

New Jersey Highlands Water Protection and Planning Council

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# 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.<sup>1</sup>

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<sup>2</sup> for additional information.

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<sup>1</sup> 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/](http://www.nj.gov/njhighlands/master/).

<sup>2</sup><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<sup>3</sup>, 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<sup>4</sup> (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](http://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 to comply with the Stormwater Rules and associated regulations. This document is available along

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<sup>3</sup> N.J.A.C. 7:8, [www.nj.gov/dep/rules/rules/njac7\\_8.pdf](http://www.nj.gov/dep/rules/rules/njac7_8.pdf)

<sup>4</sup> [www.nj.gov/dep/stormwater/bmp\\_manual2.htm](http://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](http://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<sup>5</sup>, 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.

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<sup>5</sup> "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.<sup>6</sup>

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](http://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. Information from paper forms should be translated to an acceptable electronic format in accordance with the NJDEP Mapping and Digital Data Standards prior to submission. Paper forms will not be accepted but should be kept on file with the municipality. 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 as of 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 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. Additional information on this mapping tool can be found on the NJDEP website at [www.nj.gov/dep/dwq/msrp\\_map\\_aid.htm](http://www.nj.gov/dep/dwq/msrp_map_aid.htm).

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<sup>6</sup> 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.



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 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](http://www.nj.gov/njhighlands/planconformance/liaisons.html)).

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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/liasons/](http://www.state.nj.us/njhighlands/planconformance/liasons/)).

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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/](http://www.state.nj.us/njhighlands/planconformance/liaisons/)).

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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/liasons/](http://www.state.nj.us/njhighlands/planconformance/liasons/)).

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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 (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/liasons/](http://www.state.nj.us/njhighlands/planconformance/liasons/)).