special flood hazard areas, tank inlets, fill openings, outlets and vents shall be:

(1) At or above the base flood elevation or fitted with covers designed to prevent the inflow of floodwater or outflow of the contents of the tanks during conditions of the base flood.

(2) Anchored to prevent lateral movement resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, during conditions of the base flood.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-26. - Manufactured homes.

(a) Elevation. All new and replacement manufactured homes to be placed or substantially improved in a flood hazard area shall be elevated such that the bottom of the lowest horizontal structural supporting member of lowest floor of the manufactured home is elevated to or above the base flood elevation plus 18 inches.

(b) Foundations. All new and replacement manufactured homes, including substantial improvement of existing manufactured homes, shall be placed on permanent, reinforced foundations that are designed in accordance with Section R322 of the residential code based on the applicable flood zone identified on the FIRM.

(c) Anchoring. All new and replacement manufactured homes to be placed or substantially improved in a special flood hazard area shall be installed using methods and practices which minimize flood damage. Manufactured homes shall be securely anchored to an adequately anchored foundation system to resist flotation, collapse and lateral movement. The anchor and tie-down specifications of the manufacturer are permitted, provided such specifications are specific to installation in special flood hazard areas. This requirement is in addition to applicable state and local anchoring requirements for resisting wind forces.

(d) Enclosures. Fully enclosed areas below elevated manufactured homes shall comply with the requirements of Section R322 of the residential code based on the applicable flood zone identified on the FIRM.

(e) Protection of mechanical equipment and outside appliances. Mechanical equipment and outside appliances shall comply with the requirements of Section R322 for protection of mechanical and electrical systems.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-27. - Preservation.

Floodplains act as stream flow areas and as retention or storage areas in times of flood. It is essential that floodplains be preserved, but if change is contemplated, it must only be made after:

(a) It has been determined that the change will not cause any damage, and/or

(b) Compensating action is taken to maintain the stream floodplain balance.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-28. - Accessory structures.

Accessory structures to any permitted use as described in chapter 32; subsections 32-96(a)(1) and 32-96(a)(2)(g) require approval by the city council for a special use permit as provided for in section 32-78.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-29. - Protection of flood-carrying capacity.

(a) Development in floodways. Within any floodway area designated on the flood insurance rate map, no encroachments, including fill, new construction, substantial improvements, or other development shall be permitted.

(b) Development in areas with base flood elevations but no floodways. No building or filling shall be done within the limits of any floodplain area having special flood hazards except upon the approval of city council. Any proposal for such approval shall be accompanied by recommendations from the directors of public works and planning. In granting such approval, city council shall state that the proposed building or filling will not create present or future personal or property damage from flood and will not impair the usefulness or capacity of the floodplain as a storage area required for present or future flood control. Granting such approval for building shall be in accordance with the zoning code, section 32-96. In addition, the city shall require:

(1) That new construction or substantial improvements of residential structures shall have the lowest floor elevated a minimum of 18 inches above the 100-year flood. Basements are not permitted.

(2) That new construction or substantial improvements of nonresidential structures shall have the lowest floor elevated a minimum of 18 inches above the 100-year flood. Basements are not permitted.

(3) In riverine situations where no floodway has been designed by the Federal Insurance Administration (Part 1909, Subchapter B, Chapter X, Title 24, Code of Federal Regulations), no

use, including landfill, may be permitted within the floodplain having special flood hazards unless the applicant for the land use has demonstrated that the proposed use, when combined with all other existing and anticipated uses, will not increase the water surface elevation of the 100-year flood more than 0.2 feet at any point.

(4) The applicant shall develop hydrologic and hydraulic engineering analyses and technical data reflecting the proposed activity and shall submit such analyses and data to the floodplain administrator and to FEMA. The analyses shall be prepared by a licensed professional engineer in a format required by FEMA for a conditional letter of map revision or letter of map revision. Submittal requirements and processing fees shall be the responsibility of the applicant.

(c) Deliberate alterations of a watercourse. For the purpose of these regulations, a watercourse is deliberately altered when a person causes a change to occur within its banks. Deliberate changes to a watercourse include, but are not limited to: widening, deepening or relocating of the channel; installation of culverts; construction of bridges, and excavation or filling of the channel or watercourse banks.

For any proposed deliberate alteration of a watercourse, the applicant shall develop hydrologic and hydraulic engineering analyses and technical data reflecting such changes and submit such technical data to the floodplain administrator and to FEMA. The analyses shall be prepared by a licensed professional engineer in a format required by FEMA for a conditional letter of map revision or letter of map revision. Submittal requirements and processing fees shall be the responsibility of the applicant.

The proposed alteration of a watercourse may be permitted upon submission, by the applicant, of the following:

(1) Documentation of compliance with subsection 14A-29(a) if the alteration is in a floodway or subsection 14A-29(b) if the alteration is in a watercourse with base flood elevations but no floodway.

(2) A description of the extent to which the watercourse will be altered or relocated as a result of the proposed development.

(3) A certification by a licensed professional engineer that the bankful flood-carrying capacity of the watercourse will not be diminished.

(4) Evidence that adjacent communities, the U.S. Army Corps of Engineers, and the Delaware Department of Natural Resources and Environmental Control (Division of Watershed Stewardship) have been notified of the proposal and evidence that such notifications have been submitted to the Federal Emergency Management Agency.

(5) Evidence that the applicant shall be responsible for providing the necessary maintenance for the altered or relocated portion of the watercourse so that the flood carrying capacity will not be diminished. The floodplain administrator may require the permit holder to enter into an

agreement with the city specifying the maintenance responsibilities; if an agreement is required, the permit shall be conditioned to require that the agreement be recorded on the deed of the property which shall be binding on future owners.

(Ord. No. 15-02, Amend. No. 7, 1-12-15; Ord. No. 16-05, Amend. No. 4, 1-25-16)

ARTICLE V. - VARIANCES

Sec. 14A-30. - Variances.

The council of the city shall have the power to authorize, in specific cases, such variances from the requirements of these regulations and the flood load and flood-resistant construction requirements of the building code, not inconsistent with federal regulations, as will not be contrary to the public interest where, owing to special conditions of the lot or parcel, a literal enforcement of the provisions of these regulations would result in unnecessary hardship.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-31. - Application for a variance.

(a) Any owner, or agent thereof, of property for which a variance is sought shall submit an application for a variance to the floodplain administrator.

(b) At a minimum, such application shall contain the following information: Name, address, and telephone number of the applicant; legal description of the property; parcel map; description of the existing use; description of the proposed use; location of the floodplain; description of the variance sought; and reason for the variance request. Each variance application shall specifically address each of the considerations in subsection 14A-32(b) and the limitations and conditions of subsection 14A-32(c).

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-32. - Considerations for variances.

In considering variance applications, the city council shall consider and make findings of fact on all evaluations, all relevant factors, requirements specified in other sections of these regulations, and the following factors:

(a) The danger that materials may be swept onto other lands to the injury of others.

(b) The danger to life and property due to flooding or erosion damage.

(c) The susceptibility of the proposed development and its contents (if applicable) to flood damage and the effect of such damage on the individual owner.

(d) The importance of the services provided by the proposed development to the community.

(e) The availability of alternative locations for the proposed use which are not subject to, or are subject to less, flooding or erosion damage.

(f) The necessity to the facility of a waterfront location, where applicable, or if the facility is a functionally dependent use.

(g) The compatibility of the proposed use with existing and anticipated development.

(h) The relationship of the proposed use to the comprehensive plan for that area.

(i) The safety of access to the property in times of flood for ordinary and emergency vehicles.

(j) The expected heights, velocity, duration, rate of rise, and sediment transport of the flood waters and the effects of wave action, if applicable, expected at the site.

(k) The costs of providing governmental services during and after flood conditions, including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, and water systems, and streets and bridges.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-33. - Limitations for variances.

(a) An affirmative decision on a variance request shall only be issued upon:

(1) A showing of good and sufficient cause. A "good and sufficient" cause is one that deals solely with the physical characteristics of the property and cannot be based on the character of the planned construction or substantial improvement, the personal characteristics of the owner or inhabitants, or local provisions that regulate standards other than health and public safety standards.

(2) A determination that failure to grant the variance would result in exceptional hardship due to the physical characteristics of the property.

(3) Increased cost or inconvenience of meeting the requirements of these regulations does not constitute an exceptional hardship to the applicant.

(4) A determination that the granting of a variance for development within any designated floodway, or special flood hazard area with base flood elevations but no floodway, will not result in increased flood heights beyond that which is allowed in these regulations.

(5) A determination that the granting of a variance will not result in additional threats to public safety; extraordinary public expense, nuisances, fraud on or victimization of the public, or conflict with existing local laws.

(6) A determination that the structure or other development is protected by methods to minimize flood damages.

(7) A determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.

(8) A determination that the variance is not in conflict with the purposes of the comprehensive development plan of the city.

(b) Upon consideration of the individual circumstances, the limitations and conditions, and the purposes of these regulations, the council may attach such conditions to variances as it deems necessary to further the purposes of these regulations.

(c) The council shall notify, in writing, any applicant to whom a variance is granted for a building or structure with a lowest floor elevation below the base flood elevation that the variance is to the floodplain management requirements only, and that the cost of federal flood insurance will be commensurate with the increased risk.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

ARTICLE VI. - ENFORCEMENT

Sec. 14A-34. - Compliance required.

(a) No structure or land development shall hereafter be located, erected, constructed, reconstructed, repaired, extended, converted, enlarged or altered without full compliance with these regulations and all other applicable regulations which apply to uses within the jurisdiction of these regulations.

(b) Failure to obtain a permit shall be a violation of these regulations and shall be punishable in accordance with section 14A-35.

(c) Permits issued on the basis of plans and applications approved by the floodplain administrator authorize only the specific activities set forth in such approved plans and applications or amendments thereto. Use, arrangement, or construction of such specific activities that is contrary to that authorized shall be deemed a violation of these regulations.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-35. - Violations and penalties.

Any person including, but not limited to, an individual, firm, partnership, association, trust, joint stock company, corporation, or successor of any of the foregoing, who shall violate any provision of this chapter shall be guilty of a misdemeanor, and upon conviction thereof shall be fined no less than $100.00 nor more than $1,000.00 for each violation. Each day of a continuing violation shall be deemed a

separate offense. The application of a penalty hereunder shall not preclude an application to a court for appropriate injunctive relief.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

ARTICLE VII. - AMENDMENT

Sec. 14A-36. - Amendment procedure.

(a) The council may, from time to time, on its own motion, or on the motion of the planning commission amend, supplement, change, modify, or repeal the floodplain regulations and restrictions in a manner and in accordance with the procedure hereinafter provided.

(b) All proposals for amending, supplementing, changing, modifying, or repealing the floodplain regulations or restrictions, before being acted upon by the council, except those originating on motion of the planning commission, shall be referred to the planning commission for consideration and recommendation. The planning commission shall study all such proposals, whether originating with the planning commission or otherwise, conduct a public hearing thereon after having given notice thereof required for the agenda of the planning commission. The planning commission shall report its findings and recommendations to the council.

(c) The planning commission is hereby granted the authority to require, as a condition to consideration of any proposal, other than one originating with the council, that a petition be submitted accompanied by such maps, charts, sketches, and other information as the planning commission deems necessary for the proper and effective consideration of such proposal, and to refuse to consider any proposal not complying with such requirement.

(d) No proposed amendment, change modification, or repeal of any floodplain regulation or restriction, shall become effective until after a public hearing in relation thereto shall have been held by the council, at which parties in interest and citizens shall have an opportunity to be heard. At least 15 days' notice of the time and place of such hearing shall be published in a newspaper of general circulation in the city.

(e) If, after due consideration, a proposal is denied, such proposal shall not be eligible for reconsideration for a period of two years after final action by the council, except upon the favorable vote of three-fourths of planning commission or council.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-37. - Hearing required; notice thereof.

No change or amendment shall become effective until after a public hearing in relation thereto, at

which parties in interest and citizens shall have had an opportunity to be heard. At least 15 days' notice of the time and place of such hearing shall be published in an official paper or a paper of general circulation in the city.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Sec. 14A-38. - Alternative hearing notice may be provided for by council.

Notwithstanding any notice requirement to the contrary, the council, by resolution, may provide for alternative notice so long as all notice requirements contained in the state law are followed. Said alternative notice shall contain the date of the public hearing and may be included with the electric bill regularly mailed by the city.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

ARTICLE VIII. - EFFECTIVE DATE; APPLICABILITY

Sec. 14A-39. - Effective date; applicability.

This chapter shall take effect on February 5, 2015 and shall apply to all applications for development, including building permit applications and subdivision proposal, submitted on or after February 5, 2015.

(Ord. No. 15-02, Amend. No. 7, 1-12-15)

Appendix 10

ARTICLE VI. - DRAINAGE SWALES AND DITCHES

Sec. 26-40. - Maintenance of drainage swales and ditches.

A property owner in the City of Newark is responsible for the maintenance and keeping free of obstructions of all drainage swales and ditches located on his property except those drainage swales or ditches specifically accepted by the city for maintenance.

(Ord. No. 85-43, Amend. No. 2, 9-9-85; Ord. No. 99-30, Amend. No. 1, 9-13-99)

Editor's note— Formerly § 26-41. See the editor's note at § 26-36.

Appendix 11

APPENDIX III. - DRAINAGE CODE[1]

Footnotes:

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Cross reference—Drainage swales and ditches, Ch. 26, Art. VI.

Section I. - In general.

(a) *Objective.* The objective of both Appendices III and IV is to develop a comprehensive set of regulations and controls covering surface and groundwater drainage in the city in order:

(1) To protect persons and property from serious harm and significant damage from flooding caused by storms of up to one hundred-year intensity;

(2) To assure that each residential, commercial, industrial, or public development, home, and yard is constructed with adequate drainage;

(3) To provide that public drainage facilities and watercourses are designed and constructed to require minimal maintenance;

(4) To preserve water quality of the streams and natural watercourses in Newark;

(5) To minimize sedimentation and erosion;

(6) To promote delayed runoff by requiring the use of on-site detention/retention; and

(7) To promote the utilization of groundwater recharge techniques where feasible.

(8) To enable the City of Newark to comply with its National Pollutant Discharge Elimination System (NPDES) permit and applicable regulations for stormwater discharges (40 CFR 122.26, Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 and the Water Quality Act of 1987 33 U.S.C. 1251 et seq. and Title 7, Del. C., § 6003).

(9) To prohibit illicit connections and discharges to the municipal separate storm sewer system (MS4).

(b) *Liability of city.* Nothing in this appendix shall create any liability for loss for damage resulting from the failure of the city to perform any responsibility stated in this appendix or obligate the city to make any appropriation or to expend any money not appropriated for any purpose stated in this appendix.

(c) *[Conformance.]* Whenever a sediment and/or stormwater management plan is required by the public works department, the plans shall conform to the most current Delaware Sediment and Stormwater Regulations pursuant to subsection (d) of this section and city regulations.

(d) *Additional information and related requirements.* For additional information and related applicable state requirements, see the most current "Delaware Sediment and Storm Water Regulations" issued by the Delaware Department of Natural Resources and Environmental Control (DNREC), and as may be amended by the DNREC, are hereby adopted by the City of Newark as if fully set forth herein.

(e) *Land-disturbing activities.* Except as exempted in the Delaware Sediment and Stormwater Regulations, no person or entity shall engage in any land-disturbing activity in the city until such person or entity has submitted and obtained approval for a sediment and stormwater permit. All sediment and stormwater plans submitted for permit approval shall conform with the requirements of the most current Delaware Sediment and Stormwater Regulations, and any amendments thereto, and city regulations.

(f) *Sediment and stormwater permit fee.* The public works department shall collect a permit fee at the time constructions plans for erosion and sediment control and stormwater management are submitted for review. The minimum fee shall be $125.00 per disturbed acre per project. The fee for acreage and fractions of acreage greater than one shall be at the rate of $125.00 per acre or fraction thereof. The fee for a general permit shall be $25.00. A general permit shall be required pursuant to the Delaware Sediment and Stormwater Regulations, Section II, or as deemed necessary for specific land-disturbing activities as determined by the public works director.

(g) *Standard requirements.* The guidelines established in Appendix III and IV are minimum requirements. The public works director may require more stringent requirements in certain situations based on historical drainage, flooding problems, preservation of environmentally sensitive areas, or based on site specific circumstance.

(Ord. No. 05-14, Amend. No. 2, 5-23-05)

Section II. - Watercourse maintenance.

(a) *Responsibility.*

(1) It is the responsibility of the city to keep all major streams in Newark, open and free flowing. Each owner of property containing a minor stream(s) shall keep any stream on their property open and free flowing.

(2) Maintenance of "on-street" drainage facilities for public dedicated or owned streets and roads to the point of open discharge is the responsibility of the city once inspected and accepted. Maintenance of private property after the point of open discharge is the responsibility of the property owner.

(3) Maintenance of all drainage facilities and watercourses within any subdivision is the responsibility of the developer until the subdivision is accepted by the city, after which they become the responsibility of the city, the community maintenance association, or the adjacent property owners.

(4) The city may agree to accept a water body, which is contained within the tract being subdivided, through dedication. If dedication of the water body or portion thereof is unacceptable to the city, the lot line shall be drawn so as to distribute the entire ownership of the water body among the adjacent lots. The city council may approve an alternative plan whereby the ownership of and responsibility for safe maintenance of the water body is so placed that it will not become the responsibility of the city. No more than 25% of the minimum lot area or related zoning code requirements may be satisfied by land under water. Where a watercourse or water body separates the buildable area of a lot from access to a street right-of-way, provisions shall be made for installation of a culvert or other structure approved by the public works director.

(5) For each development, a drainage agreement shall be executed before any building permits are issued. A sample drainage agreement is found in Section VII(a) Exhibit 1.

(6) The enforcement section of this agreement shall include the following steps to be taken by the city to enforce the agreement:

a. A written notice is to be sent from the director of public works to the builder stating that he is not complying with the agreement and that he must do the work agreed upon before a certain date. This date is determined by the director of public works.

b. If the builder does not comply with the agreement by the date specified in the notice, the city shall immediately refuse to issue any more building permits for the development. Furthermore, no certificate of occupancy shall be issued for any houses under construction as of the date specified in the notice.

c. If the builder does not take steps to comply with the agreement before 30 calendar days after the date specified in the notice, the city shall then issue "stop work orders" on all active building permits the builder has in the city.

d. Simultaneously with step (c), above, the city or its agent shall perform any construction work required to attain compliance with the drainage agreement.

e. Upon completion of the work, the builder will be required to reimburse the city for the cost of this work, plus an annual interest of 12%. If the builder fails to reimburse the city on a timely basis, the city will place a lien on any bond or insurance so created for this purpose. If there is no bond or insurance, a lien shall be placed on the property.

f. If the city is subsequently reimbursed for the drainage work done, any stop work orders or liens will be rescinded.

(7) Maintenance of any drainage facility, stormwater management structure, or watercourse originating and partially or completely on private property is the responsibility of the owner to the point of open discharge at the property line or at a communal watercourse within the property or the point of piped discharge into a closed communal system which has been accepted by the city or communal watercourse.

(8) It is the responsibility of any person, corporation, or other entity doing any act on or across a communal stream or watercourse or upon the floodplain or right-of-way thereof to maintain as nearly as possible, in its present state, the stream, watercourse, floodplain, or right-of-way during the pendency of the activity and to return it to its original or equal condition after such activity is completed.

(9) Maintenance of streams, watercourses, and drainage facilities shall consist of keeping them open and free flowing.

(b) *Prohibitions.*

(1) No person, corporation, or other entity shall block, impede the flow of, alter, construct any structure, or deposit any material or thing, or commit any act which will affect normal or flood flow in any communal stream or watercourse without having obtained prior approval therefore from the department of public works.

(2) Whoever shall block, impede, or cause to be blocked or impeded, the normal or flood flow of any stream or drainage ditch in the city shall, upon conviction, be fined not less than $100.00 and not more than $1,000.00 for each violation. Each day during which such blockage or impeding of flow continues shall be deemed a separate offense.

(3) Whoever shall alter, or cause to be altered, the course or in any way change or cause to be changed any stream or drainage ditch or normal flood flow without first having obtained approval from the director of public works shall, upon conviction, be fined not less than $100.00 and not more $1,000.00 for each violation. Each day during which such altered course or change in stream or drainage ditch shall continue shall be deemed a separate offense.

Prior to granting such approval, the director of public works shall consider, but not limit his/her considerations to, such items as the effect of such change or alteration on the stream's groundwater recharge capability, loss or erosion resistance, destruction of natural habitat, organisms and stream supported and oriented life, and increased stream flow velocity.

(4) Whoever shall place or cause to be placed rubbish, debris, trash, grass cuttings, weeds, or waste materials in any stream, drainage ditch, or on the floodplain of any stream or drainage ditch shall, upon conviction, be fined not less than $100.00 and not more than $1,000.00 for each violation. Each day during which such rubbish, debris, trash, grass cuttings, weeds, or waste materials shall remain in any stream or drainage ditch shall be deemed a separate offense.

(c) *Design for maintenance.*

(1) New or improved watercourses or drainage facilities will be designed and constructed to allow for economical maintenance, and improvements to watercourses in existing developments will be designed and constructed to retain the character of the surrounding area as much as practical.

(2) Open watercourses are preferred to closed systems.

(3) Adequate right-of-way must be provided for access of persons and equipment during construction and afterwards for maintenance.

(4) Easements and rights-of-way.

a. All on-site drainage easements necessitated either by approved drainage design for subdivision or alterations to natural watercourses will be sized and laid out according to the requirements of this appendix.

b. All easements will be dedicated by the developer or parties making the alterations and recorded by the procedures which are established by the city subdivision regulations.

c. Rights-of-way or easements necessary for storm drainage on-site of the proposed developments must be provided by the developer. Easements off-site which pertain to natural watercourses and/or major streams will be provided by the city if necessary. The width shall be such as to permit the movement and normal operation of equipment which is necessary for the repair and maintenance of these facilities under day-to-day living conditions.

d. Within subdivisions where pipes are located on private lands, a drainage easement should be provided of no less than 20 feet in width, and suitable allowance for swale construction over the pipe must be made. The owner shall not construct any structure within the drainage easement or place within the easement any blockage. If drainage swales are designed along property lines of private property, those areas shall be maintained by abutting property owners.

e. Streams which flow through or along the boundaries of developments shall have dedicated right-of-way of a width not less than the area estimated to be flooded by a 100 year frequency storm after grading. However, in no case shall the width of dedicated right-of-way be less than 50 feet if the drainage area is in excess of 100 acres. (Any grading in the area of the 100-year floodplain shall be accomplished in compliance with provisions of Section III, Floodplains.)

f. Off-site easements necessary to ensure proper discharge and unimpeded flow to natural watercourses must be obtained in accordance with the provisions of this section. Copies of these easements shall be provided to the department of public works and/or shown on the final plat.

g. Besides the above requirements, the developer will be required to provide a permanent recorded access easement to all on-site easements required by the above paragraphs. These access easements, where possible, should be across individual lots of the subdivision. This access easement will be at least ten feet wide so that equipment and material can be easily moved in and out without damage to private adjacent properties.

(5) When it is necessary to make permanent improvements to provide adequate drainage systems for existing subdivisions, the same criteria for establishing new easements will be followed as in paragraph (4) above.

(6) Where it is necessary to make capital improvements or maintenance work on a watercourse in the city, which is not part of the subdivision, the same policy for establishing new easements will be followed as in paragraph (4) above. The width of the easement will consist of the course bed and slopes plus a 30-foot strip adjacent to the stream not including the slopes of both sides. If only one strip can be provided, a minimum of 40 feet will be required. Access to the maintenance strips must be provided and will be of the same type as described in paragraph (4) above.

On small watercourses, when the above requirements place an undue hardship on the landowners, these can be waived by the director of public works or his designee and a suitable size easement will be provided. The alignment of the easement will generally be governed by the hydraulic characteristics of the stream flow and the location and relationship of the adjacent properties. The alignment should follow a natural watercourse when possible.

(7) When capital improvements are made along reaches of major streams such as the White Clay, and Christina, or any of their minor streams, the easements will be sized and located on an individual basis with direct consultation with the director of public works.

(8) Easements for other drainage facilities which are not specifically mentioned in the previous sections will be sized and located on an individual basis with such aid from the department of public works as is necessary to provide an adequate easement.

(d) *Riparian buffer protection requirements.* Because the preservation of Newark's streams and stream banks in an undisturbed natural condition constitutes important physical, aesthetic, recreational, water quality, health, and economic assets for our community, new construction in subdivisions approved after the date of the adoption of the ordinance from which this Section derives shall comply with the following:

(1) In addition to conformance with the city zoning code, article XXVI, special provisions for floodplains and land adjoining floodplains, plans shall show all perennial watercourses identified through site inspection and labeled on United States Geological Survey (USGS) maps with a solid blue line (known as "blue line" streams).

(2) Within a 50-foot buffer area, measured from the top of the banks of the blue line streams and from 50 feet from beyond the special flood hazard area (SFHA), formerly known as the open floodway district (OFD), as designated in zoning code, chapter 32, the land shall be managed to enhance and maximize the value of the stream channel and water resources by prohibiting the following, except for uses permitted and regulated in city zoning code article XXVI, special provisions for floodplains and land adjoining floodplains.

(a) Clearing of existing trees and vegetation, except: for selective pruning that does not compromise vegetation; removal of individual trees that are diseased or may cause disease; removal of trees and vegetation that are in danger of causing damage to structures or municipal facilities, or that otherwise may jeopardize public safety; and removal of poison ivy and similar vegetation.

(b) Soil disturbance by grading, stripping or similar practices, including alteration of the course of the stream.

(c) Filling or dumping.

(3) These requirements do not apply to culverts unless the stream is removed from the culvert as part of the subdivision plan.

(4) Stream restoration and stabilization approved by the public works director is permitted.

(5) The buffer area restrictions established herein shall not apply to area and related requirements, nor uses permitted in the underlying zoning district adjacent to the buffer area, as specified in the city zoning code.

(6) Subject to the approval of the city, the buffer area restrictions established herein shall not apply to the construction or maintenance of public utilities and facilities including, but not limited to, transmission lines, roads, drainage, water, wastewater, and similar facilities.

(7) The public works director, in consultation with the parks and recreation director, shall require a buffer area management plan through the construction improvement plan review process. This plan shall consist of descriptions of existing vegetation and a landscape plan for proposed new plantings. The requirement for new plantings may be waived only in instances where the existing stand of trees is sufficiently wide and in such good condition to function as a riparian buffer as specified in this subsection.

(Ord. No. 05-14, Amend. No. 2, 5-23-05; Ord. No. 10-02, Amend. No. 1, 1-11-10; Ord. No. 16-05, Amend. No. 7, 1-25-16)

Section III. - Reserved.

Editor's note— Ord. No. 15-02, Amend. No. 6, adopted January 12, 2015, repealed the former section III in its entirety, which pertained to floodplains, and derived from Ord. No. 05-14, Amend. No. 2, adopted May 23, 2005.

Section IV. - Developments; watercourses design requirements.

(a) *Definition. "Drainage areas"* are those areas whose surface runoff is collected into a common natural watercourse.

For the purpose of clarification of the use of terms in this section, the following definitions shall apply:

(1) *Bridge:* Any structure without a paved invert or any structure of which the superstructure is not structurally integrated with the substructure.

(2) *Culvert:* Any structure not included in the bridge definition. These normally are structures of which all structural elements are integrated into a closed unit such as pipes, box culverts, and rigid frames with paved inverts.

(b) *Sizing.*

(1) Whenever any surface change is approved within a drainage area, the drainage facilities and easements within that development shall be sized and designed consistent with an integrated drainage system serving the entire drainage area when fully developed in accordance with the General Comprehensive Development Plan for Newark. The city shall make available all information it deems necessary to design an integrated drainage system.

For projects requiring stormwater management approval, developers shall include stormwater management and drainage computations as stipulated in Appendix IV, Section I(a) and (b).

(2) The peak rate of runoff normally shall be calculated by the rational formula, TR55, TR20, or HEC1 (use of alternate methods of computing the peak rate of runoff may be specifically approved or required on a case-by-case basis by the public works director):

a. All closed storm drainage conveyance systems shall be designed and constructed according to Delaware Department of Transportation (DelDOT) standards unless exceeded by design criteria under this section. Reference is made to the State of Delaware Department of Transportation, Division of Highways, Rules and Regulations for Subdivision Streets, Section 7, Drainage Criteria, and any amendments, thereto.

(3) Conveyance system design frequencies.

a. Storm sewer installations going to the site, or on the site as required for development to handle stormwater runoff, shall be designed using the 10-year storm frequency. The 25-year storm frequency shall be used for sump areas drained by a storm piping system, to open discharge.

b. All natural water courses shall be preserved on the site as close to its natural state unless there are circumstances applicable to the site such that the strict adherence to the provisions of the regulation will result in unnecessary hardship. The conversion of a natural watercourse through the site or along the boundary of the site to an enclosed conveyance system shall be designed using the 50-year storm frequency. This design shall include an enclosed system in combination with a swale or other conveyance system able to carry the 100-year storm frequency without negative impact to adjacent property.

c. Wherever open channels (ditches/swales) are proposed for the conveyance system, the capacity design shall be a 25-year storm frequency, except that a higher storm frequency design may be required as directed by the public works director to address potential flooding or conveyance issues.

(4) Bridges and culverts.

a. Culverts or bridges transversing a natural watercourse running through the site or along the boundary of the site, or open channels replacing a watercourse, shall be designed for the 50-year storm frequency with a 100-year flooding easement.

b. All structures installed to convey surface flows which are not under DelDOT's jurisdiction shall be sized in accordance with this section to carry the peak runoff from the contributing watershed without causing flood damage to upstream properties or erosion damage to downstream properties.

c. The acceptable design method for sizing both bridges and culverts shall be in accordance with the USDOT Federal Highway Administration publications HDS-5 and HEC-10 entitled "Hydraulic Design of Highway Culverts" and "Capacity Charts for the Hydraulic Design of Highway Culverts," respectively. Structures so designed shall be checked against a storm of 100-year frequency to protect against serious harm and/or significant damage.

d. Runoff estimate shall be based on the upstream basin being fully developed in accordance with the latest approved and applicable comprehensive development plan.

e. In addition to the general criteria stated above, the following specific criteria shall also be applied:

1. Detailed engineering calculations in accordance with above manuals must be submitted with design report.

2. Bridges: One foot of clearance between the lowest point of the underside of the superstructure and the 50-year design storm level shall be provided.

3. General: Any bridge or culvert involved with a state highway must meet the criteria of the DelDOT.

4. All watercourses crossed by streets or alleys shall be provided with permanent culverts of adequate length and size. A suitable apron shall be provided at the discharge end of the culverts as per the most current Delaware Erosion and Sediment Control Handbook, and an approved method of protection against erosion shall be provided at the intake where necessary.

f. A report showing hydrologic, hydraulic, and design computations shall be prepared for each bridge or major culvert and may be made available to the city department of public works. Each report shall contain the following minimum data:

1. Location map (U.S.C. and G.S. or aerial photos) showing the location of the structure and the limits of the drainage area.

2. Vicinity map showing specific details near the structure including contours, existing details, and the location and details of the proposed improvement. In some cases, stream cross sections may be acceptable in lieu of a topographical map, subject to the approval of the director of public works.

3. Information on structures and channels upstream and downstream from the proposed improvement. This should include type and size of the structure, channel cross sections, high and low water marks, and any other pertinent data obtained in the field investigation. Analysis of the adjacent channels and structures shall be made to determine the effects, if any, on the proposed improvements.

4. Hydrologic analysis.

5. Hydraulic analysis of the proposed improvement showing the estimated velocities, storm level elevations, and backwater curves where necessary.

6. Federal and state agency permits as required or letters, in lieu thereof, from same stating permits are not required.

(c) *Surface water collection and disposition.*

(1) Each person, corporation, or other entity which makes any surface changes shall be required to:

a. Collect on-site runoff and dispose of it to the point of discharge into the common natural watercourse of the drainage area, or to such other point approved by the director of public works.

b. Handle existing off-site runoff through his development but size any pipes he installs and size any easements and make any on-site improvements for a fully developed area upstream.

c. Pay the proportionate share of the total cost of off-site improvements to the common natural watercourse based on a fully developed drainage area.

d. Provide onsite stormwater controls as approved by the director of public works when downstream improvements are physically or economically impractical.

(2) City of Newark shall be required to:

a. Assess and collect the cost of off-site improvements to the common natural watercourses from the developer and/or property owner. Assessments shall be on the undeveloped land of the drainage area only and the proportionate share for the existing developed land may be provided by the city. Collection may be delayed until the assessed land is approved for development.

b. Acquire easements for such common natural watercourse improvements.

c. Supervise such improvements to completion.

(3) DelDOT shall be required to make improvements to any existing state maintained or owned street or road crossing of the common natural watercourse as needed for upstream development and as state funds are made available.

(d) *Stabilization.* Where changes in the surface are made that increase water runoff into a watercourse or where a change is made to a natural watercourse, either of which will result in erosion, that watercourse shall be stabilized. Where the flow/soil conditions exceed the stabilizing ability of vegetation, then as a second option a combination vegetative/mechanical means of stabilization (biotechnical methods of stream bank stabilization) will be explored, and as a third and least desirable option, a straight mechanical method will be explored.

(e) *Storms exceeding criteria.* There will always be storms or local flooding conditions that exceed the capacity of the drainage system. Therefore, open systems should be designed with free board, and closed systems should be designed for overland flow or other provisions should be made to prevent damage when the capacity of the system is exceeded.

(f) *Watercourse improvements by the City of Newark.*

(1) Qualification criteria.

a. Improvements to public and communal watercourses and drainage systems by the city shall only be made to city owned property:

1. To protect persons and property from serious harm and significant damage from flooding caused by storms of up to 100-year intensity;

2. To reduce cost of city maintenance of such watercourses and systems, providing the annual average maintenance divided by the annual amortization cost of the improvement over a ten year payoff equals at least 110%;

3. To protect dwelling unit(s) or attachment structure(s) from structural damage because of the action of flowing water;

4. To eliminate a public health hazard certified as such by the state health officer, providing other methods are not available or practical to eliminate said health hazard.

(2) Approval procedure. See Article XXVI, Special Provisions for Floodplains, in City Zoning Code.

(3) Design considerations.

a. Improvements to streams and watercourses shall be engineered and constructed to preserve and enhance the natural environment wherever practical.

(g) Inundation of yards or periodic basement flooding or loss of nonstructural property due to stream bank erosion or flooding is not considered significant damage. Ponding or failure of a lot to drain is not the responsibility of the city to correct; however, the city should seek developer or builder correction where the plan of drainage or lines and grades was not followed. Change of grade by an upstream neighbor to the detriment of the downstream neighbor is not the responsibility of the city to correct. Similarly, change of grade by a downstream neighbor to the detriment of an upstream neighbor is not the responsibility of the city to correct.

(Ord. No. 05-14, Amend. No. 2, 5-23-05)

Section V. - Groundwater.

(a) *Wet areas.*

(1) Certain areas have poor drainage characteristics which result in seasonally high water tables near or at the surface of the ground. Structures built in these areas shall be protected by an approved method which will lower the water table below the structure basement or lowest floor, or the structure shall be protected by such other means, as approved by the building department.

(2) "Wet areas" are those areas having seasonally high water tables from approximately 36 inches below the surface of the ground. These areas are all lands so designated on sheets 1 through 58 inclusive of the soil survey of New Castle County, Delaware (U.S.D.A. SCS Series) as listed in Exhibit 2, Table A.

(3) Waiver from the requirements of this section may be granted where evidence is submitted to indicate that the land is not of the type shown on the soil survey sheets. Natural Resource Conservation Service (NRCS) personnel may be consulted in such case. Structures built in wet areas with basements or habitable spaces below grade shall be provided with foundation drains, and foundation walls shall be water-proofed.

(4) Foundation or footing drains shall be provided around foundations enclosing basements or habitable spaces below grade. Drains shall be installed at or below the area to be protected and shall discharge by gravity or by mechanical means to a positive outfall such as a drainage ditch or swale, or into a sump pit from which it shall be pumped to discharge into the storm drainage system. Such discharges, however, shall be designed and installed so as not to cause icing conditions on sidewalks, driveways, curbs, or streets, or continuous saturated conditions along common swales. Under no conditions shall the drain discharge into the sanitary sewer.

a. Foundation and footing drains shall be installed per the most current building code or as approved by the building department.

(5) Exterior walls enclosing basements or habitable spaces below grade in wet areas shall be water-proofed in an approved manner as required by the building department per the most current building code.

(6) Wherever springs or wet areas are encountered in the excavation for a structure, the method of draining must be approved by the departments of public works and building.

(7) Alternate methods of protecting the structure requiring foundation drains and/or foundation wall water-proofing may be approved if they are deemed adequate by the Directors of public works and building.

(Ord. No. 05-14, Amend. No. 2, 5-23-05)

Section VI. - Grading for drainage.

(a) *Yards and other surfaces.*

(1) The yards of every structure shall be graded to carry water away from that structure and dispose of it without ponding or excessive erosion, and all land within a development shall be graded to drain and dispose of surface water without ponding or excessive erosion except where approved by the departments of public works and building. For the purposes of this subsection, ponding shall mean a visual accumulation of water above the surface of the ground remaining 48 hours after the end of rainfall. Areas susceptible to erosion shall be sodded or stabilized by other means as stipulated by the public works director.

(2) The directors of public works and building will review the plan submission required by the city regulations to determine its feasibility for recordation purposes.

(3) An overall lines and grades approval shall be required before construction begins. The first phase of this approval shall be a detailed drainage design with calculations showing that full development of the upstream basin has been considered in sizing all drainage structures associated with the development. Two copies of the drainage calculations and drainage plans are to be submitted to the department of public works for review. Calculations and sizing of structures are to be in accordance with the requirements of this appendix. At the option of the developer, a single plan satisfying drainage and lines and grades may be submitted. The second phase of this approval shall be the submission and approval by the department of public works of a detailed sediment and erosion control plan. No stripping of vegetation or earth moving shall be permitted on the site until the erosion and sediment control plan is approved. The lines and grades submission shall identify the name of the engineer or land surveyor duly registered in the State of Delaware responsible for preparation of the plan. Copies of the plan shall be signed and sealed by the engineer or land surveyor. The scale of the lines and grades plan shall be sufficient to provide the following in a clear and legible manner:

a. Contours or existing grades at intervals of not more than 5 feet. Intervals less than 5 feet may be required when indicated by the character of the topography.

b. Location of house or structure and accessory buildings on each lot.

c. Identification of each lot by number.

d. Elevations shall be based upon the U.S.G.S. data. The type of data and the location of the benchmarks shall be indicated on the submission.

e. The final grade elevations or contours of the proposed finished grades shall be indicated. The contour level selected shall be appropriate to the topography of the site. The finished floor elevation shall be indicated. Basement finish floor elevations will be required at any walkout locations.

f. Indication of the lot grading type and the approximate location of the drainage swales.

g. Location of the drainage outfall if drainage is not to a street.

h. Indication of the location, type and size of both city water and sanitary sewer lines.

i. Indicate, where applicable, the 100-year storm flood line, with elevation of said lines to be shown.

j. Complete metes and bounds data on the property with bearings and lengths of all lines.

(4) As a part of the requirements for individual building permits, a specific lines and grades submission shall be required. When the requested permit is part of an already approved subdivision or plan, the developer may add the required information for the development of each lot to his already approved overall lines and grades plan. If the developer elects to submit individual plans, the information shown shall be as required in paragraph (a)(3) of this section.

(5) The following are specific requirements for multifamily, commercial, or industrial uses:

a. *Protective slopes around buildings:*

1. Slope downward from building foundations to lower areas or drainage swales.

2. Horizontal length, minimum 10 feet.

3. Vertical fall of protective slopes, minimum 6 inches. Vertical fall at upper end of swale may be reduced to 3 inches if a long slope toward the building or a nearby bank is not present.

4. Minimum gradient: Impervious surfaces 1/8 inch per foot (1%).

   Pervious surfaces ¼ inch per foot (2%). Wet areas as defined in Section V(2) may require underground drains to carry surface and ground water to point of discharge into storm system or stormwater management facility.

5. Maximum gradient: A ratio of four horizontal to one vertical for a minimum of four feet away from all building walls.

b. *Lawn area and other slopes:*

1. Minimum gradient: Pervious surfaces 1/8 inch per foot (1%).

2. Maximum gradient: Slopes shall not be steeper than two horizontal to one vertical.

3. The city may, after analysis, accept steeper slopes or require flatter slopes.

c. *Open channels (ditches/swales):*

1. When open channels are used, engineering analysis shall be submitted supporting proposals with respect to feasibility, capacity design and channel stabilization.

2. Documentation of the seasonal high water table elevation with respect to the proposed channel depth shall be provided to evaluate the potential of the ditch intersecting the ground water table causing the channel to receive greater flows than design capacity and the possibility for continually wet surfaces within the channel.

3. Minimum bottom width shall be 3 feet where the depth exceeds 1 foot.

4. Minimum design velocity shall be 2 ft./sec. Where swales are designed specifically as a BMP, lesser velocities will be permitted.

5. The maximum design velocity in a grassed channel shall not exceed the permissible values stated in the Standards and Specifications for Vegetated Channels section of the Delaware Erosion and Sediment Control Handbook for Development, except as provided with structural measures as detailed therein. Also noted therein, sustained wet conditions in a channel are not amenable to the establishment of adequate vegetative cover; therefore, where conditions will exist which indicate a base flow in the channel; the channel shall be provided with a stone center according to the specifications noted above.

6. Maximum side slopes: 3 foot horizontal to 1 foot vertical for unpaved (vegetated side slopes). Steeper side slopes may be approved upon submittal and approval of sound engineering design.

7. All other standards and specifications contained in the vegetated channel waterways sections of the Delaware Erosion and Sediment Control Handbook for Development, as promulgated by the Delaware DNREC (most current edition), shall apply.

8. Ditches or swales draining an off site area greater than ten acres shall only be located in private or public open space and shall be designed for maintenance by the owner of the private or public open space. The width of the easement and the minimum width of its open space corridor shall be the area encompassed by the flows from the 100-year storm event plus 1 foot of freeboard.

9. The maximum flow depth for the design storm event in an open channel on a residential lot and/or the right-of-way adjacent to a residential lot shall be one foot. The maximum channel depth shall be three feet. The depth at any given cross section shall be measured from the bottom of the channel to the height at which the side slope becomes less than 5 foot horizontal to 1 foot vertical.

d. Streets, driveways and parking areas.

1. Street grading and center line gradients on streets shall meet the standard city specifications. Street grading and center line gradients for streets which are not to be dedicated shall meet the following criteria:

2. The street rights-of-way shall be graded with adequate surface drainage and convenient access to the living units and other important facilities on the property.

3. Center line gradients of the streets shall be suitable to provide adequate surface drainage and reasonable safety for traffic, and shall generally be no steeper than 10%.

4. Minimum gradient for streets shall be 1% unless analysis indicates that a flatter gradient cannot be avoided.

5. Driveway sloping toward building shall be graded in such a manner that the drainage will be intercepted prior to inundating the building.

6. Maximum gradient in parking areas to be 14%. Minimum gradient in parking areas to be 1%.

(6) The following are specific requirements for single-family dwellings:

a. *Protective slopes around buildings:*

1. Slope downward from building foundation and potable water supply wells to lower areas or drainage swales. (See stormwater disposal, below.)

2. Horizontal length, minimum 10 feet except where restricted by property line.

3. Vertical fall of protective slopes, minimum six inches. However, vertical fall at high point at upper end of a swale may be reduced to three inches if a long slope toward the house or from a nearby high bank will not exist.

4. Minimum gradient: Concrete or other impervious surfaces, to be 1%.

5. Maximum gradient: The first 4 feet away from all building walls shall be graded to a maximum of four horizontal to one vertical.

b. *Other lot areas:*

1. Minimum gradient: Concrete or other impervious surfaces, 1%; pervious surfaces, 2%. When acceptable to the department of public works, lesser gradients than those required for pervious surfaces above may be accepted when the lesser grading is adequate to drain the lot without detrimental effect upon buildings or upon essential lot uses, including any individual sewage disposal system. Conditions which would result in prolonged standing of water (defined as 48 hours after a storm) at any season are not acceptable.

Where surface water disposal is proposed by infiltration into the ground, technical exhibits such as soil gradient analysis and infiltration tests may be required.

Wet areas as defined in Section V(2) may require underground drains to carry surface and ground water to point of discharge into storm system or stormwater management facility.

2. Maximum gradient: Other areas within the subdivision, 3 feet horizontal to 1 foot vertical except that, if vertical height of slope does not exceed 30 inches, maximum gradient may be 2 feet horizontal to one foot vertical.

   If slope is held by satisfactory existing vegetation or rock outcropping and is not going to be disturbed, no limit when present and future stabilization is assured.

   Top and bottom of banks at swales, terraces, etc., shall be rounded for convenient maintenance.

c. *Open channels (ditches/swales):* See Section VI(a)(5)c.

d. *Storm water disposal:*

1. All areas shall be sloped to lower elevations off the lot or to drainage structures on the lot, except as necessary for controlled irrigation.

2. Unpaved drainage swales formed by intersecting slopes shall have adequate depth and width.

3. Longitudinal gradient for swale or gutter shall comply with minimum gradient for other lot areas.

4. Off-site drainage ways shall be assured by public rights-of-way, easements or by other means acceptable to the city. Where drainage inlets or catch basins are installed, emergency surface drainage overflow shall be provided to prevent possible flooding against buildings and walls in the event of failure of the underground drainage structures.

e. *Residential driveways:*

1. Driveways sloping toward building shall be graded to a low point located at least 8 feet away from the building with a minimum of 0.67' (8 inches) vertical elevation difference between the elevation at the building and low point.

2. Maximum gradient in residential driveways to be 14%. Minimum gradient in residential driveways to be 1%.

(7) Any or parts of a requirement can be waived by the director of public works for a particular submission if sound engineering practice and judgment warrant such a waiver, subject to all applicable requirements in the most current Delaware Sediment and Stormwater Regulations.

(8) All revisions to an approved plan must be approved by the director of public works. A new reproducible and copies shall be submitted which comply with the above requirements.

(9) All violations shall be considered a violation of the building permit.

(10) Notwithstanding other provisions of this chapter, construction and building on properties with slopes exceeding 25% shall not be permitted, except with the approval of the public works director upon consideration of the geological, hydrological, and soil conditions of the site.

(b) *Overland flow.* Concentration of diffused natural surface water flow shall only be permitted in swales or watercourses.

(c) *Floor elevations.* The lowest floor of every structure shall be elevated above the elevation of the 100-year flood, except as modified in Section III(c) above.

(d) *Slopes.* Slopes created by regrading shall be limited in degree of vertical incline and/or interrupted by terraces and/or equipped with foot and terrace drains as required, and/or stabilized by other structural techniques as required, at the discretion of the public works director, to prevent earth slippage.

(e) *Specific stormwater system design requirements.*

(1) Inlet design (10-year frequency): Check the design to insure the spread of water is no greater than 8 feet from the flow line of the curb. Maximum spacing of inlets is not to exceed 300 feet.

(2) The total number of catch basins at any one location must be sufficient to carry runoff up to the 100-year storm event without water overflowing the curb unless an approved method for overland conveyance is provided.

(3) For storm sewer pipes, the maximum and minimum allowable velocities shall be ten feet per second and 2½ feet per second, respectively. Normally, all storm sewer pipes should be placed with a cover of at least two feet. Variance(s) are subject to the approval of the public works director.

(4) In designing storm sewers, it is allowable to design the pipes to flow full as long as the hydraulic gradient is not located higher than one foot below the top of any catch basin or manhole.

(5) The outfall pipe to convey stormwater from catch basins to a drainage channel shall extend to a point at least 50 feet beyond the rear house line, unless it shall be a natural watercourse, in which case only a street culvert shall be required.

(6) Minimum pipe diameter shall be 15 inches.

(7) Storm manholes or junction boxes shall be used for changes in the direction of flow (the maximum deflection shall be 90 degrees).

(Ord. No. 05-14, Amend. No. 2, 5-23-05)

Section VII. - Exhibits.

(a) *Exhibit 1. Drainage agreement.*

	PARCEL NO:
	PREPARED BY:
	RETURN TO:
	City Secretary's Office
	City of Newark
	P. O. Box 390
	Newark, DE 19715

DRAINAGE AGREEMENT

THIS AGREEMENT, made this _____ day of _____, A. D. _____, by and between _____, party of the first part, hereinafter referred to as the 'OWNERS", and the CITY OF NEWARK, in New Castle County, a municipal corporation of the State of Delaware, party of the second part, hereinafter referred to as the "CITY".

WHEREAS, the Owners desire to construct a stormwater management and storm drainage system on acres, () of land for the development of to be known as _____, located at _____ in Newark, New Castle County, Delaware, (hereinafter called the "SITE"), and the City desires that all developed sites in the City of Newark to be so designed and constructed as to conform with City Ordinances; and

NOW, THEREFORE, IT IS AGREED, by and between the parties hereto; in conjunction of the mutual promises and benefits contained herein; that:

1. The Owners, at their expense, shall:

   (a) Provide to the City all necessary surveys, plans, profiles, cross sections and easement drawings required for sediment and erosion control, stormwater management, plans, designs, and calculations, and on-site plans for lines and grades submission. The designs and plans shall conform to the requirements of the City Department of Public Works.

   (b) Collect on-site and any off-site stormwater runoff and dispose of it to the point of discharge, as shown on the approved plan.

   (c) Construct the required on-site stormwater management and associated storm drainage system and any off-site improvements, as per the approved site plans, as required by the Department of Public Works, and in conformance with City Code and State Regulations.

   (d) Be responsible for removing any sediment which is washed down into, or from, the stormwater management area or drainage system during construction and after construction and the restoration of the stormwater management area in accordance with the approved plans.

   (e) Grade the Site only in accordance with the approved plans or approved revisions thereto.

   (f) Be responsible for control of erosion and prevent sediment from leaving the site and from entering off-site drainage systems during the course of construction. The Owners shall construct erosion control improvements as required by the Director of Public Works. Owners shall include Erosion and Sediment Control Plans with his/her site plans. Plans are subject to the review and approval of the Director of Public Works.

   (g) Permit the City Inspectors free access to all parts of the site.

   (h) Be responsible for the continuing maintenance of the on-site stormwater management and associated storm drainage system and off-site outfall pipe to continue functioning as per the approved design and plans during and after construction.

   (i) Provide access to the City of Newark to periodically inspect the stormwater management installations to assure its proper performance. Provide all maintenance required as directed by the Public works director during and after construction.

   (j) Notify the Public Works Inspector to inspect erosion and sediment control installations prior to any other site disturbance.

   (k) Prior to the completion of the project, the Owners shall furnish as-built drawings of the stormwater management and storm drainage system, signed by a Registered Professional Land Surveyor or Engineer.

   (l) The Owners shall hold the City harmless and indemnify the City for any and all claims arising out of any construction on the site or lands adjacent thereto.

2. The City shall:

(a) Have the right, in case the Owners do not properly maintain the stormwater management facilities, to enforce and do necessary repairs to the stormwater management system and to fine and/or charge the Owners or lien their property, according to City and State Regulations.

(b) Assign such inspectors as it deems necessary to assure that the grading and drainage work conforms to the approved plans and specifications.

(c) Provide the Owners or their Engineer with a check list for items to be completed on the erosion and sediment control and stormwater management plans.

3. Besides the specific rights and obligations that are combined in Paragraph 1 and 2, both parties shall comply with all applicable City Ordinances and State and Federal Laws and the orders and directives of all City and State Agencies. The Owners shall submit all submissions required by the DelDOT, City Planning Department, and the City Building Department, in addition to the submissions which have previously been required in the above paragraphs.

4. If, upon ten (10) days written notice by the Director of Public Works, the Owners, their successors or assigns, fail to correct any violation of this agreement, the City, in addition to any other remedies, may:

   (a) Immediately suspend all building and plumbing permits for any incomplete buildings.

   (b) Suspend issuance of Certificates of Occupancy.

   (c) If necessary, the City shall enter upon the site and correct violations of this agreement and charge the Owners for all costs incurred including, but not limited to, the direct cost of corrections and administrative overhead costs or lien his/her property for unpaid charges.

   (d) Fine responsible party per City Code and State Regulations.

5. This Agreement shall be binding upon the respective parties to it and upon their successors and assigns until the City informs the Owners/Developer in writing that the construction, which is the subject of this Agreement, is accepted by the City as being satisfactorily complete, with the exception of maintenance of the on-site stormwater management and associated storm drainage system and any off-site improvements, for which the Owners, their heirs, successors, and assigns shall be responsible for after acceptance by the City. The Owners shall continue to provide access to the City of Newark for periodic inspection of facilities and provide all maintenance required as directed by the Public Works Department.

IN WITNESS THEREOF: the parties hereto have duly executed this Agreement on the day and year aforesaid.

Attest:	
_____	_____ Owner/Representative
Attest:	CITY OF NEWARK
_____ City Secretary	_____ City Manager

STATE OF DELAWARE

SS:

NEW CASTLE COUNTY

BE IT REMEMBERED, that on this _____ day of _____, 20_____, in the year of our Lord, two thousand and _____, personally came before me, a Notary Public for the State of Delaware,_____, party of the first part, known to me to be such, and hereby acknowledges this indenture to be his act and deed, and that the signature affixed is the proper representative of said corporation, and the signature of _____is in his/her own proper handwriting, and that this act of sealing, executing, acknowledging, and delivering said Indenture was duly authorized by said corporation.

GIVEN under my hand and seal of office, the day and year aforesaid.

Notary Public

STATE OF DELAWARE

SS:

NEW CASTLE COUNTY

BE IT REMEMBERED, that on this _____ day of _____, 20_____, in the year of Our Lord, two thousand and _____, personally came before me, the Subscriber, a Notary Public for the State and County aforesaid, _____, City Manager, of Newark, Delaware, party of the second part to this Indenture, known to me personally to be such, and acknowledged this Indenture to be his act and deed and the act and deed of the City of Newark, that the signature of _____ is in his own proper handwriting and the seal affixed is the seal of said City of Newark, and that his act of sealing, executing, acknowledging, and delivering said Indenture was duly authorized by the Council of the City of Newark.

GIVEN under my hand and seal of office, the day and year aforesaid.

Notary Public

(b) *Exhibit 2.*

TABLE A

WET AREAS DESIGNATED BY SOIL SURVEY OF NEW CASTLE COUNTY U.S.D.A. SCS SERIES, SHEETS 1-58

Map Symbol	Mapping unit name
AdA	Aldino silt loam, 0 to 3% slopes
AdB	Aldino silt loam, 3 to 8% slopes
Am	Aldino-Keyport-Mattapex Urban Land Complex, 0 to 8% slopes

Ba	Bayboro silt loam, 0 to 2% slopes
Co	Codorus silt loam, 0 to 3% slopes
DeA	Delanco silt loam, 0 to 3% slopes
DeB	Delanco silt loam, 3 to 8% slopes
ElA	Elkton sandy loam, 0 to 2% slopes
EmA	Elkton silt loam, 0 to 2% slopes
EmB	Elkton silt loam, 2 to 5% slopes
Fa	Fallsington sandy loam, 0 to 2% slopes
Fs	Fallsington loam, 0 to 2% slopes
GnA	Glenville silt loam, 0 to 3% slopes
GnB	Glenville silt loam, 3 to 8% slopes
Ha	Hatboro silt loam, 0 to 3% slopes
HbA	Hatboro silt loam, local alluvium, 0 to 3% slopes
HbC	Hatboro silt loam, local alluvium, 3 to 12% slopes
Jo	Johnston loam, 0 to 2% slopes
KeA	Keyport silt loam, 0 to 2% slopes
KeB	Keyport silt loam, 2 to 5% slopes
KeC	Keyport silt loam, 5 to 10% slopes
KpC	Keyport silt clay loam, 5 to 10% slopes
KrA	Kinkora silt loam, 0 to 3% slopes

KrB	Kinkora loam, 3 to 8% slopes
MtA	Mattapex silt loam, 0 to 2% slopes
MtB	Mattapex silt loam, 2 to 5% slopes
MtC	Mattapex silt loam, 5 to 10% slopes
Mv	Mixed alluvial land, 0 to 2% slopes
Ot	Othello silt loam, 0 to 2% slopes
Ou	Othello-Fallsington-Urban Land, 0 to 5% slopes
Po	Pocomoke loam, 0 to 2% slopes
Tm	Tidal Marsh, 0 to 2% slopes
Wa	Watchung very stony silt loam, 0 to 8% slopes
WcA	Watchung and Calvert silt loam, 0 to 3% slopes
WcB	Watchung and Calvert silt loam, 3 to 8% slopes
WoA	Woodstown sandy loam, 0 to 2% slopes
WoB	Woodstown sandy loam, 2 to 5% slopes
WsA	Woodstown loam, 0 to 2% slopes
WsB	Woodstown loam, 2 to 5% slopes

(Ord. No. 05-14, Amend. No. 2, 5-23-05)

Section VIII. - Wetlands.

(a) *Wetlands delineation.*

(1) Except as provided below, a wetlands report shall be required as part of the submission requirement for minor and major subdivisions involving new and/or additional construction,

requiring subdivision review. The wetlands report shall be submitted to the public works department by a Delaware registered engineer, land surveyor, biologist, or other environmental scientist with experience and qualifications in wetlands delineation, preferably certified by the Society of Wetlands Scientists (Professional Wetlands Scientists) or US Army Corp of Engineers, and shall include the following:

a. Designation on the subdivision plan accurately depicting wetlands, if any.

b. Narrative description of the site conditions including the hydrologic soil and vegetative characteristics, and also including date of site investigation.

c. Narrative description of the extent to which any proposed construction shall disturb wetlands depicted on the subdivision plan, including proposed draining, filling, grading, dredging, and vegetation removal.

d. If no wetlands are found within the subdivision, the subdivision plan shall stipulate that the site was investigated and no wetlands were found to exist. The date of site investigation shall be included.

e. Description of the methods used to identify the wetlands delineated on the plan.

f. Copies of all applicable federal and/or state wetlands permits or a letter from the applicant specifying compliance with all applicable nationwide and/or state permits.

(2) Upon written request at the time of minor or major subdivision application, the public works department may waive the requirement for a wetlands report for all or a portion of the subdivision, based on one or more of the following conditions:

a. New or additional construction is not proposed.

b. New or additional construction is proposed for areas of the subdivision currently paved with impervious surfaces.

c. New or additional construction is proposed in developed areas where in the determination of the public works director, no wetlands impact will occur.

(b) *Interpretation of wetlands boundaries.*

(1) The wetlands boundary shall be determined by using the methodology in the Corps of Engineers Wetlands Delineation Manual (1987), and as may be amended from time to time.

(2) When interpretation is needed as to the exact location of wetlands boundaries, the public works director shall make the necessary interpretation.

(3) Any applicant contesting a location of the wetlands boundary shall have the burden of establishing that such land does not lie within wetlands as defined in this appendix.

(c) *Standards for wetlands design.* Because the preservation of Newark's wetlands in an undisturbed natural condition constitutes important physical, aesthetic, recreational, water quality, health, and economic assets for our community, subdivision plans with delineated wetlands shall be subject to the following site design and construction requirements and review criteria:

Site design and construction requirements:

(1) There shall be minimal feasible alteration or impairment to the wetlands' characteristics and its existing contours, and to its vegetation and hydrologic condition; any such alteration shall not cause significant degradation of ground and surface water quality and quantity.

(2) For undeveloped lands, a 50-foot wide buffer area surrounding the wetlands measured from the edge of the wetlands jurisdictional line shall be required. This buffer area shall consist of natural and minimally disturbed vegetation, with any such disturbance subject to the standards in subsection (1) above. A five-foot wide pathway mowed to a minimum height of four inches through the buffer for pedestrian access to the wetland(s) may be permitted. For wetlands located on

previously developed parcels, the buffer area shall consist of the area, no wider than 50 feet, between the site's impervious surface and the wetlands jurisdictional line.

(3) Stormwater management facilities are permitted, as per DNREC's Delaware Sediment and Stormwater Regulations, if wetlands are maintained or enhanced, and if the disturbance for stormwater management is the only feasible alternative, subject to all state and federal permits and wetlands mitigation requirements.

Review criteria:

(1) Whether reasonable design alternatives exist to minimize the disturbance of wetlands on the site, including site design to incorporate wetlands within proposed public or private open space.

(2) Whether wetlands disturbance depicted on the subdivision plan accurately reflects those activities necessary to develop the site as proposed.

(3) The quality of the wetlands that may be impacted and the amount of wetlands to be disturbed.

(4) Whether the subdivision plan complies with all other applicable floodplain, water resource protection area, wet areas, and related requirements of this Code.

(d) *Design alternatives.* Notwithstanding the site design and constructions requirements set forth in the preceding subsection (c), the public works and water resources director may approve modifications to the subdivision plan site design that serve to preserve or enhance wetland areas or minimize the disturbance of wetlands. As specified in the Delaware Sediment and Stormwater Regulations, wetland disturbance for stormwater management shall be limited to the construction of pond embankments, provided that the intended or functional aspects of the stormwater facility and wetlands are maintained or enhanced and the construction in the wetlands for this purpose is the only reasonable alternative. All necessary state and federal permits must be obtained and mitigation measures satisfied.

(Ord. No. 05-14, Amend. No. 2, 5-23-05; Ord. No. 10-01, Amend. Nos. 1—3, 1-11-10; Ord. No. 14-12, Amend. Nos. 1, 2, 4-15-14)

Appendix 12

APPENDIX IV. - SEDIMENT AND STORMWATER MANAGEMENT

Section I. - Stormwater Management and Drainage Conveyance.

(a) *Stormwater management design basis:* Both water quantity and quality are an integral component of overall stormwater management.

(1) Stormwater quantity management. Control of peak discharge will, to some extent, prevent increases in flooding.

a. The post-development peak discharge rates for the 2, 10, and 100-year frequency storm events shall not exceed the pre-development peak discharge rates for the 2, 10, and 100-year frequency storm events.

b. Waivers or variances from the stormwater quantity design criteria may be granted on a case-by-case basis.

(2) Stormwater quality management. Control of runoff from small, frequent rainfall events on-site will mitigate further degradation of water quality and habitat.

a. In general, the preferred option for water quality protection shall be those practices collectively referred to as "green Technology BMP's." Other practices shall be considered only after preferred practices have been eliminated for engineering or hardship reasons as approved by the appropriate plan approval agency.

b. Water quality control practices shall be designed to manage the rate and volume of runoff of flow from the 2.0" NRCS Type II rainfall event, or the rainfall event that produces up to a maximum of 1.0" of runoff.

c. Alternative stormwater quality practices may be acceptable if the removal efficiency for suspended solids meets or exceeds 80% as approved by DNREC or as demonstrated by scientifically independent evaluation and monitoring performance data.

d. Other acceptable stormwater quality practices may be acceptable if the removal efficiency for suspended solids meets or exceeds 80 percent as approved by DNREC or as demonstrated by scientifically independent evaluation and monitoring performance data.

e. Waivers or variances from the stormwater quality design criteria may be granted on a case-by-case basis.

(b) Projects requiring storm water management approval shall include:

(1) Pre- and post-development velocities, peak rates of discharge, and inflow and outflow hydrographs of stormwater runoff at all existing and proposed points of discharge from the site.

(2) All stormwater management designs shall use the NRCS Technical Release # 55 or # 20, the Delaware Urban Runoff Management Model (DURMM) or any other methodologies as approved by DNREC's Division of Soil and Water Conservation.

(Ord. No. 05-14, Amend. No. 3, 5-23-05)

Section II. - Erosion and Sediment Control.

(a) *General.*

(1) Erosion is the process by which the land's surface is worn away by the action of wind, water, ice and gravity. Water generated erosion is the most severe type of erosion, and can be broken down into the following types: Raindrop, Sheet, Rill, Gully, and Channel erosion.

(2) Any land development activity that disturbs 5,000 square feet or more shall have an approved sediment and stormwater plan in accordance with the most recent version of the Delaware Erosion and Sediment Control (E&SC) Handbook, and Title 7 of the Delaware Code, Chapter 40.

(3) E&SC Practices shall be installed prior to any on-site grading or soil disturbance.

(4) Whenever sedimentation is caused by stripping vegetation, regrading, or other development, it shall be the responsibility of the person, corporation, or other entity causing such sedimentation to remove it from all adjoining surfaces, drainage systems, and watercourses, and to repair any damage at his expense and within the time prescribed by the director of public works.

(5) The E&SC plan shall be reviewed by the public works director or designee and approved when in conformance with the most current version of the Delaware Erosion and Sediment Control Handbook and Title 7 of the Delaware Code, Chapter 40.

(6) Starting construction without the approved E&SC plan and/or stormwater plan is a violation of state law and regulations and could result in a stop work order, as well as possible enforcement action. Approved plans must be kept on site at all times.

(b) *Erosion and sediment control (E&SC) plan.* The E&SC plan shall contain the following components:

(1) An overall E&SC schematic plan showing a map of the basic site features, legend, standard symbols and data for all E&SC practices;

(2) A detailed E&SC plan(s) showing disturbed areas, limits of disturbance, areas of preservation, land grading techniques, pre-and post-development grading and contours, and all E&SC practices, temporary and permanent stabilization areas, general topography and soil characteristics, legend, details and specifications;

(3) Written information such as approvals, owner/developer certifications, location and vicinity map, general/special notes, construction instructions, vegetative notes and the sequence of construction, pollution prevention measures.

(4) Provisions for the maintenance of E&SC measures. The cost of installing and maintaining all erosion and sediment controls and practices shall be borne by the developer and/or owner. These measures shall be adequately maintained until it has been determined by the public works director that the site has been permanently stabilized.

Developer and/or owner proposed modifications to the originally approved E&SC plan shall be processed and approved or disapproved by the public works director, and must be submitted in writing before changes are implemented.

The public works director reserves the right to require additional E&SC measures as deemed necessary.

(c) *Erosion and sediment (E&S) control design.* The E&S control design may include, but is not limited to, the following components:

(1) Sediment trapping practices such as straw bale barriers, silt fencing, sediment traps, temporary sediment basins, storm drain inlet and culvert inlet protection.

(2) Dewatering practices such as pumping pits, portable dewatering practices, and dewatering basins and devices.

(3) Soil stabilization practices such as top soiling, slope treatment, vegetative stabilization, stream bank stabilization, mulching, stabilization matting, stabilized construction entrances, and dust control.

(4) Water control practices such as swales, berms, vegetative channels, lined channels, diversions, check dams, subsurface drains, pipe slope drain chutes, rip rap outlet protection, and rip rap stilling basins.

(5) Pollution prevention practices which are designed to prevent generation of non-point source pollution from construction sites due to improper handling and usage of nutrients and toxic substances, and to prevent the movement of toxic substances from the construction site.

(6) Miscellaneous practices which address minor development and tree protection. Practices shall be designed and implemented in order to prevent soil from moving off site. These practices shall be designed in accordance with the most recent version of the Delaware Erosion and Sediment Control Handbook, and Title 7 of the Delaware Code, Chapter 40.

(Ord. No. 05-14, Amend. No. 3, 5-23-05)

Section III. - Post-Construction.

(a) *As-built plans.* All construction applicants are required to submit actual "as-built" plans for any stormwater management practices after final construction is completed. The plan must show the final design specifications for all stormwater management facilities and must be certified by a professional engineer or professional land surveyor. A final inspection by the City of Newark is required before the release of any performance securities can occur.

(b) *Maintenance.* All stormwater management facilities must undergo, at a minimum, an annual inspection to document maintenance and repair needs and ensure compliance with the requirements of this ordinance, the city's designation as a delegated agency by DNREC, and our NPDES stormwater permit.

The owner or person responsible shall perform or cause to perform preventative maintenance of all completed stormwater management practices to ensure proper functioning.

The maintenance of stormwater management facilities shall be in accordance with public works department inspection findings and recommendations. All maintenance work shall be approved and inspected by the public works department.

Maintenance may be subject to additional permit requirements to be determined on a case-by-case basis.

(c) *Right of entry.* The public works director or his designee, bearing proper credentials and identification, may enter and inspect all properties for regular periodic inspections, investigations, monitoring, observation, measurement, enforcement, sampling and testing, to effectuate the provisions of this Appendix and/or the NPDES storm water permit. The inspections shall be conducted at reasonable times.

(Ord. No. 05-14, Amend. No. 3, 5-23-05)

Section IV. - Illicit Discharges.

(a) *Discharge prohibitions.* No person shall discharge or cause to be discharged into the municipal storm drain system or watercourses any materials, including but not limited to pollutants or waters containing any pollutants that cause or contribute to a violation of applicable water quality standards, other than stormwater.

Unless identified as a significant source of pollutants to waters of the state, the following non-stormwater discharges need not be prohibited from entering the municipal separate storm sewer system provided such sources are identified and appropriate control measures to minimize the impacts of such sources, are developed under the stormwater management plan.

- Water line flushing
- Landscape irrigation
- Diverted stream flows

- Rising ground waters
- Uncontaminated groundwater infiltration to separate storm sewers
- Uncontaminated pumped groundwater
- Discharges from potable water sources
- Foundation drains
- Air conditioning condensate
- Irrigation water
- Springs
- Water from crawl space pumps
- Footing drains
- Lawn watering
- Individual residential vehicle washing
- Flows from riparian habitats and wetlands
- De-chlorinated swimming pool discharges
- Street wash waters
- Discharges or flows from emergency fire fighting activities

Dye testing is an allowable discharge, but requires verbal and/or written notification to the City of Newark prior to the time of testing.

(b) *Illicit connections.* The construction, use, maintenance or continued existence of illicit connections to the storm sewer system is prohibited.

This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

Any owner or person responsible for a property or premises, which is, or may be, the source of an illicit discharge, shall be required to implement, at the owner's or person's expense, the BMP's necessary to prevent the further discharge of pollutants to the municipal storm sewer system. Compliance with all terms and conditions of a valid NPDES permit authorizing the discharge of stormwater associated with industrial activity, to the extent practicable, shall be deemed compliance with the provisions of this section.

Notwithstanding other requirements of law, as soon as any owner or person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting in, or may result in, illicit discharges or pollutants discharging into stormwater, the storm sewer system, the person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release. Discharge notification shall be made in accordance with Title 7, Chapter 60, subchapter II, § 6028 of the Delaware Code.

Commercial, industrial and residential facilities shall employ good housekeeping practices to prevent debris such as cigarette butts, paper, bottles, cans, plastic, grass, etc. from entering the municipal storm sewer system from areas such as parking lots, loading zones, sidewalks, trash cans and dumpster sites. It shall be unlawful for any person to discharge chemicals, waste products or any pollutant to the parking lot or grounds of a commercial area, industrial facility, or residence, which allows such pollutants to enter the municipal separate storm sewer system.

(Ord. No. 05-14, Amend. No. 3, 5-23-05)

Section V. - Enforcement and penalties.

(a) *Administrative enforcement remedies.* The following enforcement remedies may be utilized to enforce this appendix.

(1) *Notification of violation.* A certified letter explaining the code violation, with a timeframe set forth to cease the violating action, correct a deficiency found, or to cleanup the result of the violating action.

(2) *Reimbursement of costs.* When the city has paid for the cleanup and/or work performed as a result of no action taken, it will recover the actual cost of the cleanup and/or work performed, plus 50% in city overhead, plus accrued interest at the Delaware legal rate of interest per annum from the date of completion of the work. These charges shall be billed to the owner or responsible person in charge of the property.

If the full amount due the city is not paid by the owner or responsible party, or his or her agent, within the time required, the city shall cause to be recorded in the municipal lien docket a statement showing the cost and expense incurred for the work, the date and the place or property on which said work was done. The recordation of said statement shall constitute a lien on the property and shall remain in full force and effect for the amount due in principal and interest until final payment has been made.

(3) *Penalties.* The following penalties shall be applicable to violations of this appendix: Failure to correct any action, which is prohibited by this appendix, shall constitute a violation. Every day in which a violation exists shall constitute a separate violation and a separate offense. Any person violating any of the provisions of this appendix shall be subject to a fine of not less than $100.00, nor more than $1,000.00, for each offense.

(4) *Referral to DNREC enforcement.* If no action is taken to remedy a violating action, then referral to a DNREC environmental protection officer will be made, and the legal fine limits double.

(Ord. No. 05-14, Amend. No. 3, 5-23-05)

Section VI. - Applicability.

This ordinance appendix shall apply to all water entering the storm drain system generated on any developed and undeveloped lands unless explicitly exempted by an authorized enforcement agency.

(Ord. No. 05-14, Amend. No. 3, 5-23-05)

Section VII. - Severability.

The provisions of this ordinance appendix are hereby declared to be severable. If any provision, clause, sentence, or paragraph of this ordinance or the application thereof to any person, establishment, or circumstances shall be held invalid, such invalidity shall not affect the other provisions or application of this ordinance.

(Ord. No. 05-14, Amend. No. 3, 5-23-05)

Section VIII. - Ultimate responsibility.

The standards set forth herein and promulgated pursuant to this ordinance appendix are minimum standards; therefore this ordinance does not intend nor imply that compliance by any person will ensure that there will be no contamination, pollution, nor unauthorized discharge of pollutants.

(Ord. No. 05-14, Amend. No. 3, 5-23-05)

Appendix 13

Appendix 13– Flood Prone Streets

The following is a list of streets that have been prone to flooding in past storms. These areas should receive priority for review for flooding solutions and are listed in alphabetical order:

- Arbour Drive
- Barksdale Road opposite Handoff Park
- Barksdale Road at Christina Creek
- Bellevue Road at Yorkshire Ditch
- Brook Drive from Silverbrook
- Casho Mill Road at Produce Marketing Association
- Casho Mill Road underpass
- Creek Road
- Curtis Lane
- Delrem Drive at Rt. 273 intersection
- Old Paper Mill Road at Jenney's Run
- Paper Mill Road at White Clay Creek
- Park Drive at Silverbrook
- Rahway Drive
- Shull Drive between Devon Drive and Chrysler Avenue and south of Cornwall Drive
- Catch basin on east side of South College Avenue on the north side at the foot of the Amtrak bridge
- Swarthmore Drive
- Timberline Drive at Timbercreek
- Welsh Tract Road at Christina Creek
- West Chestnut Hill Road at Christina Creek

Appendix 14

Appendix 15