

Policy Consideration: **Prime Ground Water Recharge Area Protection Requirements**
Status: **For Consideration by the Highlands Council at**
the September 21, 2006 Work Session
Date: **September 19, 2006**

I. STAFF POLICY RECOMMENDATIONS

1) **Prime Ground Water Recharge Areas** will be included in the Land Use Capability Map (LUCM) of the Regional Master Plan (RMP) to help protect the potable water supply, surface and ground water quantity and quality and ecological resource values.

Rationale: The Highlands Act includes a regional goal to protect, restore, and enhance the quality and quantity of the surface water and ground waters of the Highlands Region. Sections 10.b.(1) and 10.c.(1). Ground water recharge is the process by which water infiltrates into the ground and is added to the water table from precipitation. It is the primary source of water replenishment to both aquifers (defined as ground water able to be used economically as a source of drinking water) and non-aquifer ground water. The determination of the relative ground water recharge of land areas across the Highlands and understanding of where the most productive recharge areas are located allows for improved management and protection of ground water quality and quantity in support of a sustainable water supply, as well as overall water and ecological resource protection.

2) **Prime Ground Water Recharge Areas** shall include those lands within a HUC 14 subwatershed which provide 40 percent ground water recharge, relative to other land areas, during drought conditions.

Rationale: Section 11 of the Highlands Act requires a Resource Assessment in order to maintain the overall ecological values of the Highlands Region with special reference to surface and ground water quality and supply. To address this requirement, the relative productivity of ground water recharge areas has been evaluated for each HUC14 subwatershed. Ground Water Recharge Areas were evaluated using the New Jersey Geological Survey (NJGS) method, GSR-32, to differentiate relative recharge rates. This is an appropriate and established method to estimate the rate of ground water recharge and evaluate the effect of present and future land uses on ground water recharge.

3) The following standards shall be incorporated into the **Regional Protection Zone** of the Land Use Capability Map (LUCM) in furtherance of the goals and requirements of the Highlands Act to protect and enhance Highlands resources, as follows:

- Include Prime Ground Water Recharge Areas to the maximum extent practicable, given other LUCM considerations.
- Discourage land uses within Prime Ground Water Recharge Areas, except within a **Specially Planned Area**, as determined by the Highlands Council, and only upon demonstration that any relief from protection requirements will not impair or reduce ground water recharge quality, rates or volumes.
- Where development is allowed that infringes into a mapped Prime Ground Water Recharge Area within a **Specially Planned Area**, Low Impact Development or

other best management practices (BMPs) and compensation or mitigation must be provided through restoration of impaired Prime Ground Water Recharge Areas in the same subwatershed or by other means, as determined by the Highlands Council.

Rationale: The Highlands Act requires the development of Land Use Capability Map and minimum standards based upon the Resource Assessment and Smart Growth Component. Sections 11.a.(1) , 11.a.(6) and 12. An evaluation of the relative rate of recharge in a Prime Ground Water Recharge Area within a subwatershed facilitates an assessment of its regional significance to ensure that the level of protection afforded is adequate and appropriate. The integrity of Highlands Prime Ground Water Recharge Areas supports the goals of the Act with consideration of the impacts of the dominant land use (e.g., open space, agriculture, and low or higher density development) within each HUC14. Applicable Resource Protection and Smart Design standards can then be applied based on regional indicators of recharge area productivity to the extent they are appropriate and necessary to support a sustainable potable water supply, as well as surface water, ground water and ecological resource values.

- 4) The following standards shall be incorporated into the **Regional Conservation Zone** of the Land Use Capability Map in furtherance of the goals and requirements of the Highlands Act to provide a conservation-based approach for agricultural areas, rural areas and suburban areas, as follows:
- Include Prime Ground Water Recharge Areas to the maximum extent practicable, given other LUCM considerations.
 - Allow for adjustments and revisions to Prime Ground Water Recharge Area protection requirements, such as increases in impervious cover or loss of forest or other natural land cover within a Specially Planned Area, as determined by the Highlands Council, upon demonstration that there is no net loss in rate or volume and no degradation of quality to ground water recharge. This can be achieved through site planning, Low Impact Development (LID) or other BMPs, compensation or mitigation within the same subwatershed or by other means, as determined by the Highlands Council.

Rationale: The Highlands Act requires the development of Land Use Capability Map and minimum standards based upon the Resource Assessment and Smart Growth Component. Sections 11.a.(1), 11.a.(6) and 12. An evaluation of the relative rate of recharge in a Prime Ground Water Recharge Area within a subwatershed facilitates an assessment of its regional significance to ensure that the level of protection afforded is adequate and appropriate. The integrity of Highlands Prime Ground Water Recharge Areas supports the goals of the Act with consideration of the impacts of the dominant land use (e.g., open space, agriculture, and low or higher density development) within each HUC14. Applicable Resource Protection and Smart Design standards can then be applied based on regional indicators of recharge area productivity to the extent they are appropriate and necessary to support a sustainable potable water supply, as well as surface water, ground water and ecological resource values.

- 5) The following standards shall be incorporated into the **Regional Development Zone** of the Land Use Capability Map in furtherance of the goals and requirements of the Highlands Act within areas of existing developed land that may serve to support additional development,

redevelopment and voluntary TDR Receiving Zones based on infrastructure and land use conditions and local desire, as follows:

- Require that any development activity demonstrate no net loss of quantity within the same subwatershed or degradation in quality to ground water recharge.

Rationale: The Highlands Act requires the development of Land Use Capability Map and minimum standards based upon the Resource Assessment and Smart Growth Component. Sections 11.a.(1), 11.a.(6) and 12. An evaluation of the relative rate of recharge in a Prime Ground Water Recharge Area within a subwatershed facilitates an assessment of its regional significance to ensure that the level of protection afforded is adequate and appropriate. The integrity of Highlands Prime Ground Water Recharge Areas supports the goals of the Act with consideration of the impacts of the dominant land use (e.g., open space, agriculture, and low or higher density development) within each HUC 14. Applicable Resource Protection and Smart Design standards can then be applied based on regional indicators of recharge area productivity to the extent they are appropriate and necessary to support a sustainable potable water supply, as well as surface water, ground water and ecological resource values.

6) The following **Resource Protection Standards** are recommended for the RMP in furtherance of the goals and requirements of the Highlands Act to protect and enhance Highlands resources, including:

- Restrict development activities and new land uses within Prime Ground Water Recharge Areas,
- Require inclusion of Prime Ground Water Recharge Area protection standards within municipal zoning and land use ordinances, and
- Establish minimum standards for development and approval of LID and other appropriate BMPs within a Prime Ground Water Recharge Area.

Rationale: RMP standards are assigned based on regional indicators of Highlands recharge area productivity. The RMP Standards support the necessity to determine the amount and type of human development and activity the Highlands Region can sustain while still maintaining the ecological value of the Highlands Region. Section 11.a.(1)(a). The Highlands Act requires the development of Land Use Capability Map and minimum standards based upon the Resource Assessment and Smart Growth Component. Sections 11.a.(1), 11.a.(6) and 12.

7) The following **Smart Design Standards** are recommended for the RMP in furtherance of the goals and requirements of the Highlands Act to encourage appropriate conservation-based design throughout the region, including:

- Establish minimum site design guidelines and permissible uses within a Prime Ground Water Recharge Area as follows:
 - a) No increase in pre-existing impervious area shall be permitted unless it is demonstrated that there is no net loss to ground water recharge rates and

volumes or degradation in water quality. Increases in pre-existing impervious area shall be permitted upon demonstration of no discernible harm or approval of an applicable management plan and LID or other BMP program to be approved by the Highlands Council. Restoration of impaired areas shall be encouraged wherever practical.

- b) Activities within a Prime Ground Water Recharge Area shall encourage redevelopment of previously developed areas and allow for other compatible uses that do not impair recharge area productivity or water quality.
- c) Require use of LID or other BMPs to protect, enhance and restore Prime Ground Water Recharge Areas as a mandatory requirement for any site plan application. These BMPs would seek to maximize ground water recharge through site design standards including but limited to infiltration basins and open stormwater conveyance channels.

Rationale: RMP standards are assigned based on regional indicators of Highlands recharge productivity. The RMP Standards support the necessity to determine the amount and type of human development and activity the Highlands Region can sustain while still maintaining the water resource and ecological values of the Highlands Region. Section 11.a.(1)(a). The Highlands Act requires the development of Land Use Capability Map and minimum standards based upon the Resource Assessment and Smart Growth Component. Sections 11.a.(1), 11.a.(6) and 12.

- 8) The following **Regional Growth Standards** are recommended for the RMP in furtherance of the goals and requirements of the Highlands Act to encourage appropriate economic development opportunity throughout the Highlands Region, including:
- Require development of regional stormwater and wetland management and mitigation plans to promote regional restoration and enhancement of ground water recharge, subject to review and approval of Highlands Council.
 - Require participation in regional stormwater and wetland management and mitigation programs, where applicable, as a mandatory requirement for any site plan application.

Rationale: RMP standards are assigned based on regional indicators of Highlands recharge area productivity. The RMP Standards support the necessity to determine the amount and type of human development and activity the Highlands Region can sustain while still maintaining the ecological value of the Highlands Region. Section 11.a.(1)(a). The Highlands Act requires the development of Land Use Capability Map and minimum standards based upon the Resource Assessment and Smart Growth Component. Sections 11.a.(1), 11.a.(6) and 12.

- 9) The following **Pre-Conformance Strategies** are recommended in furtherance of the goals and requirements of the Highlands Act to ensure successful implementation of the RMP prior to the conformance period, including:

- Develop technical guidelines and procedures for LID and other BMPs to protect and restore Prime Ground Water Recharge Areas.

Rationale: RMP Implementation Strategies support the necessity to determine what activities, data and programs will be required of both the Highlands Council and municipal and county stakeholders during the Plan Conformance process as well as what initiatives will require longer term planning goals. Sections 11.a.(3), 14 and 15. The RMP is a “living document” and will continue to be refined and developed in support of regional planning goals. In order to facilitate regional planning goals it is imperative that the RMP have State, county and local support from all levels of government and the support of the stakeholders of the Highlands Region.

10) The following **Conformance Strategies** are recommended in furtherance of the goals and requirements of the Highlands Act to ensure successful implementation of the RMP during the conformance period, including:

- Require inclusion of Prime Ground Water Recharge Areas in municipal and/or county conformance documents, master plans, zoning and land use ordinances, as appropriate.

Rationale: RMP Implementation Strategies support the necessity to determine what activities, data and programs will be required of both the Council and municipal and county stakeholders during the Plan Conformance process as well as what initiatives will require longer term planning goals. The RMP is a “living document” and will continue to be refined and developed in support of regional planning goals. In order to facilitate regional planning goals it is imperative that the RMP have State, County and local support from all levels of government and the support of the stakeholders of the Highlands Region. Sections 11.a.(3), 14 and 15.

11) The following **5-year Resource Protection and Planning Goals** are recommended in furtherance of the goals and requirements of the Highlands Act to ensure continued refinement and development of the RMP, including:

- Coordinate programs, funding and activities among public and private entities to encourage regional ground water recharge protection and restoration activities consistent with the RMP.
- Develop technical guidelines and procedures for development of municipal Prime Ground Water Recharge Area LID and other BMPs, and other methods of protecting ground water recharge quantity and quality as appropriate.

Rationale: The Highlands Act requires the Highlands Council to periodically revise and update the RMP at least once every six years. Section 8.a. RMP Implementation Strategies support the necessity to determine what activities, data and programs will be required of both the Council and municipal and county stakeholders during the Plan Conformance process as well as what initiatives will require longer term planning goals. The RMP is a “living document” and will continue to be refined and developed in support of regional

planning goals. In order to facilitate regional planning goals it is imperative that the RMP have State, County and local support from all levels of government and the support of the stakeholders of the Highlands Region. Sections 11.a.(3), 14 and 15.

12) The following **Coordination and Consistency Considerations** are recommended to promote active participation in the implementation of the RMP among state and federal agencies:

- Develop a coordinated regulatory review program with the NJDEP and other state agencies, as appropriate to ensure consistency of permit actions, open space acquisition priorities, restoration and other activities consistent with the resource protection goals of the RMP. Investigate additional State agency program opportunities (e.g., Environmental Infrastructure Trust, Forest and Water Quality Management Planning, water supply, transportation) to leverage existing programs, research and funding in support of ground water recharge protection as part of RMP implementation.
- Coordinate with the USDA Natural Resource Conservation Service to promote Prime Ground Water Recharge Area resource protection requirements and standards in Resource Management and Conservation Plans for existing agricultural uses to the maximum extent practical. Investigate additional federal agency program opportunities (e.g., US Geological Survey water science research, US Environmental Protection Agency regulatory and remedial programs, US Army Corps of Engineers wetland restoration) to leverage existing programs, research and funding in support of ground water recharge protection as part of RMP implementation.

Rationale: RMP Implementation Strategies support the necessity to determine what local, State and federal programs and policies may best be coordinated to promote the goals, purposes, policies, and provisions of the RMP. Sections 11.a.(4). The RMP is a “living document” and will continue to be refined and developed in support of regional planning goals. In order to facilitate regional planning goals it is imperative that the RMP have State, county and local support from all levels of government and the support of the stakeholders of the Highlands Region.

13) The following **Local Participation Considerations** are recommended to promote the understanding and support for the RMP resource protection goals at the local level:

- Develop or utilize existing educational and technical training programs for municipal officials, interested watershed organizations and others to promote understanding of the importance of and consistent standards for the protection, restoration and acquisition of Prime Ground Water Recharge Areas of the Highlands Region.
- Develop or utilize existing educational and technical training program for municipal officials on Prime Ground Water Recharge Area protection measures, including LID and other BMPs, to minimize impacts to Prime Ground Water Recharge Areas through the use of municipal planning, zoning and other regulatory authority.

Rationale: RMP Implementation Strategies support the necessity to provide for the maximum feasible local government and public input into the Highlands Council's operations. Section 11.a.(3). The RMP is a “living document” and will continue to be refined and developed in support of regional planning goals. In order to facilitate regional planning goals it is imperative that the RMP have State, county and local support from all levels of government and the support of the stakeholders of the Highlands Region.

II. REQUIREMENTS OF THE HIGHLANDS ACT AND RMP GOALS RELATED TO PRIME GROUND WATER RECHARGE AREA PROTECTION:

Findings of the Highlands Act:

The Highlands Act includes specific legislative findings relating to the protection of water supplies:

“The Legislature further finds and declares that in the New Jersey Highlands there is a mountain ridge running southwest from Hamburg Mountain in Sussex County that separates the eastern and the western New Jersey Highlands; that much of the State's drinking water supplies originate in the eastern New Jersey Highlands; and that planning for the region and the environmental standards and regulations to **protect those water supplies should be developed with regard to the differences in the topography** of the Highlands Region and how the topography affects the quality of the water supplies.” Section 2. (emphasis added).

Goals of the Highlands Act:

In accordance with Section 10 of the Highlands Act, the overarching goal of the Regional Master Plan “with respect to the entire Highlands Region shall be to protect and enhance the significant values of the resources thereof in a manner which is consistent with the purposes and provisions of this act.” Section 10.a.

Those goals relating to the protection of ground water recharge areas with respect to the Preservation Area shall be to:

- protect, restore, and enhance the **quality and quantity of surface and ground waters.** Section 10.b.(1). (emphasis added).
- preserve extensive and, to the maximum extent possible, contiguous areas of land in its natural state, thereby ensuring the continuation of a Highlands environment which contains the **unique and significant natural, scenic, and other resources representative of the Highlands Region.** Section 10.b.(2). (emphasis added).
- protect the natural, scenic, and other resources of the Highlands Region, including but not limited to contiguous forests, wetlands, vegetated stream corridors, steep slopes, and critical habitat for fauna and flora. Section 10.b.(3).
- promote **conservation of water resources.** Section 10.b.(6). (emphasis added).
- prohibit or limit to the maximum extent possible construction or development which is **incompatible with preservation of this unique area.** Section 10.b.(9). (emphasis added).

In addition, the goals relating to the protection of ground water recharge areas with respect to the Planning Area shall be to:

- protect, restore, and enhance the **quality and quantity of surface and ground waters**. Section 10.c.(1). (emphasis added).
- preserve to the maximum extent possible any environmentally sensitive lands and other lands needed for recreation and **conservation purposes**. Section 10.c.(2). (emphasis added).
- protect and maintain the **essential character of the Highlands environment**. Section 10.c.(3). (emphasis added).
- promote **conservation of water resources**. Section 10.c.(7). (emphasis added).

Requirements of the Highlands Act:

Resource Assessment

The Highlands Act includes specific requirements relating to protection of ground water recharge areas requiring the development of a Resource Assessment for the Highlands Region which “(a) determines the amount and type of human development and activity which the ecosystem of the Highlands Region can sustain while still maintaining the overall ecological values thereof, with special reference to **surface and ground water quality and supply; contiguous forests and woodlands; endangered and threatened animals, plants, and biotic communities;** ecological factors relating to the protection and enhancement of agricultural or horticultural production or activity; air quality; and **other appropriate considerations affecting the ecological integrity of the Highlands Region.**” Section 11.a.(1)(a)(emphasis added).

Smart Growth Component

The Highlands Act also includes specific requirements relating to protection of ground water recharge areas requiring the development of a Smart Growth component that includes “an assessment, based upon the resource assessment prepared pursuant to paragraph (1) of subsection a. of this section, of opportunities for appropriate development, redevelopment, and economic growth, and a transfer of development rights program In preparing this component, the council shall:

- (a) prepare a **land use capability map;**
- (b) identify **existing developed areas** capable of sustaining redevelopment activities and investment;
- (c) identify **undeveloped areas** in the planning area, which are **not significantly constrained by environmental limitations** such as steep slopes, wetlands, or dense forests, are not prime agricultural areas, and are located near or adjacent to existing development and infrastructure, that could be developed;
- (g) identify **special critical environmental areas and other critical natural resource lands** where development should be limited. Section 11.a.(6)(emphasis added).

Preservation Area Assessment

For the Preservation Area, Section 12 of the Highlands Act requires “a **land use capability map** and a comprehensive statement of policies for planning and managing the development and use of land in the preservation area, which shall be based upon, comply with, and implement the **environmental standards**” adopted by NJDEP and the **Resource Assessment prepared the Highlands Council** under Section 11. Section 12.(emphasis added).

Section 12 specifically requires implementation “that will ensure the continued, uniform, and consistent protection of the Highlands Region in accordance with the goals, purposes, policies, and provisions of this act, and shall include:

- a. a preservation zone element that **identifies zones within the preservation area where development shall not occur** in order to protect water resources and environmentally sensitive lands and which shall be permanently preserved through use of a variety of tools, including but not limited to land acquisition and the transfer of development rights; and
- b. minimum standards governing municipal and county master planning, development regulations, and other regulations concerning the development and use of land in the preservation area, including, but not limited to, standards for minimum lot sizes and stream setbacks, construction on steep slopes, maximum appropriate population densities, and **regulated or prohibited uses** for specific portions of the preservation area. Section 12. (emphasis added).

Preservation Area Requirements

The NJDEP’s rules at N.J.A.C. 7:38-3.5(a) prohibits development or activity if it will result in impervious surface of greater than three percent of the land area of a lot. This rule implements the “prohibition on impervious surfaces of greater than three percent of the land area” in the Preservation Area pursuant to Section 34.h.

Section 34.b. requires “measures to ensure that existing water quality shall be maintained, restored, or enhanced, as required pursuant to the "Water Pollution Control Act," P.L.1977, c. 74 (C.58:10A-1 et seq.) or the "Water Quality Planning Act," P.L.1977, c. 75 (C.58:11A-1 et seq.), or any rule or regulation adopted pursuant thereto, in all Highlands open waters and waters of the Highlands.”

The NJDEP’s rules at N.J.A.C. 7:38-3.2 includes standards for water supply diversions in order to implement the provisions in Section 34.d. to consider “individual and cumulative impacts of multiple diversions, maintenance of stream base flows, minimization of depletive use, maintenance of existing water quality, and protection of ecological uses.” New or increased diversions “for non-potable purposes that is more than 50% consumptive shall require an equivalent reduction in water demand within the same subdrainage area through such means as groundwater recharge of stormwater or reuse.” Section 34.d.

The NJDEP’s rules at N.J.A.C. 7:38-3.4 includes septic density requirements in order to implement the provisions in Section 34.e “to prevent the degradation of water quality, or to require the restoration of water quality, and to protect ecological uses from individual, secondary, and cumulative impacts, in consideration of deep aquifer recharge available for dilution.”

In addition, Section 36 of the Highlands Act requires that NJDEP’s permitting review approval without a waiver may be issued only upon a finding that the proposed major Highlands development:

- (1) would have a **de minimis impact on water resources** and would not cause or contribute to a significant degradation of surface or ground waters. In making this determination, the commissioner shall consider the extent of any impacts on water resources resulting from the proposed major Highlands development, including, but not limited to, the **regenerative capacity of aquifers or other surface or ground water supplies**, increases in stormwater

generated, increases in impervious surface, increases in stormwater pollutant loading, changes in land use, and changes in vegetative cover;

(2) would cause **minimal feasible interference with the natural functioning of animal, plant, and other natural resources** at the site and within the surrounding area, and **minimal feasible individual and cumulative adverse impacts to the environment** both onsite and offsite of the major Highlands development;

(3) will result in **minimum feasible alteration or impairment of the aquatic ecosystem** including existing contour, vegetation, fish and wildlife resources, and aquatic circulation of a freshwater wetland;

(4) will not jeopardize the continued existence of species listed pursuant to "The Endangered and Nongame Species Conservation Act," P.L.1973, c. 309 (C.23:2A-1 et seq.) or the "Endangered Plant Species List Act," P.L.1989, c. 56 (C.13:1B-15.151 et seq.), or which appear on the federal endangered or threatened species list, and will not result in the likelihood of the destruction or adverse modification of habitat for any rare, threatened, or endangered species of animal or plant;

(5) is located or constructed so as to neither endanger human life or property nor otherwise **impair the public health, safety, and welfare;**

(6) would result in minimal practicable degradation of unique or irreplaceable land types, historical or archeological areas, and existing public scenic attributes at the site and within the surrounding area; and

(7) meets all other applicable department standards, rules, and regulations and State laws." Section 36 (emphasis added)

Local Participation Component

A component to provide for the maximum feasible local government and public input into the council's operations, which shall include a framework for developing policies for the planning area in conjunction with those local government units in the planning area who choose to conform to the regional master plan. Section 11.a.(3).

Coordination and Consistency Component

A coordination and consistency component which details the ways in which local, State, and federal programs and policies may best be coordinated to promote the goals, purposes, policies, and provisions of the regional master plan, and which details how land, water, and structures managed by governmental or nongovernmental entities in the public interest within the Highlands Region may be integrated into the regional master plan. Section 11.a.(4).

III. TECHNICAL BASIS AND JUSTIFICATION FOR STAFF RECOMMENDATIONS

In furtherance of the requirements and goals of the Highlands Act, the Prime Ground Water Recharge Area Protection Requirements of the Water Resources element of the RMP are intended to protect, restore and enhance surface and ground waters. The Water Resources program element is intended to identify water resources in need of protection for inclusion in the Land Use Capability Map and RMP implementation policies. It also evaluates the effects of land development and other stressors on those resources, and establishes the overall strategies and policies necessary to protect, enhance and restore their value.

Ground water resources are critical in that they provide base flow to streams that support aquatic ecosystems and surface water supplies, as well as help to maintain and replenish ground water

resources that serve as a direct source of drinking water. The scientific literature documents the ecological and hydrologic importance of ground water recharge areas in sustaining the resource. Existing regulatory and resource management programs (e.g., Source Water Protection) are not sufficient to safeguard these critical natural areas. In order to adequately protect, restore and enhance surface and ground waters of the Highlands, the RMP includes protection of Prime Ground Water Recharge Areas.

The New Jersey Geological Survey (NJGS) developed the GSR-32 method for ground water recharge mapping. It is an appropriate method to differentiate recharge rates among land areas within subwatersheds. It can be used to determine which land areas are “prime” ground water recharge areas on a relative basis. Based on this analysis, the Highlands Council has defined “Prime Ground Water Recharge Areas” as those areas that most efficiently provide 40 percent or more of the total recharge volume for each HUC14 subwatershed, based on 2002 land use condition and using available drought recharge volume data.

The purpose of this element is to recommend protection requirements of the Highlands Prime Ground Water Recharge Area for inclusion in the RMP based on the following actions in furtherance of the requirements and goals of the Act:

- Identify and map the location and extent of the Prime Ground Water Recharge Areas for the Highlands Region,
- Evaluate the condition and productivity of the Prime Ground Water Recharge Areas on a subwatershed basis by identifying areas where the existing land uses may have impaired the ability of the Prime Ground Water Recharge Area to sustain potable water supply, surface and ground water and ecological resource values,
- Utilize the extent and condition of the Prime Ground Water Recharge Areas to inform resource protection needs and land use standards that will safeguard the quantity and quality of ground water recharge that supports a sustainable potable water supply, and protects surface water, ground water and ecological resources, and
- Identify appropriate management strategies that can help restore or enhance Prime Ground Water Recharge Areas.

These approaches are based on the best available science and the results of the Resource Assessment performed in support of the RMP, and are reinforced by scientific literature and existing state or federal regulatory programs, where applicable. In addition, as required by Section 12 of the Highlands Act for the Preservation Area, these approaches are based upon, comply with and implement the environmental standards adopted by NJDEP and the Resource Assessment performed by the Highlands Council. This requirement of the Highlands Act charges the Highlands Council with integrating the results of these two elements of the Act into a unified approach for the protection of Highlands resources.

The RMP includes a relative assessment of the ability of lands within the Highlands Region to recharge ground water and establishes the extent of protection needed to maintain source waters for potable water supply and support aquatic-based ecosystems, avoid further impairment of ground water and surface water quantity and quality and allow for opportunities to restore or

enhance recharge productivity where appropriate. The location, extent and condition of the Prime Ground Water Recharge Areas inform development of the RMP.

The Highlands Council worked in cooperation with the New Jersey Water Supply Authority to develop appropriate methods to assess the Prime Ground Water Recharge Areas in the Highlands Region. A technical memorandum titled Ground Water Recharge Areas discussed the methods and analytical results of the analysis being incorporated into the RMP.

IV. GLOSSARY

This section defines the terms that are used to develop the approach and methods that informed the proposed policy actions for this RMP element. Topic-specific glossaries will contribute to the general RMP glossary of terms.

GSR-32 - The New Jersey Geological Survey method for ground water recharge mapping (GSR-32) that differentiates recharge rates among land areas within single watersheds or subwatersheds. It can be used to determine which land areas can be considered “prime” ground water recharge areas on a relative basis.

Hydrologic Unit Code – Hydrologic Unit Code (HUC) means an area within which water drains to a particular receiving surface-water body, which is identified by a specific digit number, or “hydrologic unit code.” The HUC codes were developed by the U.S. Geological Survey. *N.J.A.C. 7:38-1.4.*

HUC14 - An area within which water drains to a particular receiving surface-water body, which is identified by a fourteen-digit number, or “hydrologic unit code.” In New Jersey, a HUC14 correlates to a subwatershed. *N.J.A.C. 7:38-1.4.*

Impervious surface – Any structure, surface, or improvement that reduces or prevents absorption of stormwater into land, and includes porous paving, paver blocks, gravel, crushed stone, decks, patios, elevated structures, and other similar structures, surfaces, or improvements. *Section 3.*

Low Impact Development (LID) Best Management Practices – Low Impact Development is an environmentally sensitive approach to storm water management that emphasizes conservation and the use of existing natural site features integrated with distributed, small scale storm water controls to more closely mimic natural hydrologic patterns in residential, commercial and industrial settings. LID best management practices involve comprehensive land planning and engineering design to maintain and enhance the hydrologic regime of urban lands and development within watersheds. LID standards and best management practices are supported by the New Jersey Stormwater Management Rules, N.J.A.C. 7:8 and the “New Jersey Stormwater Best Management Practices Manual” developed by the New Jersey Department of Environmental Protection, in coordination with the New Jersey Department of Agriculture, the New Jersey Department of Community Affairs, the New Jersey Department of Transportation, municipal engineers, county engineers, consulting firms, contractors, and environmental organizations.

Prime Ground Water Recharge Area - Those areas that most efficiently provide 40 percent or more of the total recharge volume for each HUC14 subwatershed, using the GSR-32 method, incorporating 2002 land use/land cover data and drought water data.

Specially Planned Area - Previously developed lands that provide opportunities for redevelopment, including infill and adaptive reuse, based on limited resource constraints due to past development patterns. Within the Preservation Area a Specially Planned Area is limited to an area or site that contains at least 70% impervious area or is a Brownfield site determined to be Specially Planned Area by the Highlands Council and NJDEP.

Stormwater and Wetland Regional Management and Mitigation Plan - A planning document developed at a municipal or county level that identifies areas appropriate for improvement as a regional stormwater or wetland mitigation site(s) including strategies for its implementation at the local or regional level.