New Jersey Highlands Water Protection and Planning Council

DRAFT

Highlands Region Stormwater Management Program Guidance

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Abstract

This guidance document provides an overview of the Highlands Stormwater Management Program. It is intended to be used by municipal Stormwater Coordinators, stormwater professionals and municipal public works members who will be actively engaged in stormwater management planning within the municipality.

The Highlands Stormwater Management Program supports and supplements the requirements of the New Jersey Stormwater Management Rules (N.J.A.C. 7:8).

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Statutory Platform, Purpose and Funding

Through the passage of the New Jersey Highlands Water Protection and Planning Act in 2004, the New Jersey Highlands Water Protection and Planning Council (the Highlands Council) was created and charged with developing a Regional Master Plan (RMP). Adopted in 2008, the RMP serves as the guiding document for the long-term protection and restoration of the region's critical resources. Stormwater Management activities include but are not limited to the following RMP Goals: 1D, 1K, 2D, 2E, 2G and 6N.[1]

This document outlines the Highlands Council Stormwater Management Program. The Program has four main components, each of which will be further discussed in following chapters.

1. GIS Mapping of Stormwater Structure Locations and Conditions Assessment
2. Adoption of Highlands Area Stormwater Control Ordinance Amendments
3. Review and Update of Municipal Stormwater Mitigation Plan
4. Stormwater Management Training

Funding to support this work within a municipality is provided through the Highlands Plan Conformance process. Municipalities with approved Plan Conformance Petitions are eligible for grant funding to cover the reasonable expenses of planning activities associated with the Conformance process and should contact their Highlands Council Municipal Liaison[2] for additional information.

[1] Copies of the Highlands Regional Master Plan are available in most municipal offices and can be obtained by contacting the Highlands Council office and www.nj.gov/njhighlands/master/.
[2] https://www.state.nj.us/njhighlands/planconformance/liaisons/

Using this Document

Chapter 1 of this document provides an overview of the importance of stormwater management planning and an introduction to the unique requirements of stormwater planning in the Highlands Region.

Chapter 2 provides details about the components of the Highlands Stormwater Management Program for municipalities, which is part of the Highlands Plan Conformance process.

The Appendices provide material that support the various project components. Instructions for using each of the appendices is provided in the pages that follow and is summarized below.

Appendix A: Model Scope of Work - Prior to commencing activities related to the implementation of a Highlands Stormwater Management Program, municipalities must have an approved scope of work, developed in collaboration with their Highlands Council staff liaison. See section 1.2.

Appendix B: Stormwater Structure Data Collection/Submission Suggested Protocol – Provides guidance for manual completion of stormwater structure mapping and conditions assessment project component. See section 2.1.

Appendix C: Stormwater Infrastructure Mapping and Inventory Guidance Document – Provides instructions for using the NJDEP mapping and inventory tools. See section 2.1.

Appendix D: Highlands Stormwater Control Ordinance Amendments – Provides suggested language for Highlands-specific amendments to existing Stormwater Control Ordinances. See section 2.2.

Appendix E: Approach for Developing Municipal Stormwater Mitigation Plans in the Highlands Region – Provides guidance for the preparation of municipal stormwater mitigation plans, a requirement of the Highlands Stormwater Management Program. See section 2.3.

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1. Introduction

1.1 Importance of Stormwater Management Planning

According to the New Jersey Department of Environmental Protection (NJDEP) definition, *stormwater* is water resulting from precipitation (including rain and snow) that runs off the land's surface, is transmitted to the subsurface, is captured by separate storm sewers or other sewage or drainage facilities, or conveyed by snow removal equipment. In natural landscapes such as forests, the soil absorbs much of the stormwater and plants help hold stormwater close to where it falls. In developed environments, unmanaged stormwater can create flooding and water pollution. Stormwater also serves as an important resource as demands for clean water exceed availability.

As outlined in the New Jersey Stormwater Management Rules at N.J.A.C. 7:8-2.2[3], there are nine overarching goals of stormwater management planning:

1. Reduce flood damage, including damage to life and property;
2. Minimize, to the extent practical, any increase in stormwater runoff from any new development;
3. Reduce soil erosion from any development or construction project;
4. Assure the adequacy of existing and proposed culverts and bridges, and other in-stream structures;
5. Maintain groundwater recharge;
6. Prevent, to the greatest extent feasible, any increase in nonpoint pollution;
7. Maintain the integrity of stream channels for their biological functions, as well as for drainage;
8. Minimize pollutants in stormwater runoff from new and existing development in order to restore, enhance and maintain the chemical, physical, and biological integrity of the waters of the State, to protect public health, to safeguard fish and aquatic life and scenic and ecological values, and to enhance the domestic, municipal, recreational, industrial and other uses of water; and;
9. Protect public safety through the proper design and operation of stormwater management basins.

The New Jersey Stormwater Best Management Practices Manual[4] (BMP Manual) has been developed to provide guidance to address the standards in the Stormwater Rules and provides generalized examples of ways to meet the standards. A copy of the BMP Manual can be found online at www.njstormwater.org. In addition, the Highlands Council has developed a companion document that provides constructed examples of stormwater BMP projects throughout New Jersey to assist Highlands municipalities in the development of stormwater control measures that may be required in order comply with the Stormwater Rules and associated regulations. This document is available along

[3] N.J.A.C. 7:8, www.nj.gov/dep/rules/rules/njac7_8.pdf
[4] www.nj.gov/dep/stormwater/bmp_manual2.htm

with the complete Stormwater Management Program documents on the Highlands Council website at www.nj.gov/njhighlands/planconformance/guidelines/resource.html .

1.2 Stormwater Management in the Highlands Region

Effective stormwater management is an important element of natural resource protection, and therefore, vital to the success of the Highlands Water Protection and Planning Act (Highlands Act) and Regional Master Plan.

Because the Highlands Region provides drinking water to more than 300 municipalities that are home to 70% of New Jersey residents[5], the Highlands Stormwater Management Program provides additional guidance, beyond the New Jersey Stormwater Management Rules, to ensure the enhanced natural resource protections dictated by the Highlands Act are in place.

The Highlands Stormwater Management Program has four main components:

1. GIS Mapping of Stormwater Structure Locations and Conditions Assessment
2. Adoption of Highlands Area Stormwater Control Ordinance Amendments
3. Review and Update of Municipal Stormwater Mitigation Plan
4. Stormwater Management Training

Grant funding to support the tasks associated with these program components is available to conforming Highlands municipalities with approved petitions for Plan Conformance. Prior to commencing project activities, municipalities must have an approved scope of work (SOW), developed in collaboration with their Highlands Council staff liaison. A model SOW is included in Appendix A.

The Highlands Stormwater Management Program supports the goals of the Highlands Regional Master Plan as well as the requirements of the New Jersey Stormwater Management Rules (N.J.A.C. 7:8) and the NJDEP Bureau of Nonpoint Pollution Control Municipal Stormwater Regulation Program (MS4 Permits). Each of the program components will be discussed in greater detail in Chapter 2.

[5] *"Potable Water Supplied in 2011 by New Jersey's Highlands."* New Jersey Geological and Water Survey Open-File Report 15-01, 2015

2. Highlands Stormwater Management Program Components

2.1 GIS Mapping of Stormwater Structure Locations and Conditions Assessment

To ensure a comprehensive and coordinated approach to stormwater management throughout the Highlands Region, the Highlands Council requires municipalities to conduct an assessment of existing stormwater structure locations and submit digital GIS data in accordance with the New Jersey Stormwater Management Rules at N.J.A.C. 7:8. This is required for all Tier A and Tier B municipalities in the Highlands Region. [6]

Municipalities may choose to use traditional data collection methods to provide this information to the Highlands Council or use the free mapping and inventory tools developed by the NJDEP for this purpose (see overview of each approach below). Regardless of the method used, all data collected must adhere to the NJDEP Mapping and Digital Data Standards (www.nj.gov/dep/gis/assets/NJDEP_GIS_Spatial_Data_Standards_2013.pdf) and the Highlands Council approved scope of work details.

Traditional Data Collection and Submission

Municipalities may use a combination of paper forms and georeferenced digital photographs to complete the stormwater structure inventory and conditions assessment. Should a municipality choose this option, the Highlands Council Stormwater Structure Data Collection/Submission Suggested Protocol (Appendix B) should be used. It is important to note, however, that location data must be submitted electronically to the NJDEP by December 21, 2020.

NJDEP ArcGIS Online Mapping Tool

Municipalities may opt to use the ArcGIS Online Mapping Tool (tool) developed by the NJDEP to complete the structure inventory. This tool is intended for permittees who do not have a handheld GPS unit and who are creating a new inventory. The use of this tool requires an ArcGIS Online license and a mobile device such as a cell phone or tablet. The NDEP is making a number of ArcGIS Online licenses available, at no cost, to permittees who request it. Environmental groups or volunteers that will assist a municipality with mapping and inventory of stormwater infrastructure may also be eligible to use a free license. Additional information on this mapping tool can be found on the NJDEP website at www.nj.gov/dep/dwq/msrp_map_aid.htm.

Use of the tool may require the use of an external GPS device to improve accuracy. Grant funding from the Highlands Council is available on a reimbursement basis to support this cost. Please note that prior approval from the Highlands Council is required. Appendix C includes a

[6] Under the existing permit, only storm sewer outfall pipes are required to be mapped under the NJPDES Tier A permit. Municipalities, however, are encouraged to include any/all stormwater structure data that is currently available in their inventories.

copy of the Stormwater Infrastructure Mapping and Inventory Guidance Document (placeholder until available).

Prior to initiating field work, a desktop review should be performed. This will allow for a more systematic approach to data collection and will likely reduce errors and save the inspector time. The following tasks are recommended:

1. Review existing maps of stormwater structures (if available).
2. Determine if a structure naming convention has already been established. If so, these IDs should be used for the assessment. Please note that each structure ID should be unique. Additionally, hyphens are acceptable but no other special characters should be included in the ID.
3. The approximate street address should be determined for each structure to allow for easier navigation to the structure.
4. In all cases, back-up paper field forms should be used in case of unanticipated GPS malfunctions or other issues. Completing the known information on these forms prior to field work can be a time saver and help to keep the survey team organized.

2.2 Adoption of Highlands Stormwater Control Ordinance Amendments

Per the requirements of the New Jersey Stormwater Management Rules at N.J.A.C. 7:8, all New Jersey municipalities are required to prepare Stormwater Management Plans and adopt a Stormwater Control Ordinance. In addition, conforming Highlands municipalities must incorporate Highlands-specific amendments to ensure resource protection standards of the Regional Master Plan (RMP). These updates/revisions apply to all Highlands Preservation Area lands, as well as those lands located in the Planning Area of conforming towns.

The amendments are to be inserted into an existing municipal Stormwater Control Ordinance. Applicable amendments have been made to the NJDEP Model Stormwater Ordinance for Municipalities, Appendix D of the NJ Stormwater Best Management Practices Manual, April 2004. The required Highlands amendments are found in Appendix D of this document and are provided for municipalities conforming for both Preservation and Planning Area lands (Part I) and municipalities that are only conforming for the Preservation Area (Part II).

The draft revised municipal Stormwater Control Ordinance must be submitted to the Highlands Council for review and approval, prior to local adoption. The municipality must provide an electronic copy of the adopted document to the Highlands Council.

2.3 Review and Update of Stormwater Mitigation Plan

In accordance with N.J.A.C. 7:8-4.6, a municipality may grant a variance or exemption from the design and performance standards for stormwater management measures set forth in its approved municipal Stormwater Management Plan and Stormwater Control Ordinance(s), provided the municipal plan

includes a Stormwater Mitigation Plan in accordance with N.J.A.C. 7:8-4.2(c)11. A written report must also be submitted to the county review agency and the NJDEP describing the variance or exemption and the required mitigation.

The Highlands Stormwater Management Program requires municipalities to review and update existing adopted Stormwater Mitigation Plans to bring them in conformance with the Highlands RMP resource protection standards. If a municipality does not currently have an adopted Stormwater Mitigation Plan, one shall be developed if a variance or exemption from design and performance standards is permitted. The Highlands Council has developed a guidance document to aid in the preparation of municipal mitigation plans (see Appendix E). As part of the mitigation plan, the municipality is to select a minimum of two sites for mitigation priority projects and develop concept mitigation plans for the sites. (Note: A developer may provide funding or partial funding to the municipality for the cost to implement the mitigation project in accordance with N.J.A.C. 7:8)

The draft or revised draft of the municipal Stormwater Mitigation Plan shall be submitted to the Highlands Council for review and approval prior to local adoption. The municipality must provide an electronic copy of the adopted document to the Highlands Council.

2.4 Stormwater Management Training

Funding is available through the Plan Conformance process for municipal officials and/or designees to attend either Highlands-sponsored Stormwater Management training programs or other stormwater training programs. Please note that **prior approval from the Highlands Council is required** for attendance at non-Highlands stormwater training events and all funding is reimbursement-based.

Periodically, the Highlands Council will offer training sessions on the use of the NJDEP ArcGIS Online Mapping Tool. It is important to note that attendance at these training sessions is not mandatory to use the application.

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Appendix A:
Model Scope of Work

Abstract

Prior to commencing activities related to the implementation of a Highlands Stormwater Management Program, municipalities must have an approved scope of work, developed in collaboration with their Highlands Council staff liaison.

This document is included as Appendix A of the overall Highlands Region Stormwater Management Program Guidance document. For complete documentation, contact your Highlands Council Liaison (www.nj.gov/njhighlands/planconformance/liaisons.html).

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Highlands Plan Conformance Grant Program
Highlands Region Stormwater Management Program Overview
Model Municipal Scope of Work

This scope of work (SOW) overview document supports the Plan Conformance resource management implementation plan and the required Highlands Regional Master Plan (RMP) updates to the existing New Jersey Stormwater Management Rules at N.J.A.C. 7:8 (Stormwater Rules) for conforming towns in the Highlands Region. The SOW tasks identify the required update components as was indicated in the municipal Plan Conformance Petition and associated Highlands Implementation Plan and Schedule approved by the Highlands Council.

The Highlands Council has authorized grant funding for each conforming municipality for GIS mapping of stormwater structure locations and conditions assessment, amendments to the existing Municipal Stormwater Control Ordinance(s), evaluating and updating municipal Stormwater Management and Mitigation Plans in accordance with the Stormwater Rules to reflect the RMP resource protection standards, and training.

This document discusses each component of the overall program. Highlands Council Municipal Liaisons should be contacted for additional information. The list of municipal liaisons can be accessed at: www.state.nj.us/njhighlands/planconformance/liaisons/.

Component I – GIS mapping of Stormwater Structure Locations and Conditions Assessment

Task 1. Conduct an assessment of existing stormwater structure* locations and submit digital GIS data for each structure in the municipality in accordance with the Stormwater Rules. This is required for all Tier A and Tier B municipalities in the Highlands Region. The SOW must identify the lead person responsible for handling this task, the staffing approach and a description of the naming convention to address the User Guide instructions for structure IDs. Please note that the municipality shall prepare a SOW for completion of this task and submit it to the municipal liaison for approval prior to proceeding with the task activities.

Municipalities have several options for completing this task:

Option 1. Utilize the New Jersey Department of Environmental Protection's (NJDEP) Arc GIS Online Mapping Tool (Tool). This option is intended for permittees who do not have a handheld GPS unit and who are creating a new inventory. The use of this tool requires an ArcGIS Online license and a mobile device such as a cell phone or tablet. The NJDEP is making a number of ArcGIS Online licenses available, at no cost, to permittees who request it. Environmental groups or volunteers that will assist a municipality with mapping and inventory of stormwater infrastructure may also be eligible to use a free license. Permittees may contact Tim Ebersberger to begin using this tool or to request a license.

Option 2. Utilize a combination of paper forms, GPS devices for latitude and longitude coordinates and digital photography to carry out the stormwater structure* inventory and assessment. The Highlands Council will provide necessary forms, protocols, and guidance documents for structure inventory and evaluation. All data collected must adhere to the NJDEP Mapping and Digital Data Standards (www.nj.gov/dep/gis/assets/NJDEP_GIS_Spatial_Data_Standards_2013.pdf) and the

Highlands Council approved SOW details. The proposed field data collection form must be submitted with the SOW.

Option 3. Utilize a Trimble handheld GPS data dictionary template. This tool in intended for permittees with handheld GPS unit capabilities and software who may or may not have existing inventories, but intend on collecting data via a handheld GPS unit. A number of versioned templates created using Pathfinder software are available at www.nj.gov/dep/dwq/msrp_map_aid.htm. Completed templates should be submitted to the Highlands Council and the NJDEP.

Option 4. ESRI Geodatabase Template Tool. This tool is intended for permitees with ArcGIS software capabilities and experience who have existing electronic inventories. This template should be populated by permitees and submitted to the Highlands Council and the NJDEP. Templates can be found on the NJDEP website at www.nj.gov/dep/dwq/msrp_map_aid.htm.

Option 5. Permitees with limited hardware/software capabilities or permitees with existing inventory databases that exist in environments such as Microsoft Excel or Access may submit their inventories using an Excel template. The template should be populated by permitees and submitted to the Highlands Council and the NJDEP. A copy of the template can be found at www.nj.gov/dep/dwq/msrp_map_aid.htm.

**Note: Under the existing permit, only storm sewer outfall pipes are required to be mapped under the NJPDES Tier A permit. Municipalities, however, are encouraged to include any/all stormwater structure data that is currently available in their inventories (inlets, detention/retention basins, green infrastructure, etc). Please speak with your Highlands municipal liaison for specific questions.*

Component II – Adoption of Highlands Area Stormwater Control Ordinance Amendments

Task 1. Review existing Stormwater Control Ordinance(s) to incorporate Highlands RMP stormwater control requirements; refer to Appendix D of the Highlands Region Stormwater Management Program Guidance for required revisions to the NJ Model Stormwater Control Ordinance for Municipalities as presented in Appendix D of the NJ Stormwater Best Management Practices Manual dated April 2004.
Task 2. Revise municipal Stormwater Control Ordinance(s) to reflect Highlands RMP updates. Submit draft revised document to Highlands Council for review.
Task 3. Revise document based on comments received from Highlands Council. Finalize document and receive Highlands Council approval prior to local adoption.
Task 4. Provide electronic copy of adopted document to Highlands Council.

Component III – Develop or Review and Update of Stormwater Mitigation Plan

Task 1. Review the existing adopted municipal Stormwater Mitigation Plan if the municipality has permitted, in accordance with 7:8-4.6, a variance or exemption from the design and performance standards for stormwater management measures. If a municipality does not currently have a mitigation plan, one shall be developed.
Task 2. Review the guidance document for the preparation of a Highlands RMP Stormwater Mitigation Plan provided by the Highlands Council in Appendix E of the Highlands Region Stormwater Management Program Guidance for a detailed outline of mitigation components and required sections. The Highlands guidance was prepared based on the requirements of N.J.A.C. 7:8. The municipality is to select a **minimum of two sites** for mitigation priority projects and develop

concept mitigation plans for the sites as part of the municipal Stormwater Mitigation Plan update. A developer may provide funding or partial funding to the municipality for the cost to implement the mitigation in accordance with the Stormwater Rules.

Task 3. Revise municipal Stormwater Mitigation Plan to reflect Highlands RMP component details. Submit draft document to Highlands Council for review.

Task 4. Revise document based on comments received from Highlands Council. Finalize document and receive Highlands Council approval prior to local adoption.

Task 5. Provide electronic copy of adopted document to Highlands Council.

Component IV – Stormwater Management Training

Task 1. Funding is available through the Plan Conformance process for municipal officials and/or designees to attend either Highlands-sponsored Stormwater Management training programs or other stormwater training programs. Please note that **prior approval from the Highlands Council is required** for attendance at non-Highlands stormwater training events and all funding is reimbursement-based.

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Appendix B:
Stormwater Structure Data Collection/Submission Suggested Protocol

Abstract

This document provides instructions for the collection of municipal-wide stormwater structure data and subsequent submission to the Highlands Council. The collection and reporting of this data supports the requirements of the New Jersey Stormwater Management Rules (N.J.A.C. 7:8), the NJDEP Municipal Stormwater Permit (MS4) program and the Highlands Council funded Stormwater Management Program elements. This protocol is intended to be used by Highlands municipalities that have opted not to utilize the NJDEP ArcGIS online mapping tool for stormwater structure mapping.

This document is included as Appendix B of the overall Highlands Region Stormwater Management Program Guidance document. For complete documentation, contact your Highlands Council Liaison (www.state.nj.us/njhighlands/planconformance/liaisons/).

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Statutory Platform, Purpose and Funding

Through the passage of the New Jersey Highlands Water Protection and Planning Act in 2004, the NJ Highlands Water Protection and Planning Council (the Highlands Council) was created and charged with developing a Regional Master Plan (RMP). Adopted in 2008, the RMP serves as the guiding document for the long-term protection and restoration of the region's critical resources. Stormwater management activities, including the collection and submission of stormwater structure data, include but are not limited to the following RMP Goals: 1D, 1K, 2D, 2E, 2G and 6N.[1]

The Highlands Council Stormwater Management Program has four main components, listed below. This document supports the first Program component.

1. **GIS Mapping of Stormwater Structure Locations and Conditions Assessment**
2. Adoption of Highlands Area Stormwater Control Ordinance Amendments
3. Review and Update of Municipal Stormwater Mitigation Plan
4. Stormwater Management Training

This document is intended to be used by Stormwater Coordinators, stormwater professionals and municipal public works members who will be actively engaged in conducting stormwater structure inventories. This work constitutes one component of the overall Highlands Stormwater Management Program. Materials related to the complete Stormwater Management Program are available on the Highlands Council website at www.nj.gov/njhighlands/planconformance/guidelines/resource.html#2.

Funding to support this work within a municipality is provided through the Highlands Plan Conformance process. Municipalities with approved Plan Conformance Petitions are eligible for grant funding to cover the reasonable expenses of planning activities associated with the Conformance process and should contact their Highlands Council Municipal Liaison[2] for additional information.

[1] Copies of the Highlands Regional Master Plan are available in most municipal offices and can be obtained by contacting the Highlands Council office and found at www.nj.gov/njhighlands/master/.
[2] www.state.nj.us/njhighlands/planconformance/liaisons/

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1. Introduction

To ensure a comprehensive and coordinated approach to stormwater management throughout the Highlands Region, the Highlands Council requires conforming municipalities to conduct an assessment of existing stormwater structure locations. This is required for all Tier A and Tier B municipalities in the Highlands Region.

In lieu of using the NJDEP ArcGIS Online tool for stormwater structure mapping, municipalities may collect stormwater structure data (locations and conditions) by alternative methods. The collected data must be submitted to the Highlands Council for inclusion in our centralized GIS database and formatted so that it can be easily uploaded to our interactive mapping website. The collection of this data also supports existing NJDEP 7:8 Municipal Stormwater Regulations (MS4 Permit).

This document outlines the requirements for collecting and submitting stormwater structure data to the Highlands Council.

2. Requirements

2.1 Scope of Work

Grant funding to support the collection of stormwater structure data is available to conforming Highlands municipalities with approved petitions for Plan Conformance. Prior to commencing project activities, municipalities must have an approved scope of work (SOW), developed in collaboration with their Highlands Council staff liaison. A listing of liaisons can be found at www.state.nj.us/njhighlands/planconformance/liaisons/. A model SOW is included with the Stormwater Management Program Guidance Materials on the Highlands Council website at www.state.nj.us/njhighlands/planconformance/guidelines/resource.html#2.

2.2 Desktop Review

Prior to initiating field work, a desktop review should be performed. This will allow for a more systematic approach to data collection and will likely reduce errors and save the inspector time. The following tasks are recommended:

1. Identify the Stormwater Team members, timeframe and approach for field activities.
2. Review existing data and maps of stormwater structures and conditions (if available).
3. Determine if a structure naming convention has already been established. If so, these IDs should be used for the assessment. Please note, however, that each structure ID should be unique. Additionally, hyphens are acceptable but no other special characters should be included in the ID.
4. The approximate street address should be determined for each structure to allow for easier navigation to the structure.
5. A Stormwater Outfall Inspection Form is included as Appendix B-1 of this document. Please consider this a model document that can be used as-is or customized to suit local needs. Completing the known information on these forms prior to field work can be a time saver and help to keep the survey team organized. Also included as Appendix B-2 is a glossary to be used with the inspection form.

2.3 Stormwater Structure[3] Data

2.3.1 Stormwater Structure Locations

Stormwater structure locations must be collected using Global Positioning System (GPS) receivers. GPS coordinates must be collected in accordance with N.J.A.C. 7:1D-Appendix A and the NJ GIS Data Collection Standards[4] to ensure data quality and consistency. GPS can be used to provide location accuracy from a few centimeters to tens of meters. **The horizontal accuracy standard for**

[3] Under the existing permit, only storm sewer outfall pipes are required to be mapped under the NJPDES Tier A permit. Municipalities, however, are encouraged to include any/all stormwater structure data that is currently available in their inventories.
[4] http://www.nj.gov/dep/gis/assets/NJDEP_GIS_Spatial_Data_Standards_2013.pdf

locations determined through the use of GPS is within 5 meters of truth, with a 95% level of confidence.

2.3.2 Stormwater Structure Conditions

A conditions inspection must be conducted. The Stormwater Outfall Inspection Form as well as Stormwater Outfall Survey Glossary (Appendices B-1 and B-2) are included as model documents to be used in the field. The provided form can be modified to suit local needs; however, it is important to note that there are several required fields that will need to be submitted. The proposed inspection form must be submitted with the SOW document and approved by the Highlands Council in order to be eligible for funding through the Highlands Plan Conformance Grant Program.

2.3.3 Photographic Data

Digital photographs of each structure must be submitted. Up to five (5) photographs of each structure will be accepted. Each photo should be date/time stamped and named to reflect the naming convention of the structure. Acceptable file types are .JPG and .PNG.

2.4 Submission Requirements

No paper forms will be accepted. Acceptable file types for submitting stormwater structure data include: .shp, .xls, and .mdb. All field names must be Arc compatible (no special characters or spaces-underscore only). All data must be certified by the designated municipal Stormwater Coordinator that it meets the required standards. A certification form is included in Appendix B-3. Stormwater structure data shall be submitted on a compact disc (CD) by mail to the following address:

New Jersey Highlands Council
Attn: GIS Manager
100 North Road
Chester, NJ 07930

Or the data may be submitted electronically to the Highlands Council GIS Manager at: Nathan.McLean@highlands.nj.gov. (Please note that some file sizes may be too large to email.)

References

Highlands Water Protection and Planning Council. 2008. *Highlands Regional Master Plan*. Highlands Council. Chester, NJ.

New Jersey Department of Environmental Protection, Office of Information Resources Management- Bureau of Geographic Information Systems. October 2013. *Mapping and Digital Data Standards*. NJDEP. Trenton, NJ.

New Jersey Department of Environmental Protection, Office of Information Resources Management- Bureau of Geographic Information Systems. June 8, 2011. *NJDEP GPS Data Collection Standards for GIS Data Development*. NJDEP. Trenton, NJ.

Appendix B-1: Stormwater Outfall Inspection Form

*Type: Outfall	*Outfall ID:	*Inspector(s):
*Date:	*Time:	
*County:	*Municipality:	
Block:	Lot:	Tax Map Number:
Road Name:	Owner:	
Precip. last 24hrs: Y / N	Snow Melt Last 24hrs: Y / N	

Time of Last Rain: *(circle one)*	<24 Hours <48 Hours >48 Hours >72 Hours	*Outfall Description:	☐ Pipe ☐ Flared end Section ☐ Pipe in Headwall ☐ Ditch ☐ Concrete Headwall ☐ Grass Swale ☐ Winged Headwall Other:
*Outfall Condition:	☐ Good ☐ Fair ☐ Poor ☐ Unknown	*Pipe Material:	☐ Concrete ☐ Brick ☐ Metal Other: ☐ Plastic ☐ PVC
*Pipe Shape:	☐ Circular ☐ Rectangular ☐ Elliptical ☐ Pipe Arch ☐ Square Other:		*Pipe Height: *Pipe Width:
*Headwall Condition:	☐ No Headwall ☐ Good ☐ Fair ☐ Poor	Headwall Structure:	☐ Abutment Wall ☐ Steel Bulkhead ☐ Brick Culvert Wall ☐ Stone ☐ Bridge Abutment ☐ Wood Bulkhead ☐ Cinder Block
BMP Present: Y /N			
BMP Structure:	☐ None ☐ Concrete Other: ☐ Rip-Rap ☐ Gabion Basket		

**Highlands required field*

Red Text = MS4 required field

BMP Comments:			
Scouring Present: Y / N			
Scouring Comment:			
Area Receiving:	☐ Stormwater Basin	☐ Wetland	☐ Swale
	☐ Stream/River	☐ Woodland	Other:
	☐ Lake/Pond	☐ Field	
	☐ Canal	☐ Ditch	
Flowing: Y / N		Dry Weather Flow: Y / N	
Flow Color:	☐ Clear ☐ Turbid	Flow Odor: Y / N	
Flow Foam: Y / N		Solid Floatables: Y / N	
Flow Comments:			
Photos Taken: Y/N	Comments:		
General Comments:			

Appendix B-2: Stormwater Outfall Survey Glossary

Type: This entry will be **Outfall**. According to the NJDEP, stormwater outfalls are "part of all development where impervious surfaces shed water during storm events and channel water into a subsurface drainage system and/or detention basin." Consult with your Highlands Council liaison should you require additional categories. *Required by Highlands Council (HC)*

Outfall ID: Unique ID for to identify the outfall. *Required by HC*

Inspector: A unique employee identifier. Example: initials, employee number, etc. *Required by HC*

Date: The date the data was collected. *Required by HC*

Time: The time the data was collected. *Required by HC*

County: Name of county where outfall is located. *Required by HC*

Municipality: Name of municipality where outfall is located. *Required by HC*

Block: Indicate the block number where the outfall is located. *MS4 required field (if applicable).*

Lot: Indicate the lot number where the outfall is located. *MS4 required field (if applicable).*

Tax Map Number: Indicate the tax map number of where the outfall is located. *MS4 required field.*

Road Name: Indicate the road name closest to the outfall. Leave blank if outfall is not near any road. *MS4 required field (if applicable).*

Owner: Indicate the owner of the land on which the outfall is located. *MS4 required field.*

Precip. last 24hrs: Indicate if it has rained or snowed (collectively precipitation) in the past 24 hours. (Y/N)

Time of Last Rain: Indicate when the last rain/snowfall was.

<24 Hours: Precipitation occurred less than 24 hours ago.

<48 Hours: Precipitation occurred less than 48 hours ago.

>48 Hours: Precipitation occurred more than 48 hours ago.

>72 Hours: Precipitation occurred more than 72 hours ago.

Snow Melt Last 24 Hours: Indicate if snowmelt occurred within the last 24 hours. (Y/N)

Outfall Description: Construction description of outfall. *Required by HC*

Pipe: Outfall consists of a pipe only.

Pipe in Headwall: Outfall consists of a pipe set in a headwall of any type.

Concrete Headwall: Outfall consists of a pipe set in a concrete headwall.

Source: US Environmental Protection Agency

Winged Headwall: Outfall consists of a pipe set in a headwall with supports coming off of the headwall on both sides at an angle.

Source: Pennsylvania DEP

Flared end Section: Outfall pipe is cut off at the end on an angle, allowing the bottom portion of the pipe to be longer than the top portion.

Source: New York State DOT, Region 5 Maintenance Division

Ditch: A long, narrow man-made hole that is dug along a road, field or other feature that is used to hold or move water.

Source: Federal Highway Administration

Grass Swale: EPA defines this as a grassed "open–channel management practice designed specifically to treat and attenuate stormwater runoff for a specified water quality volume." The grass swale consists of a ditch-like feature that is grassed over.

Source: US Environmental Protection Agency

Other: Construction does not match one of the above descriptions.

Outfall Condition: Overall condition of the outfall. *Required by HC*

Good: Outfall is in good condition and does not need any repair or other attention.

Fair: Outfall is in decent condition and should be repaired soon.

Poor: Outfall is in disrepair and needs to be repaired immediately or replaced to ensure continuity of proper functioning.

Unknown: Outfall pipe cannot be seen or location is taken from a source that does not indicate current condition.

Pipe Material: Material that the pipe is constructed of. This is the material of the pipe only. *Required by HC*

Concrete: Pipe is made entirely of concrete.

Source: Massachusetts Water Resources Authority

Metal: Pipe is made entirely of corrugated metal

Source: US Forest Service

Plastic: Pipe is made out of plastic.

Source: USGS

PVC: Pipe is made out of PVC.

Source: California Department of Transportation

Clay: Pipe is made out of clay or terra cotta.

Brick: Pipe is made out of brick.

Other: Pipe is made out of a material not listed above.

Pipe Shape: The intended shape of the pipe. *Required by HC*

Circular: A pipe having a perfectly round intended shape.

Source: Massachusetts Water Resources Authority

Elliptical: Pipe is shaped like a flattened circle or an oval.

Source: Alaska Department of Fish and Game

Square: A four-sided shape that is made up of four straight sides that are of the same length and meet at four right angles.

Rectangular: A four-sided shape that is made up of two pairs of parallel lines (each set of different length) and that has four right angles.

Pipe Arch: Pipe is not a full cylinder and is bottomless.

Source: Alaska Department of Fish and Game

Other: Pipe shape does not match one of the above.

Pipe Height: The height of the inside of the pipe from top to bottom, reported in inches (in). *Required by HC*

Pipe Width: The width of the inside of the pipe from left to right, reported in inches (in). *Required by HC*

Headwall Condition: Overall condition that the headwall is in. *Required by HC*

No Headwall: Select if headwall is not present.

Good: Headwall is in good condition and does not need any repair or other attention.

Fair: Headwall is in decent condition and should be repaired soon.

Poor: Headwall is in disrepair and needs to be repaired immediately or replaced to ensure continuity of proper functioning.

Headwall Structure: If a headwall is present, indicate of which material it is constructed.

Abutment wall: A retaining wall that supports a vertical weight

Brick culvert wall: Headwall is constructed of bricks

Bridge abutment: A retaining wall that supports a bridge

Cinder block: Headwall is constructed of cinderblocks

Steel bulkhead: Headwall is constructed of steel

Stone: Headwall is constructed of stone

Wood bulkhead: Headwall is constructed of wood

BMP Present: Indicate if a BMP (Best Management Practice) is present. Defined by SMRC as "a structural or non-structural device designed to temporarily store or treat urban stormwater runoff in order to mitigate flooding, reduce pollution and provide other amenities." (Y/N)

BMP Structure: Indicate which structure is present.

None: No BMP structure is present.

Rip-rap: Defined by SMRC as "broken rock, cobbles, or boulders placed on earth surfaces, such as the face of a dam or the bank of a stream, for protection against the action of water (waves); also applies to brush or pole mattresses, or brush and stone, or similar materials used for soil erosion control." Defined by the DVRPC as "a foundation or sustaining wall of stones thrown together without order."

Source: Pennsylvania DEP

Concrete: Defined by the DVRPC as "flared wings off of a headwall."

Gabion Basket: Defined by SMRC as "a flexible woven-wire basket composed of two to six rectangular cells filled with small stones. Gabions may be assembled into many types of structures such as revetments, retaining walls, channel liners, drop structures and groins." Defined by the DVRPC as a "rectangular steel wire mesh basket filled with stones."

Source: Pennsylvania DEP

Other: BMP structure not listed above is present. Indicate type in BMP Comment field.

BMP Comment: Indicate any comments regarding the BMP structure. Include type of BMP if other is listed.

Scouring Present: Indicate if scouring is present. Scouring is the removal of soil, rock, sand or debris by a powerful flow originating from the outfall (i.e. a channel or gorge in the earth that originates at the pipe and leading away from it). This can lead to erosion, but does not include erosion. (Y/N)

Scouring Comment: Indicate any comments regarding the scouring at the outfall (severity, amount, old/recent, etc.).

Area Receiving: Indicate the type of receiving area. (What is the outfall leading/draining into?)

Stormwater Basin: Defined by the NJDEP as "an excavation or embankment and related areas designed to retain stormwater runoff. A stormwater management basin may either be normally dry (that is, a detention basin or infiltration basin), retain water in a permanent pool (a retention basin), or be planted mainly with wetland vegetation (most constructed stormwater wetlands)." (Also called a stormwater management basin.)

Stream/River: A natural flow of freshwater of various sizes.

Lake/Pond: A natural or man-made body of fresh water or various sizes.

Canal: A man-made channel filled with water

Wetland: Defined by the NJDEP as "an area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation."

Woodland: A primarily forested area.

Field: An area with no trees, can be actively farmed, pasture/hayfield, meadow or other area without trees.

Ditch: A long, narrow man-made hole that is dug along a road, field or other feature that is used to hold or move water.

Swale: Defined by SMRC as "an open drainage channel or depression explicitly designed to detain and promote the filtration of stormwater runoff."

Other: Area that the outfall leads into does not fit one of the above descriptions.

Flowing: Indicate if water is actively flowing though the outfall. (Y/N)

Dry Weather Flow: Indicate if flow is present when there has been no rain within the last 72 hours (3 days). (Y/N)

Flow Color: Indicate if flow is clear or turbid.

Clear: Defined by DVRPC as "can see to bottom."

Turbid: Defined by DVRPC as "clouded from silt."

Flow Odor: Indicate if flow has a discernible odor. (Y/N)

Flow Foam: Indicate if foam is present within the flow. (Y/N)

Solid Floatables: Indicate if solids are present within the flow (leaves, twigs, litter, sewage, etc.). (Y/N)

Flow Comments: Indicate any other comments regarding the outfall's flow. Include amount of flow (measure bottom of pipe to top of flow in inches), further comments on color (gray, tea-colored, etc.), type of odor (sewage, petroleum, chemical, anaerobic, etc.), color of foam, presence of sheen and type of floatables.

General Comments: Indicate any other comments about the outfall. If location is estimated due to a technical error (no cell service, out of battery, etc.), indicate that location is estimated along with an estimation of accuracy.

References

DVRPC (Delaware Valley Regional Planning Commission): http://www.dvrpc.org/Environment/water/pdf/OutfallDataCollectionGuidance.pdf.

NJ DEP: http://www.nj.gov/dep/landuse/activity/outfalls.html or http://www.nj.gov/dep/rules/rules/njac7_8.pdf or http://www.state.nj.us/dep/gis/digidownload/metadata/lulc02/anderson2002.html.

SMRC (The Stormwater Manager's Resource Center): http://www.stormwatercenter.net/. (Accessed through the US EPA's Municipal Separate Storm Sewer System (MS4) Main Page - http://water.epa.gov/polwaste/npdes/stormwater/Municipal-Separate-Storm-Sewer-System-MS4-Main-Page.cfm.)

US EPA: http://water.epa.gov/infrastructure/greeninfrastructure/gi_what.cfm.

Photo Credits

Alaska Department of Fish and Game: http://www.adfg.alaska.gov/sf/reports/FishPassage/rptSite.cfm?site=20501410&surveyID=1250

California Department of Transportation: http://www.dot.ca.gov/hq/oppd/dib/dib83-02-6.htm

Federal Highway Administration: http://safety.fhwa.dot.gov/local_rural/training/fhwasa09024/

Massachusetts Water Resources Authority: http://www.mwra.state.ma.us/03sewer/html/sewcso.htm

New York State DOT, Region 5 Maintenance Division: https://www.dot.ny.gov/divisions/engineering/environmental-analysis/repository/OutfallMethodology.pdf

Pennsylvania DEP: http://www.elibrary.dep.state.pa.us/dsweb/GetRendition/Document-87860/html

US Environmental Protection Agency: http://water.epa.gov/polwaste/npdes/swbmp/Grassed-Swales.cfm , http://www.epa.gov/caddis/ssr_sed_wtl.html

US Forest Service: http://www.fs.fed.us/eng/dams/olt/index.html#41-problems

USGS: http://pubs.usgs.gov/sir/2012/5068/section6.html , http://il.water.usgs.gov/proj/nvalues/db/sites/03343200.shtm

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Appendix B-3: Certification Form

New Jersey Highlands Council 100 North Road Chester, N.J. 07930 Phone: 908-879-6737 Website: www.nj.gov/njhighlands	Receipt Stamp - Highlands Council Use Only

Stormwater Structure Data Submittal Certification

Municipalities in the Highlands Region with approved Plan Conformance Petitions are required to submit stormwater structure data to the Highlands Council in accordance with the Highlands Stormwater Management Program. This form is to certify that the data being submitted is accurate and that the locational information provided adheres to the NJDEP Mapping and Digital Data Standards (October 2013) www.nj.gov/dep/gis/assets/NJDEP_GIS_Spatial_Data_Standards_2013.pdf.

Should you have any questions about this submission process, please do not hesitate to call the Highlands Council at (908) 879-6737 and request to speak to your liaison.

Municipality:

Project Description
(brief description of data being submitted)

Certification

Signature:		
Name:		
Title:		
Username or Certification (if applicable):		
Date:		
Phone #:	Fax #:	email:

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Appendix C:
Stormwater Infrastructure Mapping and Inventory Guidance Document (NJDEP)

Abstract

This document was prepared by the NJDEP to provide guidance for mapping stormwater management facilities (i.e. culverts, green infrastructure, manufactured treatment devices (MTDs), outfalls, basins, inlets and subsurface infiltration/detention systems) as required by the New Jersey Stormwater Management Rules (N.J.A.C. 7:8). The document discusses the various free mapping and inventory tools available for use. The inspection, maintenance and upkeep of these facilities is required under the New Jersey Pollutant Discharge Elimination System (NJPDES) Municipal Separate Storm Sewer System (MS4) general permit. A frequently asked questions document is also included in an appendix.

This document is intended to be used by Stormwater Coordinators and/or municipal public works members who will be actively engaged in the mapping of stormwater structures.

The reporting of stormwater structure data supports the requirements of N.J.A.C. 7:8 as well as Highlands Council funded Stormwater Management Program elements.

This document is included as Appendix C of the overall Highlands Region Stormwater Management Program Guidance document. For complete documentation, contact your Highlands Council Liaison (www.state.nj.us/njhighlands/planconformance/liaisons/).

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[PLACEHOLDER FOR NJDEP GUIDANCE DOCUMENT]

Appendix C-1: Stormwater Mapping Tool Questions & Answers

1. **Am I required to use the NJDEP mapping tool?**
   No. If stormwater facilities data has been collected using another means, that is perfectly acceptable. The NJDEP provides additional templates that can be used for submitting previously collected data. These include a Trimble Handheld GPS Data Dictionary Template, ESRI Geodatabase Template and a Microsoft Excel MS4 Inventory Spreadsheet Template. Copies of the templates can be found on the NJDEP website at **www.nj.gov/dep/dwq/msrp_map_aid.htm**. If you are unable to submit your previously collected data in GIS format or in one of the provided templates, the NJDEP will accept it in PDF form (e.g. AutoCAD PDF map). The benefit of the tool is that it provides an exciting mobile- and web-based interactive mapping platform and real-time data collection and uploads.

2. **Are there any hidden costs associated with the use of the mapping tool?**
   The use of the tool requires an ArcGIS Online license and a mobile device such as a cell phone or tablet. The NJDEP is making a number of ArcGIS Online licenses available, at no cost, to permittees who request it. Environmental groups or volunteers that will assist a municipality with mapping and inventory of stormwater infrastructure may also be eligible to use a free license. Permittees may contact **Tim Ebersberger** to begin using this tool or to request a license.

3. **How do the Highlands Council Stormwater Program stormwater facilities inventory requirements differ from the NJDEP requirements?**
   They are the same for Tier A municipalities. The NJDEP is providing an enhanced tool to the municipalities in support of the Stormwater Rules requirements. The mobile application presents an easy and accurate way to collect the data that is already required to be collected as per your Municipal Stormwater General Permit (Tier A municipalities only). Although Tier B municipalities are not required to collect stormwater facility data by the NJDEP, the Highlands Council requires it for conformance with Highlands Regional Master Plan.

4. **Will funding be available through the Plan Conformance grant program to purchase additional equipment needed to collect the stormwater facilities data?**
   No. Stormwater structures can be mapped in the field using iPhone or Android smart phones or similar devices with secure internet access. These devices are not reimbursable through the Highlands Council Plan Conformance Grant Program. However, the grant program will

reimburse costs associated with the purchase of a mapping-grade GPS receiver to improve the accuracy of the location data. The cost of this receiver is approximately $100.

5. **Who will be able to access the data that is collected using the mapping tool?**
   The designated municipal users (i.e. Stormwater Coordinator) will have access to the data as well as the NJDEP program coordinator. Security protection and access control measures will be established for individual users through the use of ArcGIS Online licenses, usernames and passwords.

6. **What if I have already collected stormwater structure data?**
   As long as the data conforms to the NJDEP MS4 Permit criteria, it will be acceptable to the Highlands Council. In this case, the municipal liaisons will assist municipalities in developing a tailored Scope of Work that will allow for reimbursement of stormwater management activities through the Plan Conformance Grant Program.

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Appendix D:
Highlands Stormwater Control Ordinance Amendments

Abstract

This document provides suggested language for Highlands-specific amendments to existing municipal Stormwater Control Ordinances.

This document is included as Appendix D of the overall Highlands Region Stormwater Management Program Guidance document. For complete documentation, contact your Highlands Council Liaison (www.state.nj.us/njhighlands/planconformance/liaisons/).

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Highlands Council
Municipal Plan Conformance
Highlands Stormwater Control Ordinance Amendments

All New Jersey municipalities were required to prepare Stormwater Management Plans and adopt a Stormwater Control Ordinance in order to comply with the New Jersey Stormwater Management Rules at N.J.A.C. 7:8. This document provides Highlands-specific amendments required in order to comply with the Highlands Regional Master Plan (RMP) and reflect RMP resource protection standards. These updates/revisions apply to all Highlands Preservation Area lands, as well as those lands located in the Planning Area of conforming towns. It is important to note that if a project is deemed exempt from the Highlands Act, the enhanced standards identified in this ordinance shall not apply.

The following amendments are meant to be inserted into an existing municipal Stormwater Management Ordinance. Section numbering in this amendment refers to the numbering as found in the NJDEP Model Stormwater Ordinance for Municipalities, Appendix D of the NJ Stormwater Best Management Practices Manual, April 2004. Part I is for a Highlands municipality (all lands conforming) to apply the standards on a municipal-wide basis. Part II is for Highlands municipalities that are only conforming for the Preservation Area. **Either Part I or Part II should be used, <u>not</u> both.** Standards in this ordinance may be amended upon municipal adoption of a Water Use and Conservation Management Plan.

I. STORMWATER ORDINANCE AMENDMENTS (Entire Municipality Conforming):

SECTION 2: Definitions *(new and amended)*

Carbonate Rock Area means an area where rock consisting chiefly of calcium and magnesium carbonates, such as limestone and dolomite, has been identified.

Current Deficit Area means any United States Geological Survey 14-digit Hydrologic Unit Code subwatershed area that is identified in the Highlands Regional Master Plan as having negative Net Water Availability, meaning that existing consumptive and depletive water uses exceed the capacity of the ground water supply to sustain.

Disturbance means the placement of impervious surface, the exposure or movement of soil or bedrock, or the clearing, cutting, or removing of vegetation.

Highlands Open Waters means all springs, wetlands, intermittent and ephemeral streams, perennial streams and bodies of surface water, whether natural or artificial, located wholly or partially within the boundaries of the Highlands Region, but shall not mean swimming pools.

Karst means a distinctive topography that indicates solution of underlying carbonate rocks (such as limestone and dolomite) by surface water or groundwater over time, often producing surface depressions, sinkholes, sinking streams, enlarged bedrock fractures, caves, and underground streams.

Major development *(amended definition)* means any development that provides for ultimately disturbing one or more acres of land or a cumulative increase in impervious surface by one-quarter acre or more. Disturbance for the purpose of this rule is the placement of impervious surface or exposure and/or movement of soil or bedrock or clearing, cutting, or removing of vegetation, or the redevelopment of previously developed sites**.**

Maximum extent practicable means designing stormwater management systems so that all reasonable opportunities for using non-structural stormwater practices are exhausted and a structural BMP is implemented only where absolutely necessary.

Mitigation means an action by an applicant providing compensation or offset actions for onsite stormwater management requirements where the applicant has demonstrated the inability or impracticality of strict compliance with the stormwater management requirements set forth in NJAC 7:8, in an adopted regional stormwater management plan, or in this local ordinance, and has received a waiver from strict compliance from the municipality. Mitigation shall include the implementation of the approved mitigation plan within the same drainage area where the subject project is proposed, or a contribution of funding toward a municipal stormwater control project, or provision for equivalent treatment at an alternate location, or any other equivalent water quality benefit as approved by the municipality.

Municipally Important Ground Water Recharge Area means preserved or constrained lands that cannot be developed or built upon under current regulations. These areas have recharge rates above the median recharge rate for the subwatershed in which they are located; meaning they provide 40% or greater total recharge volume for the subwatershed. Constrained lands are comprised of undeveloped lands within the Highlands Open Water buffer as well as moderately and severely constrained steep slopes. Preserved lands are those that are permanently preserved by local, county, state, federal or non-profit entities. **(OR Prime Ground Water Recharge Area)**

Non-Exempt Project means any project not eligible for an exemption from the Highlands Water Protection and Planning Act Rules, pursuant to N.J.A.C. 7:38-2.3.

Prime Ground Water Recharge Area means lands with the best ground water recharge rates within a HUC14 subwatershed, as indicated by GSR-32 analysis, that provide the top forty percent (40%) of the total recharge volume for the subwatershed. **(OR Municipally Important Ground Water Recharge Area)**

Redevelopment means land-disturbing activity that results in the creation, addition, or replacement of impervious surface area on an already developed or disturbed site. Redevelopment includes, but is not limited to: the expansion of a building footprint, addition or replacement of a structure, replacement of impervious surface area that is not part of a routine maintenance activity, and land disturbing activities related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and

grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

Regional Master Plan means the Highlands regional master plan or any revision thereof adopted by the Highlands Water Protection and Planning Council pursuant to N.J.S.A. C.13:20-8.

SECTION 4: Stormwater Management Requirements for Major Development

F: Erosion Control, Groundwater Recharge and Runoff Quantity Standards

Subsection 1.b:

Amended section (1) The design engineer shall, using the assumptions and factors for stormwater runoff and groundwater recharge calculations at Section 5, demonstrate compliance with either (a) or (b) below. Additional standards set forth in subsections (c) and (d) may apply as required.

New section (c) Non-Exempt Projects located in a Current Deficit Area: Where the project is located in a Current Deficit Area as identified in Exhibit A, the project shall demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures provide for enhanced recharge standards set forth in (e) below.

New section (d) Non-Exempt Projects located in a Municipally Important Ground Water Recharge Area **OR** Prime Ground Water Recharge Area (***choose one***). Where the project is located in a Municipally Important Ground Water Recharge Area **OR** Prime Ground Water Recharge Area (***choose one***) as identified in Exhibit B, the following standards shall apply:

i. Where disturbance is permitted in accordance with this subsection, it shall be limited to no greater than 15% of the Municipally Important Ground Water Recharge Area **OR** Prime Ground Water Recharge Area (***choose one***) on the site and shall preferentially be sited on that portion of Municipally Important Ground Water Recharge Area **OR** Prime Ground Water Recharge Area (***choose one***) that has the lowest groundwater recharge rates.

ii. Where disturbance to the Municipally Important Ground Water Recharge Area **OR** Prime Ground Water Recharge Area (***choose one***) is permitted, the project shall demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures provide for enhanced recharge standards set forth in (e) below.

New section (e) Enhanced Recharge Standards**:** Non-Exempt Projects that are subject to the enhanced recharge requirements by (c) or (d) above, shall apply the following standards, either:

i. Recharge 125 percent of the percentage of the average annual pre-construction groundwater recharge volume for the site; or

ii. In addition to complying with the infiltration requirements of section 4.F.1(b), retain on-site with no discharge, the Stormwater Quality Design Volume (SWQDv), defined as the runoff from the 1.25-inch, 2-hour rainfall event. Where meeting the infiltration requirement will not result in retention of the full SWQDv, the major development shall retain any additional volume to meet the requirements of this section through additional infiltration, or through evapotranspiration or capture and on-site re-use of rainfall.

Subsection 1.b (3): The following types of stormwater shall not be recharged:

New Section (c) Carbonate Rock Areas, where surficial or subsurface karst features have been identified and recharge facilities cannot be designed in a manner that would eliminate the concentrated subsurface release of stormwater. *(Note: the mere presence of carbonate bedrock does not constitute a karst feature).*

Subsection 1.b

New Section (5) Mitigation Required for Non-Exempt Projects: In lieu of on-site recharge, the applicant shall be responsible for providing mitigation of the groundwater recharge volume in the required amount. The applicant should provide mitigation within the following areas, in order of priority:

(a) the same development site where feasible;
(b) the same HUC14 subwatershed, or
(c) an interrelated HUC14 subwatershed where no feasible option exists in the same HUC14 subwatershed.

If none of the above options are feasible or achievable, then the applicant shall comply with the mitigation requirements set forth in paragraph H.

(New section)

H. Mitigation Required for Non-Exempt Projects: A waiver from strict compliance with the requirements of the Municipal Stormwater ordinance shall be approved by the municipality only in those cases where an applicant has demonstrated the inability to strictly comply with any standard of the municipal stormwater ordinance. A waiver from strict compliance for such projects can only be obtained if the applicant agrees to undertake a suitable mitigation measure identified in the mitigation section of the municipality's Stormwater Management Plan. In such cases, the applicant must submit a mitigation plan detailing how the project's failure to strictly comply will be compensated. In cases where a waiver is granted, an applicant should provide mitigation, if possible and/or practical, within

the same drainage area within which the subject project is proposed, or contribute funding toward a municipal stormwater control project, or provide for equivalent treatment at an alternate location, or provide for another equivalent water quality benefit, in lieu of implementing the required stormwater control measures on their specific site.

II. STORMWATER ORDINANCE AMENDMENTS (Preservation Area Only): *(Please note: Where a municipality that contains both Planning and Preservation Area lands, but is only conforming to the Preservation Area, that municipality may restrict these standards to projects only in the Preservation Area by using this section.)*

SECTION 2: Definitions

Carbonate Rock Area means an area where rock consisting chiefly of calcium and magnesium carbonates, such as limestone and dolomite, has been identified.

Current Deficit Area means any United States Geological Survey 14-digit Hydrologic Unit Code subwatershed area that is identified in the Highlands Regional Master Plan as having negative Net Water Availability, meaning that existing consumptive and depletive water uses exceed the capacity of the ground water supply to sustain.

Disturbance means the placement of impervious surface, the exposure or movement of soil or bedrock, or the clearing, cutting, or removing of vegetation.

Ground Water Recharge Area means lands that provide forty percent (40%) of the total recharge volume for the municipality.

Highlands Open Waters means all springs, wetlands, intermittent and ephemeral streams, perennial streams and bodies of surface water, whether natural or artificial, located wholly or partially within the boundaries of the Highlands Region, but shall not mean swimming pools.

Karst means a distinctive topography that indicates solution of underlying carbonate rocks (such as limestone and dolomite) by surface water or groundwater over time, often producing surface depressions, sinkholes, sinking streams, enlarged bedrock fractures, caves, and underground streams.

Major development *(amended definition)* means any development that provides for ultimately disturbing one or more acres of land or a cumulative increase in impervious surface by one-quarter acre or more. Disturbance for the purpose of this rule is the placement of impervious surface or exposure and/or movement of soil or bedrock or clearing, cutting, or removing of vegetation, or the redevelopment of previously developed sites located in the Preservation Area.

Maximum extent practicable means designing stormwater management systems so that all reasonable opportunities for using non-structural stormwater practices are exhausted and a structural BMP is implemented only where absolutely necessary.

Mitigation means an action by an applicant providing compensation or offset actions for onsite stormwater management requirements where the applicant has demonstrated the inability or impracticality of strict compliance with the stormwater management

requirements set forth in NJAC 7:8, in an adopted regional stormwater management plan, or in this local ordinance, and has received a waiver from strict compliance from the municipality. Mitigation shall include the implementation of the approved mitigation plan within the same drainage area where the subject project is proposed, or a contribution of funding toward a municipal stormwater control project, or provision for equivalent treatment at an alternate location, or any other equivalent water quality benefit as approved by the municipality.

Municipally Important Ground Water Recharge Area means preserved or constrained lands that cannot be developed or built upon. Constrained lands are comprised of undeveloped lands within the Highlands Open Water buffer and moderately and severely constrained steep slopes that have recharge rates above the median recharge rate for the Hydrologic Unit Code in which they are located. **(OR Prime Ground Water Recharge Area)**

Non-Exempt Project means any project not eligible for an exemption from the Highlands Water Protection and Planning Act Rules, pursuant to N.J.A.C. 7:38-2.3.

Preservation Area means lands within the Highlands Region that are located in that portion designated by the Highlands Act as the "Preservation Area" (see metes and bounds description at N.J.S.A. 13:20-7b).

Prime Ground Water Recharge Area means lands with the best ground water recharge rates within a HUC14 subwatershed, as indicated by GSR-32 analysis, that provide forty percent (40%) of the total recharge volume for the subwatershed. **(OR Municipally Important Ground Water Recharge Area)**

Redevelopment means land-disturbing activity that results in the creation, addition, or replacement of impervious surface area on an already developed or disturbed site. Redevelopment includes, but is not limited to: the expansion of a building footprint, addition or replacement of a structure, replacement of impervious surface area that is not part of a routine maintenance activity, and land disturbing activities related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

Regional Master Plan means the Highlands regional master plan or any revision thereof adopted by the Highlands Water Protection and Planning Council pursuant to N.J.S.A. C.13:20-8.

SECTION 4: Stormwater Management Requirements for Major Development

F: Erosion Control, Groundwater Recharge and Runoff Quantity Standards
Subsection 1.b:

Amended section (1) The design engineer shall, using the assumptions and factors for stormwater runoff and groundwater recharge calculations at Section 5, demonstrate compliance with either (a) or (b) below. Additional standards set forth in subsections (c) and (d) may apply as required.

New section (c) Non-Exempt Projects located in the Preservation Area and in a Current Deficit Area: Where the project is located the Preservation Area and in a Current Deficit Area as identified in Exhibit A, the project shall demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures provide for enhanced recharge standards set forth in (e) below.

New section (d) Non-Exempt Projects located in the Preservation Area and in a Municipally Important Ground Water Recharge Area **OR** Prime Ground Water Recharge Area (***choose one***). Where the project is located in the Preservation Area and a Municipally Important Ground Water Recharge Area **OR** Prime Ground Water Recharge Area (***choose one***) as identified in Exhibit B, the following standards shall apply:

i. Where disturbance is permitted in accordance with this subsection, it shall be limited to no greater than 15% of the Municipally Important Ground Water Recharge Area **OR** Prime Ground Water Recharge Area (***choose one***) on the site and shall preferentially be sited on that portion of Municipally Important Ground Water Recharge Area **OR** Prime Ground Water Recharge Area (***choose one***) that has the lowest groundwater recharge rates.

ii. Where disturbance to the Municipally Important Ground Water Recharge Area **OR** Prime Ground Water Recharge Area (***choose one***) is permitted, the project shall demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures provide for enhanced recharge standards set forth in (e) below.

New section (e) Enhanced Recharge Standards**:** Non-Exempt Projects that are subject to the enhanced recharge requirements by (c) or (d) above, shall apply the following standards, either:

i. Recharge 125 percent of the percentage of the average annual pre-construction groundwater recharge volume for the site; or

ii. In addition to complying with the infiltration requirements of section 4.F.1(b), retain on-site with no discharge, the Stormwater Quality Design Volume (SWQDv), defined as the runoff from the 1.25-inch, 2-hour rainfall event. Where meeting the

infiltration requirement will not result in retention of the full SWQDv, the major development shall retain any additional volume to meet the requirements of this section through additional infiltration, or through evapotranspiration or capture and on-site re-use of rainfall.

Subsection 1.b (3): The following types of stormwater shall not be recharged:

New Section (c) Carbonate Rock Areas in the Preservation Area, where surficial or subsurface karst features have been identified and recharge facilities cannot be designed in a manner that would eliminate the concentrated subsurface release of stormwater. *(Note: the mere presence of carbonate bedrock does not constitute a karst feature).*

Subsection 1.b

New Section (5) Mitigation Required for Non-Exempt Projects in the Preservation Area: In lieu of on-site recharge, the applicant shall be responsible for providing mitigation of the groundwater recharge volume in the required amount. The applicant should provide mitigation, within the following areas, in order of priority:

(a) the same development site where feasible;
(b) the same HUC14 subwatershed, or
(c) an interrelated HUC14 subwatershed where no feasible option exists in the same HUC14 subwatershed.

If none of the above options are feasible or achievable, then the applicant shall comply with the mitigation requirements set forth in paragraph H.

(New section)

H. Mitigation Required for Non-Exempt Projects: For projects in the Preservation Area a waiver from strict compliance with the requirements of the Municipal Stormwater ordinance shall be approved by the municipality only in those cases where an applicant has demonstrated the inability to strictly comply with any standard of the municipal stormwater ordinance. A waiver from strict compliance for such projects can only be obtained if the applicant agrees to undertake a suitable mitigation measure identified in the mitigation section of the municipality's Stormwater Management Plan. In such cases, the applicant must submit a mitigation plan detailing how the project's failure to strictly comply will be compensated. In cases where a waiver is granted, an applicant should provide mitigation, if possible and/or practical, within the same drainage area within which the subject project is proposed, or contribute funding toward a municipal stormwater control project, or provide for equivalent treatment at an alternate location, or provide for another equivalent water quality benefit, in lieu of implementing the required stormwater control measures on their specific site.

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Appendix E:
Approach for Developing
Municipal Stormwater Mitigation Plans

Abstract

This document provides guidance for the development of municipal Stormwater Mitigation Plans. The review and update of existing mitigation plans is one component of the overall Highlands Stormwater Management Program. This document intended to be used by Stormwater Coordinators, stormwater professionals and public works members who will be actively engaged in stormwater management planning within the municipality.

The Highlands Stormwater Management Program supports and supplements the requirements of the New Jersey Stormwater Management Rules (N.J.A.C. 7:8) as well as the New Jersey Department of Environmental Protection Bureau of Nonpoint Pollution Control Municipal Stormwater Regulation Program (N.J.A.C. 7:14A; MS4 Permits).

This document is included as Appendix E of the overall Highlands Region Stormwater Management Program Guidance document. For complete documentation, contact your Highlands Council Liaison (www.state.nj.us/njhighlands/planconformance/liaisons/).

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Statutory Platform, Purpose and Funding

Through the passage of the New Jersey Highlands Water Protection and Planning Act in 2004, the New Jersey Highlands Water Protection and Planning Council (the Highlands Council) was created and charged with developing a Regional Master Plan (RMP) [1]. Adopted in 2008, the RMP serves as the guiding document for the long-term protection and restoration of the region's critical resources. Stormwater management activities include but are not limited to the following RMP Goals: 1D, 1K, 2B, 2D, 2E, 2G, 6N and 7G.

The Highlands Council Stormwater Management Program has four main components, listed below. This document supports the third Program component.

1. GIS Mapping of Stormwater Structure Locations and Conditions Assessment
2. Adoption of Highlands Area Stormwater Control Ordinance Amendments
3. **Review and Update of Municipal Stormwater Mitigation Plan**
4. Stormwater Management Training

Funding to support this work within a municipality is provided through the Highlands Plan Conformance process. Municipalities with approved Plan Conformance Petitions are eligible for grant funding to cover the reasonable expenses of planning activities associated with the Conformance process and should contact their Highlands Council Municipal Liaison[2] for additional information.

[1] Copies of the Highlands Regional Master Plan are available in most municipal offices and can be obtained by contacting the Highlands Council office and at https://www.state.nj.us/njhighlands/master/ .
[2] www.state.nj.us/njhighlands/planconformance/liaisons/

Using this Document

Chapter 1 of this document provides an overview of stormwater management planning and an introduction to the unique requirements of stormwater planning in the Highlands Region.

Chapter 2 provides guidance for the development of stormwater mitigation plans for Highlands Region municipalities including funding information.

Appendix E-1: Outline for the Development of a Highlands Municipal Stormwater Management/Mitigation Plan – Document to assist Highlands Region municipalities with the development of municipal plans. Also included is supporting documentation from the Highlands RMP. See section 2.2.

Appendix E-2: Model Scope of Work - Prior to commencing activities related to the review and update of a municipal stormwater mitigation plan, municipalities must have an approved scope of work, developed in collaboration with their Highlands Council staff liaison. See section 2.3.

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Appendix E-2: Model Scope of Work and Grant Program Scope of Work Requirements Form E-2

1. Introduction

1.1 Municipal Stormwater Regulation Program

The Municipal Stormwater Regulation Program was developed in response to the U. S. Environmental Protection Agency's (USEPA) Phase II rules published in December 1999[3]. The New Jersey Department of Environmental Protection (NJDEP) issued final stormwater rules on February 2, 2004 (N.J.A.C. 7:8)[4] and four (4) New Jersey Pollutant Discharge Elimination System (NJPDES) general permits authorizing stormwater discharges from Tier A and Tier B municipalities, as well as public complexes, and highway agencies that discharge stormwater from municipal separate storm sewers (N.J.A.C. 7:14A; MS4s).

1.2 Important Definitions

Stormwater

According to the NJDEP definition, stormwater is water resulting from precipitation (including rain and snow) that runs off the land's surface, is transmitted to the subsurface, is captured by separate storm sewers or other sewage or drainage facilities, or conveyed by snow removal equipment.

Stormwater Runoff

Stormwater runoff means water flow on the surface of the ground or in storm sewers, resulting from precipitation.

Stormwater Management

Stormwater Management is the process of minimizing stormwater runoff and directing stormwater to nonstructural and structural devices so as to control flooding, prevent soil erosion, recharge ground water and avoid pollution of water resources.

1.3 Stormwater Management Plans

As outlined in the stormwater rules at N.J.A.C. 7:8-2.2, there are nine overarching goals of stormwater management planning:

1. Reduce flood damage, including damage to life and property;
2. Minimize, to the extent practical, any increase in stormwater runoff from any new development;
3. Reduce soil erosion from any development or construction project;
4. Assure the adequacy of existing and proposed culverts and bridges, and other in-stream structures;
5. Maintain groundwater recharge;

[3] http://water.epa.gov/polwaste/npdes/upload/phase2.pdf
[4] http://www.nj.gov/dep/rules/rules/njac7_8.pdf

6. Prevent, to the greatest extent feasible, any increase in nonpoint pollution;
7. Maintain the integrity of stream channels for their biological functions, as well as for drainage;
8. Minimize pollutants in stormwater runoff from new and existing development in order to restore, enhance and maintain the chemical, physical, and biological integrity of the waters of the State, to protect public health, to safeguard fish and aquatic life and scenic and ecological values, and to enhance the domestic, municipal, recreational, industrial and other uses of water; and;
9. Protect public safety through the proper design and operation of stormwater management basins.

The stormwater rules also set forth the required components of regional and municipal stormwater management plans (MSWMP), and establish the stormwater management design and performance standards for new (proposed) development. The design and performance standards for new development include groundwater recharge, runoff quantity controls, runoff quality controls, and buffers around Category One (C1) waters.

The New Jersey Stormwater Best Management Practices Manual (BMP Manual)[5] has been developed to provide guidance to address the standards in the stormwater rules and provides generalized examples of ways to meet the standards. Chapter 3 of the BMP Manual provides a discussion of regional and municipal stormwater management plans. In addition, the Highlands Council has developed a companion document that provides constructed examples of stormwater BMP projects throughout New Jersey to assist Highlands municipalities in the development of stormwater control measures that may be required in order comply with the stormwater rules and associated regulations. This document is available along with the complete Stormwater Management Program documents on the Highlands Council website at www.state.nj.us/njhighlands/planconformance/guidelines/resource.html#2.

1.3.1 Stormwater Mitigation Plans

Some development projects have unique, site-specific conditions that prevent them from strict compliance with the stormwater design and performance standards. In order for the municipality to grant a waiver or exemption from strict compliance with the groundwater recharge and stormwater runoff quality and quantity requirements, the MSWMP must include a mitigation process documented in a mitigation plan contained within the larger MSWMP (N.J.A.C. 7:8-4.2(c)11).

The mitigation plan must identify measures required to offset any potential impact created by granting the variance or exemption to the performance standards. Several strategies can be used to mitigate a development project and its impacts. Applicants can: identify, design and implement a compensating measure to mitigate impacts; complete a project identified by the municipality as equivalent to the

[5] http://www.nj.gov/dep/stormwater/bmp_manual2.htm

environmental impact created by the exemption or variance; or, provide funding for municipal projects that would address existing stormwater impacts.

To assist municipalities, the NJDEP has developed Guidance for the Development of Municipal Mitigation Plans (February 2006)[6].

1.4 Stormwater Management in the Highlands Region

Effective stormwater management is an important element of natural resource protection, and therefore, vital to the success of the Highlands Water Protection and Planning Act (Highlands Act) and Regional Master Plan (RMP). Applicable RMP policies include but are not limited to the following: 1D4, 1D5, 2D3, 2D4, 2E1, 2G5, 2H4, and 6N2.

Because the Highlands Region provides drinking water for approximately half the state's residents[7], the Highlands Stormwater Management Program provides additional guidance, beyond the stormwater rules, to ensure the enhanced natural resource protections dictated by the Highlands Act are in place.

The Highlands Stormwater Management Program has four main components:

1. GIS Mapping of Stormwater Structure Locations and Conditions Assessment
2. Adoption of Highlands Area Stormwater Control Ordinance Amendments
3. **Review and Update of Municipal Stormwater Mitigation Plan**
4. Stormwater Management Training

This document is meant to provide guidance to Highlands Region municipalities on the development of municipal stormwater mitigation plans to ensure that the enhanced protections of the Highlands Act and RMP are met.

[6] http://www.state.nj.us/dep/stormwater/pdf/munimitipplan030706.pdf
[7] *Highlands Regional Master Plan*, 2008

2. Highlands Region Municipal Stormwater Mitigation Plan Development

2.1 Regulatory Framework

In accordance with N.J.A.C. 7:8-4.6, a municipality may grant a variance or exemption from the design and performance standards for stormwater management measures set forth in its approved MSWMP and Stormwater Control Ordinance(s), provided the MSWMP includes a Stormwater Mitigation Plan in accordance with N.J.A.C. 7:8-4.2(c)11. A written report must also be submitted to the county review agency and the NJDEP describing the variance or exemption and the required mitigation as required by N.J.A.C. 7:8-4.6.

2.2 Highlands Region Requirements

The Highlands Stormwater Management Program (Program) requires municipalities to review and update existing adopted Stormwater Mitigation Plans to bring them in conformance with the Highlands RMP resource protection standards. Specifically, conforming municipalities are required to develop a Stormwater Mitigation Plan to support the enhanced RMP stormwater recharge requirement of 125% versus the DEP rule requirement of 100% recharge and this 125% requirement is also specified for development within Prime Groundwater Recharge Areas (PGWRA). Applicable RMP policies include but are not limited to 2B8, 2D3, 2D4, 7G1 and 7G3 as well as the PGWRA and Smart Growth project review standards. If a municipality does not currently have an adopted Stormwater Mitigation Plan, one shall be developed if a variance or exemption from design and performance standards are permitted. The municipality, in the development of its Plan, will need to identify the potential for off-site recharge mitigation projects when it is not able and/or practicable to be addressed on-site. These mitigation sites should be within the same HUC14 subwatershed or an inter-connected subwatershed. Therefore, in developing its Plan consistent with best practices, a municipality should select a minimum of two sites for mitigation priority projects and develop concept mitigation plans for the sites. (*Note: A developer may provide funding or partial funding to the municipality for the cost to implement the mitigation project in accordance with N.J.A.C. 7:8*)

The Highlands Council has developed an outline to assist municipalities with the development of stormwater management/mitigation plans. Also included are associated RMP goals, policies and objective that provide supporting basis for this work. This can be found in Appendix E-1.

The draft or revised draft of the municipal Stormwater Mitigation Plan shall be submitted to the Highlands Council for review and approval prior to local adoption. The municipality must provide an electronic copy of the adopted document to the Highlands Council.

2.3 Funding

Grant funding to support the tasks associated with the review and update of municipal stormwater mitigation plans is available to conforming Highlands municipalities with approved petitions for Plan Conformance. Prior to commencing project activities, municipalities must have an approved scope of work (SOW), developed in collaboration with their Highlands Council staff liaison. A model SOW is included in Appendix E-2. (*Note: This SOW includes all four Program components.*)

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Appendix E-1:
Outline for the Development of a Highlands Municipal Stormwater Management/Mitigation Plan

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Highlands Municipal Stormwater Management/Mitigation Plan Preparation

1. Information Sources
    a. NJ Stormwater Best Management Practices (BMP) Manual Section 3 - *Regional and Municipal Stormwater Management Plans* (April 2004)
    b. NJDEP Guidance for the Development of Municipal Mitigation Plans (February 2006)
    c. Highlands Regional Master Plan (RMP) (2008). See following section in Appendix E-1 for specific RMP programmatic goals, policies and objectives.
    d. Highlands Council Stormwater BMP Project Implementation Manual (November 2015)
2. Map and Assess Existing Stormwater System
    a. Map Inlets
    b. Map Outfalls
    c. Map Detention Basins
    d. Map Additional Stormwater Management Facilities (i.e. green infrastructure, manufactured treatment devices (MTDs), etc.)
    e. Identify Problem Areas
    f. Identify Maintenance Concerns
    g. Identify Illicit Connections
3. Additional Mapping
    a. Carbonate Rock Areas
    b. Drainage Areas
    c. Sensitive Receptors
        i. Quantity
        ii. Quality
        iii. Recharge
4. List and Prioritize Known Problems
    a. Create Team to Identify Problems
    b. Inadequate Bridges or Culverts
    c. Flooding
    d. Erosion
    e. Contaminated Sites
    f. Maintenance Issues
    g. Failing Systems
    h. Illicit Connections
    i. Existing Stream Data
    j. Existing Impairments
    k. Existing Detention Basins Requiring Improvements/Maintenance
    l. Identify Gaps in Data
        i. Design Program to Gather Data on Unknown Problems
5. Gather List of Properties with Potential for Mitigation Project Use
    a. Municipal Property
        i. Roadways

ii. Parks
iii. Municipal Facilities
iv. Open Space
1. Determine if there are any restrictions

b. School Property
c. Stormwater Systems in Common Ownership
d. Drainage Easements

6. Mitigation Project Requirements (see 1.b.)
a. Located within the Same Area that Would Contribute to the Receptor Impacted by the Project that was Granted a Variance/Exemption
b. Obtain Legal Authorization to Construct Project
i. Determine if project is sited a regulated area and subject to applicable regulations (i.e. Flood Hazard Area Control Act Rules and Freshwater Wetland Act Rules)
c. Site Project Close to the Location of the Original Project
d. Identify One Location that Addresses Any and All of the Performance Standards Waived
e. Demonstrate that the Implementation of the Mitigation Project will Result in no Adverse Impacts to other Properties
f. Mitigation Projects that Address Stormwater Runoff Quantity can Provide Storage for Proposed Increases in Runoff Volume, as Opposed to a Direct Peak Flow Reduction

7. Prepare List of Potential Mitigation Projects*
a. Recharge
i. Improvement/Restoration/Development of Roadside Swales into Infiltration Swales
ii. Retrofitting of Existing Basins into Infiltration Basins
iii. Reforestation
iv. Property Preservation

RMP Note: Minimum 125% recharge requirement in a Current Deficit Area (RMP Objective 2B8b) and 125% recharge requirement in a Prime Groundwater Recharge Area (RMP Objective 2D4b).

b. Water Quality
i. Fix Known Erosion Problems
ii. Direct Water into a Natural Area
iii. Constructing a New BMP
iv. Improvement/Maintenance of Roadside Swales
v. River Cleanup Programs
vi. Reforestation
vii. Inlet Retrofitting
viii. Illicit Connection Elimination Program
c. Water Quantity
i. Installation of Roadside Swales/Stormwater Management Systems
ii. Detention Basin Retrofitting

* *Wherever possible, quantification of the mitigation provided by each project relative to the applicable standard should also be included.*

8. List Planned and Potential Municipal Stormwater Projects
    a. Drainage Systems
        i. Outfall Maintenance
        ii. Culvert Maintenance
        iii. Swale Maintenance and Restoration Program
        iv. Catch Basin Maintenance and Retrofitting
    b. Maintenance
    c. Illicit Connections
    d. Estimate Costs
    e. Locate in Drainage Areas
9. Identify Other Stormwater Programs
    a. Stormwater Mitigation Bank/Fund
        i. Local Grant Programs
    b. Education
    c. Private Maintenance of Stormwater Systems
    d. Enforcement of Maintenance Requirements and Easement Restrictions
    e. Ordinance Amendments
        i. Parking Requirements
        ii. Site Plan and Subdivision Design Standards
        iii. Construction Standards

Supporting Documentation from the RMP

GOAL 1D: PROTECTION, RESTORATION, AND ENHANCEMENT OF HIGHLANDS OPEN WATERS AND RIPARIAN AREAS

Policy 1D4: Highlands Open Waters shall include a protection buffer of 300 feet from the edge of the discernable bank of Highlands Open Waters feature, or from the centerline where no discernable bank exists. With respect to wetlands and other Highlands Open Waters features (e.g., seeps, springs, etc.), the feature shall include a protection buffer of 300 feet from the delineated Letter of Interpretation (LOI) line issued by the NJDEP for wetlands, or from a field-delineated boundary for other features. In areas where existing development or land uses within the protection buffers have reduced or impaired the functional values of the buffers, the Council will seek opportunities to restore the buffer and its functions. Any proposed disturbance shall, through local development review and Highlands Project Review, comply with Highlands Open Waters buffer standards. The protection buffer width for Category 2 streams in the Planning Area may be modified through a Stream Corridor Protection/Restoration Plan, as specified in Objective 1D4i. In approved Redevelopment Areas, the Council may, at its discretion, modify the required buffer, upon a showing of no alternatives, no impact to the functional value of the buffer, and provision of alternative approaches to enhancing or protecting Highlands Open Waters and resources of the buffer area.

Objective 1D4c: Require that proposed development within all Highlands Open Waters buffers (Preservation and Planning Areas) conforms through local development review and Highlands Project Review with the buffer requirements of N.J.A.C. 7:8 (Stormwater Management Rules), N.J.A.C 7:13 (Flood Hazard Area Rules), and N.J.A.C. 7:7 (Freshwater Wetland Rules), and with any applicable requirements of a Regional Stormwater Plan adopted pursuant to N.J.A.C. 7:8 (Stormwater Management Rules).

Objective 1D4g: Encourage opportunities to restore and enhance Highlands Open Waters buffers of all zones in both the Preservation and Planning Areas. Restoration activities shall be targeted to ensure improvements to one or more of the functional values that the buffers provide while ensuring that there is no net loss of any of the functional elements, in compliance with Objective 1D4h. Specifically during site redevelopment, techniques may include, but are not limited to: disconnecting the direct drainage of impervious surfaces to Highlands Open Waters; retrofitting of stormwater management facilities to achieve the water quality, quantity, and recharge standards of the Stormwater Management Rules as specified in N.J.A.C. 7:8; reducing the temperature of stormwater discharges; and minimizing concentrated stormwater discharges through or into protection buffers.

Objective 1D4h: Key functional values that Highlands Open Waters buffers provide or contribute to include but are not limited to habitat, stormwater and flood water retention and filtration, water quality protection, temperature moderation, aquatic ecosystem integrity and channel integrity. The mitigation requirement of no net loss of functional value shall ensure improvements to one or more function and that there shall be no net loss of any function in the mitigation design. For the Highlands Open Waters buffer functional value assessment, require that the applicant demonstrate improvement or no net loss of functions as follows:

1. Habitat – No net loss of instream food sources and no net loss of terrestrial and aquatic habitat functional value due to a shift to a less valuable overall vegetative condition in the protection buffer based on the following continuum from highest to lowest: forest or wetland, scrub/shrub, pasture or meadow, agriculture, maintained lawn, unpaved impervious surface, and other structures;
2. Water Quality – A degradation of this functional value will occur if, as a result of the proposed land conversions, pollutant loads increase to the Highlands Open Waters;

3. Temperature Moderation – A loss in temperature moderation functional value will occur if changes to the existing vegetation result in reduced shading of the Highlands Open Waters or stormwater that discharges to Highlands Open Waters. Further, a loss in temperature moderation functional value may occur with the heating of stormwater by new structures and other impervious surface. Mitigation approaches include removing or relocating impervious surfaces away from the Highlands Open Water or ensuring that stormwater temperature is reduced through shading or other techniques; and
4. Channel Integrity – A loss of channel integrity functional value will occur if the project will result in: the loss of bank stabilizing vegetation; the placement of infrastructure that can be feasibly located outside the stream corridor; an increase in the peak rate of stream flow generated, or in localized scour potential, that will increase stream bank and stream bed erosion; or the removal or burial of aquatic habitat in any substantial part of a stream bed or for threatened or endangered species.

Policy 1D5: Protect the integrity of the Riparian Areas through the application of RMP standards during local development review and Highlands Project Review.
Objective 1D5f: Require that development within Riparian Areas conforms through local development review and Highlands Project Review to any applicable requirements of a Regional Stormwater Plan adopted pursuant to N.J.A.C. 7:8 (Stormwater Management Rules).

GOAL 1K: PROTECTION OF GROUND WATER QUALITY AND PUBLIC SAFETY REGARDING KARST FEATURES IN THE HIGHLANDS

Policy 1K4: To ensure through Plan Conformance that municipalities in, or within subwatersheds draining directly to, the Carbonate Rock Area protect public health and safety and the quality of ground waters from inappropriate land uses and pollutant discharges.
Objective 1K4a: Identification of critical requirements for development review ordinances to be adopted by municipalities, and for county development review procedures regarding roads and stormwater systems at a minimum, with technical guidance
Objective 1K4d: Public works projects, including but not limited to water supply, sewerage, stormwater, and transportation facilities, shall be constructed and maintained such that the potential for damage from karst features and the contamination of ground water are avoided.

GOAL2B: PROTECTION, RESTORATION AND ENHANCEMENT OF WATER QUALITYAND QUANTITYOF SURFACE AND GROUND WATERS (SECTIONS 10.B(1) AND 10.C(1)), AND TO DETERMINE "THE AMOUNT AND TYPE OF HUMAN DEVELOPMENT AND ACTIVITYWHICH THE ECOSYSTEM OF THE HIGHLANDS REGION CAN SUSTAIN WHILE STILL MAINTAINING THE OVERALL ECOLOGICAL VALUES THEREOF, WITH SPECIAL REFERENCE TO SURFACE AND GROUND WATER QUALITYAND SUPPLY…" (SECTION 11.A.(1)(A)).

Policy 2B8: To require through Plan Conformance, local development review, and Highlands Project Review the efficient and effective use of water availability, the planning for future water needs, the reduction and elimination of water deficits, and the mitigation of new consumptive or depletive use in any Current Deficit Areas or subwatersheds that could become deficit areas based on projected development and water uses, to ensure sustainable water supply, water resource, and ecological values in conformance with RMP policies and objectives.

Objective 2B8a: Prevent net increases in consumptive or depletive water uses in Current Water Deficit Areas to prevent exacerbation of and help reduce or eliminate the deficit to ensure sustainable water supply, water resource and ecological values, emphasizing techniques including, but not limited to water reuse, recycling, and conservation.

Objective 2B8b: Proposed new consumptive or depletive water uses within a Current Deficit Area shall only occur under the auspices of a Water Use and Conservation Management Plan approved under Objective 2B8c or through mitigation of the proposed consumptive or depletive use within the same HUC14 subwatershed through: a permanent reduction of existing consumptive and depletive water uses; ground water recharge in excess of the requirements of N.J.A.C. 7:8 (Stormwater Management Rules); or other permanent means. Where a Water Use and Conservation Management Plan has not been approved:

1. Each project shall achieve mitigation ranging from 125% to 200%, based on the severity of the Current Deficit and the amount of consumptive or depletive water use proposed;
2. Total consumptive and depletive water uses from any single project and all projects combined are not to exceed the Conditional Water Availability of Objectives 2B3a or 2B3b for any HUC14 subwatershed;
3. Mitigation shall be successfully completed prior to initiation of the water use, except as required by #4, below. Mitigation may be phased in keeping with project development;
4. For water uses where the combination of proposed consumptive and depletive water uses and current subwatershed deficit is high, according to a schedule established by the Highlands Council, off-site mitigation shall be successfully completed prior to any on-site construction. On-site mitigation shall be successfully completed prior to initiation of the water use but may be implemented concurrent with on-site construction. Mitigation may be phased in keeping with the level of consumptive or depletive water uses; and
5. Mitigation plans for a project shall include: specific objectives for each mitigation component; monitoring and reporting requirements; methods by which shortfalls in meeting the mitigation objectives shall be addressed through additional action; and be guaranteed through performance bonds.

Objective 2B8c: Water Use and Conservation Management Plans shall be required through municipal Plan Conformance for all subwatersheds to meet the policies and objectives of Goal 2B, to ensure efficient use of water through water conservation and Low Impact Development Best Management Practices, and to avoid the creation of new deficits in Net Water Availability. Where developed for Current Deficit Areas, the plans shall include provisions to reduce or manage consumptive and depletive uses of ground and surface waters as necessary to reduce or eliminate deficits in Net Water Availability, or to ensure continued stream flows to downstream Current Deficit Areas from Existing Constrained Areas, to the maximum extent practicable within each HUC14 subwatershed. Water Use and Conservation Management Plans shall demonstrate through a detailed implementation plan and schedule how and when the current deficit will be resolved in a subwatershed prior to approval for new water uses in the subwatersheds with the most severe deficits (e.g., in excess of 0.25 million gallons per day or mgd), and the plan shall be implemented prior to initiation of new water uses.

Objective 2B8d: All water users within a Current Deficit Area shall seek funding and opportunities to meet the intent of Objective 2B4b.

Objective 2B8e: Allow water resource transfers between or from Highlands subwatersheds only when there is no other viable alternative and where such transfers would demonstrably not result in impairment of resources in any subwatershed. Potential effects on upstream and downstream subwatersheds should be included in any such evaluation.

GOAL 2D: MAINTENANCE OF HYDROLOGIC INTEGRITY THROUGH THE PROTECTION OF GROUND WATER RECHARGE

Policy 2D3: To protect, enhance, and restore the quantity and quality of Prime Ground Water Recharge Areas

Objective 2D3a: Establish Low Impact Development and other Best Management Practices, technical guidelines and procedures to protect, restore and enhance Prime Ground Water Recharge Areas, to maximize the protection of natural ground water recharge and to minimize the need for engineered recharge methods for the purpose of complying with N.J.A.C. 7:8 (Stormwater Management Rules).

Objective 2D3b: Establish model municipal development regulations and master plan elements for the protection of Prime Ground Water Recharge Areas, through mechanisms that both complement and supplement the provisions of N.J.A.C. 7:8 (Stormwater Management Rules)

Objective 2D3e: Identify and implement opportunities for the restoration or enhancement of recharge in Prime Ground Water Recharge Areas and other lands through the retrofit or rehabilitation of stormwater recharge facilities, land management improvements, reforestation, etc.

Policy 2D4: To apply standards through Plan Conformance, local development review and Highlands Project Review to protect, restore and enhance the functionality and the water resource value of Prime Ground Water Recharge Areas by restricting development and uses of land within a Prime Ground Water Recharge Area that reduce natural ground water recharge volumes or may directly or indirectly contribute to or result in water quality degradation

Objective 2D4b: Any development activity approved to occur in a Prime Ground Water Recharge Area shall provide an equivalent of 125% of pre-construction recharge volumes for the affected Prime Ground Water Recharge Area of the site within the following areas, in order of priority: (1) the same development site where feasible; (2) the same HUC14 subwatershed, or (3) an interrelated HUC14 subwatershed as approved by the Highlands Council where no feasible option exists in the same HUC14 subwatershed. This requirement shall apply to all portions of the Prime Ground Water Recharge Area where the recharge is disrupted through impervious surfaces, routing of stormwater runoff and recharge from natural flow paths, and other similar changes

Objective 2D4g: Require conformance with applicable components of regional stormwater management plans, where applicable, as a mandatory requirement for any site plan application.

Objective 2D4h: Achieve a net improvement in ground water recharge volume and maintenance of water quality as required through compliance with and implementation of any related provisions of an adopted regional stormwater plan.

Objective 2D4i: Achieve a net improvement in ground water volume and maintenance of water quality through redevelopment, enhanced infiltration, pretreatment or other means where feasible.

GOAL2E: IMPROVEMENT OF GROUND WATER RECHARGE THROUGH REGIONAL MANAGEMENT EFFORTS

Policy 2E1: To develop regional stormwater plans to promote regional protection, restoration and enhancement of ground water recharge volume and quality where specific watersheds are at risk in the absence of regional analysis and enhanced standards (see N.J.A.C. 7:8, Stormwater Management Rules).

Policy 2E2: To coordinate programs, funding and activities among public and private entities to encourage regional ground water recharge protection, restoration and enhancement activities consistent with the Plan.

GOAL2G: PROTECTION, RESTORATION AND ENHANCEMENT OF THE WATER QUALITY OF THE HIGHLANDS REGION

Policy 2G2: To reduce or avoid water quality impacts using requirements for water quality protection measures for new land uses through local development review and Highlands Project Review.

Policy 2G3: To adopt and implement water quality protections through Plan Conformance, local development review, and Highlands Project Review.

Policy 2G4: To determine where water quality improvements are necessary or beneficial for the improvement of water availability, develop watershed-based plans to achieve such improvements such as restoration techniques including disconnection and reduction of existing impervious surfaces, develop implementation mechanisms, and implement these plans.

Policy 2G5: To adopt and implement stormwater management controls through Plan Conformance, local development review and Highlands Project Review.

Objective 2G5a: Require recharge of clean stormwater rather than contaminated stormwater wherever feasible to meet stormwater management requirements, and to pretreat contaminated stormwater wherever its recharge is required.

Objective 2G5b: Require Low Impact Development and other Best Management Practices standards for stormwater management to minimize the discharge of stormwater-entrained pollutants to ground and surface waters.

Objective 2G5c: Implement agricultural best management practices for water conservation, water reuse, nutrient and pesticide application, animal waste management, environmental restoration, pollution assessment and prevention, and irrigation efficiency in farm operations for the protection of ground and surface water quality.

Policy 2G6: To establish minimum criteria for municipal water quality management programs.

Objective 2G6a: Develop technical guidelines and procedures for Low Impact Development Best Management Practices to protect ground and surface water quality.

Objective 2G6b: Develop model municipal development regulations for the protection of ground and surface water quality.

Policy 2G7: To promote the implementation of Low Impact Development Best Management Practices to protect the quality of ground and surface water quality.

Policy 2G8: To develop an educational program to further the understanding of the importance of water quality and methods of protecting water resources in the Highlands.

GOAL 6N: USE OF SMART GROWTH PRINCIPLES, INCLUDING LOW IMPACT DEVELOPMENT, TO GUIDE DEVELOPMENT AND REDEVELOPMENT IN THE HIGHLANDS REGION

Policy 6N2: To require municipalities and counties to adopt stormwater management Low Impact Development standards to preserve or mimic the natural hydrologic features and characteristics of the land

GOAL7G: ENSURE THAT HIGHLANDS ACT PERMITS AND WAIVERS ARE PROPERLY ISSUED, TRACKED, AND MONITORED.

Policy 7G1: For the Preservation Area, coordinate with NJDEP during Highlands permit review for any major Highlands development including the review of waivers on a case-by-case basis: 1) if determined to be necessary in order to protect public health and safety; 2) for redevelopment in certain previously developed areas as identified by the Highlands Council, or 3) in order to avoid the taking of property without just compensation.

Objective 7G1a: Ensure through agency coordination in accordance with N.J.A.C. 7:38-1.1 that any Highlands permit, or permit with a waiver, be issued only with due consideration of the RMP and/or any amendments to a master plan, development regulations, or other regulations adopted by a local government unit specifically to conform them to the RMP.

Policy 7G2: For both the Preservation Area and the Planning Area, a waiver may be issued by the Highlands Council on a case-by-case basis from the requirements of the RMP or any amendments to a master plan, development regulations, or other regulations adopted by a local government unit specifically to conform them with the RMP: 1) if determined to be necessary in order to protect public health and safety; 2) for redevelopment in certain previously developed areas as identified by the Highlands Council, or 3) in order to avoid the taking of property without just compensation. Any waiver issued shall be conditioned upon a determination that the proposed development meets the requirements prescribed for a finding as listed in Section 36.a of the Highlands Act to the maximum extent possible.

Policy 7G3: For both the Preservation Area and the Planning Area during local development review, any variance or exception issued shall be conditioned upon a written determination, specifically included in an approving resolution, that the proposed development meets the requirements prescribed for a finding as listed in Section 36.a of the Highlands Act to the maximum extent possible.

RMP Chapter 5 - Programs

Implementation of Water Quality Restoration Projects: Stormwater Management Plans

Municipalities are already required to implement certain actions, including the adoption of stormwater management plans and ordinances and the implementation of management practices for municipal stormwater systems and facilities. The Highlands Council will:

Coordinate with counties, municipalities and other interests to develop and implement Regional Stormwater Management Plans in high priority HUC14 subwatersheds. These plans, where adopted by the NJDEP, become part of each municipality's stormwater permit;

Review Residential Site Improvement Standards (RSIS) for stormwater and determine whether improvements are necessary to better protect Highlands resources, and then coordinate with the Site Improvement Advisory Board for approval of those changes for municipal use;

Coordinate with appropriate interests to develop and implement Nonpoint Source (NPS) Management Measures and Control Projects including the implementation of retrofitted stormwater structural devices and nonstructural systems to collect and filter NPS pollutants such as: retrofitted stormwater drains, retention/detention/infiltration basins, swales, bioretention systems, the installation of cross-sectional catch basins to reduce NPS pollutants prior to entering a water body, and other stormwater best management

practices as per NJDEP Stormwater BMP Manual and other guidance manuals, inspection, regularly scheduled stormwater basin cleanout and maintenance, storm sewer inlet cleanouts, street sweeping programs, and rehabilitation; and

Identify alternative means of stormwater management that are more appropriate to rural and forested areas of the Highlands, potentially including use of stormwater wetlands, vegetated filters, land spreading and other non-structural techniques as per NJDEP Stormwater BMP Manual and other guidance manuals to reduce fecal coliform and Total Suspended Solids (TSS) input.

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Appendix E-2:
Model Scope of Work

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Highlands Plan Conformance Grant Program
Highlands Region Stormwater Management Program Overview
Model Municipal Scope of Work

This scope of work (SOW) overview document supports the Plan Conformance resource management implementation plan and the required Highlands Regional Master Plan (RMP) updates to the existing New Jersey Stormwater Management Rules at N.J.A.C. 7:8 (Stormwater Rules) for conforming towns in the Highlands Region. The SOW tasks identify the required update components as was indicated in the municipal Plan Conformance Petition and associated Highlands Implementation Plan and Schedule approved by the Highlands Council.

The Highlands Council has authorized grant funding for each conforming municipality for GIS mapping of stormwater structure locations and conditions assessment, amendments to the existing Municipal Stormwater Control Ordinance(s), evaluating and updating municipal Stormwater Management and Mitigation Plans in accordance with the Stormwater Rules to reflect the RMP resource protection standards, and training.

This document discusses each component of the overall program. Highlands Council Municipal Liaisons should be contacted for additional information. The list of municipal liaisons can be accessed at: www.state.nj.us/njhighlands/planconformance/liaisons/.

Component I – GIS mapping of Stormwater Structure Locations and Conditions Assessment

Task 1. Conduct an assessment of existing stormwater structure* locations and submit digital GIS data for each structure in the municipality in accordance with the Stormwater Rules. This is required for all Tier A and Tier B municipalities in the Highlands Region. The SOW must identify the lead person responsible for handling this task, the staffing approach and a description of the naming convention to address the User Guide instructions for structure IDs. Please note that the municipality shall prepare a SOW for completion of this task and submit it to the municipal liaison for approval prior to proceeding with the task activities.

Municipalities have several options for completing this task:

Option 1. Utilize the New Jersey Department of Environmental Protection's (NJDEP) Arc GIS Online Mapping Tool (Tool). This option is intended for permittees who do not have a handheld GPS unit and who are creating a new inventory. The use of this tool requires an ArcGIS Online license and a mobile device such as a cell phone or tablet. The NJDEP is making a number of ArcGIS Online licenses available, at no cost, to permittees who request it. Environmental groups or volunteers that will assist a municipality with mapping and inventory of stormwater infrastructure may also be eligible to use a free license. Permittees may contact Tim Ebersberger to begin using this tool or to request a license.

Option 2. Utilize a combination of paper forms, GPS devices for latitude and longitude coordinates and digital photography to carry out the stormwater structure* inventory and assessment. The Highlands Council will provide necessary forms, protocols, and guidance documents for structure inventory and evaluation. All data collected must adhere to the NJDEP Mapping and Digital Data Standards (www.nj.gov/dep/gis/assets/NJDEP_GIS_Spatial_Data_Standards_2013.pdf) and the Highlands Council approved SOW details. The proposed field data collection form must be submitted with the SOW.

Option 3. Utilize a Trimble handheld GPS data dictionary template. This tool in intended for permittees with handheld GPS unit capabilities and software who may or may not have existing inventories, but intend on collecting data via a handheld GPS unit. A number of versioned templates created using Pathfinder software are available at www.nj.gov/dep/dwq/msrp_map_aid.htm. Completed templates should be submitted to the Highlands Council and the NJDEP.

Option 4. ESRI Geodatabase Template Tool. This tool is intended for permitees with ArcGIS software capabilities and experience who have existing electronic inventories. This template should be populated by permitees and submitted to the Highlands Council and the NJDEP. Templates can be found on the NJDEP website at www.nj.gov/dep/dwq/msrp_map_aid.htm.

Option 5. Permitees with limited hardware/software capabilities or permitees with existing inventory databases that exist in environments such as Microsoft Excel or Access may submit their inventories using an Excel template. The template should be populated by permitees and submitted to the Highlands Council and the NJDEP. A copy of the template can be found at www.nj.gov/dep/dwq/msrp_map_aid.htm.

**Note: Under the existing permit, only storm sewer outfall pipes are required to be mapped under the NJPDES Tier A permit. Municipalities, however, are encouraged to include any/all stormwater structure data that is currently available in their inventories (inlets, detention/retention basins, green infrastructure, etc.). Please speak with your Highlands municipal liaison for specific questions.*

Component II – Adoption of Highlands Area Stormwater Control Ordinance Amendments

Task 1. Review existing Stormwater Control Ordinance(s) to incorporate Highlands RMP stormwater control requirements; refer to Appendix D of the Highlands Region Stormwater Management Program Guidance for required revisions to the NJ Model Stormwater Control Ordinance for Municipalities as presented in Appendix D of the NJ Stormwater Best Management Practices Manual dated April 2004.

Task 2. Revise municipal Stormwater Control Ordinance(s) to reflect Highlands RMP updates. Submit draft revised document to Highlands Council for review.

Task 3. Revise document based on comments received from Highlands Council. Finalize document and receive Highlands Council approval prior to local adoption.
Task 4. Provide electronic copy of adopted document to Highlands Council.

Component III – Develop or Review and Update of Stormwater Mitigation Plan

Task 1. Review the existing adopted municipal Stormwater Mitigation Plan if the municipality has permitted, in accordance with 7:8-4.6, a variance or exemption from the design and performance standards for stormwater management measures. If a municipality does not currently have a mitigation plan, one shall be developed.
Task 2. Review the guidance document for the preparation of a Highlands RMP Stormwater Mitigation Plan provided by the Highlands Council in Appendix E of the Highlands Region Stormwater Management Program Guidance for a detailed outline of mitigation components and required sections. The Highlands guidance was prepared based on the requirements of N.J.A.C. 7:8. The municipality is to select a **minimum of two sites** for mitigation priority projects and develop concept mitigation plans for the sites as part of the municipal Stormwater Mitigation Plan update. A developer may provide funding or partial funding to the municipality for the cost to implement the mitigation in accordance with the Stormwater Rules.
Task 3. Revise municipal Stormwater Mitigation Plan to reflect Highlands RMP component details. Submit draft document to Highlands Council for review.
Task 4. Revise document based on comments received from Highlands Council. Finalize document and receive Highlands Council approval prior to local adoption.
Task 5. Provide electronic copy of adopted document to Highlands Council.

Component IV – Stormwater Management Training

Task 1. Funding is available through the Plan Conformance process for municipal officials and/or designees to attend either Highlands-sponsored Stormwater Management training programs or other stormwater training programs. Please note that **prior approval from the Highlands Council is required** for attendance at non-Highlands stormwater training events and all funding is reimbursement-based.