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HIGHLANDS REGIONAL

MASTER PLAN

2008

HIGHLANDS

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HIGHLANDS REGIONAL MASTER PLAN

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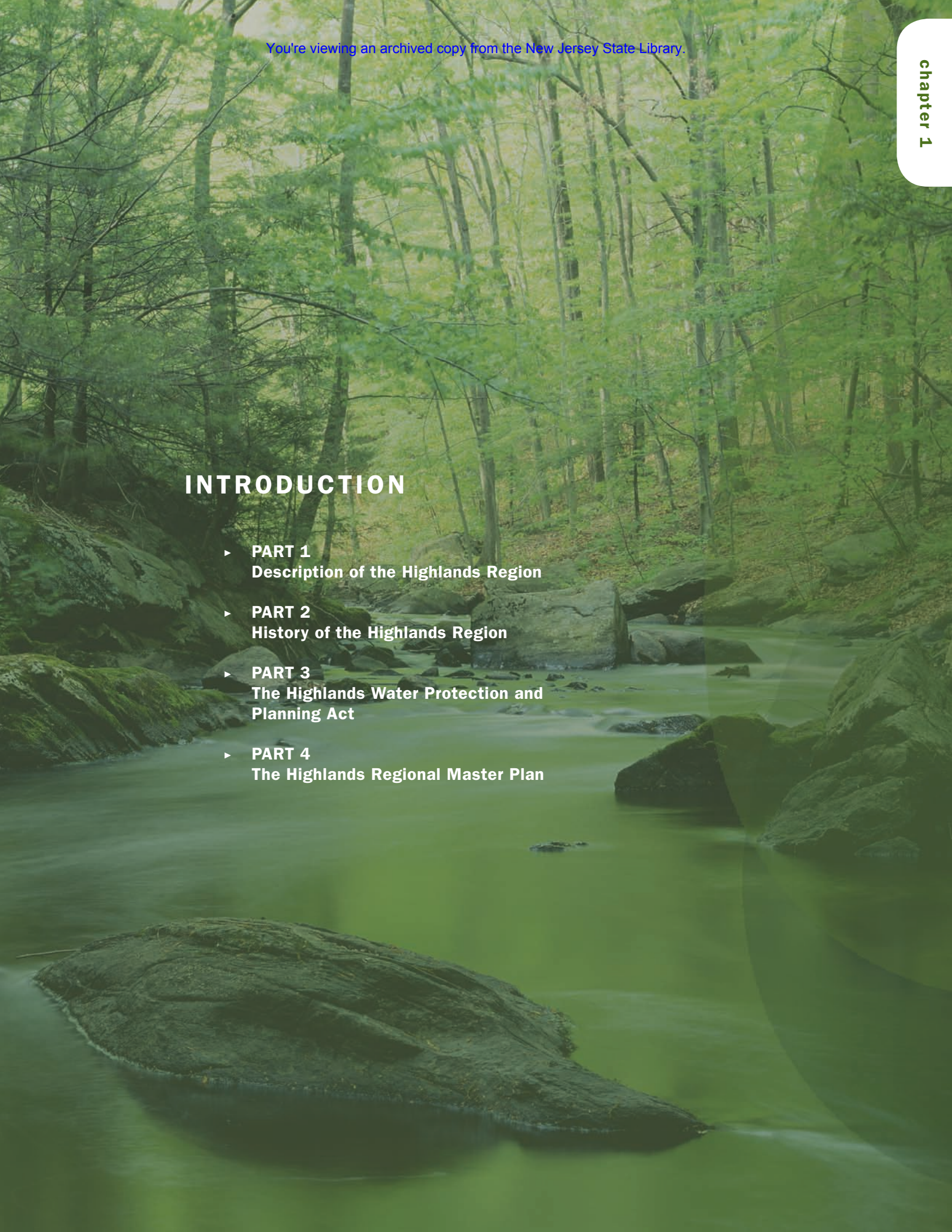

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PART 1 Description of the Highlands Region

THE NEW JERSEY HIGHLANDS REGION

The New Jersey Highlands Region (Highlands Region) is an area of 859,358 acres located in the northwest part of the State (see Figure 1.1 *Highlands Region*). The Highlands Region includes 88 municipalities and parts of seven Highlands counties – Bergen, Hunterdon, Morris, Passaic, Somerset, Sussex, and Warren. The Highlands Region offers stunning vistas of an ancient landscape and serves as a vital source of drinking water for over half of New Jersey residents. Highlands Region residents and visitors appreciate this special resource area of the State for its natural beauty and environmental significance as it stretches from Phillipsburg, Warren County in the southwest to Mahwah, Bergen County in the northeast.

Nathan McLean

In the Highlands Water Protection and Planning Act (Highlands Act), the Legislature designated specific boundaries within the Highlands Region as the Preservation Area and the Planning Area. The fundamental distinction between the Preservation and Planning Areas is that municipal and county conformance with the Regional Master Plan is required in the Preservation Area and is voluntary in the Planning Area.

Dwight Hiscano

ENVIRONMENTAL AND LAND USE SETTING

The Highlands Region serves as a significant green belt along the East Coast's metropolitan areas. Noted for its scenic beauty and environmental significance, the Region displays myriad geographic and geologic features, including rolling hills, pastoral valleys, steep ridges, diverse forests, and critical wildlife habitats. The Highlands Region has endured extensive periods of gradual uplift and erosion. As a result, ridges are typically underlain by older rocks that are less susceptible to erosion. Stream valleys generally follow along fractured zones and faults, or along areas of softer rocks that weather and erode faster. An irregular escarpment, averaging 500 feet in height, extends from Franklin Borough, Sussex County, through Andover Township, Sussex County, to the Delaware River north of Phillipsburg, Warren County. This escarpment forms the Highlands' northwestern boundary with the Valley and Ridge Province. To the southeast, major faults separate the Highlands erosion-resistant bedrock to form

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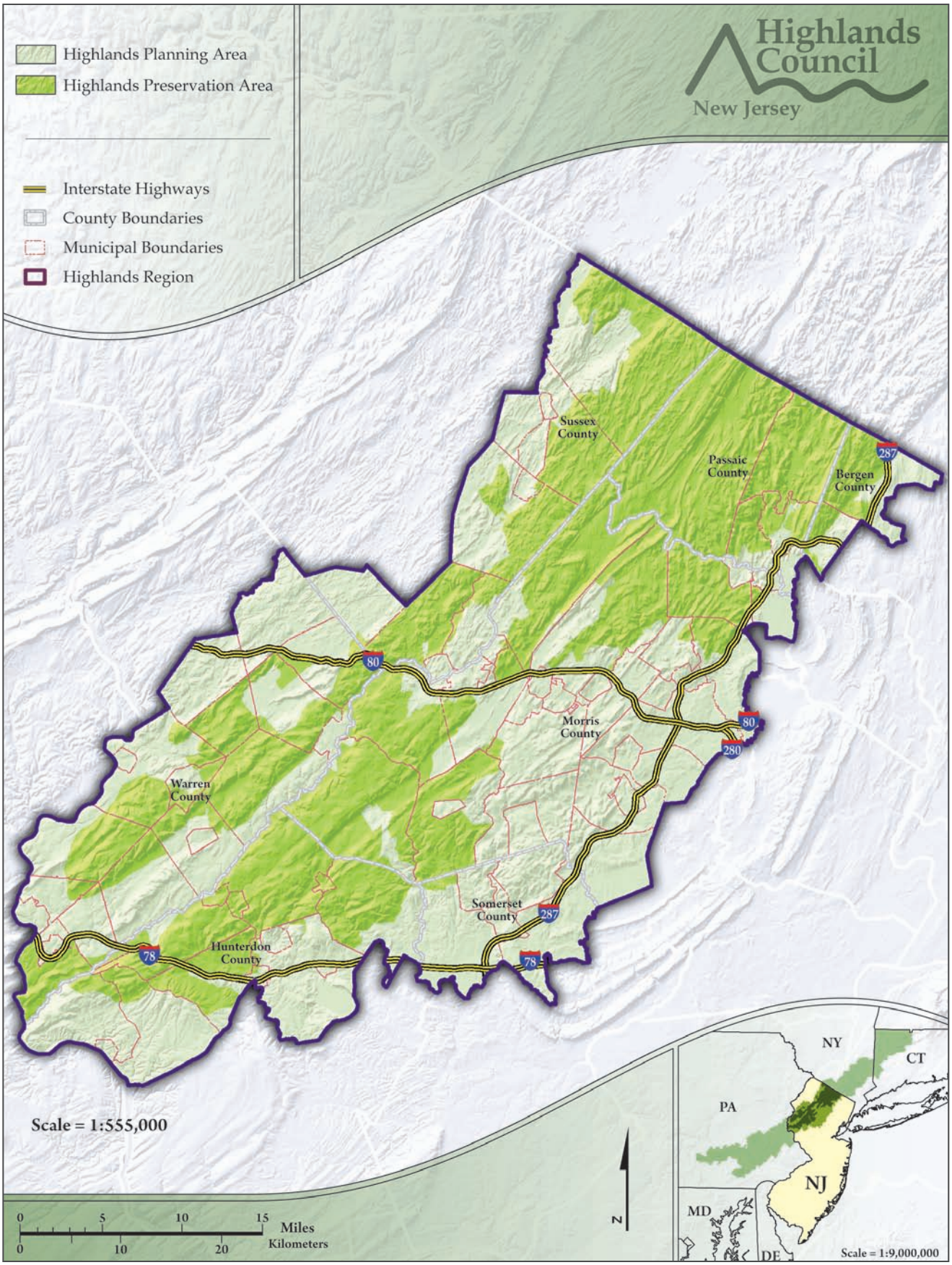
FIGURE 1.1: Highlands Region



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another prominent escarpment running from Mahwah Township, Bergen County, to Peapack-Gladstone Borough, Somerset County, to the Delaware River near Milford Borough, Hunterdon County. This rift marks the Highlands boundary with the Piedmont Province.

Dwight Hiscano

In addition to the forces of nature, patterns of human development have shaped the land and land uses in the Highlands Region. Today the Region is a unique and dynamic place with distinct physical features and historic settlement patterns. The Region encompasses a broad array of land uses and activities with rural towns, former mill towns, suburban neighborhoods and urbanized centers, located within short distances of each other. The Region's housing is characterized by a mix of older homes in compact neighborhoods, rural agricultural communities, and more recently constructed housing subdivisions. Retail, office, light industry, and other commercial establishments provide services and opportunities for employment. Outdoor recreation resources abound, including numerous lakes and streams, many miles of hiking and biking trails, and a large assortment of national, State, county and municipal park facilities. The Region is rich with historic, cultural, and archaeological resources due to its place in American Revolutionary War era history, iron mining, canal building, agrarian settlements and early industry.

PART 2 History of the Highlands Region

EARLY HISTORY

The natural environment has evolved gradually since the final retreat of the Wisconsin Glacier around 10,000 BC. After the retreat, the Highlands contained tundra-like vegetation which, over time, succeeded to grasslands and eventually to forests that dominate the Highlands Region today. Although Highlands forests were regularly harvested after European settlement, slightly more than half of the Region is currently forested.

Since the terminal moraine of the glacier was located south of the present day location of Route 80 – between Morris and Warren Counties – differences exist in the topography and soils between the northern and southern portions of the Highlands. The northern portion has steeper slopes, is rockier, and has narrower valleys than the southern portion. South of where the glacier ended, the soils are richer and better suited for agriculture.

Farming has been part of the Highlands since its earliest recorded history. The most productive early farms were in the low fertile valleys. The earliest farmers consumed much of their own food production or fed it to their livestock. Staples included dairy products, grain, fruits and vegetables. Farmsteads typically consisted of a main house, various types of barns for animal shelter, feed storage structures, fields, orchards and independent water sources. These farms and fields were often enclosed and enhanced by natural, wooden or stone fence lines conveying a sense of independence and distinction.

Nathan McLean

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Carl Figueiredo

Early on, the key industry of the Region was ironworks. Factors contributing to this industry included the Region's geology and the availability of natural resources. The Highlands was found to contain one of the richest iron oxide deposits in the world. Iron oxide, also known as magnetite, is an iron ore with the highest iron content. The area also had readily available sources of water and lumber which were needed to process the raw ore into metallic products. The Mount Hope Mine in Rockaway Township, Morris County is believed to be one of the oldest and largest iron mines in the United States, dating back to 1710. It yielded close to six million tons of iron ore during more than 250 years of operation.

The onset of industrialization brought many changes to the Highlands Region. People settled in a more permanent fashion since many were needed to run the ironworks operations. The communities that sprouted up around the industries included structures for housing, work (e.g., mills, offices), civic activities (e.g., churches, schools), and commerce (e.g., stores, inns). Significant ironworks structures and related features include the mines themselves (the Highlands contain 95 percent of the abandoned mines in the State), roads, and other transportation structures such as the Morris Canal and numerous railroads, furnaces, forges, waterworks, and dams. These historic resources may be seen in several Highlands towns today.

Dramatic changes to the natural environment also took place during this era. Initially, ore was extracted from surface rock, but over time numerous sub-surface mines were established throughout the Highlands. A reliable water supply was needed since water power was used in the operation of many iron mines. Additionally, charcoal was used as a fuel source to fire the industry's furnaces and forges. The vast forests of the northern Highlands provided an abundant source of timber for producing charcoal, leading to nearly total clearcutting of the forests over time.

Industrialization of the area demanded better transportation networks to move raw materials and goods. Transportation advancements occurring during this period included the construction of the Morris Canal and expansion of railroads. The Morris Canal was completed in 1830 to connect Newark and the Hudson River to the Delaware River. The canal prevented the early demise of the iron industry in New Jersey by providing coal from Pennsylvania as a source of fuel for the forges. Coal was shipped to the Highlands to supplement the waning Highlands timber supply. Railroad expansions that followed enhanced the ability to transport fuel and processed iron.

Increased agricultural use of the Highlands accompanied the industrialization of the Region. Remarkably similar in overall size and appearance to the earliest farms, many farmsteads in the mid-19th to early-20th century continued to prosper by adapting their crops to provide daily dairy products and seasonal produce for the massive markets of the metropolitan New Jersey/New York area. The late-19th and early-20th centuries witnessed a gradual and gentle transformation of parts of the agricultural landscape as commercial farming enterprises metamorphosed into the country estates of the upper middle class. Initially this trend was encouraged by easy rail access to Manhattan, and was later reinforced by an improved roadway network. The number of farms decreased noticeably in the Highlands Region in the mid- and late-20th century due to post-World War II suburban development. However, some areas of the Highlands Region still are dominated by agriculture.

SIGNIFICANCE OF THE HIGHLANDS REGION

The value of the Highlands Region has been recognized and studied by both State and federal agencies for over 100 years. Of particular importance are: the creation of reservoirs in the Highlands for cities of northern New Jersey; the findings of the New Jersey Potable Water Commission report issued in 1907; the establishment of the North Jersey District Water

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Supply Commission; the United States Forest Service (USFS) bi-state study conducted in 1992 and updated in 2002; and the recommendations of the 2003 New Jersey Highlands Task Force.

NEWARK WATERSHED AND RESERVOIR DEVELOPMENT

By the mid-19th century, Newark was a major industrial center in New Jersey. With a prime location that included port facilities, a good roadway network, the Morris Canal, and new railroad access, Newark attracted many lucrative businesses that employed numerous local residents, but also contributed to regional pollution of Newark's primary water supply, the Passaic River. In 1879, the City of Newark looked to the pristine waters in the hills of Passaic County and the Pequannock River for a new, long-term supply of clean drinking water based on five reservoirs. Over time, Newark purchased additional land in the drainage basin to protect the source of their drinking water. The City of Newark currently owns over 86 percent of the lands in the Pequannock watershed. Jersey City also built two reservoirs in the Rockaway River watershed in the early-20th century for water supply, but did not make extensive land purchases in what was already an industrialized and populated river valley.

Carl Figueiredo

In the early 1920s, Newark sought to create another dedicated water supply source along the Wanaque River located in the Highlands. However, the New Jersey Legislature decided instead to create the North Jersey District Water Supply Commission to serve a consortium of municipalities, including the City of Newark, to address the communities' water supply needs. Construction of the 29 billion gallon Wanaque Reservoir was completed in 1930. The final large reservoirs built to store Highlands Region water were the Spruce Run and Round Valley reservoirs in the Raritan River Basin and the Monksville Reservoir just upstream of the Wanaque Reservoir (see Figure 1.2 *Water Supply to Areas Outside the Highlands Region* and Figure 1.3 *Source Water Protection Areas and Reservoirs*).

1907 POTABLE WATER COMMISSION REPORT

On March 7, 1906, New Jersey Governor Edward C. Stokes approved Joint Resolution No. 2 of the Senate and General Assembly establishing a five-member commission "to investigate the practicability and probable cost of the acquisition by the State of the title to the potable waters of the State." The Potable Water Commission's task was to examine the extent, character, ownership, and value of the State's potable water supplies.

The Commission's 1907 findings acknowledged the uneven distribution of potable water sources throughout the State. The report indicated that, while an abundant natural supply of potable water may be available, the people of the State had the responsibility to use it wisely and prevent it from contamination for the existing population and future generations. The Commission noted the importance of the Highlands watersheds in its report explaining:

The Highlands watersheds are the best in the State in respect to ease of collection, in scantiness of population, with consequent absence of contamination; in elevation, giving opportunity for gravity delivery and in softness as shown by chemical analysis. These watersheds should be preserved from pollution at all hazards, for upon them the most populous portions of the State must depend for water supplies. There has been too much laxness in the past regarding this important matter.

The report suggested that the State acquire lakes or ponds over 100 acres in size for the purpose of public recreation such as boating and fishing in order to keep them accessible for the public use. In particular, the Commission highlighted lakes in Sussex, Morris, and Warren Counties for their pristine waters and scenic beauty for recreational purposes. While the Com-

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FIGURE 1.2: Water Supply to Areas Outside the Highlands Region

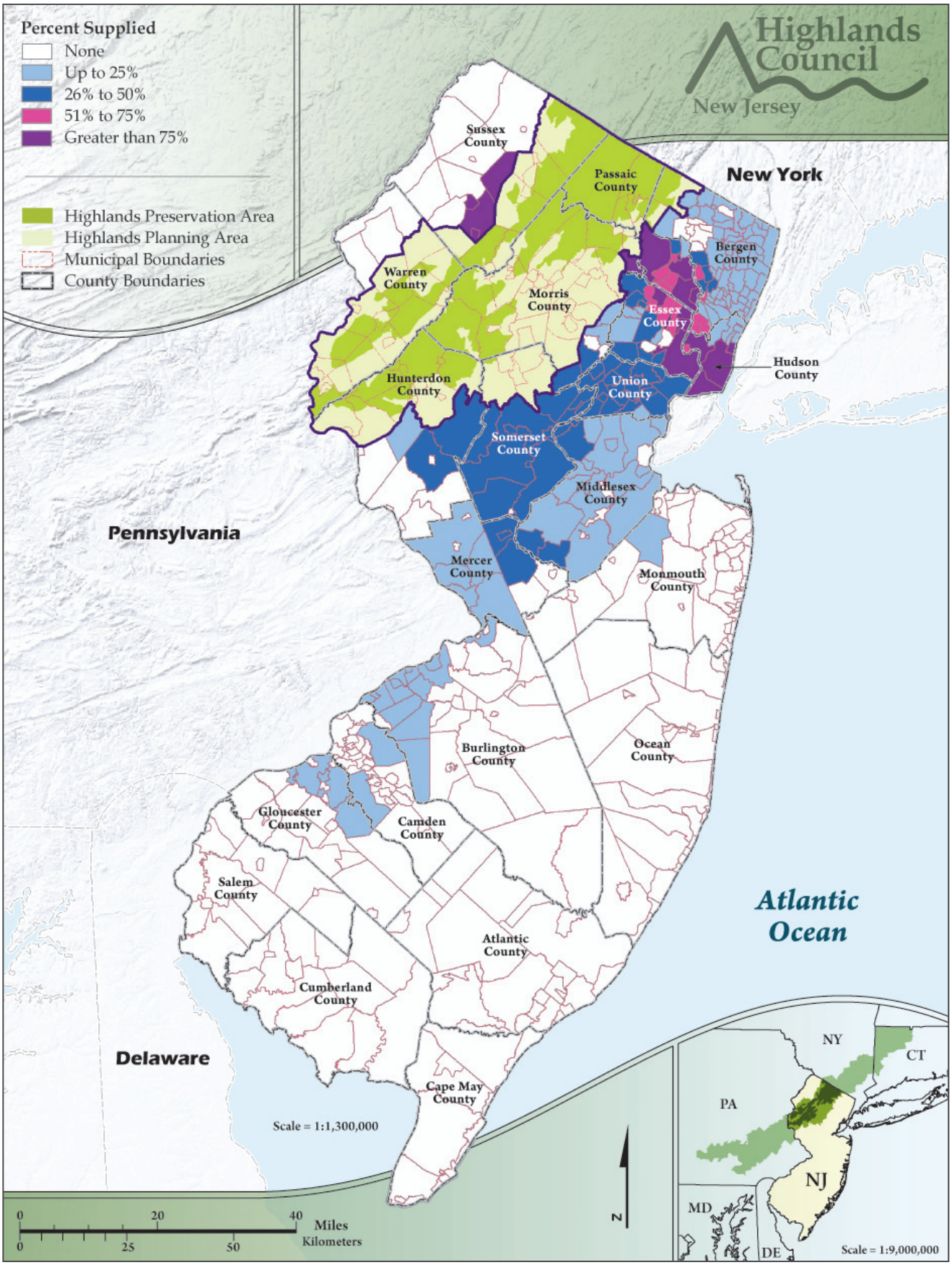

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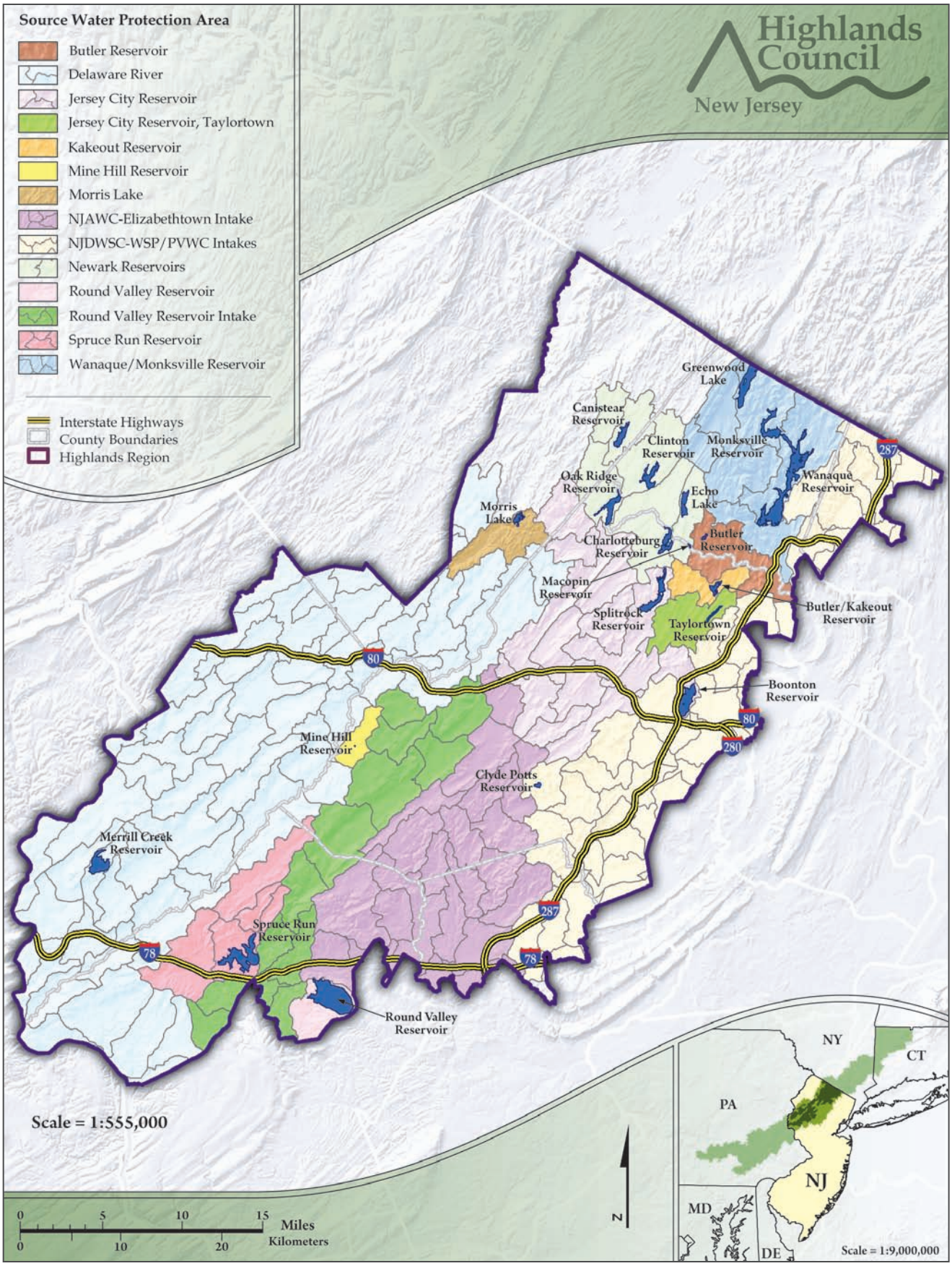
FIGURE 1.3: Source Water Protection Areas and Reservoirs



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mission's report promoted the development of water supply management in New Jersey over the next century, and some land preservation occurred through the New Jersey Green Acres Program, local purchases and land trust initiatives, focused governmental action aimed at protecting the Highlands was not taken until the end of the century when the federal government became involved.

UNITED STATES FOREST SERVICE STUDY

Federal involvement with the Highlands Region began with the passage of the Food, Agriculture, Conservation, and Trade Act of 1990, which authorized the Secretary of Agriculture "… to conduct a study of the region known as the New York-New Jersey Highlands …" The study's objectives were to:

- Define the physiographic boundaries of the Region;
- Identify forest, ecological, and economic resources;
- Identify historical land ownership patterns;
- Indicate the likely impact of change;
- Propose alternative conservation strategies; and
- Provide the opportunity for public comment.

As a result of the study, the USFS (in cooperation with New York and New Jersey representatives) issued a report in 1992. The USFS bi-state study served as a significant impetus to reigniting the effort to protect the critical natural resources of the New Jersey Highlands Region. The New Jersey Highlands Region is part of the four-state Highlands system consisting of over 3.5 million acres of land including portions of Connecticut, New York, New Jersey, and Pennsylvania. The federal Highlands Conservation Act enacted in 2004 envisioned $100 million for land preservation in the four state region (see Figure 1.4 *Federal Highlands Conservation Act Boundary*).

The 1992 New York-New Jersey Highlands Regional Study (1992 Study) analyzed approximately 1.1 million acres of ridges and valleys from the Hudson River in the east to the Delaware River in the west, encompassing a study area that included portions of two counties in southern New York State and seven counties in the northwest part of New Jersey.

Nathan McLean

The USFS identified unprecedented development pressure from commercial, industrial, and residential uses in the study area and concluded that this pressure was causing the loss of natural and cultural heritage, agricultural lands, wildlife habitat, and recreational opportunities, in addition to deteriorating the air quality and the quality of the region's drinking water supplies. The 1992 Study stated that "[t]hese changes place the extraordinary and essential resources of the Highlands at risk."

The results of the 1992 Study, which were later reiterated in a 2002 update, listed five major goals to protect the region's water resources:

- Goal 1: Manage future growth compatible with the region's ecological constraints;
- Goal 2: Maintain an adequate supply of quality water;
- Goal 3: Conserve contiguous forests;
- Goal 4: Provide appropriate recreational opportunities; and
- Goal 5: Promote economic prosperity that is compatible with goals 1-4.

The 1992 Study examined the following resources in a regional context: forest resources, ground water, surface water, fish and wildlife, recreation, agriculture, biological communities, threatened and endangered species, geo-

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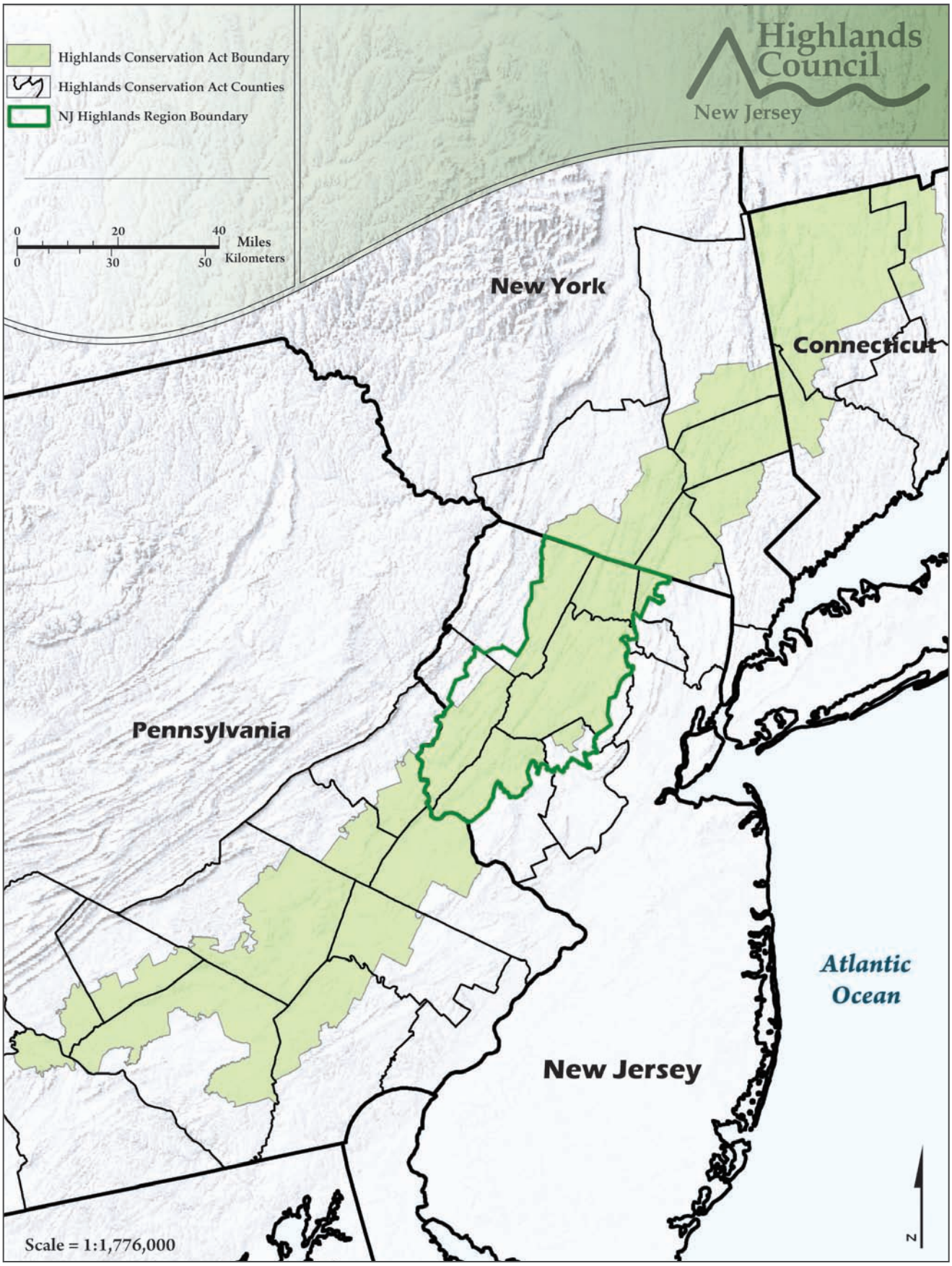
FIGURE 1.4: Federal Highlands Conservation Act Boundary



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physical characteristics, air quality, cultural resources, forest land ownership and forest losses, and population growth and land use change. The 1992 Study concluded that there would continue to be negative impacts on the region's natural and cultural resources unless numerous conservation measures were employed.

The conservation measures recommended in the 1992 Study included:

- ***Planning*** – Including all practices that employ the principles of planning and design, project review, and land and resource regulation.
- ***Land Acquisition*** – Including practices regarding the purchase, lease or donation of land, or any interest in land, in order to secure a public benefit.
- ***Incentives*** – Including financial or other benefits to landowners that employ land management strategies that produce some public benefit.
- ***Education*** – Information distribution and user education – educational practices that seek to improve the environment and quality of life.

The 1992 Study also discussed many ownership and transfer of title options including, but not limited to, fee simple acquisition, conservation easement, outright land donation and land exchange. Funding options discussed in the 1992 Study included, but were not limited to, federal and state cost sharing programs, general fund appropriations, and private money donations.

Dwight Hiscano

In 2002, the USFS conducted an update of the 1992 Study. The 2002 Update expanded the study area to encompass other essential at risk lands to the Connecticut border and parts of two additional New York counties. Together, these additions increased the study area to approximately 1.5 million acres. As in the 1992 Study, the USFS explained that the expanded study area is of national significance because it contains large areas of public open space, provides quality drinking water for millions of New York and New Jersey residents, has numerous and large areas of wildlife habitat, is an integral part of the Appalachian Mountain chain, and is a historical link for both the American Revolutionary and American Civil Wars.

The 2002 Update documented an overall 11 percent increase in population from 1990-2000. Revising the 1992 Study's conclusions to reflect this increase, the USFS ran various development scenarios to determine the possible extent and pattern of changes to the Highlands landscape over time. The scenarios illustrated the consequences from the likely market reactions to the zoning laws and regulations in effect at that time. For example, the 2002 Update showed how much forest had been converted to developed areas and projected the likely future trends by examining how many houses could potentially be built under existing state laws and local zoning.

The 2002 Update also identified numerous conservation successes since 1992. These successes included, but were not limited to:

- Acquisition of 20,000 acres in Sterling Forest on the New York-New Jersey border; and 2,600 New Jersey acres and 847 New York acres protected through the USFS Legacy Program;
- Acquisition of 80,000 acres protected through state, county, local and private sector support for open space acquisition;
- Designation of the Highlands Region as New Jersey's first Special Resource Area in the 2001 State Development and Redevelopment Plan; and
- Designation of the Highlands Region as a unique physiographic province in the New York State Open Space Plan.

Importantly, the 2002 Update reiterated a recommendation from the 1992 Study to "[e]stablish a permanent regional entity, a Highlands regional council, to oversee the planning and management of the 1.1 million

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acre Study Area." The USFS's emphasis on the necessity of implementing a holistic approach to preserving the complex ecological and social characteristics of the Highlands Region served as an impetus to establishing the New Jersey Highlands Task Force in 2003.

HIGHLANDS TASK FORCE

On September 19, 2003, Governor James McGreevey issued Executive Order 70 establishing the Highlands Task Force (Task Force). The 19-member Task Force was charged with making recommendations to the Governor and Legislature regarding ways to protect and enhance the quality of life in the Highlands Region by addressing measures to preserve natural resources while simultaneously providing opportunities for economic growth. As a result of the recommendations of the Task Force, the Highlands Water Protection and Planning Act was enacted on August 10, 2004 and charged the Highlands Council with the important task of developing a Regional Master Plan for the Highlands Region.

Mick Valent

PART 3 The Highlands Water Protection and Planning Act

The Highlands Water Protection and Planning Act (Highlands Act, P.L. 2004, c. 120), enacted on August 10, 2004, includes findings of the Legislature "that the New Jersey Highlands is an essential source of drinking water . . . for one-half of the State's population . . . that . . . [it] contains other exceptional natural resources such as clean air, contiguous forest lands, wetlands, pristine watersheds, and habitat for fauna and flora, [and that it] includes many sites of historic significance, and provides abundant recreational opportunities for the citizens of the State" (Highlands Act at Section 2, hereafter "Section 2").

Nathan McLean

The Legislature also recognized that the resources of the Highlands Region are a vital part of the public trust. It declared that the measures of the Highlands Act "should be guided, in heart, mind, and spirit, by an abiding and generously given commitment to protecting the incomparable water resources and natural beauty of the New Jersey Highlands so as to preserve them intact, in trust, forever for the pleasure, enjoyment, and use of future generations" (Section 2). The Highlands Act seeks to protect the Region's public trust resources through a "comprehensive approach," including the immediate imposition of stringent water and natural resource standards in the Preservation Area, a reorganization of land use powers to emphasize regional planning for the entire Highlands Region, and a "strong and significant commitment of the State to fund the acquisition of exceptional natural resource value lands" (Section 2).

In the Highlands Act, the Legislature designated specific boundaries of the Preservation Area and found that "because of the imminent peril that the ongoing rush of development poses for the New Jersey Highlands, immediate, interim standards should be imposed on the date of enactment in the Preservation Area" (Section 2). The Preservation Area consists of nearly 415,000 acres located in 52 municipalities within the seven Highlands Counties. The lands within the Preservation Area were subject to the immediately effective standards in the Highlands Act and are governed by rules and regulations subsequently adopted by the

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New Jersey Department of Environmental Protection (NJDEP). The Highlands Act established detailed and stringent standards for the NJDEP rules to protect the Preservation Area resources, with some provision for relief for redevelopment, brownfields development, and development based on the issuance of permit with waiver or qualification for one of the 17 exemptions. The Planning Area consists of nearly 445,000 acres located in 83 municipalities. There are five municipalities that lie entirely within the Preservation Area, 47 municipalities that have land in both the Preservation and Planning Areas and 36 municipalities that have land only in the Planning Area (see Table 1.1 *Acreage of the Highlands Region in Municipalities and Counties* on page 20).

The Highlands Act also included an important exception from the NJDEP's Preservation Area rules for agricultural and horticultural activities. The definition for a "major Highlands development" specifically states that it "shall not mean an agricultural or horticultural development or agricultural or horticultural use in the preservation area" (Section 3). The New Jersey Department of Agriculture's (NJDA) "Agricultural Development in the Highlands" Rules establish the standards and criteria to be followed for agricultural and horticultural activities in the Preservation Area.

Nathan McLean

PART 4 The Highlands Regional Master Plan

Through passage of the Highlands Act, the New Jersey Highlands Water Protection and Planning Council (Highlands Council) was created and charged with the important task of developing a Regional Master Plan to restore and enhance the significant values of the abundant and critical resources of the Highlands Region. The Highlands Council is an independent agency of the State of New Jersey and consists of fifteen members whose powers, duties, and responsibilities are set forth in Section 6 of the Highlands Act. The Act establishes a fundamental goal to protect, restore and enhance water quality and water quantity in the Region and includes important goals relating to the protection of agricultural viability, ecosystems, species and communities, as well as scenic and historic resources.

In the face of the growing challenge of protecting New Jersey's finite drinking water supply and providing for the needs of a growing human population, the continued loss and fragmentation of the remaining lands that serve as the source of that water supply is no longer tenable. Accordingly, a major purpose of the Regional Master Plan is to "determine the amount and type of human development and activity which the ecosystem of the Highlands Region can sustain" (Section 11.a.[1][a]). The Regional Master Plan provides the basis to determine the capacity of the Highlands Region to accommodate appropriate economic growth while ensuring the sustainability of the resources in the Region.

The Regional Master Plan seeks to evaluate how best to protect the natural and cultural resources of the Highlands Region while striving to accommodate a sustainable economy – the core of smart growth principles. The Regional Master Plan establishes the capacity limitations for future growth within the Highlands Region related to both natural systems, such as protection of our drinking water supplies, and the built environment, such as wastewater and transportation infrastructure. The Regional Master Plan evaluates the costs, and often unintentional consequences, of local land use planning decisions, assesses the environmental and economic benefits of natural resource and open space protection, particularly as they relate to water supply, and further develops the tools and methods necessary to institute growth control measures, where necessary, to safeguard critical natural resources (see Figure 1.5 *Lakes, Rivers, and Streams* and Figure 1.6 *Forested Areas*).

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FIGURE 1.5: Lakes, Rivers, and Streams

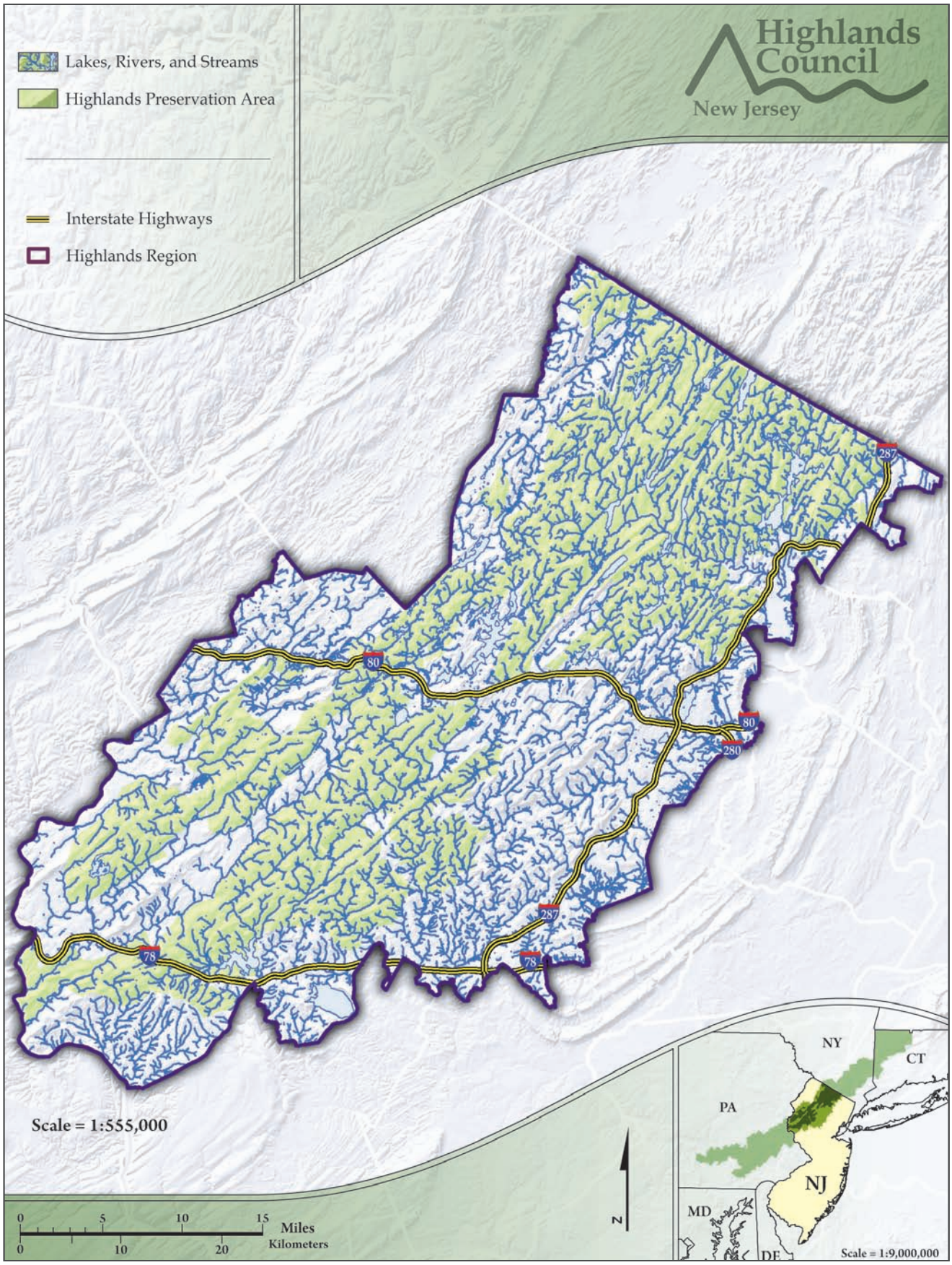

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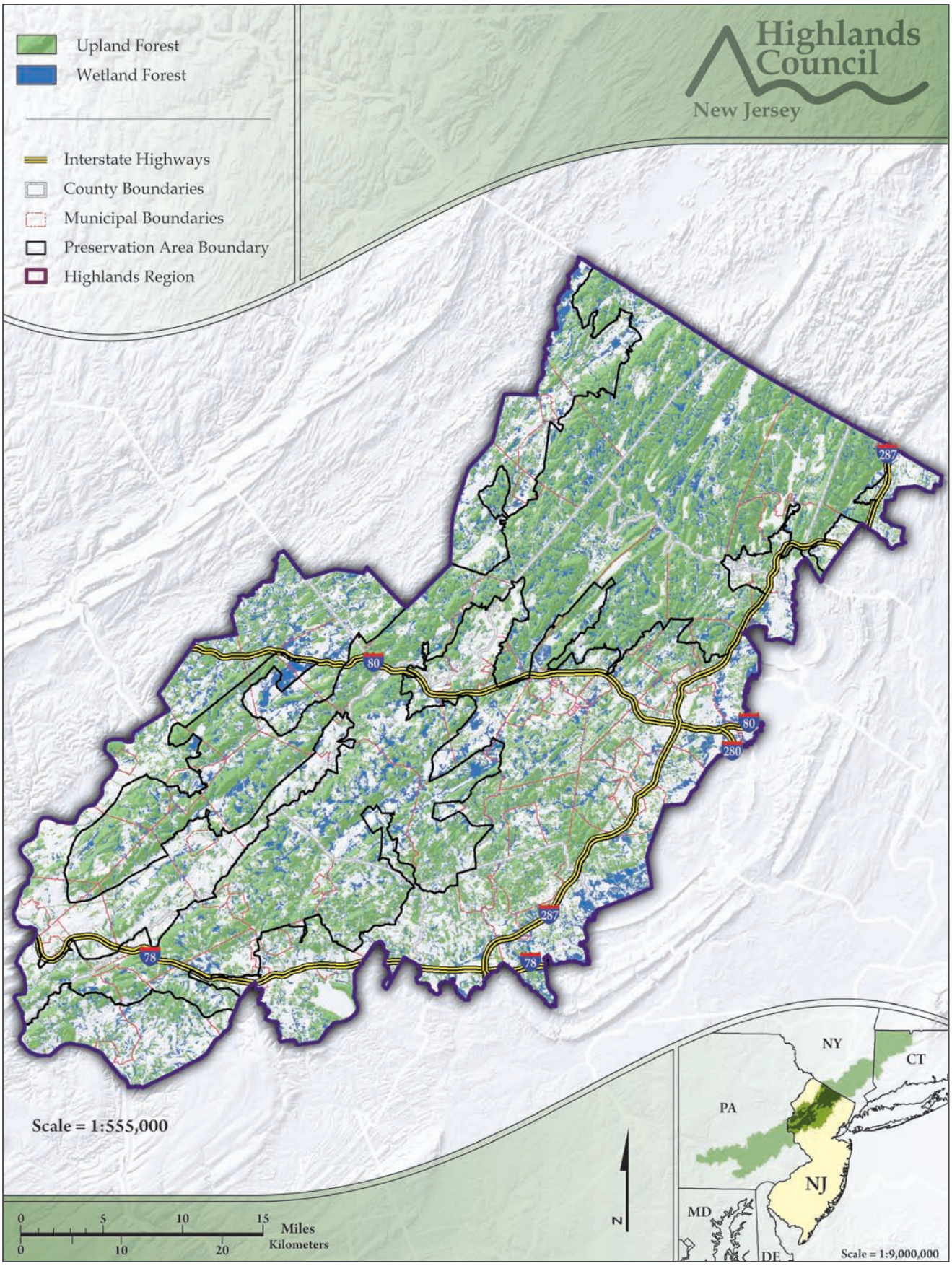
FIGURE 1.6: Forested Areas



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In order to integrate the environmental, social and economic goals of the Highlands Act, the Regional Master Plan provides a consistent framework upon which to base future land use decisions in a manner that fosters regional cooperation and community participation. It promotes a regional perspective while encouraging community-based planning that is both scientifically defensible and necessary.

The Regional Master Plan embodies a regional vision for the Highlands Region and will be implemented at all levels of government. Through conformance by municipalities and counties, financial, and technical assistance by the Highlands Council, and State and federal coordination, the Regional Master Plan will provide for the protection and preservation of significant values of the Highlands Region for the benefit of its residents.

The Highlands Council is charged with developing and implementing a Regional Master Plan for the Highlands Region. The primary goal of the Regional Master Plan "shall be to protect and enhance the significant values of the resources thereof" (Section 10.a.). The Highlands Act additionally sets forth specific goals for the Preservation Area and the Planning Area, which are fully discussed in Chapter 3.

Nathan McLean

The Highlands Act required that the Regional Master Plan include specific components that address the following issues:

Resource Assessment

- Determine 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; and
- Assess the scenic, aesthetic, cultural, historic, open space, farmland, and outdoor recreation resources of the Highlands Region, together with a determination of overall policies required to maintain and enhance such resources.

Smart Growth Component

- Assess, based upon the resource assessment, the opportunities for appropriate development, redevelopment, economic growth, and implementation of a Transfer of Development Rights (TDR) Program;
- Consider public investment priorities, infrastructure investments, economic development, revitalization, housing, transportation, energy resources, waste management, recycling, brownfields, and design such as mixed-use, compact design, and transit villages;
- Prepare a Land Use Capability Map;
- Identify existing developed areas capable of sustaining redevelopment;
- Identify undeveloped areas in the Planning Area, which are not significantly constrained by environmental limitations, are not prime agricultural areas, and are located near existing development and infrastructure, that could be developed;
- Issue model minimum standards for municipalities and counties in the Planning Area, including density standards for center-based development to encourage the adoption of such standards;
- Identify special critical environmental areas and other critical natural resource lands where development should be limited; and
- Identify areas appropriate for redevelopment and set appropriate density standards for redevelopment.

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Transfer of Development Rights (TDR) Program

- Identify transportation, water, wastewater, and power infrastructure that would support or limit development and redevelopment in the Planning Area. This analysis shall also provide proposed densities for development, redevelopment, or voluntary receiving zones for the TDR Program; and
- Identify potential voluntary receiving zones in the Planning Area for the TDR Program through the appropriate expansion of infrastructure or the modified uses of existing infrastructure.

Transportation Component

- Plan for transportation system preservation, including all federally mandated projects or programs;
- Promote a sound, balanced transportation system; and
- Ensure that transportation projects and programs are reviewed and approved by the Highlands Council in consultation with the Department of Transportation.

Financial Component

- Detail the cost of implementing the Regional Master Plan, including property tax stabilization measures, watershed moratorium offset aid, planning grants and other State aid for local government units, capital requirements for the TDR bank, payments in lieu-of-taxes, projections for 2009 and 2014 of acquisition of fee simple or other interests in lands for preservation or recreation and conservation purposes, compensation, guarantees, general administrative costs, and any anticipated extraordinary or continuing costs; and
- Detail the sources of revenue for such costs, including grants, donations, and loans from local, State, and federal departments, agencies, and other governmental entities, and from the private sector.

Local Participation Component

- Provide for the maximum feasible local government and public input into the Highland Council's operations; and
- Include a framework for developing policies for the Planning Area in conjunction with the municipalities and counties in the Planning Area who choose to conform to the Regional Master Plan.

Coordination and Consistency Component

- Detail the ways in which local, county, State, and federal programs and policies may best be coordinated to promote the goals, purposes, policies, and provisions of the Regional Master Plan; and
- Detail how the land, water, and structures managed by governmental or non-governmental entities may be integrated into the Regional Master Plan.

Dwight Hiscano

Preservation Area Requirements

- Prepare a Land Use Capability Map;
- Prepare a comprehensive statement of policies for planning and managing the development and use of land based upon the environmental standards adopted by the NJDEP and the resource assessment prepared for the Regional Master Plan;
- Provide for the implementation of the Regional Master Plan by the State and local government units in the Preservation Area in a manner that will ensure the continued, uniform, and consistent protection of the Highlands Region;
- Identify 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 TDR program; and
- Develop minimum standards governing municipal and county master planning, development regulations, and other regulations concerning the development and use of land, including standards for minimum lot sizes and stream setbacks, construction on

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steep slopes, maximum appropriate population densities, and regulated or prohibited uses for specific portions of the Preservation Area.

The Framework of the Regional Master Plan

The Regional Master Plan establishes a regional planning framework for resource protection as a complement to local land use planning efforts. The Regional Master Plan provides strategic opportunities for communities to consider and act upon based on an understanding of the cumulative and regional impacts of local land use decisions. The Regional Master Plan also provides a framework to coordinate the policy and planning decisions made by federal and State entities to ensure that these decisions and public investments are guided by the goals of this Regional Master Plan.

Land use planning decisions are generally made on the basis of local considerations, with limited opportunity to consider the broader context of these decisions. Sensitive and regionally significant environmental, natural, and cultural resources are not limited by political boundaries, nor are the impacts from land use decisions. The Highlands Act provides municipalities, counties, State entities, and federal agencies with a unique opportunity to address land use planning and resource protection in a regional context. The Regional Master Plan serves as a foundation to guide future land use planning decisions related to resource protection, conservation of agricultural landscapes, and economic growth and development.

Nathan McLean

The Regional Master Plan consists of six chapters:

1. An introduction to the Highlands Region providing a history of the origins of both the Region and the Highlands Act (Chapter 1 – Introduction);
2. An analysis of the character of the Highlands Region at a regional and local community scale and a framework envisioning the future of the Highlands (Chapter 2 – Regional and Local Community Character);
3. An analysis of the Highlands Region, including an assessment of the Region's resources and existing communities (Chapter 3 – Analysis of the Highlands Region);
4. A statement of policy guidance setting forth the goals, policies, and objectives necessary to implement the Highlands Act (Chapter 4 – Goals, Policies, and Objectives);
5. A series of programs designed to ensure that the goals, policies, and objectives for the Highlands Region are met (Chapter 5 – Programs); and
6. An implementation framework describing the necessary roles of the entities that will guide the successful implementation of the Regional Master Plan (Chapter 6 – Implementation).

The major policy areas covered in this document are organized according to the following elements of the Regional Master Plan:

- ***Natural Resources*** – This element addresses the significant natural resources of the Highlands Region and the protection strategies necessary to maintain and enhance their value. It includes the critical natural resources in the Highlands Region that are subject to protection under the Regional Master Plan including: forest resources; Highlands Open Waters and Riparian Areas, which include wetlands and flood prone areas; steep slopes; Critical Habitat, including rare/threatened/endangered species, Significant Natural Areas, and vernal pools; carbonate rock; open space; and lakes, rivers, and ponds. This section helps to spotlight areas of the Highlands with exceptionally high ecological values that should be preserved, those with lesser values that may be restored, and those previously impaired by past human activity that may be appropriate to support growth that incorporates good planning. In addition, this element includes land preservation

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and stewardship policies and strategies necessary to achieve the land preservation goals of the Highlands Act. This includes measures needed to address land equity concerns through land valuation, funding, and program coordination, as well as recommendations regarding existing program policy and implementation improvements.

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- ***Water Resources and Utilities*** – The importance of the Highlands Region's water resources in sustaining most of northern New Jersey is a matter of statewide importance. Increases in human population and changes in land use due to increasing development pressure threaten our drinking water supplies by contributing to over withdrawal of ground and surface water systems. In turn, this over withdrawal degrades water quality and reduces recharge rates, which deplete our aquifers and reduce safe yields of our reservoirs, and increase the potential for significant cost to develop new supplies or provide for water treatment facilities. The Regional Master Plan's discussion of utilities addresses policies associated with establishing the existing capacity limitations of water and wastewater infrastructure necessary to provide for drinking water supply and wastewater treatment. It also includes policies and programs that support cost-effective, innovative, and efficient provision and use of utility capacity. The Regional Master Plan summarizes the policies and strategies necessary to manage land uses in a manner that is compatible with the long term protection of the Highlands Region water resources --both quantity and quality. It includes policy guidance on water use and availability to establish sustainable thresholds to support future population growth. It addresses other considerations regarding the protection, restoration, and enhancement of surface and ground water quality, including ground water recharge and wellhead protection. Policies related to potential sources of pollution, including an evaluation of nitrate concentration and septic suitability, are also provided.
- ***Agricultural Resources*** – Sustainable agriculture consists of land management and land use policies that are necessary to sustain and preserve agricultural resources and the viability of the agricultural industry in the Highlands Region. It seeks to balance the need to protect important natural resources in ways that enhance both the agricultural resources and farmer's (often the resource steward's) livelihoods.
- ***Historic, Cultural, Archaeological, and Scenic Resource Protection*** – The Historic, Cultural, Archaeological, and Scenic Resource Protection element includes strategies to address the existing status and threats to the Highlands Region's historic, cultural, archaeological and scenic assets. It also recognizes the importance of these resources to the history, local character, and culture of the towns, villages, and cities of the Highlands.
- ***Transportation*** – The Transportation element includes policies and programs to address transportation system capacity and transportation system preservation and enhancement measures within the context of natural and cultural resource protection goals and smart growth principles of the Regional Master Plan.
- ***Future Land Use*** – The Future Land Use element addresses land use, smart growth, community design and housing. This element provides policy guidance on community planning activities that utilize clustering development, regional development, redevelopment, enhanced growth opportunities, smart growth principles, and design standards. Emphasis will be placed on maximizing development potential to address local and regional economic development opportunities, while minimizing the cumulative impact to critical natural and cultural resources of the Highlands Region. The policies and programs also stress the importance of using development and site design standards that facilitate the more efficient use of available land, with an emphasis on water conservation, energy conservation, green building, innovative/alternative technologies, mixed use and

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clustered site design, and safe and reliable transportation opportunities. The element also provides policies necessary to address housing and community facility needs, both from the perspective of the quantity of housing and the variety and choice of housing needs and the relationship to local community and regional conditions. Particular emphasis is placed on the recognition of affordable housing obligations and strategies to meet those obligations.

- ***Landowner Equity*** – This component recognizes that the implementation of the Regional Master Plan, which directs and guides future development, inevitably has an impact on reasonable landowner expectations regarding future land use potential. The Highlands Act provides several mechanisms that seek to mitigate such impacts, including a TDR program, land acquisition, exemptions and waivers. Together with existing State farmland and open space preservation programs, the Highlands TDR Program will serve as another land use tool to aid Highlands Region municipalities in the protections of the Region's unique resources while providing property owners with a mechanism to sell the development potential of their lands. This section of the Regional Master Plan establishes the policies and strategies to implement a TDR program for the Highlands Region.
- ***Sustainable Regional Economy*** – This element includes an evaluation of the regional employment and income conditions and evaluates a series of baseline economic indicators that help explain existing regional conditions. The primary purpose of the baseline indicators is to establish a means for evaluating economic segments over time so that Highlands-related trends can be distinguished from general trends, regarding factors such as jobs to housing relationships, community and housing diversity, business mix, performance of local economic support programs, and community facilities. Agricultural statistics and economic metrics will also be evaluated in support of agricultural sustainability policies. This also includes a description of the recreational resource base that exists in the Highlands and proposes how these features may support a Highlands tourism economy. These resources include cultural, historical, scenic, agricultural and outdoor recreation facilities, forming the foundation for both tourism and local recreation opportunities.
- ***Air Quality*** – This element addresses the connection between land development patterns, automobile transportation and the creation of air pollutants affecting the Highlands Region. Because development patterns also affect energy use, improved regional growth patterns also help address global warming issues to some extent. The element also calls for additional monitoring of toxic air pollutants from both within and nearby the Region.
- ***Local Participation*** – This element promotes local, county, regional, State, and federal program coordination and provides the programs and tools necessary to implement the Regional Master Plan at the municipal and county levels. The involvement of municipal, county, regional, State and federal governments and agencies will be critical to successful implementation of the Regional Master Plan. This element provides the structure for that participation, and for the participation of public and private interests in the planning process.

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TABLE 1.1: Acreage of the Highlands Region in Municipalities and Counties

MUNICIPALITY	PLANNING AREA	PRESERVATION AREA	TOTAL
BERGEN COUNTY			
Mahwah Township	7,082	9,687	16,769
Oakland Borough	3,007	2,622	5,629
Total Acres For Bergen County	**10,089**	**12,309**	**22,398**
HUNTERDON COUNTY			
Alexandria Township	15,039	2,719	17,758
Bethlehem Township	1,137	12,173	13,310
Bloomsbury Borough	0	625	625
Califon Borough	0	632	632
Clinton Town	781	141	922
Clinton Township	21,054	639	21,693
Glen Gardner Borough	0	998	998
Hampton Borough	134	823	957
High Bridge Borough	1,558	0	1,558
Holland Township	13,361	1,961	15,322
Lebanon Borough	577	0	577
Lebanon Township	7	20,257	20,264
Milford Borough	812	0	812
Tewksbury Township	6,860	13,475	20,335
Union Township	2,665	10,482	13,147
Total Acres For Hunterdon County	**63,985**	**64,925**	**128,910**
MORRIS COUNTY			
Boonton Town	1,593	0	1,593
Boonton Township	4,934	493	5,427
Butler Borough	1,318	0	1,318
Chester Borough	1,019	0	1,019
Chester Township	2,904	15,790	18,694
Denville Township	8,155	7	8,162
Dover Town	1,746	0	1,746
Hanover Township	6,878	0	6,878
Harding Township	13,162	0	13,162
Jefferson Township	3,297	24,033	27,330
Kinnelon Borough	340	11,954	12,294
Mendham Borough	3,827	0	3,827
Mendham Township	11,534	0	11,534

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MUNICIPALITY	PLANNING AREA	PRESERVATION AREA	TOTAL
MORRIS COUNTY (CONTINUED)			
Mine Hill Township	1,927	0	1,927
Montville Township	8,793	3,440	12,233
Morris Township	10,120	0	10,120
Morris Plains Borough	1,657	0	1,657
Morristown Town	1,923	0	1,923
Mountain Lakes Borough	1,861	0	1,861
Mount Arlington Borough	1,651	132	1,783
Mount Olive Township	4,131	15,865	19,996
Netcong Borough	564	0	564
Parsippany - Troy Hills Township	16,216	0	16,216
Pequannock Township	4,060	475	4,535
Randolph Township	12,954	583	13,537
Riverdale Borough	1,319	0	1,319
Rockaway Borough	1,357	0	1,357
Rockaway Township	11,582	17,823	29,405
Roxbury Township	9,719	4,301	14,020
Victory Gardens Borough	93	0	93
Washington Township	3,490	25,227	28,717
Wharton Borough	1,362	0	1,362
Total Acres For Morris County	**155,486**	**120,123**	**275,609**
PASSAIC COUNTY			
Bloomingdale Borough	1,764	4,179	5,943
Pompton Lakes Borough	2,005	0	2,005
Ringwood Borough	0	18,068	18,068
Wanaque Borough	1,294	4,641	5,935
West Milford Township	0	51,901	51,901
Total Acres For Passaic County	**5,063**	**78,789**	**83,852**
SOMERSET COUNTY			
Bedminster Township	15,873	1,011	16,884
Bernards Township	15,636	0	15,636
Bernardsville Borough	8,265	0	8,265
Far Hills Borough	3,150	0	3,150
Peapack Gladstone Borough	3,693	0	3,693
Total Acres For Somerset County	**46,617**	**1,011**	**47,628**

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MUNICIPALITY	PLANNING AREA	PRESERVATION AREA	TOTAL
SUSSEX COUNTY			
Byram Township	233	14,272	14,505
Franklin Borough	2,843	0	2,843
Green Township	10,198	281	10,479
Hamburg Borough	753	0	753
Hardyston Township	8,254	12,557	20,811
Hopatcong Borough	5,346	2,607	7,953
Ogdensburg Borough	1,232	199	1,431
Sparta Township	13,359	11,538	24,897
Stanhope Borough	1,404	0	1,404
Vernon Township	15,470	29,319	44,789
Total Acres For Sussex County	**59,092**	**70,773**	**129,865**
WARREN COUNTY			
Allamuchy Township	7,683	5,228	12,911
Alpha Borough	1,098	0	1,098
Belvidere Town	950	0	950
Franklin Township	11,284	3,792	15,076
Frelinghuysen Township	15,278	0	15,278
Greenwich Township	5,986	792	6,778
Hackettstown Town	2,168	203	2,371
Harmony Township	7,018	8,387	15,405
Hope Township	11,702	0	11,702
Independence Township	6,510	6,250	12,760
Liberty Township	543	7,095	7,638
Lopatcong Township	3,673	1,051	4,724
Mansfield Township	5,966	13,047	19,013
Oxford Township	1,671	2,184	3,855
Phillipsburg Town	2,110	0	2,110
Pohatcong Township	1,210	7,582	8,792
Washington Borough	1,262	0	1,262
Washington Township	7,970	3,604	11,574
White Township	9,984	7,812	17,796
Total Acres For Warren County	**104,066**	**67,027**	**171,093**
Total Acres For Highlands Region	**444,398.69**	**414,959.66**	**859,358.35**

(Note – the above acreage has been rounded thus altering the sum totals of some columns and lines)

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REGIONAL AND LOCAL COMMUNITY CHARACTER

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PART 1 Introduction

The Governor and Legislature of the State of New Jersey have recognized that the New Jersey Highlands Region is a unique part of the State as it is part of the larger physiographic province of the federal Highlands Region, defined by the four-state geologic Reading Prong, the easternmost range of the Appalachians that is a region distinguishable by geology, topography, and geomorphology (i.e., landforms), hydrology, and history. This physiographic area is a region of mountains underlain by Precambrian crystalline bedrock and limestone valleys. The landscape of the Region is defined by open, high hills and ridges bisected by deep, narrow valleys, with diverse and scenic water bodies, and relatively undeveloped corridors of forests, wetlands, and grasslands of regional importance to wildlife and plants. The Region is also defined by less developed, rural agricultural areas, and suburban and some urban development within close proximity to the New York City metropolitan area.

Nathan McLean

The New Jersey Highlands Region is a 1,343 square mile area extending from the Delaware River northeast to the New York border. The Region stretches from Phillipsburg in the southwest to Mahwah in the northeast, and lies within portions of seven counties (Hunterdon, Somerset, Sussex, Warren, Morris, Passaic, and Bergen) and includes 88 municipalities. The Highlands Act recognizes that the resources of the Highlands Region are a vital part of the public trust and the Act includes measures to protect the incomparable water resources and natural beauty of the Highlands so as to preserve them intact, in trust, forever for the pleasure, enjoyment, and use of future generations. The vision for the future of the Highlands is one of a sustainable quality of life and improved environmental integrity for the Region as a whole.

Some of the unique defining elements of the Highlands Region are:

- The Highlands Region is the source of drinking water for approximately 64 percent of the State's population, some 5.4 million people yet it comprises only 17 percent of the lands in the State;
- The Region contains numerous and diverse streams, rivers, ponds, lakes, and reservoirs, many with valleys forming natural transportation corridors, that provide recreational opportunities, Critical Habitat, drinking water supplies, and dramatic views;
- Although the Region was first settled more than 200 years ago, 75 percent of the land in the Region is still undeveloped;
- Approximately 32 percent of the undeveloped land in the Region is protected open space;
- Forests, the majority of which are hardwood, are a defining visible and functional feature of the Region, comprising 47 percent of the landscape;
- More than 30,000 acres (3.5 percent of the Region) have been preserved for the sustainability of agricultural activities;
- Field crops occupy approximately eight percent of the Region;
- Mining is a historical element defining the heritage of much of the Region, with industrial archaeology such as stone furnaces and waterpower wheels found in nearly all parts of the Region;

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- The Region has approximately 821,000 residents, most along the eastern and southern edges;
- 57 percent of all developed land is low density residential land use;
- Median household income is 34 percent higher than New Jersey as a whole;
- Despite proximity to the New York metropolitan area, the Region and its constituent communities are largely self-sufficient and free-standing;
- Although residential densities in the developed portions of the Highlands Region are typical of suburban development, the community character of the residential portions of the Region consist of individual small towns and villages surrounded by agricultural and forest lands interspersed with low density residential development;
- Woodlands, forested ridges, steep slopes, water features, and agricultural lands have historically maintained the separate identities of individual communities and their sense of place;
- The historical, localized, and small scale/incremental development patterns and practices of the Region have created an attractive, diverse residential landscape, and a historically active summer retreat location, defined in large part by forested lands and mature trees;
- The Region's topography begets winding roads with shortened sight distances where forested lands and mature trees or open agricultural lands are the predominant element of the landscape as it is viewed from public roads; and
- The historical development pattern and diversity of housing designs and materials has given the Region a residential landscape which has an organic and diverse quality as compared to the repetitive nature of subdivision development.

PART 2 Physical Geography and Landscape

The Highlands Region geology consists primarily of metamorphic, crystalline rocks dominated by gneiss on ridges and erodible sedimentary sandstone, dolomite, and shale underlying the valleys. The most recent glaciation (Wisconsin glaciation) extended across the northern half of the Highlands Region, resulting in a terminal moraine trending east to west. The moraine enters the Highlands from the east near Morristown, then trends north for a short distance to Denville, then west across the Highlands near Interstate 80 to Belvidere on the Delaware River. The terrain was scraped during glaciation, during which glacial lakes formed in bedrock, eventually leaving the area less suited for agriculture and more suited to supporting hardwood forests. Buried fill aquifers that are prolific sources of water supply, were created from gravel and sand deposits along river corridors in the terminal moraine. North of the moraine, there are significant accumulations of glacial till outwash and numerous lakes and wetlands, reflecting the complicated drainage pattern of this Region. The less recently glaciated southern portion of the Highlands Region has long recovered from past glaciations with older, more suitable soils for agricultural activities.

Mick Valent

The northern portion of the Highlands Region is characterized by steep slopes, narrow valleys, and rocky terrain while the southern portion is characterized by valleys that are generally wider with richer agricultural soils (see Figure 2.1 *Highlands Region Topography*). The Region also includes portions of the Piedmont physiographic provinces to the southeast, and portions of the Appalachian Ridge and Valley provinces to the north-

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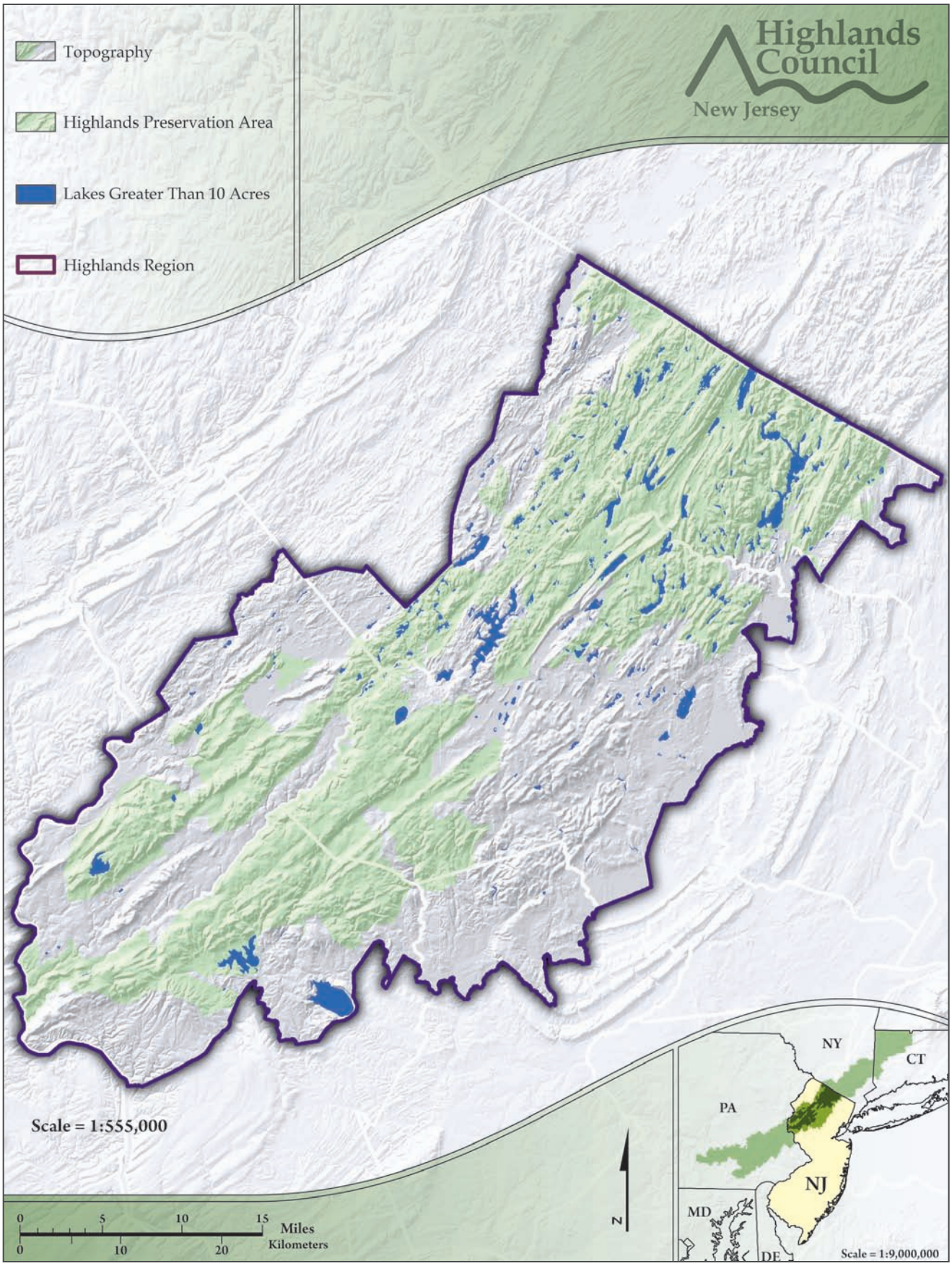
FIGURE 2.1: Highlands Region Topography



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west. The predominate landscape in the Region is forest and more than half of the Region is considered to be critical wildlife habitat for (1) federally-listed threatened or endangered species; (2) state-threatened and endangered species; and (3) state species of special concern.

Most of the land in the northern third of the Highlands Region is within the Highlands physiographic province and within the Preservation Area, with a small area to the northwest in the Ridge and Valley province, characterized by a series of valleys and ridges aligned generally along a northeast to southwest axis. Historic settlement patterns reflect this orientation as development followed valleys and water courses. Topography and geology served as a natural limiting factor with regard to land use and transportation in most of the northern part of the Region, contributing to what is a sparsely settled landscape. The Highlands Region here is heavily forested and is an important source water area for the Region and for substantial portions of urbanized New Jersey.

The middle third of the Highlands Region is a primarily man-made landscape. While dominated by suburban densities, the area has created and maintained much more local character than is typical in many other suburbs. This is due to historical mobility constraints related to this portion of the Region's geography (e.g., ridgelines and valley floors), and to the central role of traditional town centers in defining the area's identities as traditional communities of place. This area generally follows the path of Route 46 through Morris County, along the Rockaway River.

The southern third of the Highlands Region is characterized by soils and topography which are more supportive of agriculture. Historic settlement patterns in this area were typical of an agricultural landscape, which at one time was the predominant landscape in much of the State. This portion of the Highlands Region is defined by a landscape mosaic of agricultural lands and forests.

The Highlands Region landscape is characterized by:

- High hills and ridges and deep, narrow valleys;
- Numerous and diverse surface water bodies;
- Relatively undeveloped forests, wetlands, and grasslands of regional importance to wildlife and plants;
- Sparsely settled, very low density forested areas;
- Traditional agricultural/rural landscapes;
- Low density residential development organized along winding roads and around historic villages and towns;
- Lake communities; and
- Residential subdivisions and commercial strips not representative of the unique characteristics of the Region.

PART 3 Water and the Highlands Region

The Highlands Region is a focus of regional planning and special land use controls in large part due to the water needed for public use and for Highlands Region ecosystems. The Region's water resources have long been valued for water supply, ecosystem viability, and recreational and aesthetic uses. Additionally, Highlands Region lakes offer recreation opportunities, and are the defining features of many distinct communities. Highlands Region water bodies also support the Region's forests, wetlands, lakes, and streams by serving a critical role in supporting sustainable ecological resources. Northern New Jersey would have an immensely different character without Highlands Region water resources and the landscapes they support. Degradation or excessive use of these water resources would significantly undermine New Jersey's economic health, quality of life, and environmental integrity.

Nathan McLean

Water resources are generally categorized as surface water and ground water. Both surface water and ground water can be replenished by rainfall, and water may be

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exchanged between surface water and ground water systems. The use of ground water can reduce surface water flows, and the contamination of ground water can harm surface water quality.

Surface water in the form of streams, rivers, ponds, lakes, and reservoirs are an important part of the Highlands Region landscape. Ground water is water below the earth's surface, filling the pore spaces, cracks, and fissures in soil and rock. An underground layer of permeable rock or unconsolidated materials where ground water is sufficient to provide water to wells is known as an aquifer. Aquifers differ in value; some are very prolific, but the hard rocks that create the Region's ridges are very poor aquifers. While ground water is often unseen, it is the primary water supply to Highlands Region municipalities and provides the large majority of flows to the Region's streams.

Forested areas and stream-side Riparian Areas function to protect surface water and ground water quantity through collection and infiltration of rainwater, and protection of water quality through filtration of excess nutrients, solids, and pollutants and stormwater abatement. Therefore, protection of forests and Riparian Areas lends to the protection of both quantity and quality of the Region's water resources.

Mike Anderson

By law, New Jersey's water resources are held in trust for the public, and allocated by the State for public and private use. One reason the Highlands Region is so important to New Jersey's economy is the presence of many large reservoirs in the Passaic River and Raritan River basins, built from the late-19th century to the late-20th century to supply the urban areas of northeastern and east-central New Jersey. These reservoirs—built by Newark, Jersey City, the North Jersey District Water Supply Commission, and the State of New Jersey—store high stream flows against time of drought. In total, they provide some or all of the water needed by roughly 5 million people. In addition, a few Highlands communities have their own small reservoirs. Each reservoir system has a "safe yield," which is the amount of water it can supply during a repeat of the 1960s drought, defined as the worst drought on record. The safe yield is protected by the State through control of water uses. Development in urban communities will place heavy stresses on these reservoir supplies. Although most reservoir water from the major reservoirs is exported, limited supplies have been contracted to a few communities in the eastern Highlands.

Surface waters also contribute to New Jersey's economy as focal points for boating, fishing, swimming, and other recreational activities in lake communities. Most Highlands Region lakes are man-made and many of the earliest residential communities were established on the shores of these lakes. Surface water from streams (rather than reservoirs) is used within the Region, most often for farm and golf course irrigation and for manufacturing (often in historic river towns) rather than public supply.

Ground water is used by local communities throughout the Highlands Region as their primary drinking water supply. Nearly all of the Highlands Region population relies on ground water. In most cases wells are located near users, but in some cases water is piped miles from one part of the Region to another. Wells range in size from domestic wells for individual households to large community wells that can supply thousands of people.

Every water use has an effect on the Region's water resources. For example, ground water supplies in many parts of the Region are already stressed or beyond capacity. Water is moved from place to place, lost to the atmosphere from evaporation or plant use, or picks up pollutants from human and natural sources. As with every region, but more intensely in the Highlands Region due to the many competing uses, the protection and careful use of water resources is critical to a sustainable society.

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PART 4 Shared Values

The developed portions of the Highlands Region exhibit shared values despite being represented by a variety of landscapes, such as the large forests bifurcated by State Route 23; the historic mill towns of Morris County surrounded by winding tree-lined roads, where single family homes are set back far from the road on large, mostly forested lots; the lake communities around both large recreational lakes and smaller, private lakes; the rolling hills around the rural agricultural landscape of Long Valley; the business highway development along Highway 31 between Clinton and Washington.

Nathan McLean

Despite differences between these portions of the Region, each share and contribute to a series of regionally and locally significant values. The Region's developed landscapes are considerably independent and free-standing as opposed to typical suburban landscapes which are socially, culturally, and economically dependent on a core urban center. The Highlands Region undoubtedly benefits from proximity to the New York City metropolitan area; the Region is close enough to gain from one of the world's most dynamic urban economies, but not so close as to be defined by suburbs dependent upon that area. The Highlands Region is separated from New York City both by distance and topography. The relative isolation of Highlands Region landscapes and associated communities is beneficial because of their interdependency on one another for employment, shopping, health care, recreation, open space preservation, natural resources protection, and entertainment. Consequently, the function and character of historical settlements are vital and continue to be central to the character of the Region.

Highlands Region communities share a value with regard to protecting water resources. Water has long been recognized as a defining attribute of the Region, a resource which does not follow political boundaries. The importance of water to the Highlands Region is significant in several different ways. The Region provides the primary source of potable water for the majority of the urbanized population in northern New Jersey. Surface water and ground water significantly contribute to the functional integrity of the Region's ecosystems, including forests, ponds, streams, lakes, and wetlands which constitute a majority of the Region's critical wildlife habitat. Upon arrival of European settlers to the Region, water guided the settlement patterns through the formation of industry-related villages, such as mill towns, mining areas, and early agricultural areas, all of which were dependent on abundant sources of water. This settlement pattern continues to serve as the physical framework of Highlands Regional landscape types. Historic mining, quarrying, and manufacturing have influenced settlement patterns and represent potential water quality issues to existing and future populations. Lakes played a key role in the development of lakeside communities in the Highlands, representing an important residential and recreational resource for the greater northern New Jersey region.

The water resources of the Highlands Region are important not only as a potable water supply source, but as a defining element of ecosystem form and function within the Highlands. They include extensive reservoirs

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with the capacity to provide more than 600 million gallons per day of drinking water; large rivers and lakes; streams that support trout production and supply local recreation opportunities; forested headwater streams and springs; and ephemeral waterbodies that are critical to the survival of a variety of the Region's wildlife.

The vast majority of Highlands Region reservoir capacity is exported to urban and suburban areas of northern and central New Jersey. The water needs of the Highlands Region itself are primarily served by well withdrawals of ground water from local aquifers, and by smaller surface water bodies. Maintaining the integrity of water resources of the Highlands Region provides for the protection and sustainability of surface waters supplying reservoir systems, ground water supplying potable uses, and ecosystems dependent upon both surface water and ground water for essential functions.

The Highlands Region communities share this value by serving as stewards of the quality and quantity of this significant water source. Historically, this responsibility was a natural byproduct of the form and function of settlement in the Region. The character, location, and intensity of historical residential development patterns within the Region were such that water quality and quantity were naturally sustainable. Moreover, the significance of the Region's water resources played an important role in the conservation of considerable open space over the past several decades. More than 50,000 acres of land have been preserved by the State, Highlands Region counties and municipalities, and other governmental and nongovernmental entities in order to protect the principal source of water supply in northern New Jersey. Water supply was also one factor leading to the preservation of more than 100,000 acres of forested lands.

The communities of the Highlands Region share a value of preserved open space and the views and opportunities afforded by these preserved areas. Many communities share open space views in areas where more than 75 percent of the land is undeveloped. A ratio of undeveloped land to developed land of 3 to 1 is a particularly distinguishing regional characteristic given the location of the Highlands Region in northern New Jersey, one of the most densely populated parts of the most densely populated state in the nation. The relationship created by these shared views of open space between developed lands and undeveloped lands links the communities of the Region together because that shared, visible open space aids in defining the character of a community. Conversely, there are examples where principal access to one town passes through an adjacent town in which highway commercial development extends outward from the traditional town center, thereby altering community character and economic viability in both towns.

Yet another shared value of the Highlands Region is a settlement pattern which is organized around small towns and villages, most of which are historic or traditional communities of place. This basic settlement pattern exists throughout the Region, from the forested north, to the exurban middle, to the agricultural south. The rural landscape which surrounds the towns and villages may vary in terms of character (agricultural versus residential or forest), but the functional relationship of the rural landscape to the towns and villages is the same.

One aspect of this functional relationship between a rural landscape and its communities is that individual towns and villages are distinguished by their rural nature. Isolated towns and villages often have adjacent preserved forests, forested ridges, and agricultural land, thus preventing traditional suburban growth patterns. At the same time, this functional relationship fosters social, cultural, and economic symbiosis between the towns and villages and surrounding typically low density residential landscapes sustaining much of the Highlands. Moreover, the relatively low gross intensity of land use in the Region's rural landscapes results in a local market for goods and services that allows local retail to co-exist with typical retail big boxes and franchise businesses, which in turn sustains the economic vitality of many locally-owned businesses in the historic and traditional towns in the Region.

Of the 859,358 acres of land in the Highlands Region, 25 percent are developed and 32 percent are protected through open space preservation. The remaining lands are forested (63 percent), submerged and barren (15 percent), and agricultural (13 percent). A majority of the developed lands in the Region, 57 percent, is zoned

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for low intensity, single family residential areas with a density range of one dwelling unit per 2 to 20 acres.

Approximately 821,000 people live in the Region and almost 450,000 residents live in Bergen and Morris Counties. The overall population density of Bergen and Morris Counties is 1.7 and 1.4 people per acre, respectively. However, an examination of the relationship of where people live in these counties indicates that the density of people per acre triples to 4.78 and 4.28 people per acre, respectively. This indicates that significant areas remain undeveloped in these counties. The overall population density in Hunterdon and Warren Counties is 0.48 and 0.58 people per acre. However, these counties have significantly more undeveloped land compared to Bergen and Morris Counties where people live at a lower density of 2.12 to 3.44 people per acre. In Passaic, Somerset, and Sussex Counties, the overall population density ranges from 0.74 to 0.97 people per acre, representing the mid-range of overall population density in the Highlands Region. These three counties also have significant portions of undeveloped lands where residents typically live at densities that range from 2.86 to 5.37 people per acre.

PART 5 The Elements of Place

The essential character of the Highlands Region is not easily reduced to an overall description. Demographic statistics explain the Region's overall vibrant economy and relative affluence, but do not reveal the diversity of individual community character or the overall character of the Region. The extent of forested lands in the Region is truly remarkable in terms of the context of the densely developed tri-state region surrounding the Highlands Region. The amount and distribution of forested lands within the Region is illustrated by the fact that despite more than 200 years of human activity, more than half of the entire Region is described as critical wildlife habitat.

Critical natural elements of place in the Highlands define an identity for a significant portion of the Region. At the eastern edge of the Highlands, the Ramapo Mountains and Valley delineate where urbanized, developed New Jersey decreases and natural resources and open space increase. The Wyanokie Highlands (Passaic County), with its network of historic hiking trails and dramatic scenic overlooks, are located west of the Wanaque Reservoir in Ringwood and West Milford and protect critical water supply watersheds. Located between Bearfort/Green Pond Mountain to the east and the Hamburg Mountains to the west, the 35,000-acre Pequannock River watershed and Wawayanda plateau (Passaic, Sussex, Morris Counties) form one of the Region's core wilderness areas supporting bear, bobcat, native trout, and rare interior bird species. The Wallkill Valley (Sussex County) at the western edge of the Highlands is home to the Wallkill National Wildlife Refuge which protects the area's rural character and natural resources. The Farny Highlands (Morris County) include the headwaters of five rivers and large tracts of biologically diverse forests. Sparta Mountains (Sussex and Morris Counties) form the westernmost ridge of the northern Highlands. The Farney Highlands and Sparta Mountains are traversed by the Highlands Millennium Legacy Trail, which offers dramatic scenic vistas, protect threatened and endangered species, and function as a connector between numerous State Wildlife Management Areas and Allamuchy State Park to the south.

Nathan McLean

The headwaters of the North Branch of the Raritan River (Morris and Hunterdon) are located in the Hunterdon Hills and Somerset Hills, and supply drinking water uptakes on the Raritan River. The area is scenic horse and orchard country, dotted with historic villages and towns. Fed by the South Branch of the Raritan River, Spruce Run and Round Valley Reservoirs (Morris and Hunterdon Counties) store drinking water and attract swimmers, boaters, fishermen, picnickers, and campers to their scenic shores. Scott Mountain and

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the Musconetcong Ridge (Warren and Hunterdon Counties) in the southern Highlands are home to forested ridges and farmland of the Delaware, Pohatcong, and Musconetcong Valleys, forming a large contiguous area of high-quality agricultural landscapes. The Musconetcong River (Hunterdon, Morris, and Warren Counties) is the only river entirely contained within the Highlands and was recently designated part of the National Wild and Scenic Rivers System. Its rural valley houses the river as it moves south through agricultural and historic areas, forming the border between Warren and Hunterdon Counties. The Pohatcong Grasslands (Warren County) are a State Natural Heritage Priority Site, home to numerous threatened and endangered birds. Pohatcong Mountain is a linear forest island that links the Delaware River bluffs with the Musconetcong Valley.

The Highlands Region is special because it is a unique composite of landscapes, natural resources, and communities not found elsewhere in the nation. To a great degree, the unique character of the Region is a product of its geography. Although the eastern reaches of the Region are relatively accessible to and from New York City, the largest and most economically vibrant city in the United States, mobility to and through much of the Highlands Region is constrained by its topography (ridgelines and valley floors). These landforms have played a key role with regard to the character and pace of development within the Highlands Region and have preserved the identity of the Region as a uniquely beautiful blend of rolling hills, ridgelines, valley floors, large forests, rural agricultural lands, and numerous and diverse water bodies.

PART 6 Resource Assessment and Regional Land Use Capability

Notwithstanding the relative integrity of the Highlands landscapes, recent trends indicate that growth pressures are overcoming the traditional forces and factors which have historically shaped the Highlands Region and its unique character. For example, water use in many of the 14-digit Hydrologic Unit Code (HUC14) subwatersheds in the Highlands Region is already beyond sustainable levels.

The Highlands Act requires that the Regional Master Plan include a resource assessment to provide a determination of the "amount and type of human development and activity" which can be accommodated without compromising the essential character and function of the Highlands Region. The resource assessment serves to identify a balance between the Region's environmentally sensitive areas and the Region's capacity for appropriate development and human activity. In addition, the Act requires that the Regional Master Plan identify scenic, aesthetic, cultural, historic, open space, farmland, and outdoor recreational resources and provide for their maintenance and enhancement.

Nathan McLean

A basic principle of ecology is that the capacity of an environment to support a population of plants or wildlife is governed by limiting factors. The development capacity of the Highlands Region is likewise governed by limiting factors, some of which relate to the natural environment (e.g., steep slopes and water quantity and quality). However, the carrying capacity of the

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Highlands Region is also defined by public policies enshrined in the laws and Constitution of the State of New Jersey and the Constitution of the United States.

Another factor which affects the development capacity of the Highlands Region is the community character, an aspect highly valued by many residents of the area as underlying the quality of life of the Region. For example, even if the existing undeveloped lands in the Planning Area could be developed at a higher density without adversely affecting water quality and quantity and without destroying Critical Habitat, development at a denser rate requires careful management to ensure that the community character of the Region and its constituent communities of place are sustained. Some of the adverse impacts of further suburban development can be mitigated through site development standards (e.g., cluster requirements and rural design requirement). However, at some point the character and pace of suburban development, if left unchecked, may erode the character of existing communities of place.

A central element of the required resource assessment is an understanding of the definition of the essential character and function of the Highlands Region. According to the terms of the Act, this includes:

- The quantity and quality of water resources in the Highlands Region including the potable water needs of more than 4 million people who do not live within the Region;
- Large areas of contiguous forest lands;
- Critical Habitat;
- Agriculture and historic resources; and
- Natural, scenic, and other resources of the Highlands Region.

Implicit in the Act are the distinctive community characters of the towns and counties in the Region because of their importance to the residents of the Region and their centrality to the resource values of the Region as a whole.

Carl Figueiredo

Another factor which affects the amount of development which can be supported is transportation. Mobility is vital to the success of any community and in the Highlands, like most of the United States, the automobile is the primary source of transportation. Any assessment of the development capacity of the Highlands Region must consider the dynamic nature of traffic and road capacity. Although engineers like to speak in terms of levels of service (A to F), the reality is that the quality of life aspects of transportation involve more than quantitative analyses of road capacity at some prescribed level of service and the average number of trips generated by a unit of development. For example, intact historic towns and villages routinely fail to meet the engineer's level of service standards, particularly during peak hours. Nevertheless in such situations, the value of community character outweighs the inconvenience of delay, particularly when the view from the car is a traditional town where the people on the sidewalks and in the stores are friends and neighbors. Studies from around the country show that Americans select the character of a route over the speed and convenience of a route. In addition, trip-making behavior is not the fixed statistic of the traffic engineer. Where the trip to town is slow because of capacity constraints, residents make good use of a single trip instead of making multiple trips to town. Indeed, capacity constraints encourage multiple purpose trips where a shopper walks to several different shops from a single parking space, a circumstance which supports traditional town character and values. It is essential that provision be made for the movement of emergency vehicles during peak hours of congestion, but there are usually ways to assure access

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without subordinating community character to the automobile. That does not mean that traffic congestion is not problematic, but rather to say that the transportation calculus involves more than trip generation rates and highway capacity.

The amount and type of development which can be supported varies according to location and community character. For example, the Highlands Act limits the capacity of undeveloped lands in the Preservation Area to existing uses, exempt development, and agriculture. Similarly, the Act limits the capacity for additional development in previously developed portions of the Preservation Area to brownfields or areas where at least 70 percent of the land area is covered with impervious surfaces, and also limits development by the pull back of water and sewer service areas to areas with utility pipes in the ground. Finally, additional development in the Highlands Region is limited by the reality that there is little vacant land that would meet the requirements of the Act to have at least 70 percent coverage with impervious surfaces as available for infill development. Consequently, future redevelopment potential is constrained by local community character, availability of potable water capacity, environmentally sensitive areas, and capacity of roads or transit to support additional trips or riders.

Photo Facts/Carl Laskiewicz

The amount of exempt development rights in undeveloped lands in the Preservation Area is considerable in the context of historical growth rates. Available data analyzed by the land use modeling software indicates that there are over 20,000 parcels of land which may be eligible for an exemption for a single family dwelling on vacant land. Some of those parcels are land locked, located on steep slopes, or otherwise constrained, so that as a matter of practical economics they are unlikely to be developed, and the land supply constraints resulting from the implementation of the Highlands Act will foster the development of these exempt parcels over time.

The amount of development which could be accommodated within areas previously developed in the Preservation Area will vary according to the community character of municipalities and counties. The character and resource value of intact historic towns and villages are sensitive to infill and redevelopment and are likely to limit the amount of additional development. Several communities, that have initiated local revitalization efforts, such as Phillipsburg, Dover, Morristown, Boonton, Washington Borough, Stanhope, and Netcong Borough, offer potential opportunity for redevelopment, provided that water, sewer, and transportation capacity is available.

PART 7 Highlands by Design: A Vision for the Future

The Highlands Act provides the measures by which a vision for the future of the Highlands Region will be realized. The Act was passed into law to protect this nationally significant complex of resources and to provide for a sustainable quality of life and improved environmental integrity for the Region as a whole.

To ensure that the vision for the future of the Highlands is realized, protection, preservation, and enhancement of water and natural resources is fundamental to improving the environmental integrity of the Region and providing clean, sustainable drinking water supplies for future generations. As biodiversity decreases globally, providing for the protection of the Region's sensitive ecosystems will help to halt regional-scale losses in wildlife, plant, and significant natural communities. Balancing the need to protect and preserve Highlands resources with providing for a sustainable quality of life means providing for smart growth, improved transportation, protection of local economies, preservation of open space and recreational areas, and promotion of sustainable agriculture. By protecting, preserving, and enhancing the Region's resources, Highlands residents

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will benefit from sustainable water supplies, limited flooding and erosion, improved carbon sequestration, cleaner air, cleaner water, the ability to enjoy locally grown food, the ability to enjoy recreational opportunities close to home, the opportunity to visit a multitude of historic sites and structures, and a protected diverse and scenic land.

Without these protection measures for the resources of the Region, the Highlands will be permanently changed, and the economic cost of replicating the unique ecosystem services and benefits would be extraordinarily burdensome to the Region's towns and communities. Increased costs would include those for water quality treatment, public services, and infrastructure construction and maintenance. Less measurable costs would include increased habitat destruction, loss of plant and wildlife populations, reduced quality of life and access to safe recreation, and increased human health risks.

The Regional Master Plan contemplates a future regional and community character that is a measured extension of the existing condition where the functional values of the land and water resources of the Region are maintained and, wherever possible, restored and enhanced. Five fundamental principles govern the future of the Highlands Region:

1. Protect and preserve the resources of the natural and built environment, especially land and water resources;
2. Restore and enhance those aspects of the natural and built environment which have been compromised by prior use and development;
3. Maintain and enhance the fiscal and economic viability of the Region and its constituent communities;
4. Distribute the benefits and burdens of implementing the Regional Master Plan equitably among all affected interests both within and outside the Highlands Region; and
5. Ensure that all new growth and development is sustainable over the long term based on water, energy, and other critical resources, is organic to its environment, harmonious with historical settlement patterns, and is compatible with the history and character of the regional communities of place.

These principles are applicable to both the Preservation Area and the Planning Area; however, the treatment of these two areas in the Highlands Act requires somewhat differing approaches to implementation of the programs of the Regional Master Plan. Section 10 of the Highlands Act outlines the goals of the Regional Master Plan with respect to the entire Region, illustrated by Region-wide goals for both the Preservation Area and the Planning Area (see Table 2.1 *Goals of the Highlands Act for the Preservation and Planning Areas*). Goals that promote the preservation of the Region's unique resources are outlined specific to the Preservation Area, while goals that promote a balance of environmental protection and sound land use planning are outlined specific to the Planning Area.

REGION-WIDE GOALS

Although the Highlands Act divides the Highlands Region into two distinct sub-areas, the Preservation Area and the Planning Area, the elements of the natural and built environment do not stop at jurisdictional boundaries, and do affect the entire Region. The Highlands Act directs the Regional Master Plan to protect and enhance the significant values of the Region both through Region-wide goals and goals specific to the Preservation Area and the Planning Area that are distinct, yet reflect similarities in concept and intent.

The Regional Master Plan fulfills the requirement for Region-wide goals prescribed in the Highlands Act by establishing goals, policies, objectives, and programs for the protection, restoration, and enhancement of surface and ground water quality; for the preservation of the Region's agricultural areas and significant historic areas; for the public preservation of open space; for water use conservation methods; and for brownfield remediation and redevelopment.

PRESERVATION AREA GOALS

A critical need exists for preservation and protection of this portion of the Highlands Region. The planned future of the Highlands Region in the Preservation Area, outlined through the Preservation Area goals, is for all practical purposes the Highlands Region of today, a remarkable blend of natural resources and built environment which is a critical potable water source for the State of New Jersey.

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TABLE 2.1: Goals of the Highlands Act for the Preservation and Planning Areas

REGION-WIDE GOALS FOR PRESERVATION AREA AND PLANNING AREA	
Protect, restore, and enhance the quality and quantity of surface and ground waters • Preserve farmland and historic sites and other historic resources • Preserve outdoor recreation opportunities, including hunting and fishing, on publicly owned land • Promote conservation of water resources • Promote brownfield remediation and redevelopment	
Goals Specific to Preservation Area	**Goals Specific to Planning Area**
Preserve extensive and, to the maximum extent possible, contiguous areas of land in its natural state, thereby ensuring the continuation of Highlands environment which contains the unique and significant natural, scenic, and other resources representative of the Highlands Region	Preserve to the maximum extent possible any environmentally sensitive lands and other lands needed for recreation and conservation purposes
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	Protect and maintain the essential character of the Highlands environment
Promote compatible agricultural, horticultural, recreational, and cultural uses and opportunities within the framework of protecting the Highlands environment	Promote the continuation and expansion of agricultural, horticultural, recreational, and cultural uses and opportunities
Prohibit or limit, to the maximum extent possible, construction or development which is incompatible with preservation of this unique area	Encourage, consistent with the State Development and Redevelopment Plan and smart growth strategies and principles, appropriate patterns of compatible residential, commercial, and industrial development, redevelopment, and economic growth, in or adjacent to areas already utilized for such purposes; discourage piecemeal, scattered, and inappropriate development, in order to accommodate local and regional growth and economic development in an orderly way while protecting the Highlands environment from the individual and cumulative adverse impacts thereof
	Promote a sound, balanced transportation system that is consistent with smart growth strategies and principles and which preserves mobility in the Highlands Region

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The Highland Act authorized the New Jersey Department of Environmental Protection (NJDEP) to establish the Highlands Water Protection and Planning Act Rules (Rules) [N.J.A.C. 7:38], which provide environmental standards and procedures by which it shall review any application for the Preservation Area, pursuant to the Act, for the following:

- Major Highlands development;
- Waiver from any requirement for a Highlands Preservation Area Approval;
- Resource or applicability determination or exemption from the Act; and
- Permit or plan reviewed by the NJDEP in the Highlands Region.

The Rules state that the Regional Master Plan will include a Land Use Capability Map and comprehensive statement of policies for planning and managing the development and use of land in the Preservation Area. At a minimum, the Land Use Capability Map Series and policies in the Regional Master Plan were based upon, and comply with, the NJDEP's Rules for the Preservation Area. The expectation by the NJDEP was that the Regional Master Plan would address the components necessary to protect the Region's natural, scenic, and other Highlands resources.

The Rules state (7:38-1.1[g]) that, *for all decisions in or affecting the [P]lanning [A]rea or the [P]reservation [A]rea, the Department shall give great consideration and weight to the RMP, to be incorporated by reference…, when adopted by the Highlands Council.* The Rules also state (7:38-1.1[h]) that the NJDEP shall not issue any approval or permit authorization that it determines, in consultation with the Highlands Council, to be incompatible with the resource protection goals in the Regional Master Plan. NJDEP shall apply the standards of its Rules and those in the Regional Master Plan, as adopted, in its review of permits or approvals in the Preservation Area (7:38-1.1[i]). For both the Planning Area and the Preservation Area, the NJDEP shall give great consideration and weight to the RMP (7:38-1.1[j]).

Nathan McLean

In keeping with the Highlands Act's goals for the Preservation Area, of protecting contiguous areas of land in their natural state; protecting natural, scenic, and other Regional resources; promoting compatible agricultural, horticultural, recreational, and cultural uses with the environment, the Regional Master Plan provides that new land uses in the Preservation Area be limited to:

- Land uses exempt from the provisions of the Highlands Act;
- Appropriate agricultural uses and activities;
- Very limited rural residential development or compact, existing center-based redevelopment; and
- Brownfield remediation and redevelopment.

The Regional Master Plan recognizes that regional and community character are more than what is developed, they are also defined by how development is undertaken. A single family dwelling on a forested lot along a local tree-lined road in a neighborhood surrounded by steep slopes, is different in terms of community character and regional character from a single family house separated from the road only by a manicured lawn. Although both types of development exist in Highlands Region landscapes, and both types contribute to existing community character, new development which is not sensitive to surrounding land types may diminish character, resulting in a loss of cumulative community character, which could ultimately diminish the significance of the landscape at a regional level. Consequently, the Regional Master Plan provides programs to en-

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sure that new growth and development are compatible with the regional and local community character of the Region and do not continue the trend of sprawl type development. The Regional Master Plan also includes incentive programs intended to encourage exempt development to voluntarily comply with the goals, policies, objectives, and programs of the Regional Master Plan wherever possible.

The Regional Master Plan recognizes that the integrity of natural resources, especially water quality, quantity, and biodiversity are critically important to the Region. The Regional Master Plan provides protection, preservation, and enhancement mechanisms for natural resources and provides guidance for how growth and development must be carefully managed to ensure that they do not adversely affect the integrity of the Region's resources, and provides guidance for the restoration of impaired resources.

PLANNING AREA GOALS

In addition to Region-wide goals, the Highlands Act sets forth goals specific to the Planning Area. By promoting a balance of environmental protection and sound land use, the Act requires that the Regional Master Plan provide for the preservation, to the maximum extent possible, of environmentally sensitive lands and other lands necessary for recreation and conservation, and for the protection and maintenance of lands essential to the character of the Region while supporting new growth opportunities in the Planning Area that:

- Promote the continuation and expansion of agricultural, horticultural, recreational, and cultural uses;
- Promote brownfield remediation and redevelopment;
- Encourage—consistent with the State Development and Redevelopment Plan and smart growth strategies appropriate patterns of compatible residential, commercial and industrial development—redevelopment and economic growth while discouraging sprawl; and
- Promote a sound and balanced transportation system consistent with smart growth strategies.

Nathan McLean

The Regional Master Plan contemplates that development and redevelopment within the Planning Area could incorporate development rights transferred from lands in the Preservation Area in order to mitigate any disproportionate burden imposed on Preservation Area landowners and to protect the most critically sensitive natural and agricultural resources. The Regional Master Plan provides for a variety of incentive programs to encourage municipalities within the Planning Area to implement the goals, policies, and objectives of the Regional Master Plan and to conform to the Regional Master Plan. The Regional Master Plan also promotes organic development in the Planning Area which respects and reflects historical development practices in individual communities balanced by the preservation of core environmentally sensitive lands.

The Regional Master Plan encourages municipalities in the Planning Area to adopt and implement programs contained in the Regional Master Plan with regard to protection, preservation, and enhancement of natural resources, and restrictions on the number and location of septic systems in order to ensure that new growth and development is consistent with the goals, policies, and objectives of the Regional Master Plan and the community character of constituent municipalities.

The Regional Master Plan recognizes that community character within the Planning Area is an important part of the regional character of the Highlands Region. To this end, the Regional Master Plan includes detailed programs to promote development and redevelopment within the Planning Area which is compatible with that character.

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PART 8 Regional Elements

To address the mandated goals of the Highlands Act, the Regional Master Plan provides guidance for the regional elements characterized by the natural and built environment.

PROTECTION OF NATURAL RESOURCES

The Regional Master Plan accounts for the goals of protecting that Region's natural resources through goals, policies, objectives, and programs designed for the protection of natural and scenic resources, including forests, Highlands Open Waters, Riparian Areas, steep slopes, Critical Habitat, prime ground water recharge areas, water supply, and other environmentally sensitive areas. The goals, policies, objectives, and programs provide protection mechanisms that meet the spirit of the Highlands Act, balanced with standards for smart growth, for the unique blend of Highlands Region natural resources. While the NJDEP's Rules function as the minimum protection standards for Preservation Area resources, the Regional Master Plan's holistic approach to protection policies and programs recognizes that clean water supply, biodiversity, and intact ecologically important communities are factors of function, not jurisdictional boundaries. Therefore protection policies and programs meet the spirit of the Act in providing for resource conservation, protection, enhancement, and restoration, as appropriate, across the Region.

AGRICULTURE

The Highlands Act recognizes that agriculture is an important element of the economy, history, and essential character of the Region which should be protected and enhanced. The Regional Master Plan outlines programs to promote compatible agriculture in the Preservation Area and to promote and expand it in the Planning Area. Programs include opportunity to capitalize on agriculture as a component of new economic initiatives including eco- and agri-tourism. In addition, the Regional Master Plan gives priority to agriculture with regard to available water capacity.

HISTORIC, CULTURAL, ARCHAEOLOGICAL, AND SCENIC RESOURCES

The Regional Master Plan recognizes that historic, cultural, archaeological, and scenic resources are important elements of the essential character of the Region. Protection and enhancement of these resources is critical to the long term integrity of the Region and the Regional Master Plan provides multiple programs for the protection and enhancement of these resources.

Nathan McLean

TRANSPORTATION

The Regional Master Plan recognizes that mobility is a key element of the character of the Region and includes a goal in the Planning Area for the promotion of a sound, balanced transportation system that is consistent with smart growth strategies and principles. Limited access has to a large extent defined the character and function of the Region. The Regional Master Plan provides that future transportation, to the maximum extent practicable, should be directed at: (1) advocating for transportation investments that limit inter-regional transportation improvements to forms of transportation other than single occupant automobiles, including modes of transportation such as rail, bus, and shuttles, and (2) improving intra-regional movement of people and goods in ways that maintain community character.

The Regional Master Plan recognizes that efficient mobility is critical to the social, cultural, and economic success of every community. At the same time, new roads which expand an area's capacity for inter-regional movements can result in unintended consequences,

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including road widening. This widening adversely affects the character of communities or opens up previously inaccessible rural lands for development, impairing the function and character of the landscape. The Regional Master Plan provides for future mobility improvements which enhance intra-regional movement of people and goods and discourages increases in inter-regional road capacity.

LANDOWNER EQUITY

A goal of the Highlands Act is to protect undeveloped lands within the Region which have limited or no capacity to support development. The Highlands Act recognizes that implementation of the Regional Master Plan will result in adjusting landowner expectations regarding future land use potential. As a matter of fairness, reasonable future land use expectations of landowners should be mitigated to the extent possible. The Highlands Act provides several potential mitigation methods, including a transfer of development rights (TDR) program, land acquisition, exemptions, and waivers.

The TDR concept involves the transfer of development rights from lands where new growth and development is severely constrained to areas where additional development will not have an adverse impact on the important natural resources of the Highlands Region. TDRs are a recognized planning tool, which have been used to mitigate the windfalls and wipeouts of resource planning and management programs in New Jersey and around the country. TDRs are a practical and useful way of mitigating the impact of new regulatory requirements on land owners.

The Regional Master Plan recognizes the implementation challenges which attend the creation and operation of a TDR program and contemplates that additional action will be required if TDRs are to provide significant mitigation to land owners. Those actions include the establishment and capitalization of a development rights bank to create a market in TDRs. In addition, the Regional Master Plan recognizes that transferred development rights will be accommodated if Highlands Region communities gain a dedicated source of funding to ensure adequate infrastructure to serve new growth and development using TDRs.

Additionally, the Regional Master Plan recognizes the importance of the resources of the Highlands Region to the Region itself, northern New Jersey and to the entire State, as well as to a nationally-recognized multi-state region. The Regional Master Plan proposes prioritization and acquisition of fee simple or conservation easements in the form of open space and farmland preservation in those lands within the Region that have the most significant resources. The Regional Master Plan encourages all agencies of the State of New Jersey, and the New Jersey Legislature, to invest in the future of the State by funding public acquisition of large contiguous tracts, particularly forested lands and Critical Habitat.

Sabina Martine

The Highlands Act outlines 17 exemptions by which an activity would not be bound by Highlands Act, the NJDEP's Rules for the Highlands Preservation Area, the Regional Master Plan, and any municipal master plan or development regulations that are conformed to the Regional Master Plan. Thousands of acres throughout the Region could be developed under the exemptions. The exemptions are a method for landowners to use their properties where limited by the Highlands Act, but the exercise of these exemptions could result in further impacts to the Region's ecosystems and water supply areas. Therefore, the Regional Master Plan addresses the need to develop programs that attempt to avoid these impacts, such as preservation through the NJDEP Green Acres Program or the State Agricultural Development Committee Farmland Preservation Program, cluster type development, intra-local government transfers of development rights, and economic incentives.

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The NJDEP has the authority to grant waivers from its Highlands rules to mitigate landowners' reasonable land use expectations. Waivers are issued on a case-by-case basis where a project or activity is necessary to protect public health and safety; for redevelopment in previously developed areas as identified by the Highlands Council, or necessary to avoid a taking of property without just compensation.

FISCAL AND ECONOMIC VITALITY OF HIGHLANDS COMMUNITIES

The Regional Master Plan seeks to create an environment of fiscal solvency and economic sustainability for local communities. The State Legislature, through the Highlands Act, declared that the Highlands Region provides a desirable quality of life, and emphasized the importance of ensuring economic vitality in communities throughout the Region. Ideally, the Regional Master Plan will create opportunities for local communities to balance the cost of municipal services with available tax revenues. The Regional Master Plan, however, recognizes that the extraordinary quality of life of the Region will require substantial revenues to support the level of services which are commensurate with the character and quality of the Highlands communities.

The Regional Master Plan recognizes that implementation of the Highlands Act will affect the fiscal and economic well-being of local governments within the Region. In order to ensure a desirable fiscal environment, a variety of tools were established such as Property Tax Stabilization, Incentive Planning Aid, Regional Master Plan Compliance Aid, a Legal Shield, and other State Aid. The Regional Master Plan also includes a number of programs, some of which require additional funding resources. These programs, once implemented, will offer significant incentives for local governments within the Planning Area to conform to the Regional Master Plan.

Implementation of the Highlands Act and the Regional Master Plan will benefit water users who do not reside in the Region. It is estimated that Highlands Region water resources support 291 municipalities in the State, which represent 5.4 million people and nearly 3 million jobs. In addition, protection of resources in the Highlands Region will save the State an estimated $80 million annually in water treatment costs. It is appropriate that the cost burden of Regional Master Plan implementation be shared amongst all beneficiaries, through user fees or other programs identified in the Regional Master Plan.

Nathan McLean

The Highlands Region is characterized by relative wealth and economic strength. A steady growth in population and housing units has fueled overall economic growth. During the period between 1990 and 2004, the Region saw an increase of about 126,000 people, which was at a rate nearly 50 percent faster than the State as a whole according to the United States Census Bureau. Between 1990 and 2000, the Region added 33,441 housing units, an increase of 12.7 percent compared to the State's 7.6 percent. The median family income is more than one-third higher in the Highlands Region than in the State as a whole. In 2004, the New Jersey Department of Labor identified the annual unemployment rate as 3.7 percent for the Highlands Region, about a full percentage point below the rest of the State, indicative of strong labor demand.

Illustrative examples of the changing nature of community character are represented in the figures comparing land development patterns from 1930 to 2002 in Lake Hopatcong, Phillipsburg, Clinton Township (Round Valley Reservoir), and Dover provide telling stories of various Highlands landscapes (see Figures 2.2 through 2.9 respectively – *Lake Hopatcong 1930, Lake Hopatcong 2002, Phillipsburg Town 1930, Phillipsburg Town 2002, Round Valley 1930, Round Valley 2002, Dover Town 1930,* and *Dover Town 2002*).

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The Regional Master Plan contemplates a shift in perspective with regard to land and land use. The story of the modern settlement of America has been, to a large degree, a story of consumption where land was treated as a commodity. For many years, the Highlands Region, as a consequence of history and geography has avoided that tendency however, recent developments suggested a trend which ignores the historical patterns of growth and the necessity of sustainable planning to meet the obligations to future generations.

BALANCING PROTECTION OF NATURAL RESOURCES AND BUILT ENVIRONMENTS

In order to protect natural resources and the built environment, it is necessary to address conditions and circumstances which are currently problematic, like watersheds where existing water use exceeds sustainable supply, septic systems have failed, and new growth and development has occurred in ways not consistent with the protection of environmentally sensitive areas or local community character. In addition, there are existing land uses which impose adverse impacts on natural resources. The Regional Master Plan provides for incentive programs in the Preservation Area to encourage property owners and local communities to support remediation of existing problematic conditions. The Regional Master Plan contemplates that in many cases, problematic circumstances or conditions in areas which have been previously developed could be addressed through redevelopment incentives and the use of TDRs.

Another important focus of the Regional Master Plan is the implementation of water conservation measures to address existing water availability constraints in order to allow additional development and redevelopment in watersheds with existing deficits and constraints. The Regional Master Plan anticipates that water conservation measures will be a part of incentive programs for the use of TDRs or redevelopment in watersheds which have existing deficits or constraints.

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FIGURE 2.2: Lake Hopatcong 1930

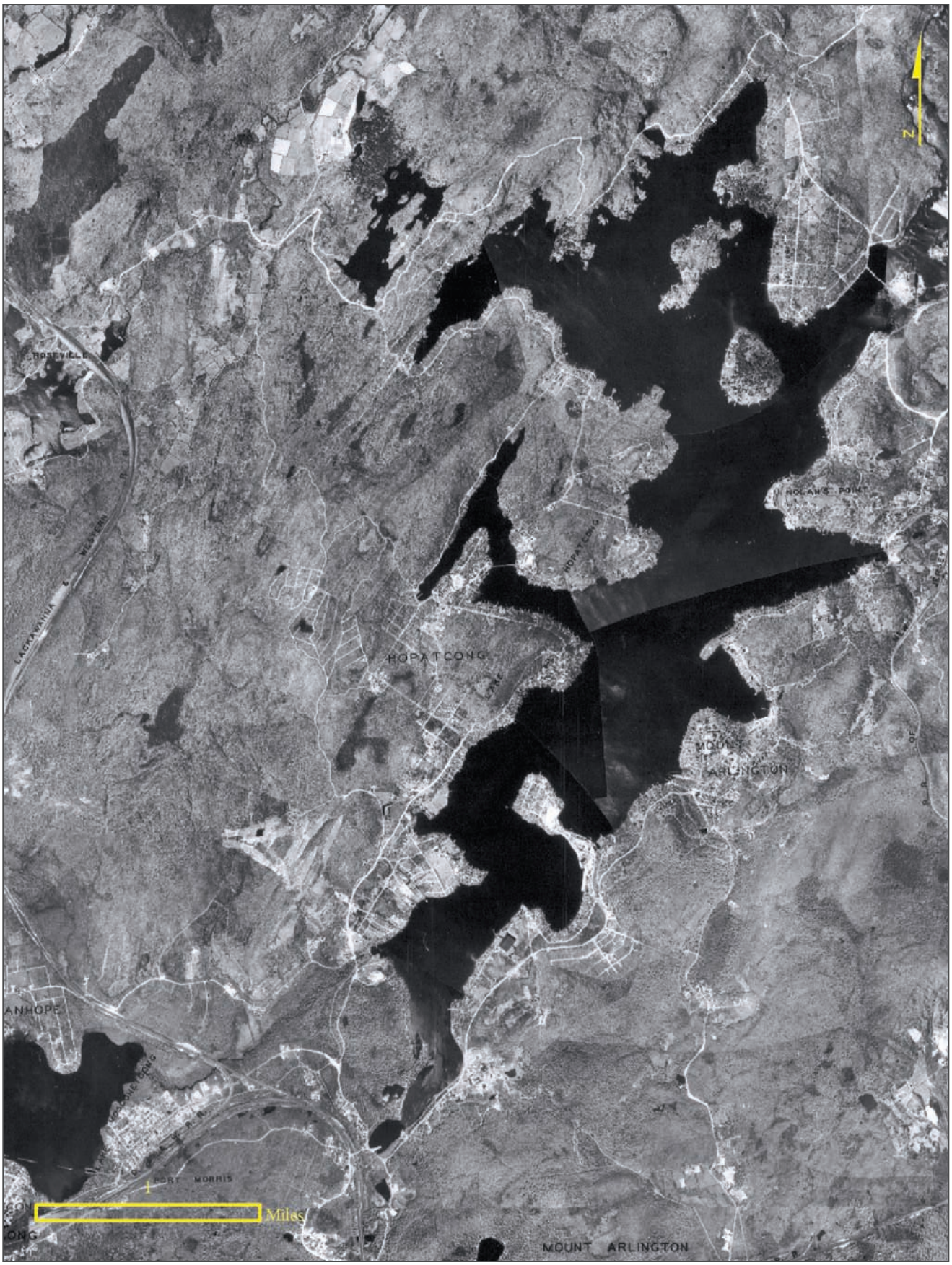

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FIGURE 2.3: Lake Hopatcong 2002

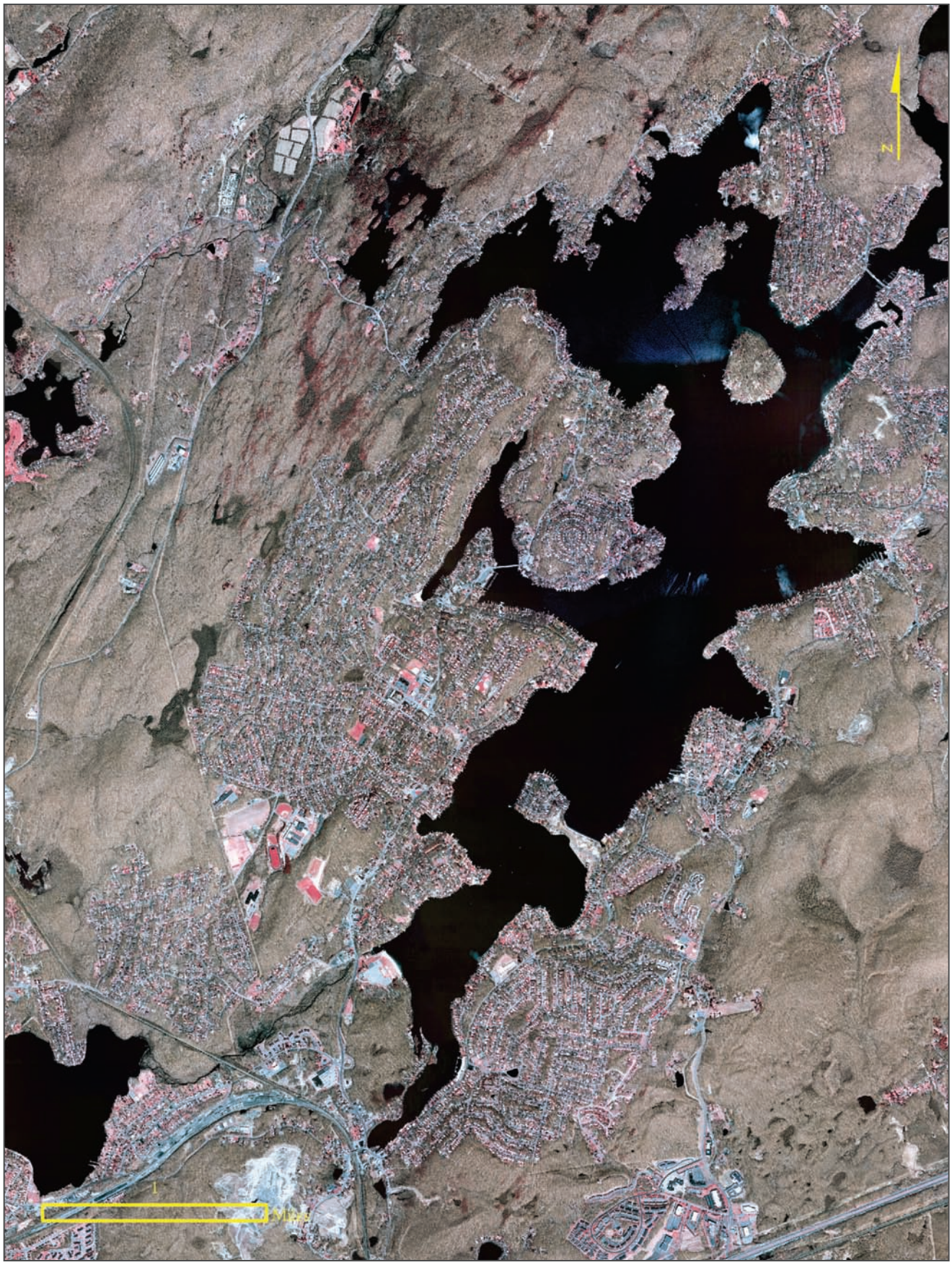

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FIGURE 2.4: Phillipsburg Town 1930

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FIGURE 2.5: Phillipsburg Town 2002

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FIGURE 2.6: Round Valley 1930

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FIGURE 2.7: Round Valley 2002

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FIGURE 2.8: Dover Town 1930

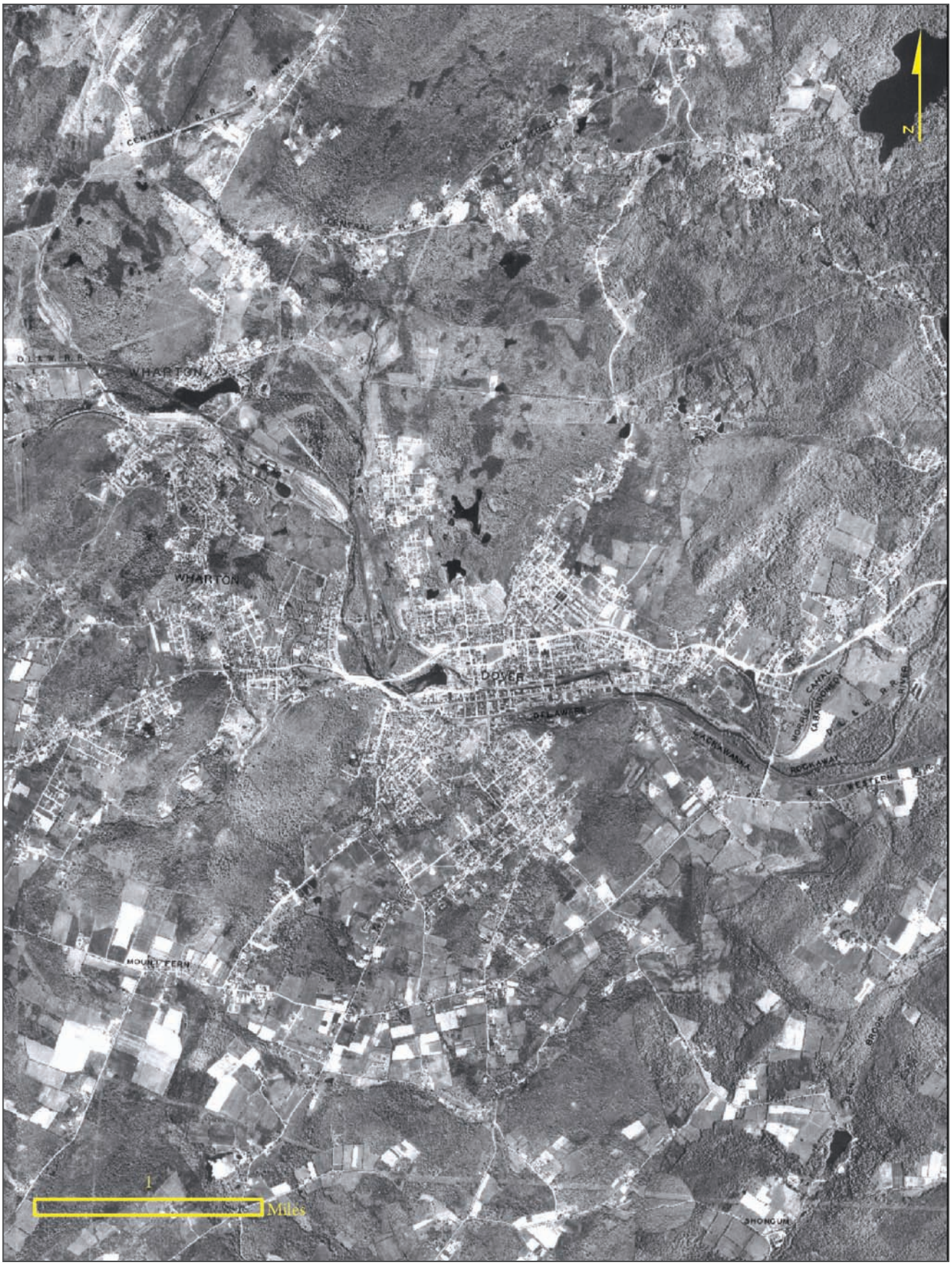

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FIGURE 2.9: Dover Town 2002

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NOTES:

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chapter 3

ANALYSIS OF THE HIGHLANDS REGION

- **PART 1**
  Natural Resources
- **PART 2**
  Water Resources
- **PART 3**
  Agricultural Resources
- **PART 4**
  Historic, Cultural, Archaeological, and Scenic Resources
- **PART 5**
  Transportation
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  Community Character
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notes:

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PART 1 Natural Resources

The New Jersey Highlands supports the greatest diversity of natural resources of any region of the State, with 70 percent of its lands classified as environmentally sensitive (Highlands Task Force Action Plan, March 2004). The biological diversity of the Highlands is comprised of an assemblage and linkages of diverse wetlands, streams and rivers, forests, wildlife habitats, and ridges and valleys. Active management, stewardship, and restoration on public and private lands are required to protect and enhance these critical resources.

The Regional Master Plan evaluates the effect of land development and other stresses on the natural and ecological resources of the Highlands Region, and establishes the overall strategies necessary to maintain and enhance their value. These resources include: a) Forest Resources; b) Highlands Open Waters and Riparian Areas; c) Steep Slopes; d) Critical Habitat; e) Land Preservation and Stewardship; f) Carbonate Rock (Karst) Topography; and g) Lakes, Ponds, and Reservoirs. These are each interrelated and interdependent systems presented in an integrated ecosystem protection and management framework. The purpose of the ecosystem management analysis is to highlight areas of the Highlands Region with exceptionally high ecological values that should be conserved, those with lesser value that may be restored, and those previously impaired by past human activity that may be appropriate to support growth.

For many of the Region's natural resources, the Highlands Council utilized a watershed-based assessment to evaluate resource integrity and protection needs. A watershed describes an area of land that drains down slope to the lowest point. Water moves through a network of drainage pathways, both underground and on the surface, and these pathways converge into streams and rivers, which become progressively larger (i.e., higher order) as the water moves downstream and the size of the contributing drainage area increases. The connectivity of the stream system is the primary reason for doing assessments at the watershed level. Because water moves downstream, any activity that affects the water quality, quantity, or rate of movement at one location can affect locations downstream. The watershed boundaries used for the analysis in the Regional Master Plan were 14-digit Hydrologic Units (i.e., subwatersheds or HUC14s). There are 183 HUC14 subwatersheds that are located partially or entirely within the Highlands Region (see Figure 3.1 *Watersheds and Subwatersheds*).

SUBPART A FOREST RESOURCES

The Highlands Region contains some of the most important forests in the state. These forests are vitally important to every element of the Region, including the natural and the built environment. Forests provide essential ecosystem functions, including surface water filtration, which is important to protecting essential drinking water supplies for the Highlands Region and for the State as a whole. Forests serve as habitat for plants and animals and are critically important to the maintenance of biodiversity in one of the most populous states in the nation. In addition, when managed for sustainable use, forests can be a source of renewable wood products. Forests are a defining visible and functional feature of the Highlands and constitute the majority of Critical Habitat in the Region.

Nathan McLean

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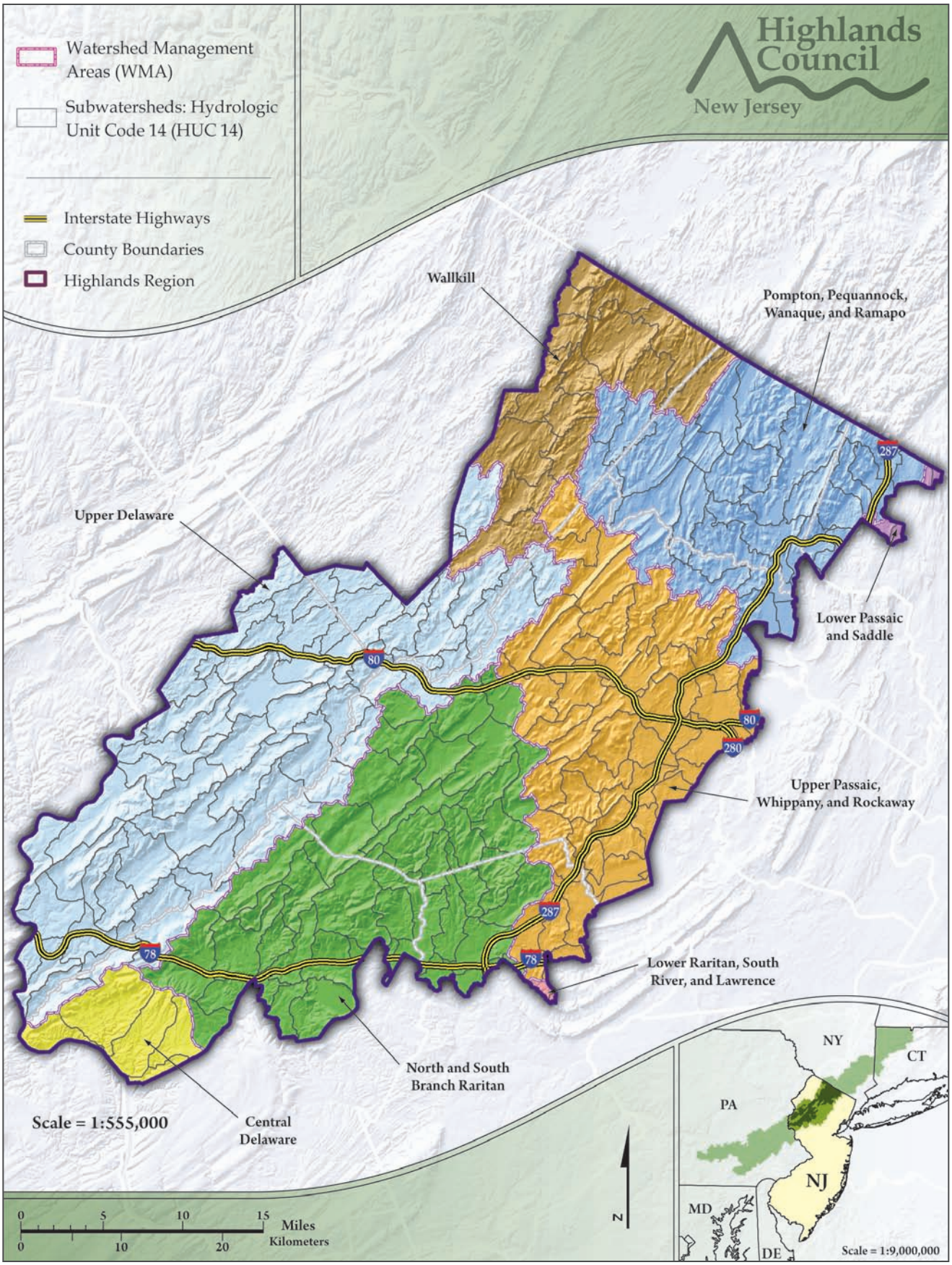
FIGURE 3.1: Watersheds and Subwatersheds



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Protecting the integrity of Highlands Region forests is dependent on the maintenance of large contiguous forested areas and healthy forest stands. Large contiguous forest tracts have a higher degree of interior, or core, forest. Interior, or core, forest provides important ecological values. Core forest habitat is defined as a forest located more than 300 feet from altered land or a road. Approximately 44 percent of the total Highlands forest area is core forest habitat. It is important to note, however, that even these large contiguous areas may consist of many smaller parcels under individual ownership. In 2002, the average size of woodland under a single ownership was 10 to 20 acres. This presents a significant challenge in efforts to manage forest to sustain ecological and water quality benefits. Land use change within the Highlands Region has resulted in forest loss and reduction in important forest ecosystem functions and societal benefits. As forests are fragmented into smaller patches, the integrity of the remaining forest is more vulnerable to human-induced change.

Forest fragmentation results in the separation of forest tracts from each other and from larger blocks of forest. Many species are especially vulnerable to the reduction in habitat area caused by forest fragmentation, and they may disappear entirely from forest patches because food or other resources are inadequate to support them. The reduction in species diversity within a forest can profoundly affect the ecosystem viability of the remaining forest. Fragmentation also reduces the movement of species that are reluctant or unable to cross non-forest areas and for those that depend on such species for dispersal. Reduced movement and dispersal increases the chance of local extinction of individual species. Even with the extensive forest areas contained within the Highlands Region, increased fragmentation of forest tracts is occurring due to land use changes. This fragmentation results in quantifiable landscape level changes to forests which include increased edge, reduced forest interior, increased number of patches, forest patch isolation, and reduced habitat area. In order to control further degradation of the Highlands forest ecosystem, effective forest protection mechanisms and sustainable management policies are essential.

Sustainable forestry also becomes more difficult as woodlot sizes decrease, particularly with increased suburbanization occurring around larger properties. Deer overabundance and introduction of non-native pest species are of significant threat to the Region's forest. An overabundance of white tailed deer, in particular, is detrimental to forest health and regeneration due to over-browsing. Sustainable forest management on a regional basis, rather than a piecemeal approach for individual parcels, is crucial for the future integrity of Highlands forests.

In furtherance of the requirements and goals of the Highlands Act, and in order to determine the amount and type of human development and activity which the ecosystem of the Highlands Region can sustain while maintaining the overall ecological values of contiguous forests and woodlands, the Regional Master Plan focuses on the following areas of action to address the need to protect forest resources and promote sustainable management practices within Highlands forests:

- Identify forest resources in need of protection;
- Develop resource protection measures;
- Develop measurable criteria and indicators to better assess the health and sustainability of Highlands forest resources; and
- Integrate protection, restoration, mitigation, and enhancement of forest resources into forest management and stewardship policies and plans.

The Highlands Council assessed the ecological integrity of forests through the examination of landscape level characteristics at the forest patch level and the subwatershed level, utilizing measures of forest fragmentation, to identify where regionally significant forests are located in the Highlands Region. These are the forests that are most suited to support ecological processes. The result of this assessment is the spatial delineation of the Forest Resource Area within the Highlands Region (see Figure 3.2 *Forest Resource Area*). The Forest Resource Area includes high ecological value forest areas, including those forested areas that exhibit the least fragmentation and are vital for the maintenance of ecological processes. The Highlands Council spatially delineated the Forest Resource Area by including those forested areas that express one or more of the following indicators: a contiguous forest patch of equal to or greater than 500 acres in size; an area consisting of greater than 250 acres of core forest area greater than 300 feet from an altered edge, or areas

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FIGURE 3.2: Forest Resource Area

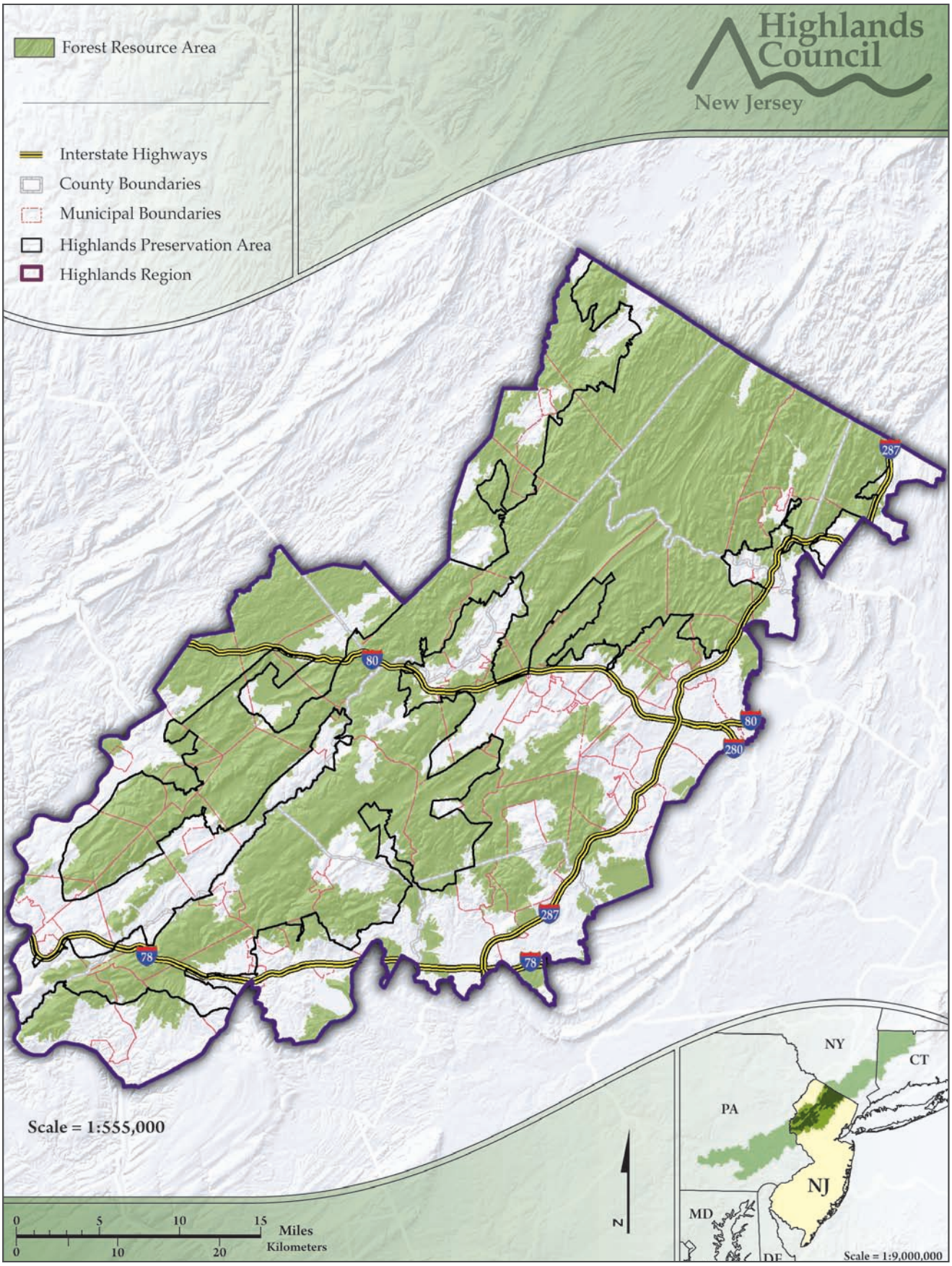

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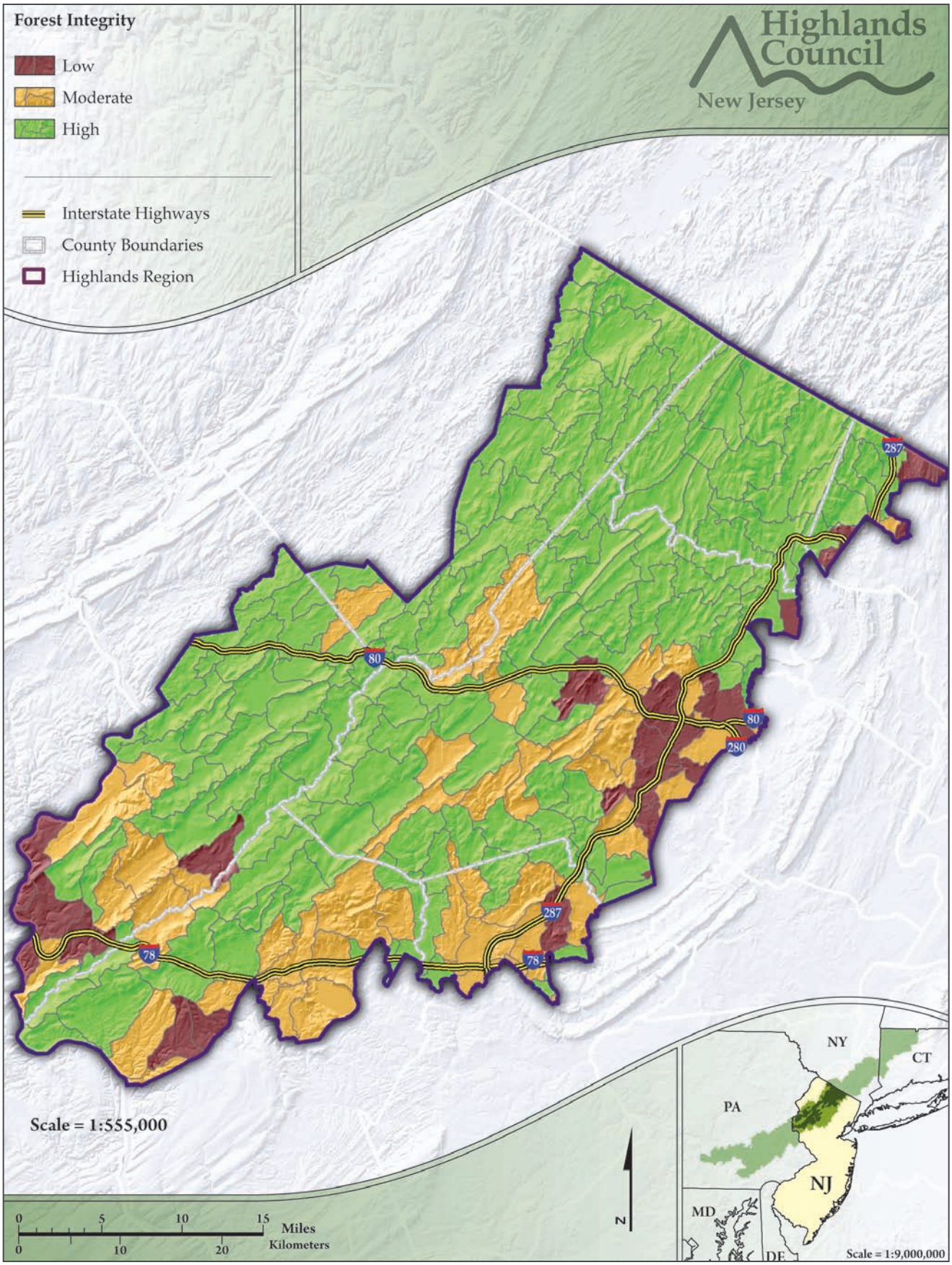
FIGURE 3.3: Forest Integrity Indicators by HUC14



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that include greater than 45 percent of mean total forest cover and mean distance to the nearest patch (HUC14 subwatershed only).

In addition, the Highlands Council assessed forest cover integrity in the Highlands Region at the subwatershed level. Forests are essential for the protection of water quality and quantity. To assess forest cover integrity at a subwatershed level, the Highlands Council assigned a value class to each of the 183 HUC14 subwatersheds in the Highlands Region based on the following classes for the Highlands subwatersheds:

- **High Integrity Forest Subwatershed** – A subwatershed that is predominantly forested, including a high proportion of forest cover consisting of high core area, large patch size, and a low distance to nearest patch;
- **Moderate Integrity Forest Subwatershed** – A subwatershed that is predominantly forested, but does not exhibit a high proportion of forest cover, core area or patch size and an increase in distance to nearest patch; and
- **Low Integrity Forest Subwatershed** – A subwatershed that is predominantly non-forested or includes low values for proportion of forest cover and patch size, or a high distance to nearest patch.

Each subwatershed within the Highlands Region was evaluated using these indicators of forest watershed integrity to identify forested subwatersheds that provide important water quality benefits (see Figure 3.3 *Forest Integrity Indicators by HUC14*). The Forest Resource Area and the Forest Integrity Indicators will be used in the Regional Master Plan to achieve the protection of forest areas in the Highlands Region.

The technical basis and additional background information on the forest area protection requirements can be found in the Highlands Council's *Ecosystem Management Technical Report*.

SUBPART B HIGHLANDS OPEN WATERS AND RIPARIAN AREAS

The protection, enhancement, and restoration of water resources is a fundamental goal of the Highlands Act. A primary mechanism to meet this goal is the assessment of surface water bodies, known as Highlands Open Waters, and lands adjacent to these waters, known as Riparian Areas. Highlands Open Waters are a critical public trust resource and an essential source of drinking water for the State. These surface waters and the associated Riparian Areas provide protection against floods and help to ameliorate the effects of prolonged droughts. They are also important habitat for numerous plant and animal species, including many rare, threatened, or endangered species in the State. Highlands Open Waters and Riparian Areas provide a wealth of agricultural, recreational, and aesthetic uses for both residents and visitors alike, helping to contribute to a vibrant regional economy.

Highlands Open Waters include all springs, wetlands, intermittent or ephemeral streams, perennial streams, and bodies of surface water, whether natural or artificial, located wholly or partially within the boundaries of the Highlands Region. Riparian Areas are areas adjacent to, and hydrologically interconnected with, rivers and streams. They are areas that exhibit periodic inundation or saturation of soils, are subject to periodic flooding, and include wildlife corridors within 300 feet of a surface water feature. Riparian Areas serve as an interface between surface water bodies and terrestrial ecosystems and play a critical role in maintaining the quality and ecological integrity of Highlands Open Waters. Since Riparian Areas are directly related to the protection requirements of Highlands Open Waters, these two resources are presented together in the Regional Master Plan.

The Highlands Region contains an extensive network of surface waters and associated riparian lands. The Highlands Council completed an inventory of the Highlands Open Waters within the Highlands Region (see Figure 3.4 *Highlands Open Waters*). The total stream length mapped in the Highlands is 3,605 miles and the extent of mapped streams and lakes acreage is 32,213 acres. The total for mapped wetlands in the Highlands Region is 90,091 acres. The mapped Riparian Area (see Figure 3.5 *Riparian Area*) is over two-fifths of the Highlands Region, emphasizing the importance of water related resources to the area.

1. EVALUATION OF WATERSHED VALUE

The Highlands Council utilized a watershed-based assessment to evaluate the integrity and protection

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FIGURE 3.4: Highlands Open Waters

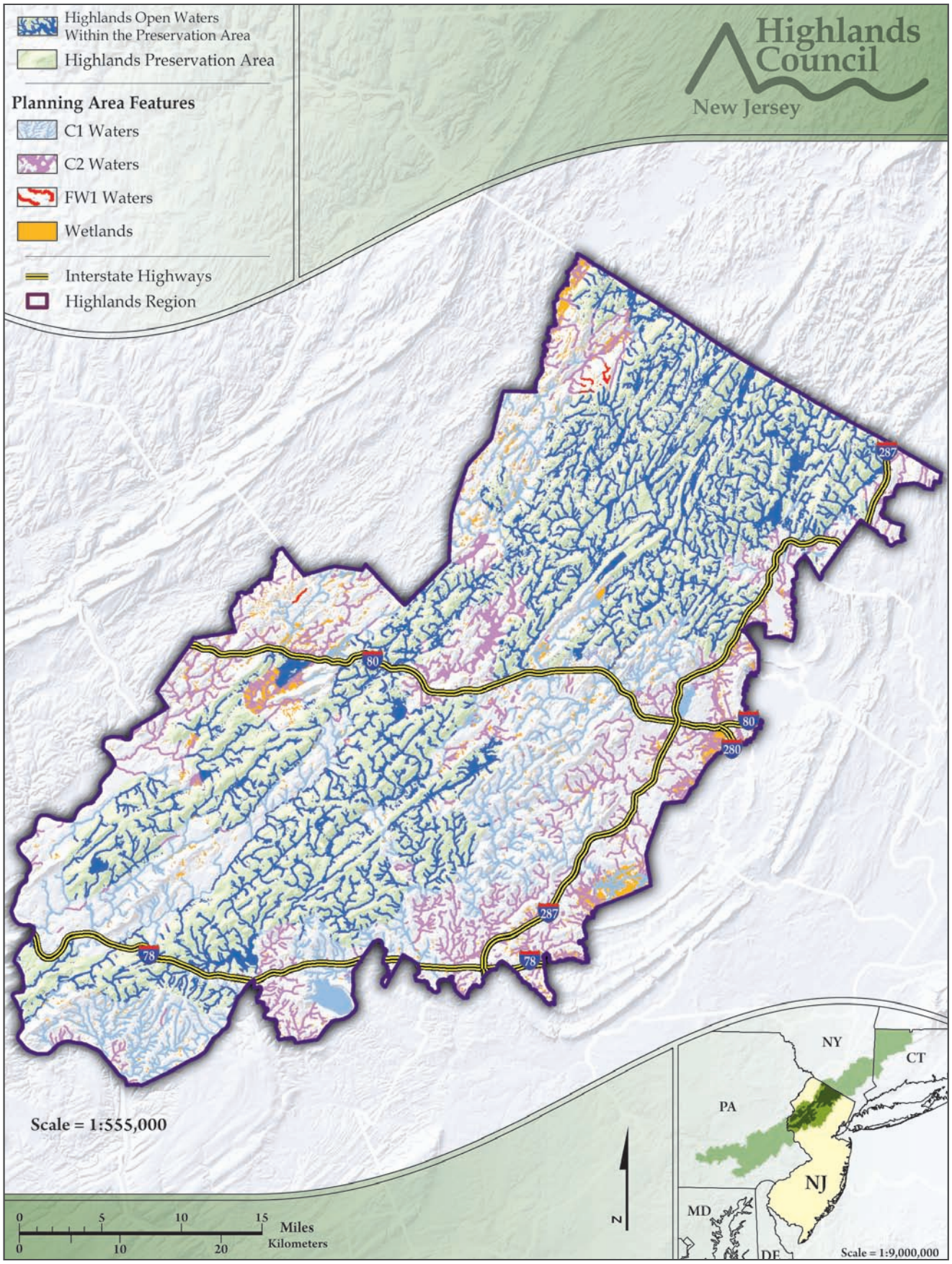

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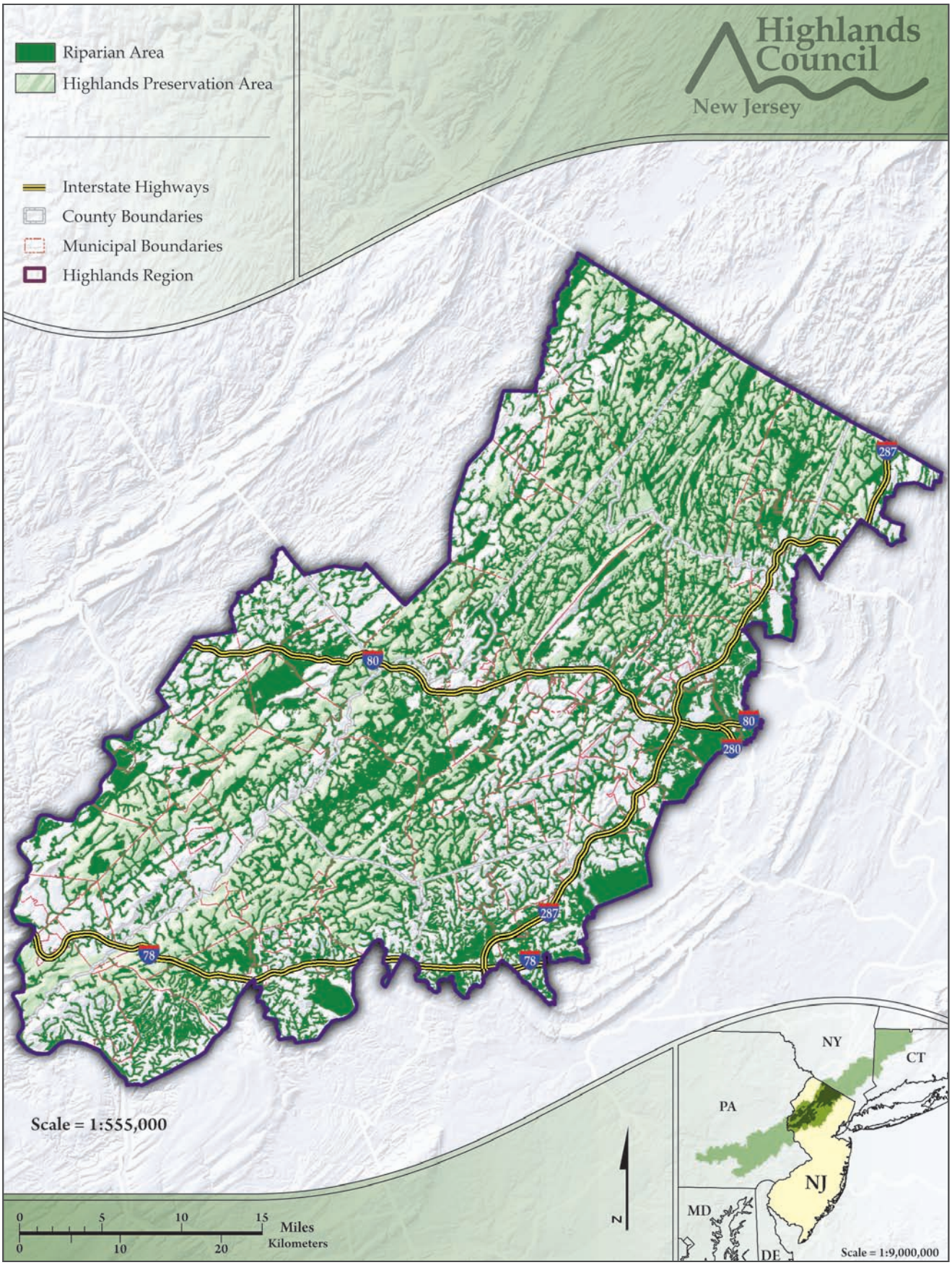
FIGURE 3.5: Riparian Area



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needs of Highlands Open Waters at the HUC14 subwatershed level. Watersheds are gaining increasing acceptance as the most appropriate geographic unit for managing water resources (Schueler 1995). The condition of a watershed greatly influences the functions and integrity of its streams. Land use disturbances in watersheds can have a significant negative impact on stream water chemistry and aquatic biota (Tiner 2004). Watershed-based planning and zoning begins with the notion that the level of impairment of a watershed (e.g., the percent developed lands versus undeveloped forested lands) largely determines the quality of streams and therefore, the attainability of stream protection goals. This, in turn, strongly influences the nature of the stream protection strategy for a given watershed (e.g., the selection of land use standards, stream corridor management plans, implementation of best management practices, and instituting land acquisition or other protection strategies) (Schueler, 1995). Peer-reviewed scientific literature was reviewed to identify sound and defensible indicators of watershed condition (FitzHugh 2001; Tiner 2004; Snyder, et. al. 2005). Forest, in particular, is an important indicator of watershed condition due to its strong association with water quality and as an indicator of the extent of alteration of a watershed due to past human activity. The watershed indicators that were selected to evaluate each of the HUC14 subwatersheds of the Highlands Region are as follows:

- **Percent Developed Lands –** The percentage of the subwatershed that is developed, with developed lands defined as lands that have been altered for residential, industrial or commercial uses;
- **Habitat Quality –** The percentage of the sub-watershed that contains habitat for species of concern including rare, threatened, or endangered species;
- **Percent Total Forest –** The percentage of the subwatershed that is forested, with forested defined as all mature and successional upland and wetland forested communities (excluding old fields);
- **Percent Core Forest –** The percentage of the subwatershed that contains forest areas greater than 300 feet in distance from an altered edge (e.g., disturbed land); and
- **Proportion of Total Forest –** The percentage of the subwatershed that contains forest within a fixed search radius (three kilometers).

The Highlands Council assigned a watershed value class to each HUC14 subwatershed in the Highlands Region based on a cumulative assessment of all the watershed indicators. The Council created the following watershed value classes for the Highlands subwatersheds:

- **High Resource Value Watershed –** A high resource value watershed contains predominantly forest lands and includes a significant portion of the watershed that is high quality habitat. A high value watershed typically consists of limited pre-existing developed land within the watershed;
- **Moderate Resource Value Watershed –** A moderate resource value watershed contains forest lands and some habitat suitable for rare, threatened, or endangered species, but typically also contains developed lands; and
- **Low Resource Value Watershed –** A low resource value watershed contains a low proportion of forest lands, a low proportion of habitat suitable for rare, threatened, or endangered species, and typically consists of higher levels of developed lands.

The Highlands Council analyzed the relative resource value for each of the 183 subwatersheds (see Figure 3.6 *Watershed Values by HUC14*) and determined that the total acreage of High Resource Value Watersheds is nearly 70 percent of the Highlands Region. The total acreage of Moderate Resource Value Watersheds and Low Resource Value Watersheds are each roughly 15 percent of the Highlands Region.

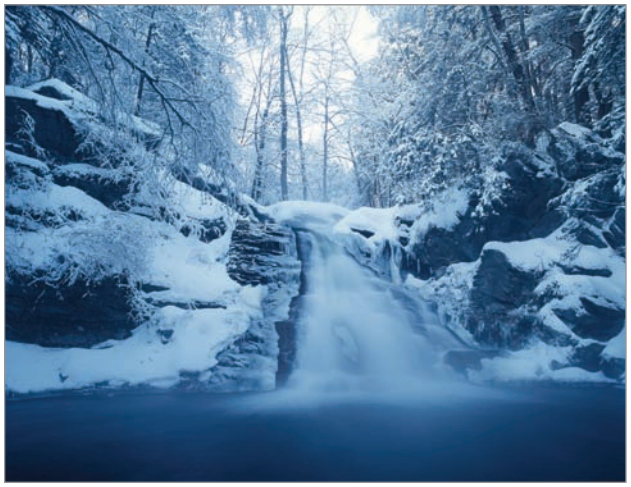

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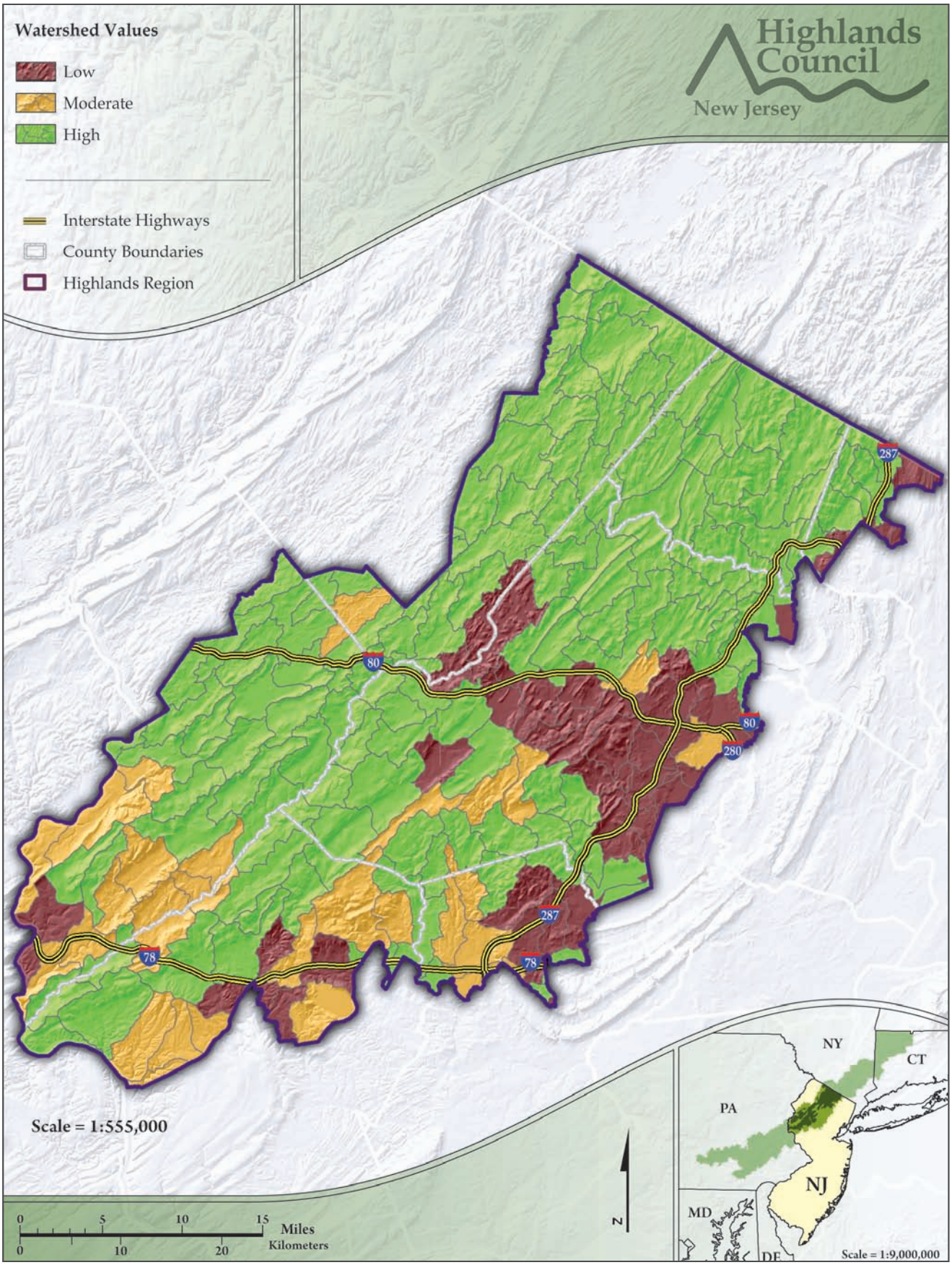
FIGURE 3.6: Watershed Values by HUC14



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2. EVALUATION OF RIPARIAN AREA INTEGRITY

The integrity of Riparian Areas may be defined by that area's ability to provide water protection and ecological function, including nutrient and sediment filtration, stream bank stabilization, wildlife migration corridors and habitat, stormwater and flood water storage, and stream water quality protection (NJWSA 2000). Characterizing Riparian Area integrity entailed the examination of existing land use conditions within Riparian Areas, or those lands that are proximate to a surface water feature. The evaluation of Riparian Area integrity was expressed at the HUC14 subwatershed level.

The Highlands Council utilized peer-reviewed scientific literature to identify indicators of Riparian Area integrity (Castelle et.al., 1994; NRCS 2006; Phillips 1989; and Wegner 1999) and selected the following integrity indicators to evaluate each of the 183 subwatersheds:

- **Impervious Coverage** – The percentage of the Riparian Area that includes impervious surfaces;
- **Agriculture Land Use** – The percentage of the Riparian Area that is in agricultural use;
- **Number of Road Crossings per Linear Stream Mile** – The number of road crossings per linear stream mile;
- **Vegetation Condition** – The percentage of the Riparian Area that features urban and agricultural lands (as a means to determine the percent of natural vegetation); and
- **Water/Wetland Dependent Species Habitat** – The amount of habitat suitable for one or more water/wetland dependent wildlife species of concern including rare, threatened, or endangered species.

Thereafter, the Council assigned a Riparian Area integrity value class to each subwatershed (see Figure 3.7 *Riparian Integrity by HUC14*) based on a cumulative assessment of all the indicators as follows:

- **High Integrity Riparian Area** – These areas include subwatersheds with Riparian Areas that exhibit predominantly natural vegetation, including high quality habitat for water/wetland dependent species, and a generally low incidence of impervious area, agricultural uses, and/or road crossings;
- **Moderate Integrity Riparian Area** – These areas include subwatersheds with Riparian Areas that contain a higher incidence of impervious area, agricultural uses, and road crossings, and a reduced proportion of natural vegetation, including high quality habitat for water/wetland dependent species; and
- **Low Integrity Riparian Area** – These areas include subwatersheds with Riparian Areas that contain a high proportion of impervious area, agricultural uses, and road crossings, and minimal natural vegetation, including high quality habitat for water/wetland dependent species.

The Highlands Council determined that the total acreage of subwatersheds in High Resource Value Riparian Areas includes half of the Highlands Region. The total acreage of subwatersheds in Moderate Resource Value Riparian Areas includes nearly two-fifths of the Region and in Low Resource Value Riparian Areas include slightly more than 10 percent of the Highlands Region.

Nathan McLean

The classification of subwatersheds with respect to Riparian Area integrity has been utilized by the Highlands Council to determine the zones of the Land Use Capability Zone Map and will also be used to evaluate site specific project review at the site plan level. A detailed description of Highlands Open Waters and Riparian Area integrity and analysis is included in the Highlands Council's *Ecosystem Management Technical Report*.

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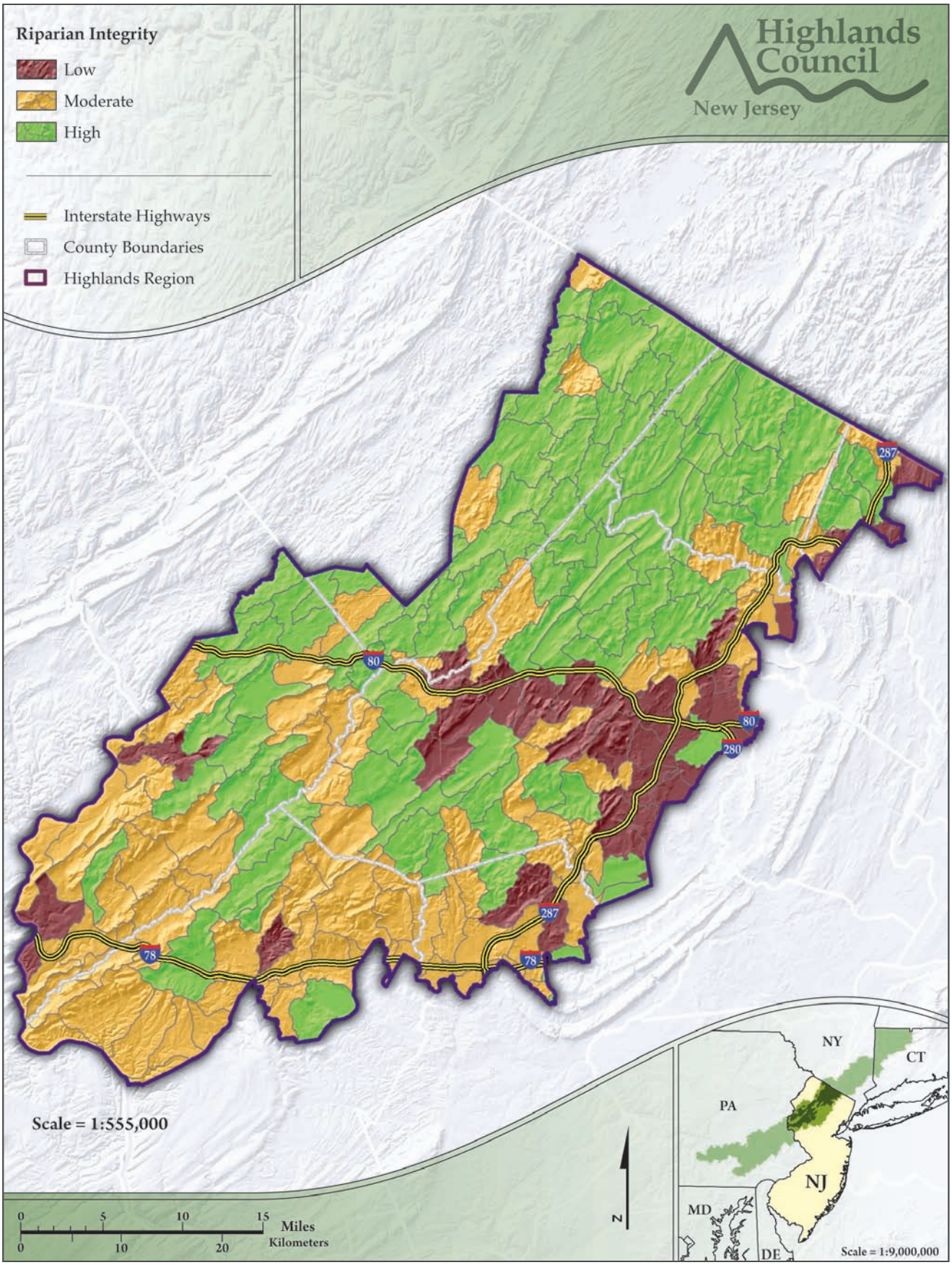
FIGURE 3.7: Riparian Integrity by HUC14



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SUBPART C STEEP SLOPES

Slope is a measurement of the steepness of terrain and is defined as the vertical change in elevation over a given horizontal distance. Disturbance of areas containing steep slopes can trigger erosion and sedimentation, resulting in the loss of topsoil. It can also result in the disturbance of habitats, degradation of surface water quality, silting of wetlands, and alteration of drainage patterns. These processes, when severe, can also result in land slumping and landslides that can damage both developed property and ecosystems. The identification and classification of steep slopes is important in order to effectively manage critical natural resources in the Highlands Region.

Nathan McLean

In order to address the requirements and goals of the Highlands Act, the Highlands Council conducted an analysis by classifying and mapping steep slopes within the Highlands Region to identify areas that are significantly constrained by steep slopes and to ensure that the level of protection for these areas is appropriate. The establishment of steep slope protection requirements is intended not to simply protect steep slope resources, but to ensure the protection of the natural, scenic, and other resources of the Highlands Region.

The Highlands Council spatially examined slopes in the Highlands Region using the 10-meter Digital Elevation Grids generated from the United States Geological Survey's (USGS) Digital Elevation Model. The Digital Elevation Model includes digital records of terrain elevations for ground positions at regularly spaced horizontal intervals, which are derived from USGS quadrangle maps. The Council examined areas of slope in the Highlands Region that encompassed a minimum of 5,000 square feet and that exhibited one of the following grade classifications and these grades were established as steep slope protection areas:

- Grades of slopes of 20 percent or greater;
- Grades of slope between 15 percent and 20 percent; and
- Grades of slope between 10 percent and 15 percent that occur within the Riparian Area.

For slopes that exhibited grades between 10 percent and 15 percent, the Highlands Council differentiated between those within and outside Riparian Areas. Alteration of slopes of 10 percent or greater within a Riparian Area have a greater potential of impacting adjacent water bodies through soil erosion (thereby causing degradation of surface water quality, silting of wetlands, and alteration of drainage patterns). Thus, in order to meet the protection needs of Highlands Open Waters, slopes with a grade of 10 percent or greater in the Riparian Area were identified and mapped as steep slope protection areas. Each of the steep slope protection classifications are shown on Figure 3.8 *Steep Slope Protection Area*.

The Highlands Council recognized the need for more refined information on steep slopes in the Highlands Region and is in the process of developing accurate slope data using laser technology. Aerial flyovers of the entire Highlands Region, using Light Detection and Ranging (LiDAR) technology, occurred in late 2006 to prepare an updated and accurate digital model of the Region. The result will be a highly accurate Digital Elevation Model that will provide two-foot contour interval mapping of the entire Highlands Region. This model will be a valuable tool to assist municipalities and counties during site plan review and will provide important information for further development of the Regional Master Plan.

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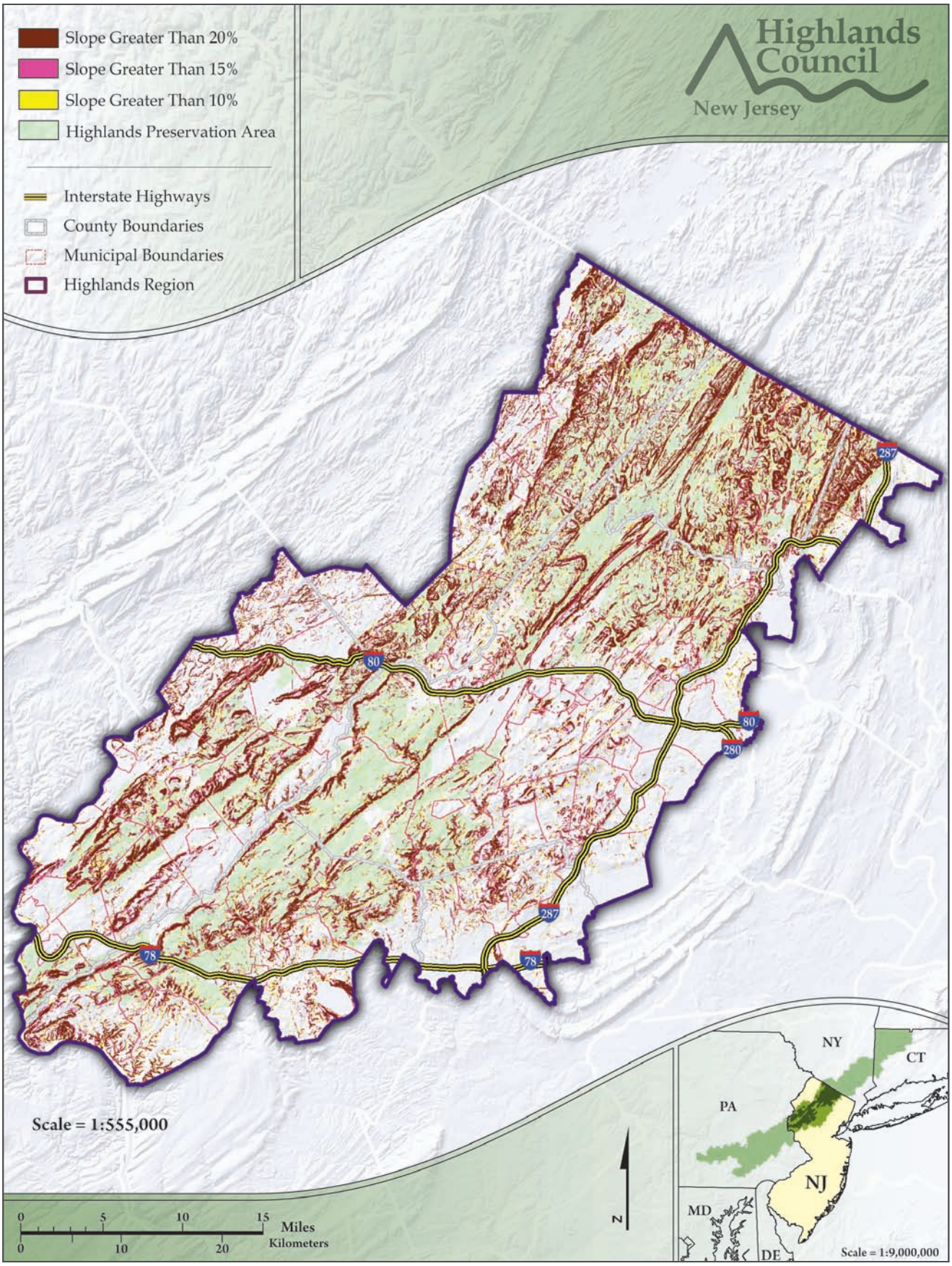
FIGURE 3.8: Steep Slope Protection Area



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The technical basis and additional background information on steep slope protection can be found in the Highlands Council's *Ecosystem Management Technical Report*.

SUBPART D CRITICAL HABITAT

Biodiversity is the variety of plant species, animal species, and all other organisms found in a particular environment and is a critical indicator of ecological integrity. The protection of habitats that are critical to maintaining biodiversity contributes to the protection of rare, threatened, and endangered plant and animal species of the Highlands Region. There are three categories of Critical Habitat in the Highlands Region:

- Critical Wildlife Habitat (habitat for rare, threatened or endangered species);
- Significant Natural Areas (regionally significant ecological communities, including habitat for documented threatened and endangered plant species); and
- Vernal Pools (confined, ephemeral wet depressions that support distinctive, and often endangered, species that are specially adapted to periodic extremes in water pool levels).

Mick Valent

Critical Wildlife Habitat and Significant Natural Areas are designated based on the presence of, and associated habitat required for the survival and propagation of, the species of concern. Vernal pools are certified by the New Jersey Department of Environmental Protection (NJDEP), and to protect and promote the biodiversity of vernal pools the Highlands Council has determined that a terrestrial habitat protection buffer of 1,000 feet around vernal pools will generally address the habitat requirements of vernal pool-breeding wildlife.

In furtherance of the requirements and goals of the Highlands Act, the Regional Master Plan seeks to protect the natural resources of the Highlands Region, including the protection needs of the Region's Critical Habitat. The Highlands Regional Master Plan focuses on three areas of action to address the need to protect Critical Habitat areas:

- Identify Critical Habitat areas;
- Develop resource protection measures; and
- Establish guidance for municipal officials and landowners pertaining to Critical Habitat conservation and management.

Critical Habitat was utilized to determine the zones of the Land Use Capability Map and will also be used to evaluate site specific project review at the site plan level. The technical basis and additional background information on Critical Habitat protection requirements can be found in the Highlands Council's *Ecosystem Management Technical Report*.

1. CRITICAL WILDLIFE HABITAT

The Highlands Council utilized the NJDEP's Endangered and Nongame Species Program Landscape Project data to identify potential habitats for rare, threatened, and endangered species wildlife within the Highlands Region. An updated Landscape Project (Version 3) was developed for the Highlands Region to identify habitat ranked by documented occurrences of rare, threatened, or endangered species as follows:

- **Landscape Rank 5 –** Habitat supporting a federally listed threatened or endangered species;
- **Landscape Rank 4 –** Habitat supporting a species designated as State Endangered;
- **Landscape Rank 3 –** Habitat supporting a species designated as State Threatened;
- **Landscape Rank 2 –** Habitat supporting a species designated as Special Concern; and

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- **Landscape Rank 1** – Habitat that meets minimum species habitat suitability needs but does not support a documented occurrence of a special concern, threatened, or endangered species.

A Highlands Conservation Rank index was also assigned to each species occurrence based upon how critical the Highlands Region is to the continued existence of the species within the state. Following are the Highlands Conservation Ranks that were used:

- **Critically Significant (Rank 3)** – If habitats in the Highlands Region were lost, that species would not exist in the State;
- **Significant (Rank 2)** – Highlands Region habitats play a significant role for that species' existence in the State; and
- **Low Significance (Rank 1)** – Highlands Region habitats do not play an important role for that species' existence in the State.

The Highlands Council delineated Critical Wildlife Habitat by utilizing Landscape Project Version 3 to identify areas of habitat for rare, threatened, and endangered species habitat (Landscape Rank 2 through 5 in the Preservation Area; Landscape Rank 2 through 5 and Highlands Rank of Critically Significant or Significant in the Planning Area). The Highlands Council identified approximately 522,000 acres or 61 percent of the Region as potential habitat for rare, threatened, or endangered species.

Mick Valent

The habitat for rare, threatened, or endangered species in the Highlands Region are shown in Figure 3.9 *Critical Wildlife Habitat*.

2. SIGNIFICANT NATURAL AREAS

Significant Natural Areas represent the presence of rare or endangered plant species or exemplary ecological communities. These sites include some of the best remaining habitat for rare plant species and regionally-significant ecological communities within the Highlands Region. The destruction or degradation of these sites could result in the loss of unique components of our natural heritage. The Highlands Council worked in cooperation with the NJDEP Natural Heritage Program to identify Natural Heritage Priority Sites that are appropriate for inclusion as Significant Natural Areas within the Highlands Region.

The Natural Heritage Program's Natural Heritage Priority Sites identify critically important areas for conservation of New Jersey's biological diversity, with particular emphasis on rare plant species and ecological communities. The Highlands Council used 95 Natural Heritage Priority Sites to serve as the basis for the Region's Significant Natural Areas. Significant Natural Areas will also include unique or regionally significant ecological communities and other significant natural sites or features. The locations of Significant Natural Areas in the Highlands Region are shown in Figure 3.10 *Significant Natural Areas*.

3. VERNAL POOLS

Vernal pools are unique ecosystems that

- Provide critical breeding habitat for a variety of amphibian and invertebrate species;
- Contribute significantly to local biodiversity by supporting plants, animals and invertebrates that would otherwise not occur in the landscape; and
- Contribute significant amounts of food to adjacent habitats.

Vernal pools periodically either dry out completely or draw down to very shallow levels unsuitable for sustaining fish. Fish are highly predatory on amphibian and invertebrate eggs and larvae, and several species of salamanders and frogs depend upon fish-free vernal habitats for their survival. The protection of vernal pools and adjacent habitat is important for maintaining ecological integrity and providing amphibian and

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FIGURE 3.9: Critical Wildlife Habitat

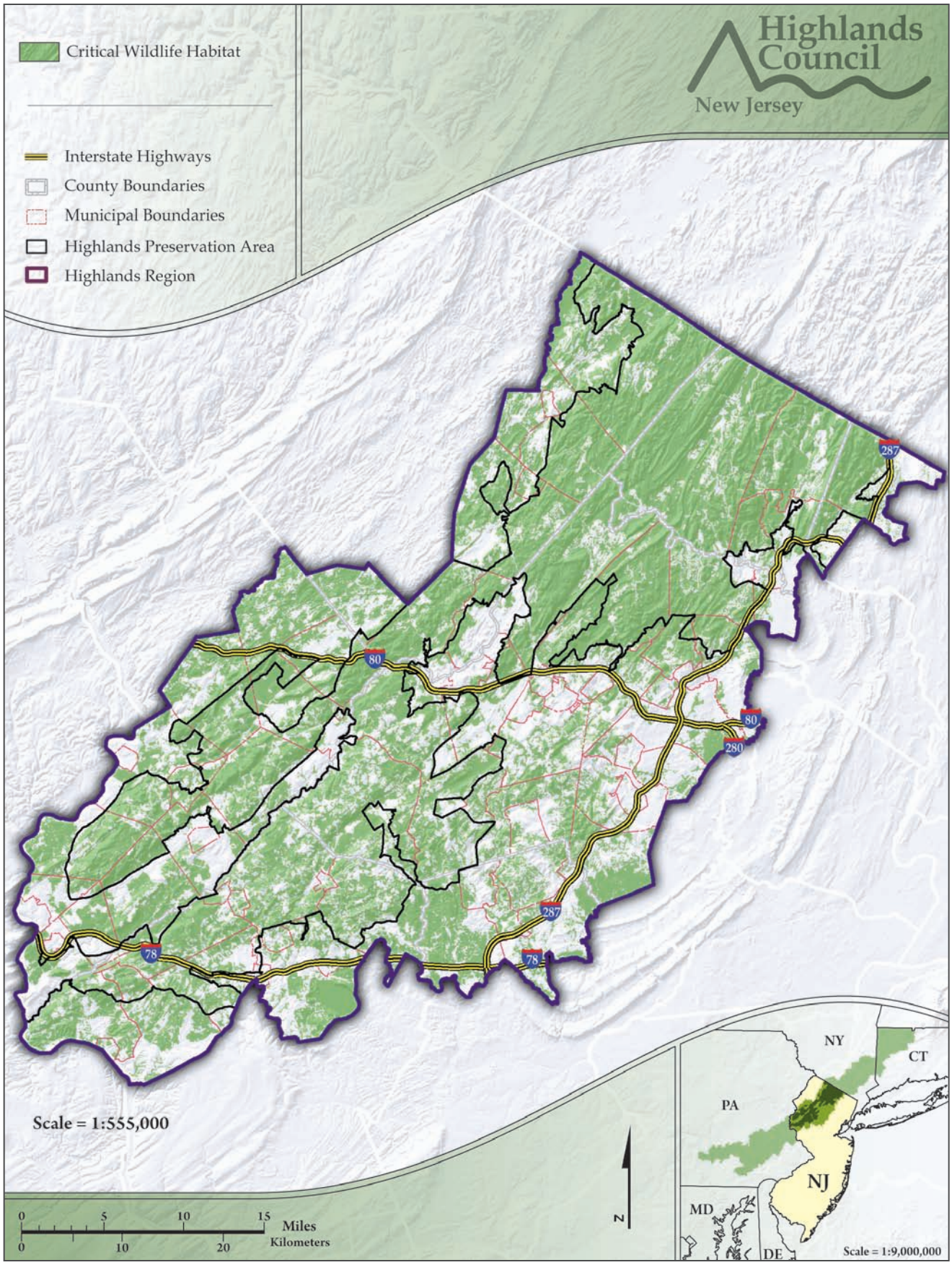

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FIGURE 3.10: Significant Natural Areas

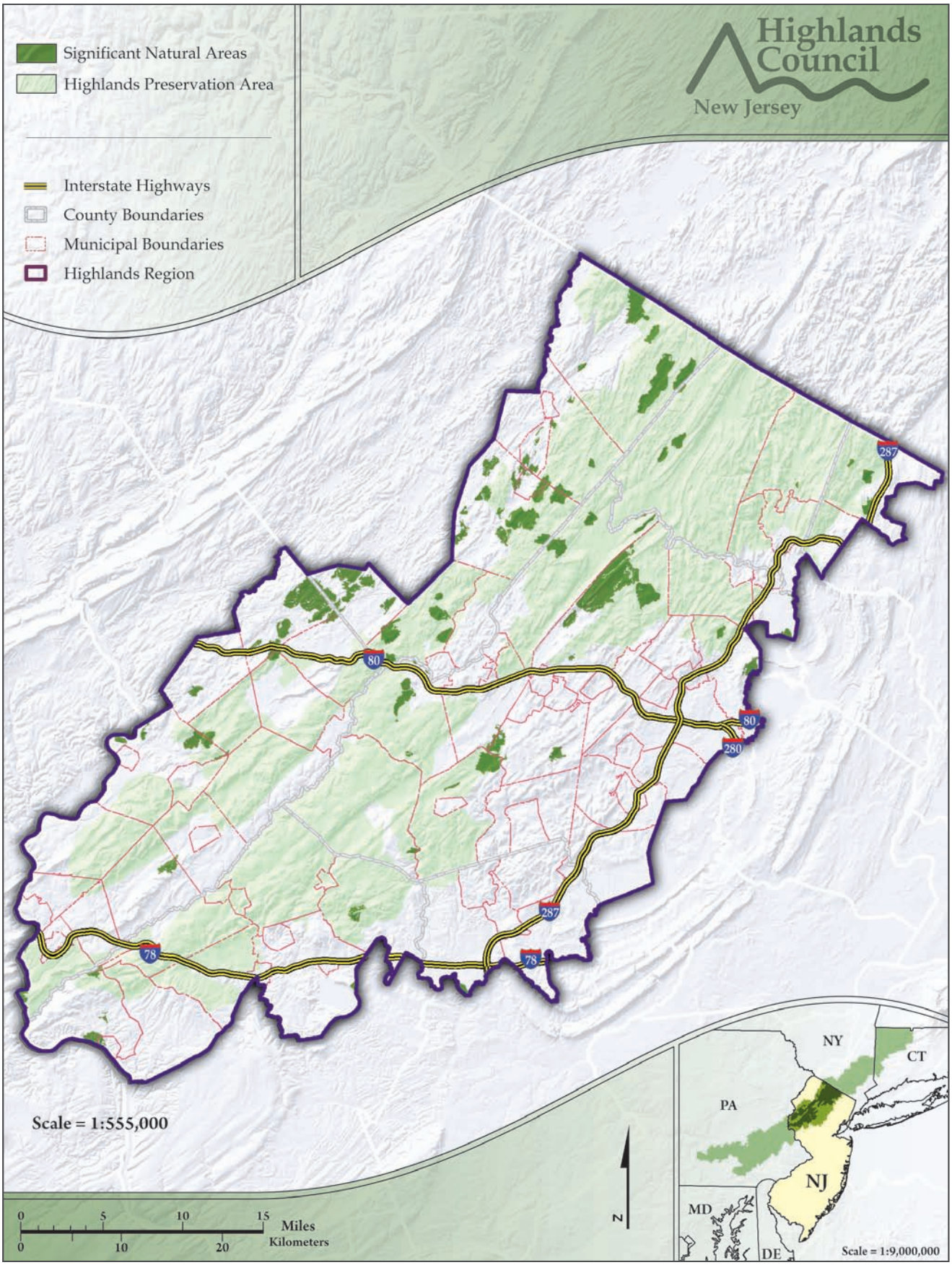

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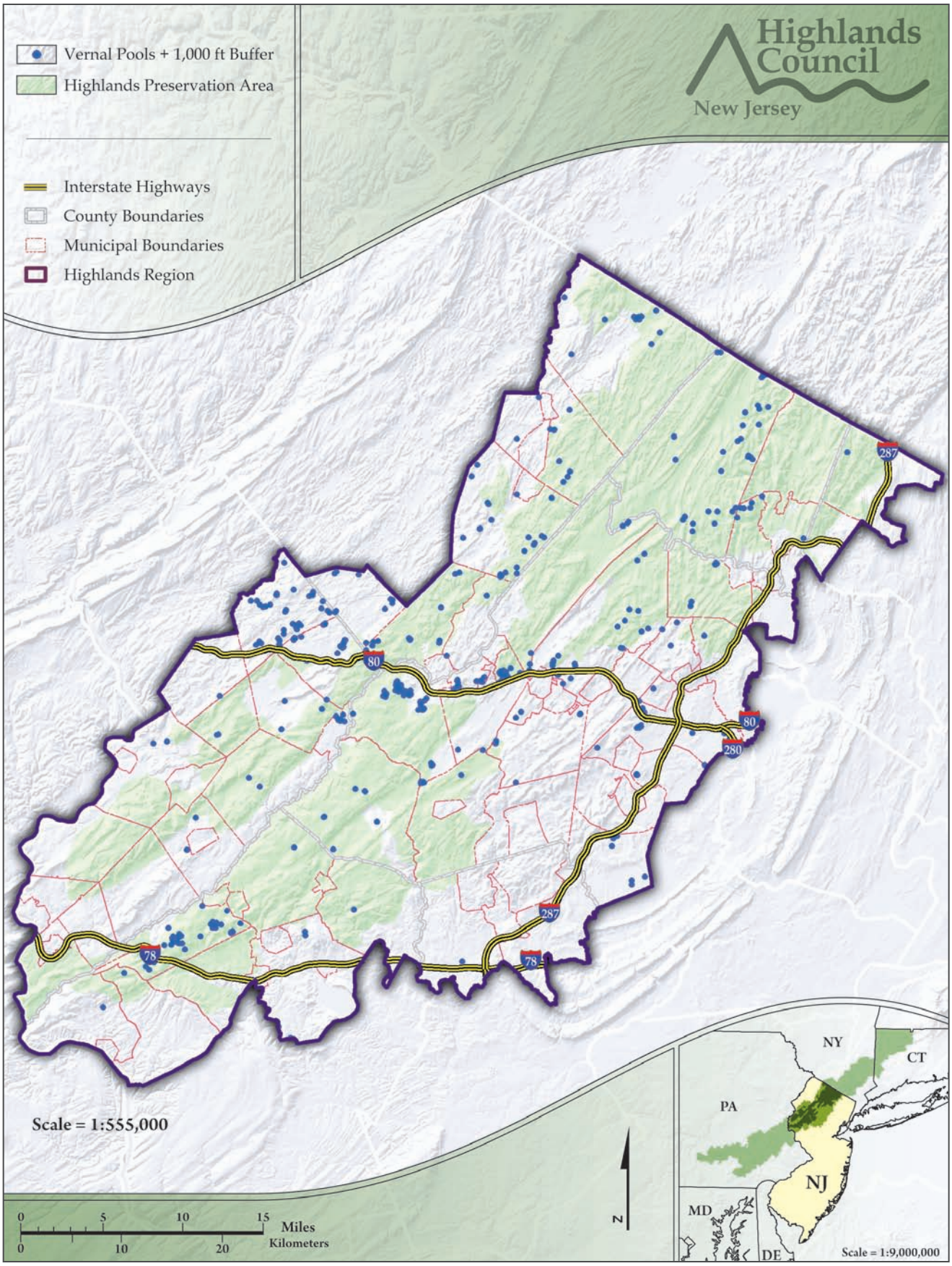
FIGURE 3.11: Certified Vernal Pools



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invertebrate breeding habitat. Because of their ephemeral nature and small size, vernal pools are not comprehensively mapped and as a result, are often overlooked from a planning and protection standpoint. The Highlands Council mapped the list of those vernal pools that have been certified by the NJDEP and their locations are shown in Figure 3.11 *Certified Vernal Pools*.

SUBPART E LAND PRESERVATION AND STEWARDSHIP

The history of public and private investment in land preservation has secured nearly a third of the Highlands Region, 273,457 acres, as open space and agriculture. Maintaining the land in a natural state is necessary where those lands provide important public benefits, most notably the protection of drinking water supplies (see Figure 3.12 *Highlands Preserved Lands*).

In recent years, the Garden State Preservation Trust Fund (Trust Fund) has served as the main source of funding for land preservation in New Jersey. The Trust Fund is funded from a quarter of a cent of the New Jersey sales tax, providing historic funding levels of approximately $150 million per year. The longevity of the Trust Fund is in jeopardy since the majority of the funds have been drawn down and the Trust Fund is projected to be depleted in the near future. This would significantly halt open space and farmland preservation activity in the State, unless the State reauthorizes the Trust Fund. In November of 2007, New Jersey residents voted to approve Public Question #3, approving the Green Acres, Farmland, Blue Acres, and Historic Preservation Bond Act of 2007, which provides a one-year $200 million measure to fund statewide preservation efforts. As originally signed into law, the Garden State Preservation Trust Act included partnering agencies with specific targets for preservation stipulated in the Trust Act – the NJDEP Green Acres Program secures lands for recreation and conservation purposes, the NJDA State Agriculture Development Committee's (SADC) Farmland Preservation Program acquires the development rights on privately owned farmland, and the New Jersey Historic Trust provides matching Garden State Historic Preservation Trust Fund grants for historic preservation projects.

The Highlands Act's mandate for a "strong and significant commitment by the State" must be a central issue in the recapitalization of the Trust Fund. As a source of drinking water for over half of the State of New Jersey, securing funds for the protection and conservation of the Highlands Region must be a priority for future preservation efforts. Additionally, the existing programs funded under the Garden State Preservation Trust do not fully capture all of the important resources in the Highlands Region. In order to fill the gaps, the Highlands Council needs to be an active partnering agency and assist in the development of specific programs and funding targets.

Nathan McLean

Additionally, other stable sources of funding must be explored such as the imposition of a water consumption fee. The relationship between preserved land in the Highlands Region and clean drinking water has been well documented. Source water protection should be an overarching goal of water purveyors in the Highlands Region and water rate schedules should be modified to foster a purveyor's ability to acquire critical watershed properties. This has been done previously in the Highlands Region by the New Jersey Water Supply Authority and by the North Jersey District Water Supply Commission.

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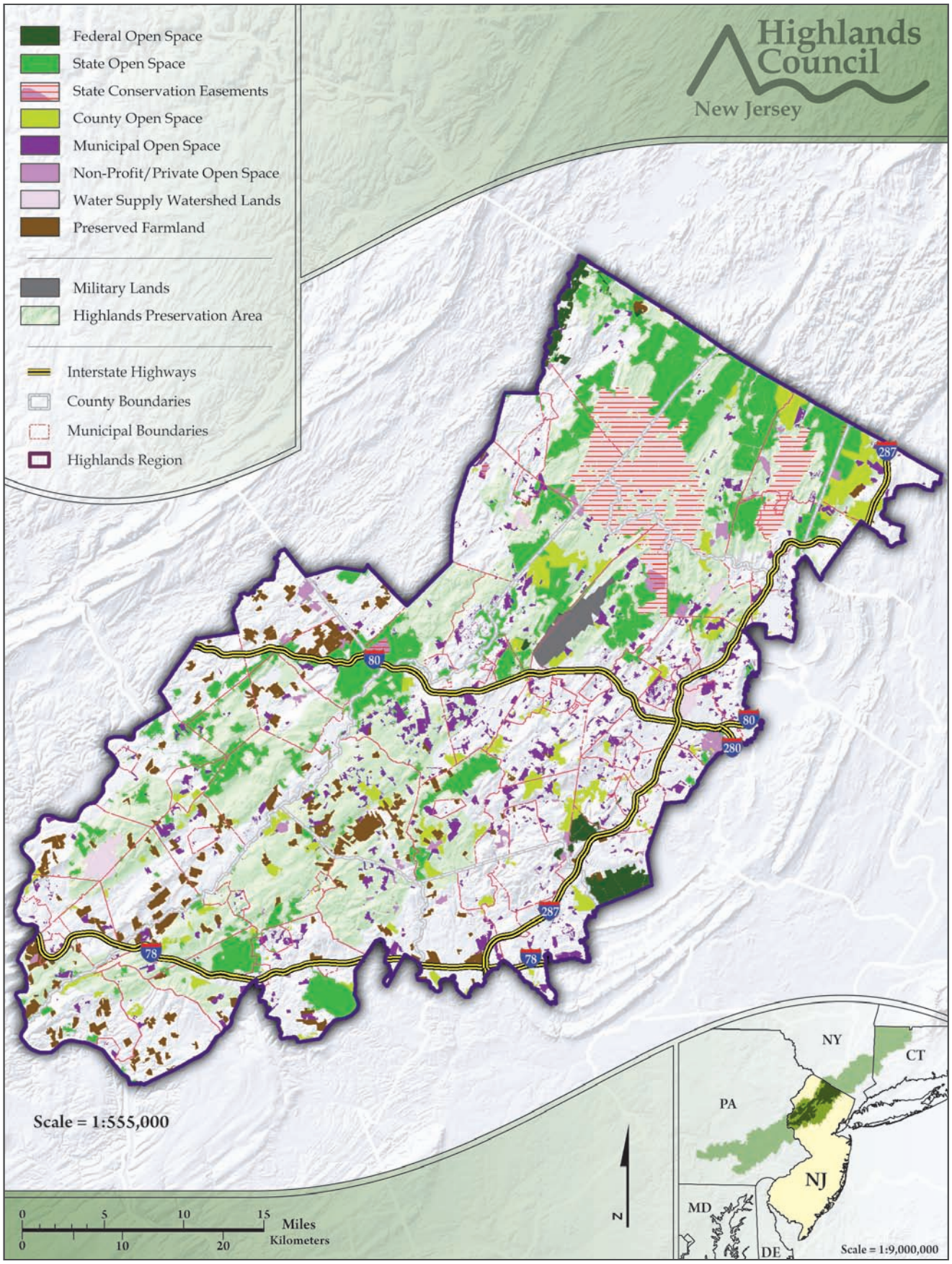
FIGURE 3.12: Highlands Preserved Lands



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The Federal government has historically funded open space acquisition in the Highlands Region. Most notably is the Forest Legacy Program, administered through the United States Forest Service, that has invested $19,723,000 for lands totaling over 14,000 acres in the Highlands Region since 1995. The National Park Service Land, Water and Conservation Fund (LWCF) Program also provides matching grants to states and local governments for the acquisition and development of public outdoor recreation areas and facilities. The Highlands Conservation Act (HCA), enacted in 2004, envisioned $100,000,000 for land preservation in the four state Mid-Atlantic Highlands region of which only $1,000,000 has been authorized to date.

Nathan McLean

Two-thirds of the municipalities, 59 out of 88, and all seven counties in the Highlands Region have created dedicated sources of funds or trusts to purchase open space for natural and cultural protection, agricultural easements to preserve farmland, to preserve historic resources, and to develop recreation facilities. Total funds collected by Highlands Region municipalities in 2007 were $20,679,104. The total funds collected by the Highlands Region county open space programs in 2007 were $103,916,000, up from $92,023,000 the year before. These monies are all based on dedicated trust funds from property taxes.

The Highlands Act establishes an equity standard to be applied when the State is purchasing a property in fee or acquiring a property's development potential, where those lands will be preserved for recreation or conservation purposes and either constitutionally dedicated monies or Green Acres bond act funds will be used (Sections 53 and 54). In such situations, the State is to appraise the land based upon the land use regulations and any State environmental laws or regulations in place as of January 1, 2004, and then to appraise the property based upon the land use regulations and any State environmental laws or regulations in effect at the time of the proposed acquisition. The higher of these two property values is to be used as the basis for negotiation with the landowner with respect to the acquisition price of the property. This valuation method sunsets June 30, 2009 unless it is extended by the New Jersey Legislature. The technical basis and additional background information on land preservation and stewardship can be found in the Highlands Council's *Land Preservation and Stewardship Technical Report.*

SUBPART F CARBONATE ROCK (KARST) TOPOGRAPHY

The term karst describes a distinctive topography that indicates dissolution of underlying carbonate rocks (such as limestone and dolomite) by surface water or ground water over time. This dissolution process causes surface depressions and the development of such features as sinkholes, sinking streams, enlarged bedrock fractures, caves, and underground streams. Sinking streams and sinkholes direct surface water runoff into karst aquifers with little or no attenuation of any transported contaminants. Stormwater basins, septic system leaching fields, sewers, agricultural runoff, lawn runoff, underground pipelines, and soil disturbance may also contribute contaminants directly to ground water through karst features. In addition to ground water concerns, communities in karst areas must contend with safety concerns as sinkholes can have damaging effects to large manmade objects. The Highlands Region has several large areas with carbonate rock formations, usually river valleys such as the Musconetcong, South Branch of the Raritan and Lamington, and karst features exist in some – but not all – of these areas.

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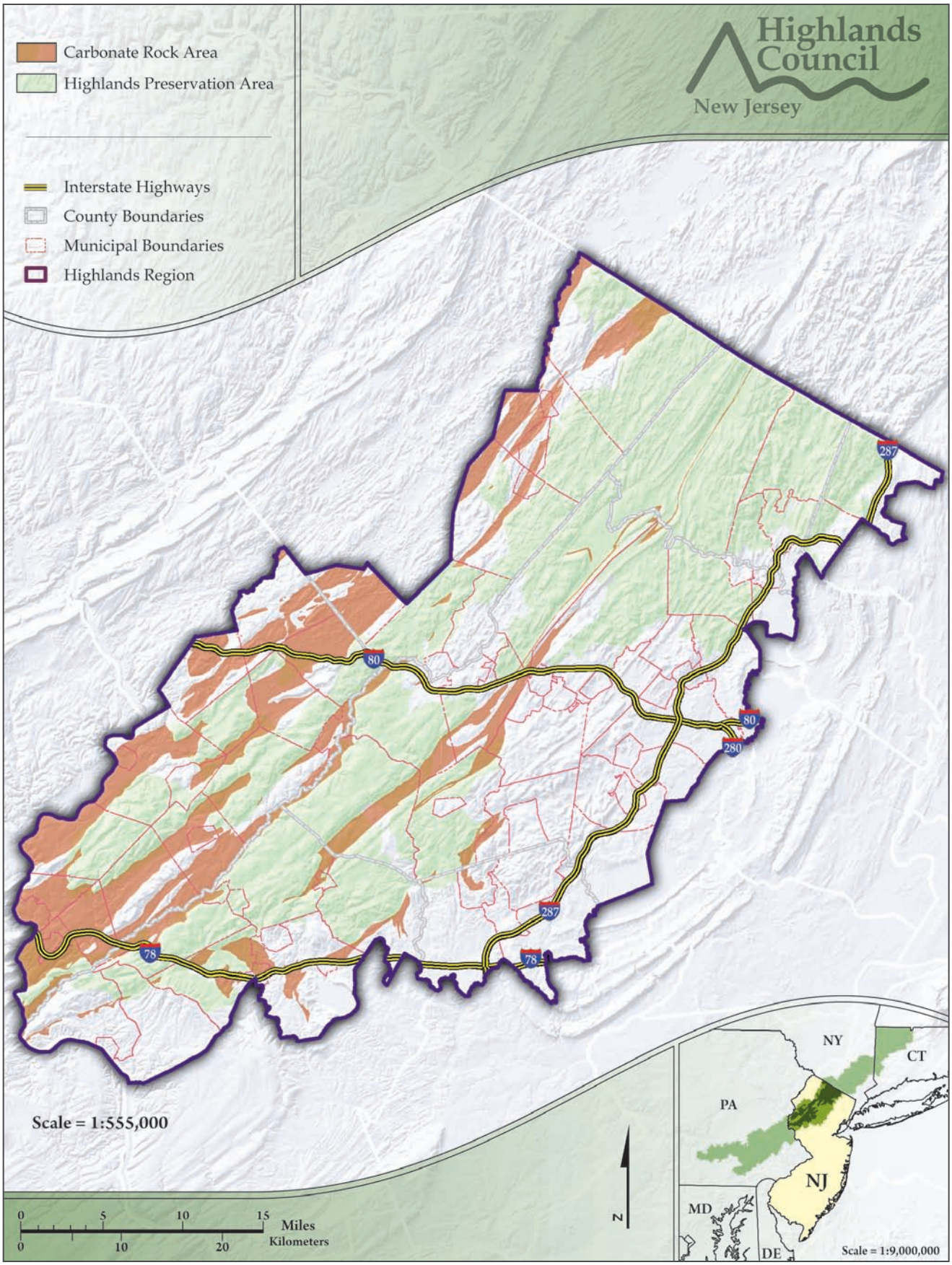
FIGURE 3.13: Carbonate Rock Area



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North Jersey Resource Conservation and Development Council

The Highlands Council relied upon existing New Jersey Geologic Survey and United States Geological Survey data to map areas of the Highlands Region that are underlain by carbonate rocks. These areas collectively are referred to as the Carbonate Rock Area (see Figure 3.13 *Carbonate Rock Area*). Since changes in the quantity, quality, and rate of discharge of surface water runoff from upslope lands can impair ground water resources in the Carbonate Rock Area, lands that drain surface water into the Area will be delineated by the Council using LiDAR topographic analyses or other topographic data where LiDAR data are not available.

Management of development activities in carbonate rock areas is necessary to address the potential problems that are common to karst areas. The site assessment and design process can be modified for karst areas to allow applicants, municipalities and the Council to identify any karst concerns at a site and to incorporate appropriate design features in order to minimize future sinkhole (or other karst feature) formation, damage to development, and the potential for ground water contamination.

The technical basis and additional background information on carbonate rock can be found in the Highlands Council's *Water Resource Assessment Technical Report*.

SUBPART G LAKES, PONDS, AND RESERVOIRS

Highlands Lakes and their environs, including Highlands lake communities, are an integral part of the character of the Highlands landscape. Overbuilt, damaged and poorly managed shoreland areas can result in the degradation of water quality, harm to the lake ecosystem, the decrease of natural aesthetic values, and the overall loss of property values for lake communities. Lakes can be harmed by pollutant sources in the watershed area draining to them. Most existing lake communities were built out prior to modern environmental requirements. Some have sewer systems, but many rely on septic systems (or even cesspools) on inadequately sized lots. Studies indicate that nearly every public lake (privately-owned lakes were not evaluated) in the Highlands is experiencing contamination, often including excessive bacteria and nutrients. Many lake communities have been experiencing intensifying land uses as the original buildings are torn down and replaced by larger structures.

Nathan McLean

Efforts to protect, restore and enhance the water quality of Highlands lakes and to protect the unique character of Highlands lake communities require a mapping of lake resources to facilitate land use and water resource planning (see Figure 3.14 *Lake Management Area*). Lake management areas have been defined that include four tiers:

- A Shoreland Protection Tier consisting of an area measured 300 feet or the first public road perpendicular to the shoreline of the lake;

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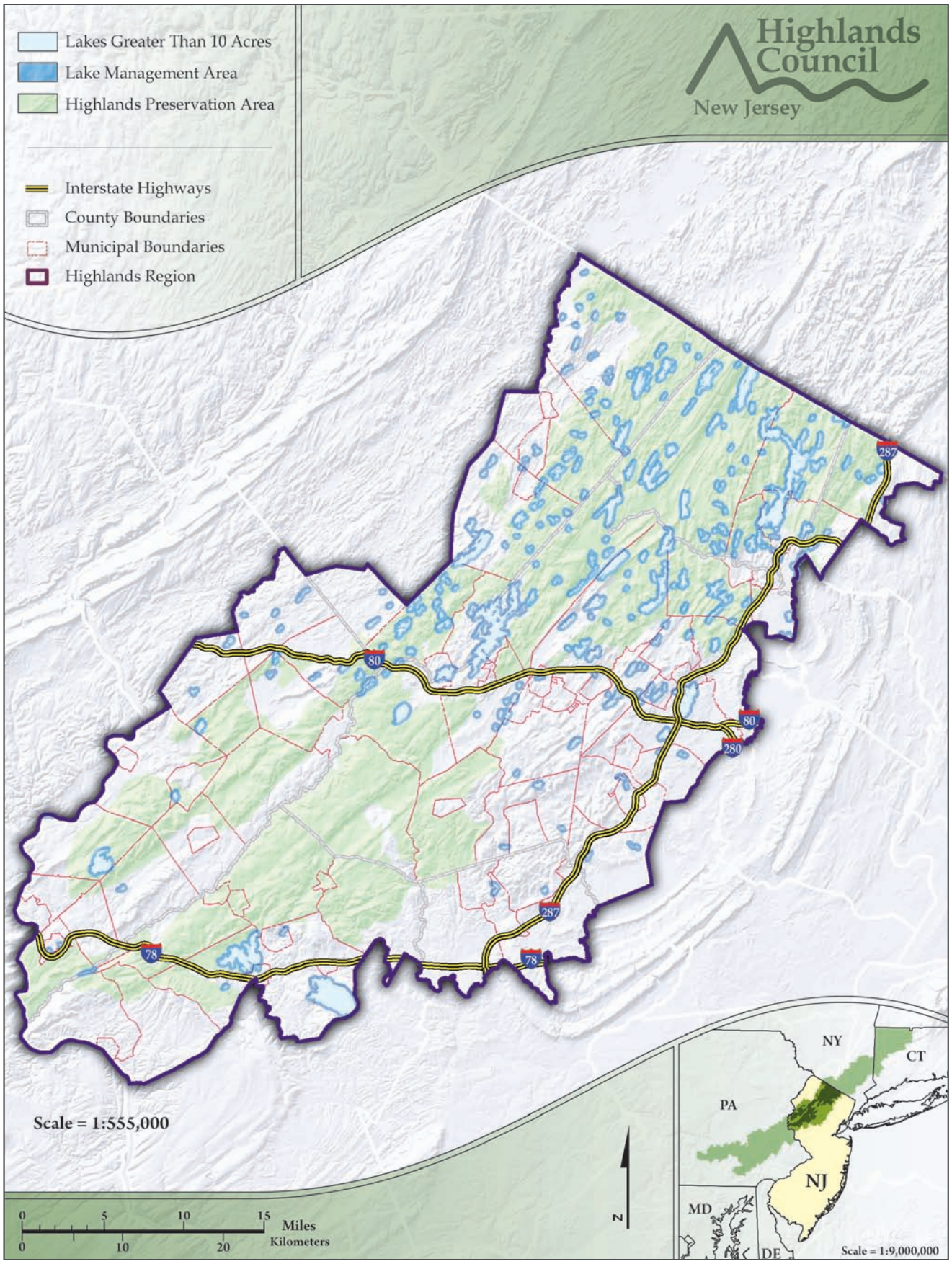
FIGURE 3.14: Lake Management Area



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- A Water Quality Management Tier consisting of an area measured 1,000 feet perpendicular from the shoreline of the lake, including the Shoreland Protection Tier;
- A Scenic Resources Tier consisting of an area measured 300 to 1,000 feet perpendicular from the shoreline of the lake, scaled based upon the view distance from the opposite shoreline, and determined through the size and layout of the lake, and topography of the land area, with wider portions of lakes and greater topographic relief having longer view distances; and
- A Lake Watershed Tier consisting of the entire land area draining to the lake.

The technical basis and additional background information on lakes, ponds and reservoirs can be found in the Highlands Council's *Water Resource Assessment Technical Report*.

Dwight Hiscano

PART 2 Water Resources

SUBPART A WATER QUANTITY, AVAILABILITY, AND USE

In order to address the requirements and goals of the Highlands Act, the Highlands Council analyzed the natural water sustainability of the Highlands Region to determine the amount of water required to protect aquatic ecological integrity and the amount "available" for water supply, and commercial, industrial, or agricultural uses.

The analysis entailed using stream base flows as a surrogate for water sustainability because the protection of base flow is critical to maintaining healthy aquatic ecosystems and protecting potable surface water supplies, particularly during periods of drought. Base flow is the amount of ground water seepage into a stream, providing most of the natural stream flow during dry periods. Overuse of ground water and surface water can reduce base flows, impair the ecological function and integrity of Highlands waters, and reduce the reliability of potable water supplies.

For the surface waters supplying reservoirs that serve areas outside the Highlands Region, the Regional Master Plan focuses on protecting existing safe yields through maintenance of base flows, the protection of water quality and agency coordination with the NJDEP's water allocation permit process. Many Highlands subwatersheds are source waters for these reservoirs, which underscores the importance of the Highlands Region as a water supply resource for areas of the State both within and outside the Region. (See Figure 1.3 *Source Water Protection Areas and Reservoirs*).

For ground water withdrawals and surface water uses other than protection of reservoir safe yields, methods that provide a direct relationship between aquatic ecosystem integrity and stream flows are not currently available. Therefore, the Highlands Council focused on the severity and duration of low flows as a reasonable surrogate for ecosystem and water supply impacts. The Highlands Council selected the Low Flow Margin method to estimate water capacity. This method is also being used by the NJDEP in its recent Statewide Water Supply Plan update. This method is an important tool to provide estimates of water availability that can be used to determine sustainable land use capacity thresholds protective of water and ecological resources and water supplies. This approach is intended to meet the dual goals of protecting the ecological integrity of Highlands waters and assessing the sustainability of water supplies.

The Low Flow Margin analysis determines Ground Water Capacity for each HUC14 subwatershed, expressed as million gallons per day. However, only a portion of this volume is actually available for human use, with the majority being reserved for ecosystem

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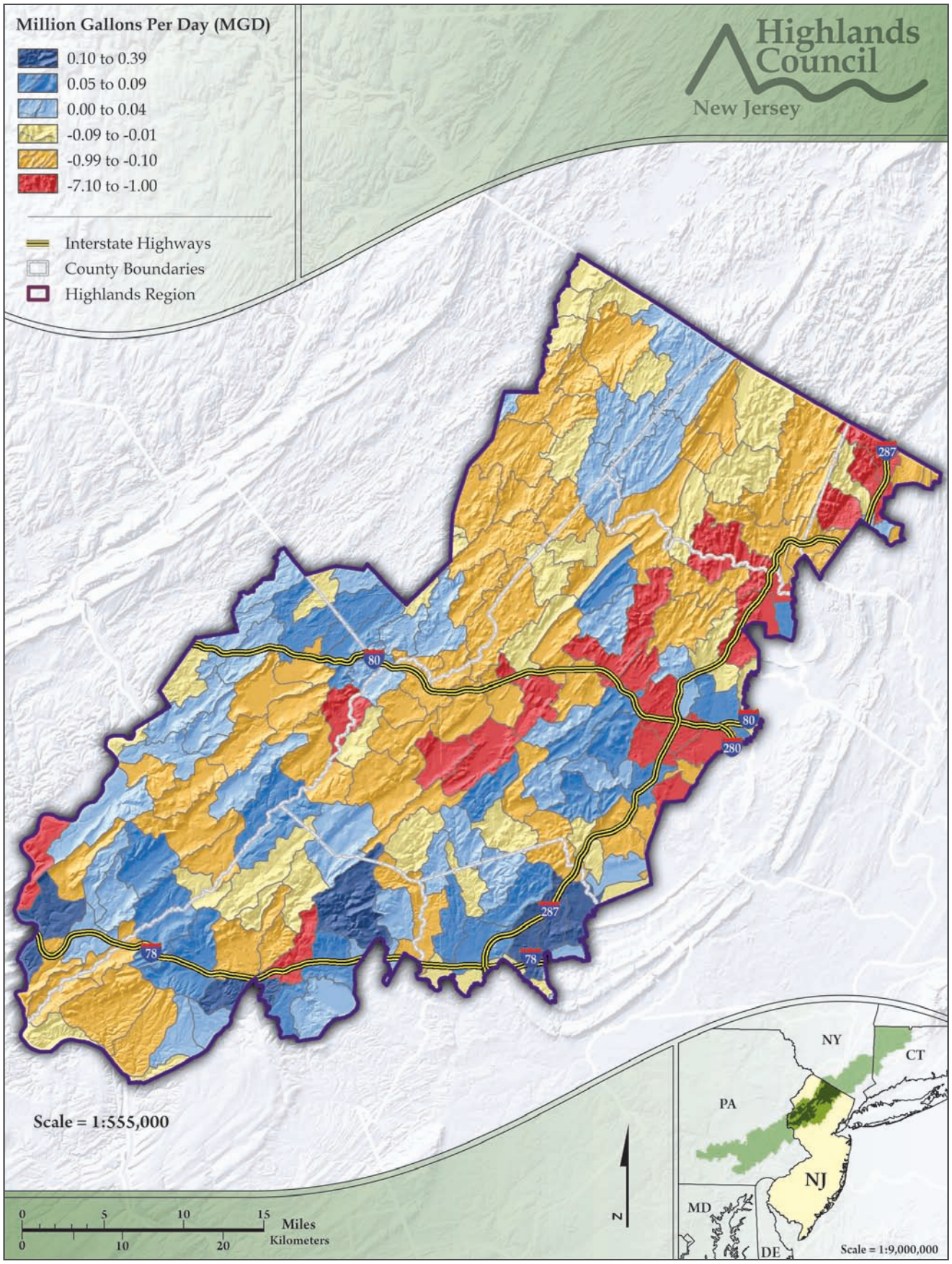
FIGURE 3.15: Net Water Availability by HUC14



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health and maintenance of safe yields of potable water systems. To account for this, the Net Water Availability for a subwatershed is determined by deducting consumptive and depletive water uses from Ground Water Availability. The Regional Master Plan incorporates Net Water Availability as a capacity threshold on water uses resulting from future development. Where Net Water Availability is positive, it is assumed there is water available beyond the existing demand. Where net water availability is negative, the subwatershed is deemed a Current Deficit Area, meaning existing uses are exceeding sustainable supplies. In addition, maintenance of stream flows within any HUC14 subwatersheds upstream of a Current Deficit Area is necessary without further impairing the ecological health of the stream or reducing the safe yields of water supplies. These areas are classified as Existing Constrained Areas and will be managed to ensure that the downstream deficit is not exacerbated. Figure 3.15 *Net Water Availability by HUC14* shows a summary of these calculations for each of the 183 subwatersheds in the Highlands Region.

Figure 3.28 *Land Use Capability Water Availability Map* displays net water available for each subwatershed if conditional availability was granted in deficit areas. The figure represents an upper capacity thresholds based on current demands of water resources of the Highlands Region. The Highlands Council will refine municipal water availability estimates, and ensure that no subwatershed is used for water supply purposes beyond its capacity. Where deficits currently exist, restoration of water resources will occur through mitigation and management opportunities identified during the conformance process and local planning initiatives. The Regional Master Plan emphasizes the critical role of conservation, recycling and reuse to minimize the impacts of existing or future uses. Finally, the Regional Master Plan recommends the development of continuing improvements in calculating water availability, including methods of addressing all hydrologic flow regimes needed to support aquatic ecosystems.

The technical basis and additional background information on water use and availability requirements can be found in the Highlands Council's *Water Resource Assessment Technical Report*.

SUBPART B GROUND WATER RECHARGE AREAS

Ground water recharge does not occur uniformly in all areas of the Highlands Region. Recharge varies by soil, precipitation, land cover, and other factors. Some land areas will provide more recharge than others, and the best of these have been mapped by the Highlands Council as Prime Ground Water Recharge Areas. Prime Ground Water Recharge Areas are defined as the areas in each subwatershed that have the highest recharge rates and, in total, provide 40 percent of total recharge for that subwatershed (see Figure 3.16 *Prime Ground Water Recharge Areas*). Protection of these lands and the quality and quantity of recharge from them has a high priority in the Regional Master Plan. The technical basis and additional background information on Prime Ground Water Recharge Areas can be found in the Highlands Council's *Water Resource Assessment Technical Report*.

SUBPART C WATER QUALITY

The Highlands Act emphasizes the protection, enhancement, and restoration of water resources throughout the Highlands Region, including the ground and surface waters that support aquatic ecosystem sustainability and provide necessary water supplies for the State.

Nathan McLean

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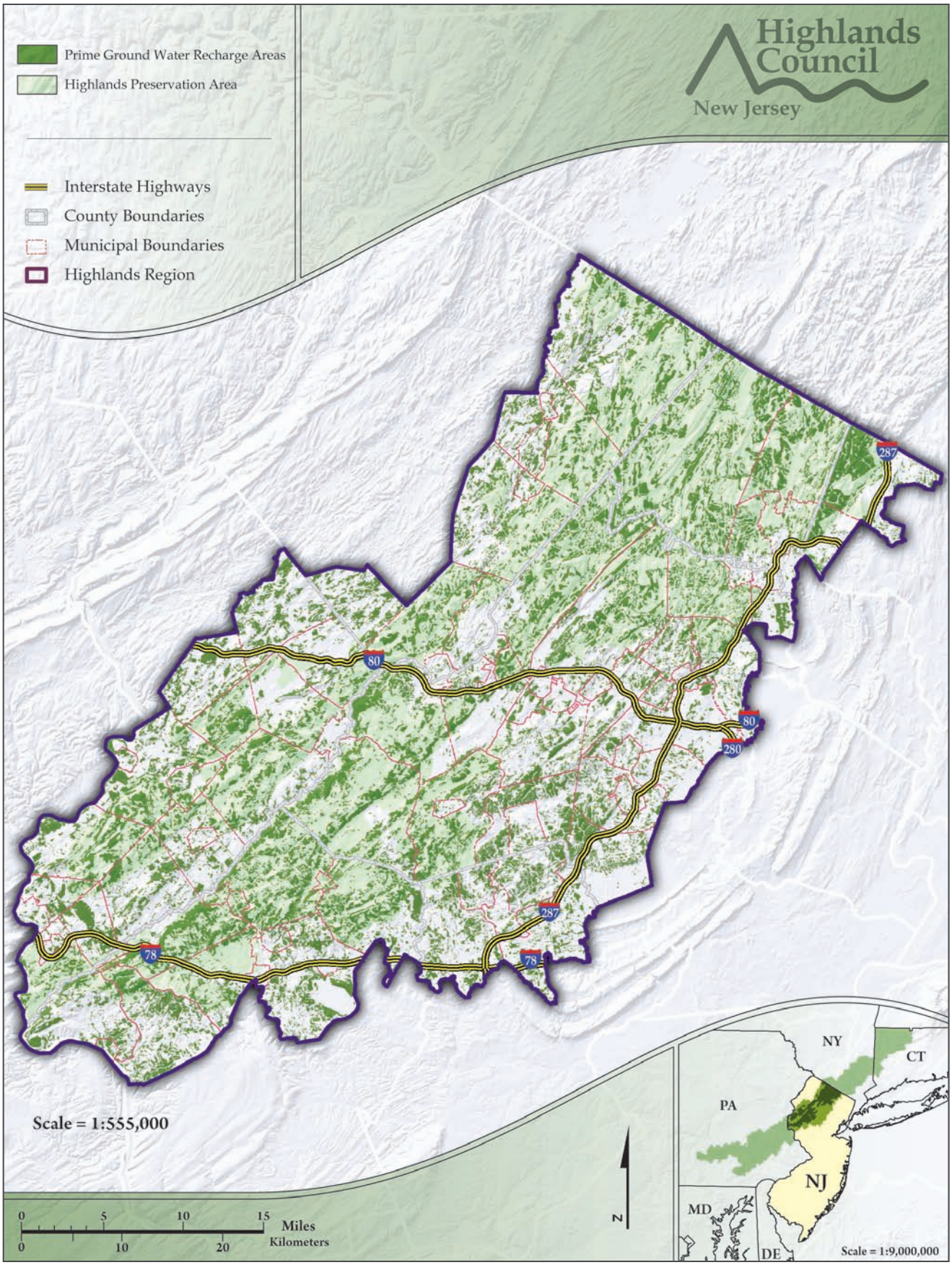
FIGURE 3.16: Prime Ground Water Recharge Areas



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1. SURFACE WATER QUALITY

The NJDEP's Surface Water Quality Standards (SWQSs) establish the designated uses and specify the water quality criteria necessary to achieve these uses and protect the State's waters. The two common designated uses for impaired surface waters in the Highlands Region are primary contact recreation due to unacceptable sanitary quality (91 percent of assessed water body units do not support primary contact use), and aquatic life support (65 percent of assessed water bodies do not support the use). The most common water quality parameters in violation of the State's SWQSs are bacteria, temperature, and phosphorus, in descending order.

From 1984 through 2004, the NJDEP conducted water quality sampling in waterbodies throughout the Highlands Region. Assessed parameters included dissolved oxygen (DO), DO saturation, nitrate (NO3), total dissolved solids (TDS), ammonia (NH3), total phosphorous (TP), and specific conductivity (a measure of salt content). In general, the results showed stable or slightly improving trends in water quality with the exception of TDS and specific conductivity which increased, indicating decreasing water quality.

Nathan McLean

However, as a result of the water quality assessment, many streams and lakes within the Highlands Region are designated as being impaired for water quality, with most impairment related to fecal coliform bacteria, phosphorus, and temperature. Some stream segments were designated as impaired due to arsenic concentrations. The NJDEP, as required by the Federal Clean Water Act, has adopted regulatory, enforceable plans, known as total maximum daily loads (TMDLs), for many of these water bodies to reduce pollutant levels and restore water quality that meets the Surface Water Quality Standards.

The NJDEP's 2006 Integrated Water Quality Monitoring and Assessment Methods report utilizes five categories of use attainment, referred to as sublists. The NJDEP used these sublist categories to characterize waterbodies in the Highlands Region. Sublist 1 indicates attainment of designated uses with no use threatened. Sublist 2 indicates that some uses are attained and no use is threatened. Sublist 3 indicates there is not enough or no data available to determine attainment status. Sublist 4 indicates impairments or threats, but no TMDL is required. There are subcategories within Sublist 4 as follows:

- A TMDL has been developed;
- Other pollution control measures are expected to result in attainment in the near future; or
- The impairment is caused by pollution (e.g., resulting from habitat degradation) but not by a pollutant.

Sublist 5 indicates that the waterbody is impaired or threatened for one or more designated uses by a pollutant and requires a TMDL. Figure 3.17 *Impaired Waters Overall Assessment by HUC14* displays the status of designated uses for waterbodies by the subwatersheds (HUC14) within the Highlands Region. The Highlands Council, working with the NJDEP, has determined that waterbodies in 119 of the 183 subwatersheds are impaired or threatened.

2. GROUND WATER QUALITY

There are five major aquifer types within the Highlands Region that can be broadly classified by the type of geologic formation in which they are located. Aquifers of the Highlands Region are generally located within crystalline, carbonate, and clastic rock formations and aquifers located within the Newark Basin are situated within sedimentary and igneous rock formations. Ground water quality of these aquifers are a function of their geochemical composition, hydrogeologic properties, proximity to land surface conditions, and exposure to pollution sources influence their water quality conditions.

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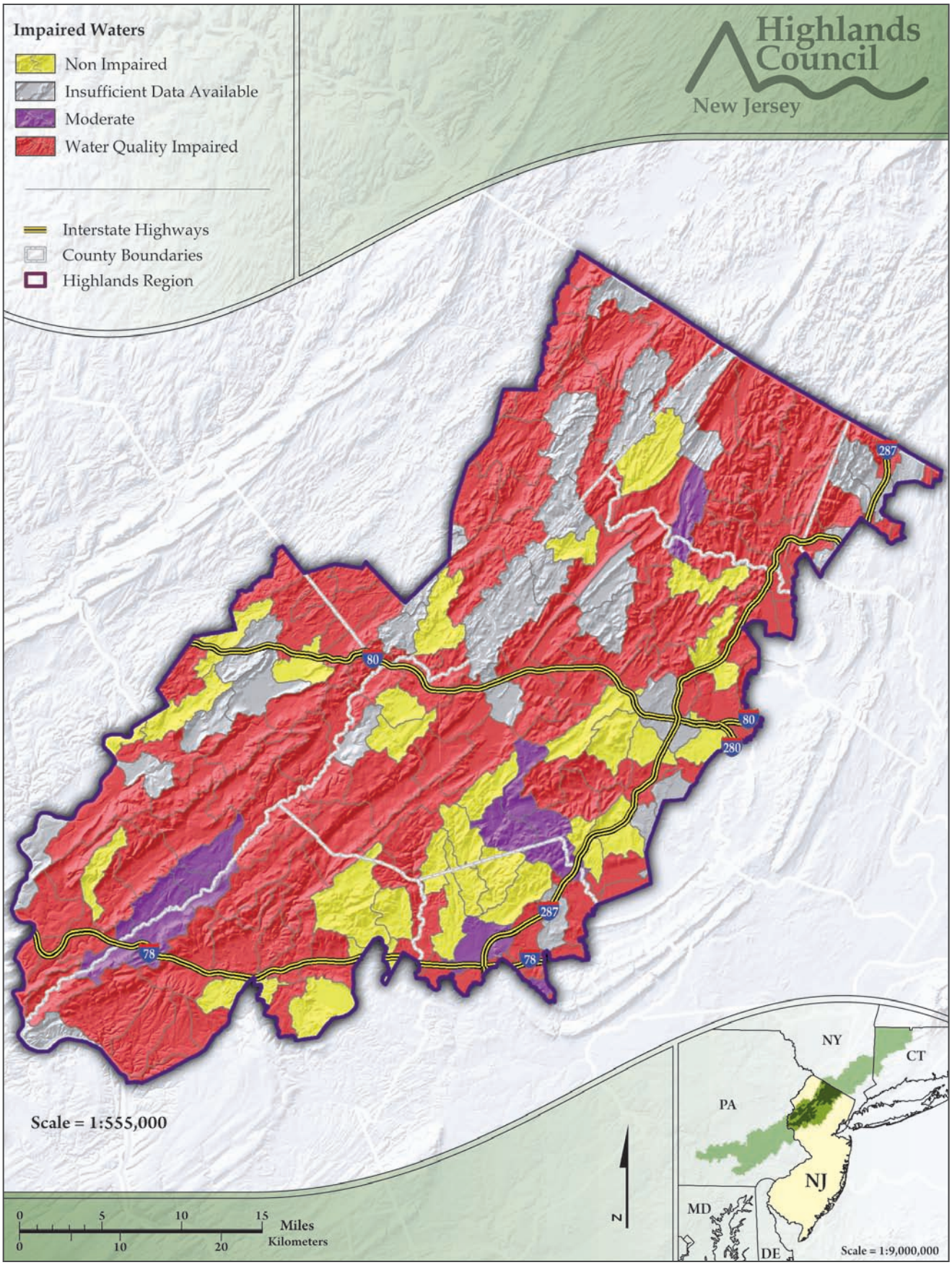
FIGURE 3.17: Impaired Waters Overall Assessment by HUC14



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Unconfined aquifers are located closest to the surface, with their upper boundary defined by the water table. Because unconfined aquifers are "open" to the atmosphere, they are recharged directly by precipitation, and are often in direct hydraulic connection with surface water bodies. Semi-confined or "leaky" aquifers are located beneath a lower permeability semi-confining unit, which is discontinuous in places and/or sufficiently "leaky" to permit water to move across it.

A thorough and complete assessment of ground water quality in all the Highlands Region bedrock aquifers is not possible at this time due to a lack of available data. While ample data exists from wells in the crystalline bedrock aquifers that comprise the upland areas, fewer sources of data are available from wells in the dolomites, slates, and other geologic units making up valley floors in the Region. Given those limitations, and based on the available data, ground water quality in the deeper portion of the bedrock aquifers is suitable for most purposes, however; the ground water may require treatment for pollutants or undesirable characteristics (such as low or high pH) and contaminants (such as manganese or radionuclides). Relatively low pH, alkalinity, and total dissolved solids (TDS) concentrations in water from the Precambrian metamorphic crystalline rock aquifers indicate that mineral water reactivity is minimal compared to the sedimentary rock aquifers in the valleys. Resistance to weathering results in those metamorphic rock types being predominant in upland areas, yielding a low buffering capacity. Water in and associated with these rock types is therefore particularly vulnerable to acid rain and other forms of contamination. This is particularly true of karstic aquifer regions, where dissolution of limestone or dolomite often produces large cavities or solution channels that can facilitate surface to subsurface contaminant migration.

Glacial aquifer water quality varies throughout in the Highlands Region. Because the depth to these aquifers tends to be shallow, they are more vulnerable to pollution from intentional, incidental, and accidental pollutant discharges from past and existing land uses. These pollutants include nutrients from fertilizer and septic system use; oil, gasoline, and deicing salts from roadways; and volatile solvents, and other industrial chemical releases. In addition, these aquifers interchange water with adjacent streams more frequently than bedrock aquifers, which can also affect ground water quality.

There is no equivalent to the TMDL process for ground water quality, but several programs exist to regulate ongoing discharges, reduce the potential for accidental discharges, and restore ground water quality from past pollution events. The NJDEP has identified several categories of ground water contamination areas, including Classification Exception Areas and related Well Restriction Areas, Currently Known Extent Areas, and Deed Notice Exhibits that provide information on ground water quality impacts related to natural ground water quality, permitted discharges or contaminated site remediation. Engineering or institutional controls may exist and must be maintained to prevent exposure to contaminants in these designated areas.

Classification Exception Areas and Well Restriction Areas are areas where the ground water quality standards are exceeded. Within a Classification Exception Area, where designated aquifer use includes potable supply and drinking water standards that are exceeded, the area will be designated as a Well Restriction Area. Currently Known Extent Areas are those areas known to be compromised because the water quality fails to meet drinking water and/or ground water quality standards. Currently Known Extent Areas designations can be used when considering the placement of potable wells. Deed Notice Exhibits document known soil contamination at levels that may restrict the use of, or access to, a property because soil contamination can lead to impacts on ground water quality.

3. WELLHEAD PROTECTION

Residents of the Highlands Region rely on ground water supplies as a primary source of drinking water. A Wellhead Protection Area (WHPA) is a mapped area around a public water supply well that delineates the horizontal extent of ground water captured by a public water supply well pumping at a specific rate over a specific time. A WHPA has three tiers which serve to mark the boundaries for priority areas for the protection of ground water quality.

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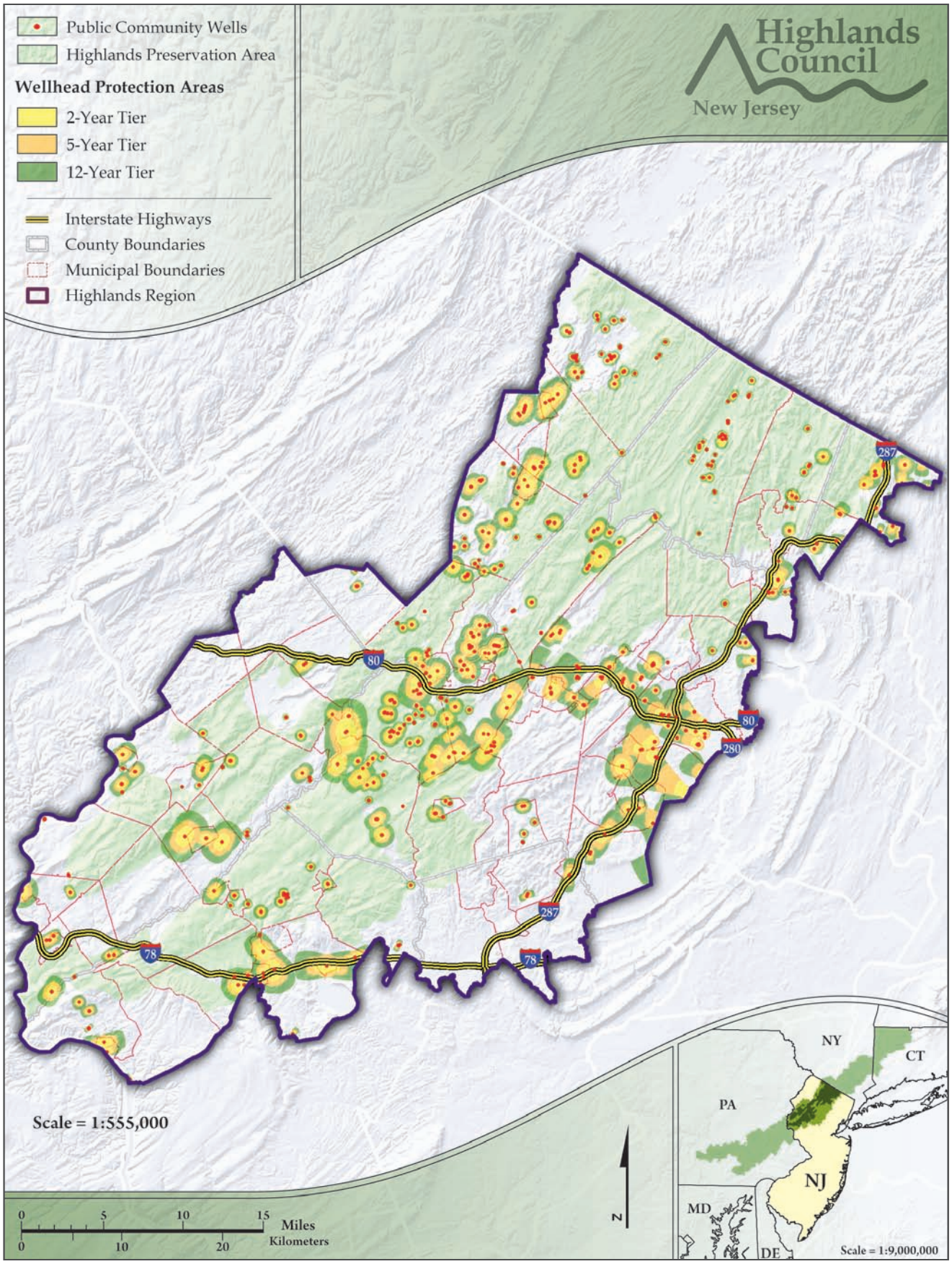
FIGURE 3.18: Wellhead Protection Areas



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- Tier 1 is a two-year time of travel, (e.g., the ground water within this tier flows to the well within a two-year time period)
- Tier 2 is equivalent to a five-year time of travel, while
- Tier 3 is equivalent to a twelve-year time of travel

(Tier 3 also includes the land area within Tiers 2 and 1, and Tier 2 also includes the land area within Tier 1).

The public water supply wells are grouped into two categories based on the type of water supply system they support. Public community water supply systems have at least 15 service connections used by year-round residents, or regularly serve at least 25 year-round residents. An example is a municipal system that services single-family residential homes. A public non-community water system is a public water system used by individuals other than year-round residents, such as hospitals or restaurants, for at least sixty days of the year.

The WHPAs for public community water supply systems in the Highlands Region are depicted in Figure 3.18 *Wellhead Protection Areas*. A total of 580 public community water supply WHPAs have been mapped in the Highlands. Many wells are located in close proximity to the development they serve which poses a risk of contamination from existing and past development patterns. Public community water supply wells that have been polluted result in either their loss as a potable water supply source or require sophisticated treatment to allow continued public use.

The New Jersey Source Water Assessment Program Plan prepared by the NJDEP describes the various sensitivity and intensity factors of concern used to develop the susceptibility ratings for ground water and surface water drinking water sources for the following categories of contaminants: pathogens, nutrients, pesticides, volatile organic compounds, synthetic organic compounds, inorganics, radionuclides, and disinfection byproduct precursors. Numerous sites and activities were included in the Potential Contamination Source Inventories, including but not limited to agricultural land use, bulk chemicals, contaminated soils, discharges to surface and ground water, highway runoff, industrial and commercial point sources, known contaminated sites, leaking sewer lines, mining operations, naturally occurring contaminants (e.g., arsenic, asbestos, radon), recreational activities (e.g., golf courses), septic systems, leaking underground storage tanks, and wastewater treatment plants.

Individual reports have been created for each of the community water systems and the non-community water systems relying on surface water. These reports provide the susceptibility ratings for each water system source per contaminant category. In order to gain an understanding of the relative susceptibility of each supply source to specific types of contamination, each well or intake was assigned a rating of low, medium, or high susceptibility for each of the eight categories of contaminants. The ratings are based on a comparison to drinking water standards, or maximum contaminant levels for the contaminants of concern. In general, the low susceptibility category includes wells for which a particular contaminant is not likely to be detected, and the medium and high susceptibility categories include wells for which a particular contaminant is more likely to be detected.

For wells in unconfined aquifers receiving a high susceptibility rating, the three contaminant categories with the highest percentage of pollutant sources are nutrients (67 percent), volatile organic compounds (61 percent), and radon and radionuclides (50 percent and 49 percent, respectively). Within confined aquifers, only the disinfection byproduct precursors contaminant category contains wells that received a high susceptibility rating (27 percent). A number of wells within confined aquifers receive a medium susceptibility rating primarily attributed to disinfection byproduct precursors (70 percent), inorganic chemicals (47 percent), and radionuclides (39 percent).

The technical basis and additional background information on Water Quality can be found in the Highlands Council's *Water Resource Assessment Technical Report*.

SUBPART D WATER SUPPLY UTILITIES

Future development within the Highlands Region at densities consistent with smart growth principles is generally reliant on access to public community water supply systems, which may be owned and operated by governmental entities (either as municipal operations or utility authorities) or investor-owned utilities. Public community systems, whether their source consists of ground water or surface water withdrawals,

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have the potential to induce or support growth. Public non-community water systems typically provide on-site water supply for industry, commercial buildings, schools and other facilities are common in the Highlands Region; however, these systems have little if any capacity for serving other utility needs. Both types of systems are regulated by the NJDEP under the Safe Drinking Water Act. Through this program, the NJDEP collects information on the treatment, storage, and distribution capacity of the water system. Some of these water systems acquire their water supply through withdrawals that are permitted through the NJDEP Bureau of Water Allocation. Ground or surface water withdrawals of 100,000 gallons per day ("gpd") in the Planning Area or 50,000 gpd in the Preservation Area require water allocation permits. Some water systems are supplied by water purchased from bulk water purveyors or other water utilities. Others may depend upon a combination of their own source water and purchased water.

Dan Van Abs

In furtherance of the requirements and goals of the Highlands Act, the Highlands Council collected the following information on potable water utilities:

- Areas currently served by public community water systems;
- Total system capacity and current water demand; and
- Net utility capacity to support development.

Planning for future water supply service areas requires knowing the existing area served, which in this case means those areas currently served by "in the ground" infrastructure, rather than planned facilities. Unlike wastewater systems and other utilities, there are few existing mandates requiring the mapping of water supply service areas. Information on existing water supply service areas is often not readily available and while franchise areas are commonly mapped, they often do not reflect the actual area served.

The Highlands Council set out to compile an updated inventory of the existing service areas through the collection of available computer-based mapping, billing records, hydrant locations, and water line data. The inventory of existing areas served by water supply systems, cover a total of 20 percent of the Highlands Region, with 6 percent in the Preservation Area and 32 percent in the Planning Area. Highlands water supply systems extend beyond the boundaries of the Highlands Region (e.g., Southeast Morris Municipal Utility Authority), and non-Highlands water supply sources may have the capacity to provide water to municipalities in the Region (e.g., New Jersey American Water Company--Elizabethtown Division).

There are 162 major water systems in the Highlands Region. Of these facilities, 72 are small systems, such as those that serve a single apartment complex, that have no additional capacity to support growth. The remaining systems were grouped into 61 unique utilities, generating the vast majority of total demand. Some of these systems are supplied by large purveyors whose water supply is withdrawn outside the Region and imported into the Highlands. The demand generated from uses primarily within the Region is estimated at 2,691 million gallons per month. Figure 3.29 *Land Use Capability Public Community Water Systems Map* provides an overview of the areas of the Highlands Region that are currently served by the public community water systems and their estimated net capacity. Demands were not apportioned between Highlands and non-Highlands Region, because accurate service areas were not available for the non-Highlands portions.

Each public community water supply system has been constructed to provide drinking water to its existing and anticipated customers during both normal and peak flows. The Council examined two different types of limitations to system capacity: the physical infrastructure (e.g., pumps, treatment plants, storage) represented by firm capacity; and the available supply of water resources, represented by water allocation permits and

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bulk purchase contracts. The physical infrastructure defines the limits for water delivery that are inherent to the system, while the NJDEP water allocation permits and associated limitations in water availability define the limits for water supply that are inherent to the water resources (e.g., aquifer, reservoir system). Firm capacity can increase over time if the system upgrades are made but the source of the water to support that system may be limited. Therefore, the water supply allocation was utilized as a better estimate of ultimate utility capacity.

Dan Van Abs

Available information on well and surface water withdrawal locations has been compiled in order to understand the impacts of water utilities on their respective sources. The Council compared the existing service areas with ground and surface water supply sources on maps of the 183 subwatersheds (HUC14) in the Highlands Region. The projected demand from water users was examined to understand the relationship of normal demands to peak demands in the summer and the resulting inventory compiled by the Council includes the peak monthly demands from the years 2000 through 2004. Monthly demands were used because daily demands, especially within the summer, are so variable. The result of this analysis allows for a comparison of utility capacity (essentially, how much capacity the water utility has available for future development) to Net Water Availability within each subwatershed.

The Council identified the appropriate next steps for assessing utility capacity during Plan Conformance and project review: The first step is to identify areas for which additional utility capacity would be appropriate, then determine whether there is net utility capacity available to support additional demand. If net utility capacity exists, determine whether there are existing future commitments that correspond or conflict with them. If conflicts exist, then further analysis would be necessary regarding the potential for equitable methods of capacity reallocation. Additional information on water supply utilities can be found in the Highlands Council's *Utility Capacity Technical Report*.

SUBPART E WASTEWATER UTILITIES

The primary wastewater collection systems in the Highlands Region predominantly treat residential wastewater. A Highlands Domestic Sewerage Facility, which includes publicly-owned and investor-owned domestic wastewater treatment facilities, provides wastewater treatment to municipalities and has collection systems that can support redevelopment and regional growth opportunities. These facilities generally have the NJDEP-permitted discharge capacity of more than either 0.150 million gallons per day (MGD) for discharge to surface water or 0.075 MGD for discharge to ground water.

Similar to the approach for potable water utilities, the Highlands Council assessed wastewater utilities by examining the existing areas served and the capacity of the wastewater infrastructure systems in the Highlands Region.

There are 42 Highlands Domestic Sewerage Facilities representing a total wastewater treatment capacity of approximately 121.61 MGD and a total discharge flow at the maximum three month rate of 99.98 MGD. Some of these facilities have service areas that extend beyond the Highlands Region so a pro rata allocation based on the relative portion of the service area in and outside of the Highlands Region was used to estimate a Highlands Region treatment capacity of approximately 78.41 MGD and a total discharge flow at the maximum three month rate of 63.11 MGD, or approximately 80 percent of the total treatment capacity. Individual facilities have discharge flow (at the maximum three month rate) ranging from 42 percent to 192 percent (indicating a deficit) of total treatment capacity, and from a

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deficit of 0.21 MGD to 2.52 MGD of current available capacity. Figure 3.30 *Land Use Capability Domestic Sewerage Facilities Map* provides an overview of the areas of the Highlands Region that are currently served by the Highlands Domestic Sewerage Facilities and their estimated capacity.

In furtherance of the requirements and goals of the Highlands Act, the Regional Master Plan focuses on the following areas to address wastewater utilities:

- Identify areas currently served by existing wastewater facilities;
- Identify areas that are inappropriate for future expansion of infrastructure; and
- Determine available wastewater system capacity and ability to support additional development.

Additional information on wastewater utilities can be found in the Highlands Council's *Utility Capacity Technical Report.*

SUBPART F SEPTIC SYSTEM CAPACITY

There is a clear link between nitrate concentrations in ground water and land use. Land use activities, particularly agricultural practices, lawn care and septic system effluent disposal, contribute to elevated concentrations of nitrate in ground and surface water. Understanding and managing the impact of contributions of nitrate loadings from septic systems in the Highlands Region is an important aspect of maintaining the overall quality of water for both water supply and ecological values.

Nitrate is often used as an indicator of the risk of impairment to ground water quality related to land use. High levels of nitrate in ground water may result in serious health impacts and can have long lasting effects on the geochemistry and ecological functioning of soils and water resources. Elevated concentrations of nitrate in surface water can cause a loss of biodiversity and lead to eutrophication, algal blooms, and oxygen depletion. Primary nonpoint sources for nitrate are agricultural runoff and soil contamination from the introduction of septic system effluent and other diffuse loading sources such as chemical lawn care application. Point source discharges, such as those from sewage treatment plants, also contribute to nitrate loadings.

The Highlands Council has established target nitrate concentrations for the Planning Area, necessary to ensure the protection, restoration and enhancement of the waters in the Highlands (the NJDEP rules implementing the Highlands Act address nitrate targets for the Preservation Area). The Council's nitrate targets for the Planning Area were used to calculate the allowable septic system density and additional new septic systems by municipality. Allowable septic densities specific to each municipality and zone were computed using the Trela-Douglass nitrate dilution model, which requires as inputs the target nitrate concentration and HUC14-specific annual recharge. The target nitrate concentrations for the Protection and Conservation Zones within the Planning Area are 0.72 milligrams/liter (mg/L) and 1.87 mg/L, respectively. These values represent the median nitrate concentrations for each zone. Annual recharge values were estimated using GSR-32 under assumed drought conditions, using the New Jersey Drought of Record spanning 1961through 1965.

In order to establish the baseline conditions of nitrate concentrations in the Highlands Region, the Highlands Council analyzed nitrate concentrations measured in wells located throughout the Region in a variety of environmental and land use settings. The Highlands median of measured nitrate concentrations is 1.1 mg/L. However, the existing sampling data for nitrates are insufficient to establish the variability of background nitrate levels throughout the Highlands Region, particularly in areas that have limited development, and as such, limited ground water quality data. Models were developed for each of the 183 HUC14 subwatersheds to estimate the nitrate concentrations throughout the Highlands Region. These models utilized available water quality data, land use variables, and specific features that are predictive of median nitrate concentrations in ground water. The best combination of variables for predicting HUC14-specific median nitrate concentrations, as determined by modeling objectives and results, included the percentage of urban land use, the percentage of agricultural land use, the septic system density in the area, the length of streams, and the number of known contaminated sites within the area of analysis.

Median nitrate concentrations were estimated for each of the 183 HUC14 subwatersheds within the Highlands

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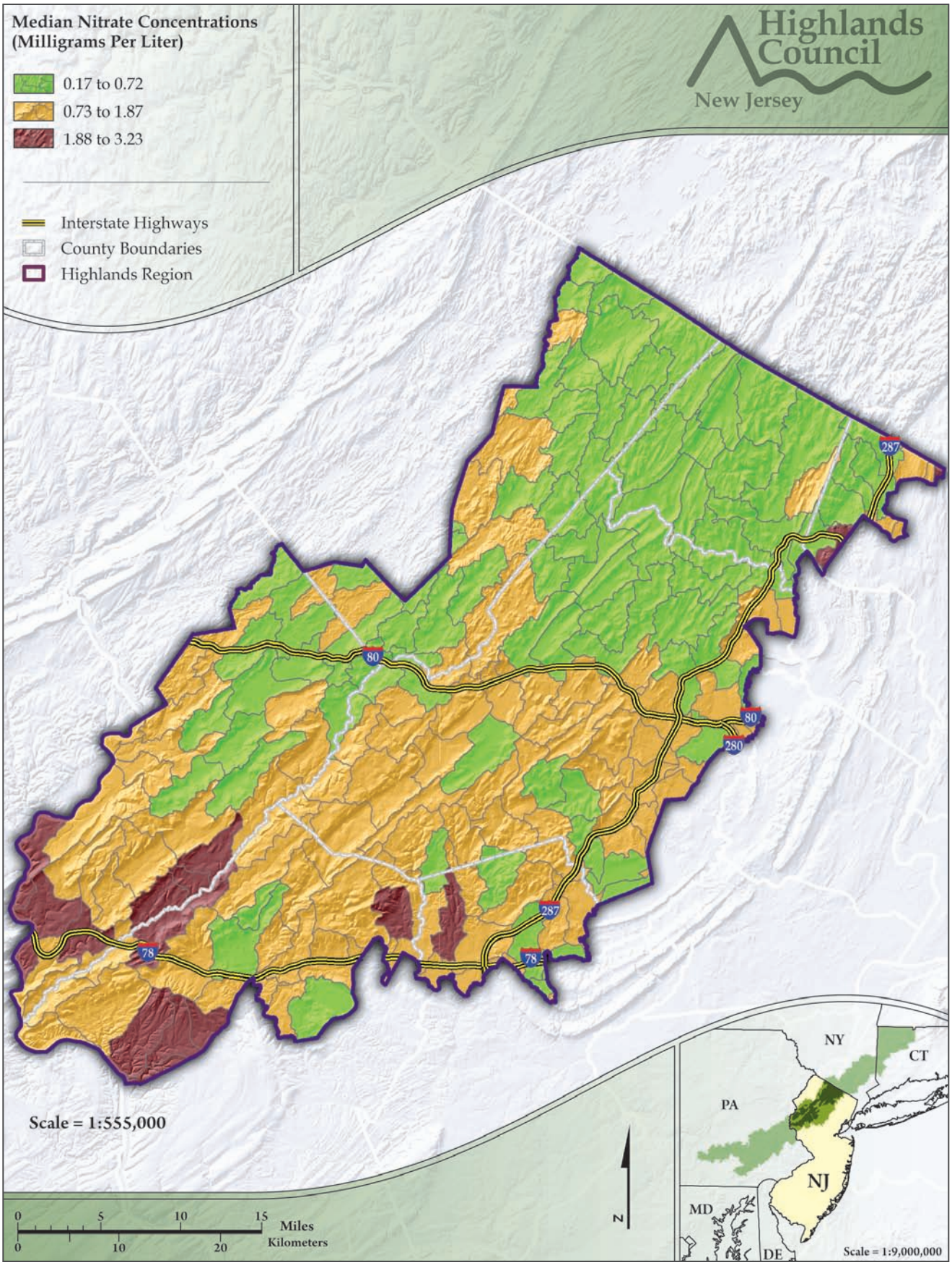
FIGURE 3.19: Median Nitrate Concentration by HUC14



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Region. These HUC14-specific median nitrate concentrations estimated with the logistic regression models range from 0.17 to 3.6 mg/L, with an overall median value for the Highlands of 0.83 mg/L, slightly lower than the 1.1 mg/L value calculated directly from well sampling analytical results. The model results are considered to be more accurate as they address limitations in the well monitoring network, related to the overall distribution of wells and the disproportionately small number of wells located in undeveloped areas. Based on the models natural levels in the Highlands Region are approximately 0.1 mg/L.

The results indicate that subwatersheds that are dominantly in the Conservation Zone generally have the highest median nitrate concentrations, followed by the Existing Community Zone, and lastly the Protection Zone. Within HUC14 subwatersheds that are located mostly in the Planning Area, the median nitrate concentrations for the HUC14's that are predominantly Conservation, Existing Community and Protection Zone are 1.87, 1.17, and 0.72 mg/L, respectively. The results of the median nitrate concentration analysis, aggregated into representative values for the HUC14-specific results are illustrated in Figure 3.19 *Median Nitrate Concentration by HUC14*. The resulting septic system yields by HUC14 subwatershed are shown in Figure 3.31 *Land Use Capability Septic System Yield Map*.

An important factor in the protection of ground water quality from degradation by nitrate and related pollutants (e.g., pathogens) is the proper location, design, construction, installation, repair, and operation of individual septic systems. These systems are subject to the NJDEP's Standards for Individual Subsurface Sewage Disposal Systems (N.J.A.C. 7:9A) and are generally regulated at the county and municipal level. Of further concern is the layout of developments to ensure that the risk of well contamination from upgradient septic systems is minimized. Proper site planning with regards to on-site water supply and wastewater disposal will be evaluated during the project review process.

The technical basis and additional background information on nitrate management can be found in the Highlands Council's *Water Resource Assessment Technical Report.*

PART 3 Agricultural Resources

Agriculture is a vital component of the economy, culture and landscape of the Highlands Region. It provides economic benefits through both agricultural production and by maintaining the rural character of Highlands communities. The loss of farmland over recent decades emphasizes the crucial need to promote and encourage a positive agricultural business climate. In order to encourage a positive agricultural business climate and enhance agricultural viability, agricultural operations need to evolve over time to adapt to ever changing climate and market conditions.

Nathan McLean

The Highlands Region has experienced a steady loss of agricultural lands representing an average rate of loss of 1,700 acres per year, a 19 percent decline between 1986 and 2002, representing over 27,500 acres. According to the NJDA, between 1998 and 2003 there was an 8 percent decrease in farmland.

In addition to the direct loss of agricultural lands, other measures of agricultural losses, such as the amount of farmland in field crop production, show a similar decrease. In 1998, the total acreage of field crops, which includes corn, wheat, soybeans, hay and other cover crops, was 81,313 acres. These crop lands decreased to 70,567 acres in 2003. The loss of over 10,000 acres of field crops during this five-year period represents a 13 percent loss for the Highlands Region.

A key program for the sustainability of agricultural activities is the NJDA State Agriculture Development Committee's (SADC) Farmland Preservation Program. Since the program's inception in 1983, a total of 33,763

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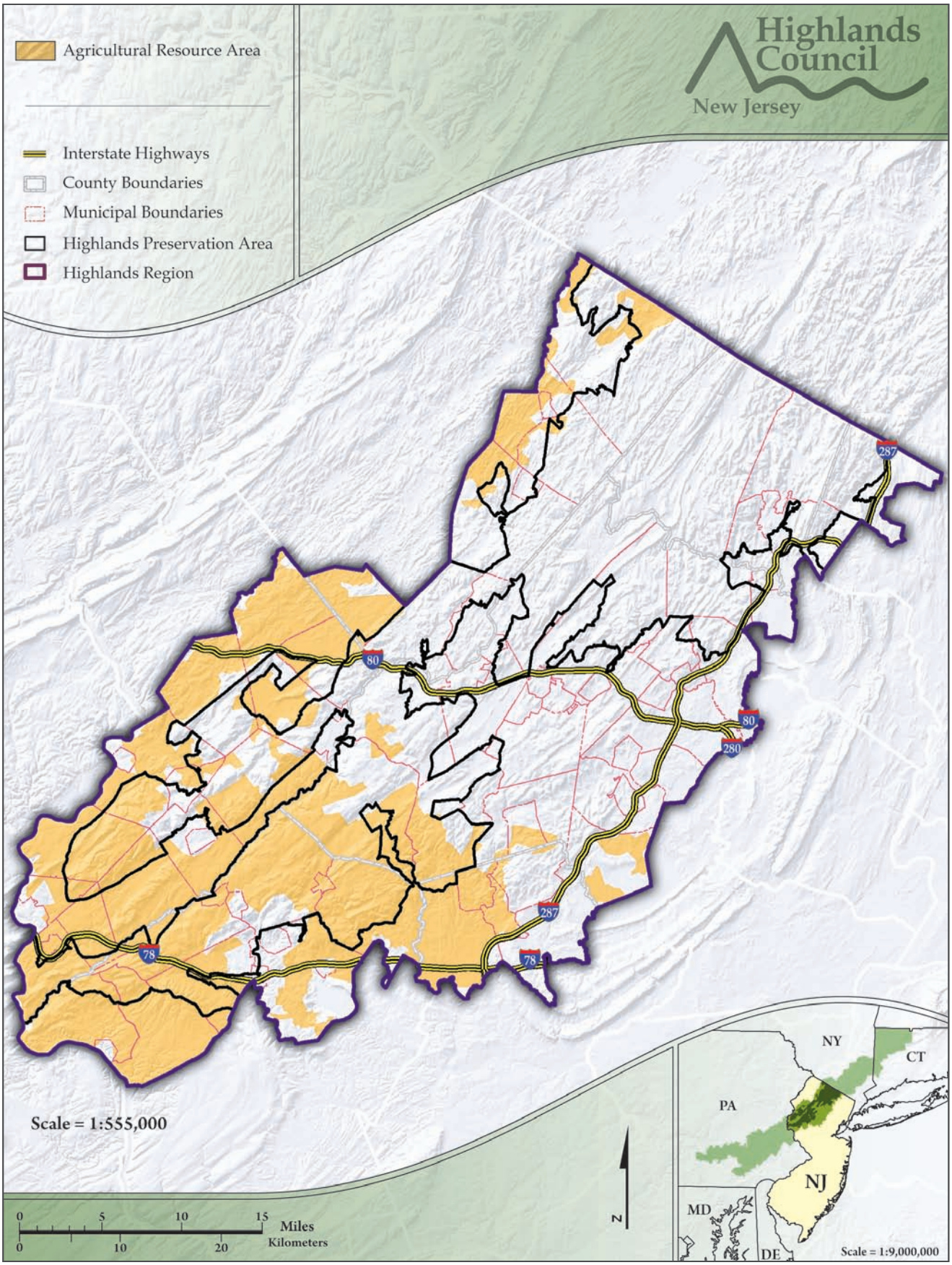
FIGURE 3.20: Agricultural Resource Area



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acres have been preserved in the Highlands Region – 21,067 acres in the Planning Area and 12,696 acres in the Preservation Area. These totals reflect preserved farms, farms with final approval for preservation, and farms in the eight year easement program. Together, these preserved farmlands represent approximately 21 percent of all farmland preserved statewide.

In furtherance of the goals and requirements of the Highlands Act, the Regional Master Plan focuses on two areas of action to address the need to protect Highlands agriculture resources:

- Identify high quality agricultural lands in need of preservation; and
- Develop a process to ensure sufficient financial and institutional resources are available for the preservation, sustainability, and viability of agricultural resources in the Highlands Region.

These two areas of focus will also determine the amount and type of human development and activity that the ecosystem of the Highlands Region can sustain while maintaining the overall character of the Region, with special reference to production and enhancement of agricultural or horticultural activities.

Many factors contribute to sustainable agricultural practices. These include, but are not limited to, soil quality and productivity; agricultural infrastructure; the changing and dynamic nature of the agricultural industry; farming methods, including conservation practices; size of a parcel and proximity to other agricultural lands; and local interest in maintaining agriculture in the community.

For purposes of identifying critical agricultural lands in the Highlands Region, the Highlands Council examined the distribution, size and quality of existing farms. These criteria were evaluated to specifically consider the realities of farming in the Highlands Region. For example, the average size of a preserved farm in the Highlands Region is small, just over 55 acres. Consequently, in the Highlands Region, the importance of farm size is diminished as a critical factor. On the other hand, development pressure and the extent to which farming has been retained in a community becomes a more significant factor to consider.

Nathan McLean

The Highlands Council used the following factors to assess the Region's farmland and to identify the most important agricultural resources: farming landscapes that account for 250 acres or more of contiguous farmland; farms that include Important Farmland Soils; extent of the lands adjoining a farm that is in agricultural use; and concentrations of preserved farmland. Using these factors, the Highlands Council spatially delineated an Agricultural Resource Area representing that portion of the Highlands Region that includes a prevalence of active farms (See Figure 3.20 *Agricultural Resource Area*).

The technical basis and additional background information on agriculture protection requirements can be found in the Highlands Council's *Sustainable Agriculture Technical Report*.

PART 4 Historic, Cultural, Archaeological, and Scenic Resources

Historic, scenic, and recreational resources play a critical role in defining the character of the Highlands. These resources will continue to attract people to the Region and must be managed to take advantage of their contribution to economic vitality and a high quality environment for the future.

The Highlands Region contains important historic, cultural, archaeological, and scenic resources. Historic resources include buildings, structures, objects, districts, sites, or areas that are significant in the history, architecture, archaeology, engineering, or culture of a place or time. Historic resources help connect people to the past, reminding them of a community's origins.

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Cultural resources include sites, artifacts, or materials that relate to the way people live or lived, including archaeological sites, rock carvings, and ruins. These resources are generally defined based on existing documentation or artifacts discovered that relate to activities of people who lived, worked, or recreated in the area during a period in history. The integrity of a cultural resource is defined by its ability to convey its significance through its physical characteristics.

Archaeological resources are any material remains of past human life or activities which are of archaeological interest, such as tools, structures or portions of structures, pit houses, rock paintings, rock carvings, intaglios, graves, human skeletal materials, or any portion or piece of any of the foregoing items.

Nathan McLean

Scenic resources include sites and landscapes that are distinctive and remarkable for their geology, topography, history, culture, and aesthetics or can be representative of the defining character of a community. They may include prominent ridgelines, mountainsides or hillsides, panoramic vistas, community gateways and landmarks, river valleys and agricultural landscapes.

The Highlands Region has presently identified 618 historic resources, of which 41 percent are currently listed on the New Jersey and National Registers of Historic Places. Of those listed, 62 are historic districts that contain collections of individual sites. The Highlands Region also has four National Historic Landmarks and 70 recorded archaeological sites. The actual number of archaeological sites in the Region is anticipated to be significantly larger than those currently recorded by the State Historic Preservation Office (SHPO). The National Historic Landmarks are Craftsman Farms in Parsippany, Vail Factory/Speedwell Village and the Thomas Nast House in Morristown, and Ringwood Manor in Ringwood. Additionally, several sites have regional significance and traverse multiple counties and municipalities, such as the Morris Canal.

Largely by virtue of its industrial history, the Highlands are also home to many abandoned mines. Of the 544 identified abandoned mines in New Jersey, 95 percent are located in the Highlands Region. The Sterling Hill Mine in Ogdensburg, Sussex County is listed on both the New Jersey and National Register of Historic Places. Additionally, the Weldon Mine in Jefferson Township and the iron mines in Montville Township, both in Morris County, have received opinions of eligibility for listing as a historic site from the SHPO.

Historic, archaeological, cultural, and scenic resources are part of the character of the Highlands Region and an important part of its cultural heritage. These resources provide the public with an understanding of how the land and people of the Highlands have changed over time. They also aid in fostering an appreciation for the events that contributed to the development of the towns, villages, and cities that exist in the Highlands today.

Nathan McLean

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SUBPART A HISTORIC, CULTURAL, AND ARCHAEOLOGICAL RESOURCES

In collaboration with the SHPO, the Highlands Council prepared a baseline inventory of the 618 historic and cultural resources within the Highlands Region. The Historic and Cultural Resource Inventory includes:

- All properties listed on the New Jersey or the National Register of Historic Places;
- All properties which have been deemed eligible for listing on the New Jersey or National Register; and
- All properties for which a formal SHPO opinion has been issued. A SHPO opinion is an evaluation of eligibility prepared when a federally funded activity is expected to have an effect on historic properties not listed on the National Register (see Figure 3.21 *Historic Preservation*).

The Highlands Historic, Cultural, and Archaeological Resource Inventory includes buildings, structures, sites, landmarks, objects, and historic landmark districts identified and evaluated to date. A great deal of the information was obtained from the New Jersey and National Registers of Historic Places, which list those special places that have been analyzed and recognized as important for their historic values. Historic, archaeological, and cultural resources in the Highlands Region include, but are not limited to:

- Agricultural Historic Districts and Farmsteads, including farm buildings such as houses, barns, windmills, spring houses, corn cribs, fields, fence lines, etc.;
- Historic Landmark Districts and architecture that represent a significant period in American History such as Ringwood Manor, Skylands Manor, Craftsman Farms, early stone houses, log cabins, churches, and schools;
- Archaeological sites, including early American settlements, such as the prehistoric Black Creek site in Sussex County, rock shelters, and historic mill and farm ruins;
- Designed landscapes attributed to a significant landscape architect or designer;
- Health and public welfare facilities, including Greystone Park (State Asylum for the Insane) and Morris County Alms House and Hospital;
- Industrial facilities or complexes, including Long Pond Ironworks, saw mills, grist mills, manufacturing sites, dams, quarries, mines, lime kilns, paper mills, and forge sites;
- Military installations and places of significance such as Picatinny Arsenal and American Revolutionary War Encampments, Battlefields, and skirmish sites;
- Recreational landmarks such as the Appalachian Trail, the White Deer Plaza and Boardwalk in Sparta Township, or Civilian Conservation Corps facilities;
- Transportation structures representing a significant period of time in history or unusual engineering type, such as the Morris Canal, and stone or steel-truss bridges; and
- Water supply facilities such as the Wanaque Reservoir dam.

Kim Ball Kaiser

Nathan McLean

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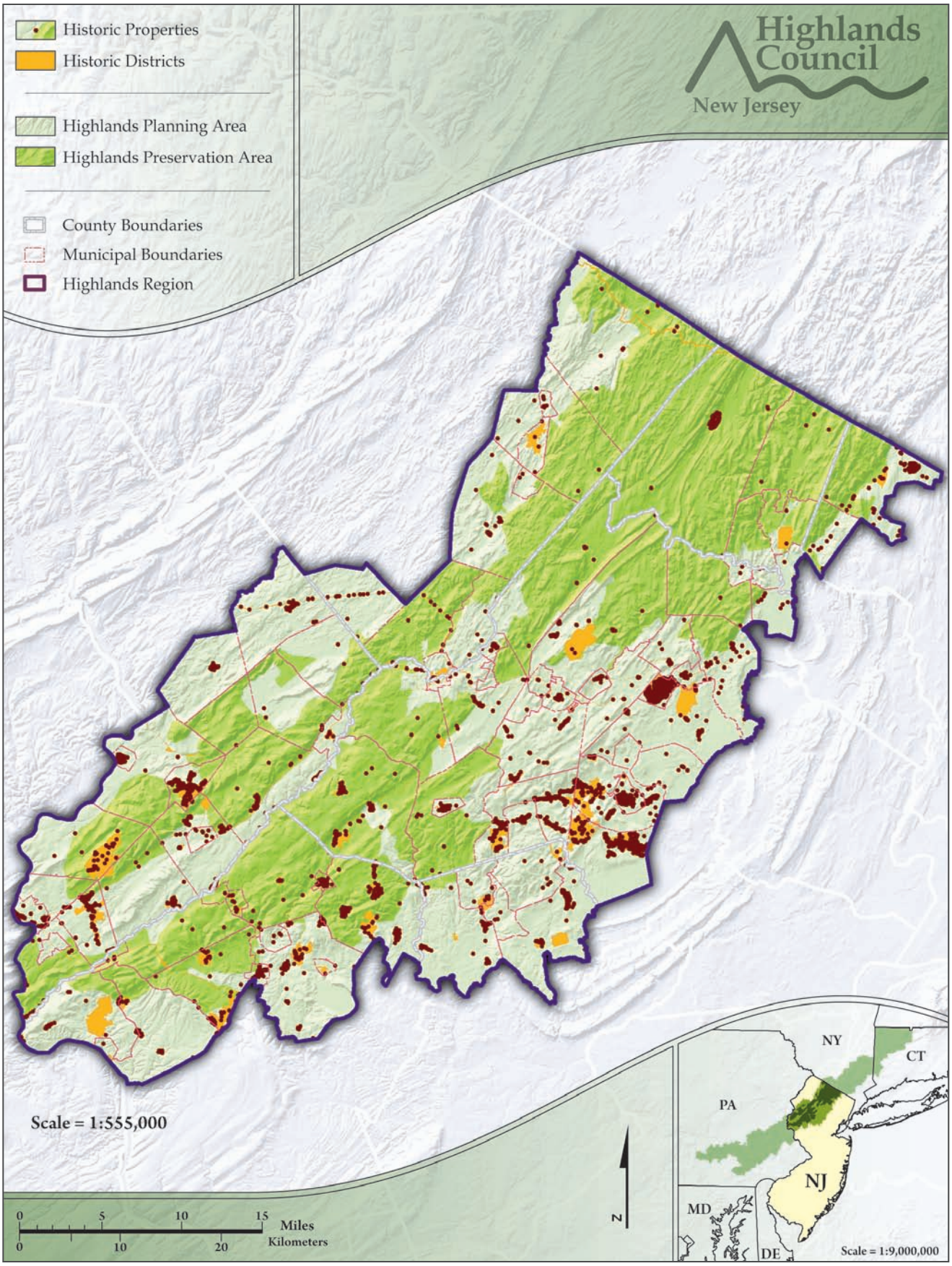
FIGURE 3.21: Historic Preservation



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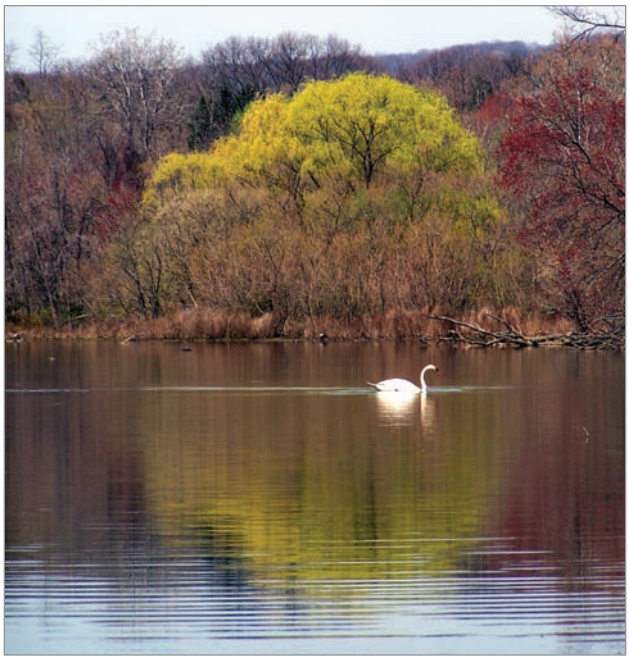
SUBPART B SCENIC RESOURCES

The scenic resources of the Highlands preserve the look and character of the area and ensure that beauty will remain for future generations. For many, the picturesque ridges and valleys are the most unique Highlands land features. While scenic resources have not previously been cataloged to the same extent as historical, archaeological, and cultural resources, the Highlands Council assembled a baseline Scenic Resource Inventory as a foundation.

Nathan McLean

The Highlands Council has initially identified a Scenic Resource Inventory of 131 scenic resource areas, including national historic landmarks, publicly-owned parks, forests, and recreation areas. This inventory will serve as a baseline from which to begin to refine a list of scenic resources.

The technical basis and additional background information on these historic, cultural, and scenic resource protection requirements can be found in the Highlands Council's *Historic, Cultural, Scenic, Recreation, and Tourism Technical Report*.



Nathan McLean

PART 5 Transportation

The Highlands Council is committed to helping shape the Highlands Region's transportation investments by working with State and local agencies and stakeholders. By promoting efficient land use, goods movement and increasing access to an inter-modal transportation system, the Highlands Council can better protect environmentally sensitive areas. By implementing smart growth principles and by looking at transportation and land use planning in a comprehensive manner, a long-term strategy can then be developed to better handle the Region's many transportation related concerns.

Following smart growth principles and efficient land use policy characterized by compact, mixed use development, higher densities and a more compact built environment, Highlands Region municipalities can begin to promote alternative modes of transportation to automobile travel. The Region can achieve the goals outlined in the Highlands Act by encouraging a more compact mixed-use pattern for new development and redevelopment, creating more transportation choices, including mass transportation, bicycle, and pedestrian travel.

The Highlands transportation system is a complex network of roads, railways, and bridges that supports various modes of travel including automobile, bus, rail,

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truck, bicycle, and pedestrian. The Highlands Region also includes seven airport facilities. There are four limited-access highways in the Highlands Region, which include Interstate Routes 78, 287, 80, and 280. There are also numerous US, State, and County routes and local roads providing extensive roadway access in the Region (see Figure 3.22 *Roadway Network*). There are also four major commuter rail lines in the Highlands Region: the Boonton Line, the Main Line and Bergen County Line, the Morris and Essex Line, and the Raritan Valley Line (see Figure 3.23 *Transit Network*).

In order to evaluate the Highlands roadway network performance, the Highlands Council worked with the New Jersey Department of Transportation (NJDOT) to develop a Highlands Sub-Area model based on information developed from a larger model known as the North Jersey Regional Transportation Model (NJRTM). The Highlands Sub-Area model summarizes the existing vehicular travel patterns and traffic conditions within the Highlands Region for the base year 2002. The NJRTM focus model covers 13 counties in Northern and Central New Jersey including the entire Highlands Region. It currently is the primary analysis tool for transportation planning in the Region. The model identifies major origin and destination trips generated in the Highlands Region, and reports on road capacity conditions during AM and PM peak periods.

The Regional Master Plan supports Transit Oriented Development as one example of a method that integrates mixed uses and transportation planning, by promoting more compact development in and around existing transportation infrastructure as an alternative to sprawl. Transit Oriented Development focuses mixed-use development around transit stations, and is designed to create walkable communities with access to multiple modes of transportation. The NJDOT, through its Transit Village Initiative working with NJ Transit, has been instrumental to advance Transit Oriented Development. Currently there are two municipalities in the Highlands Region, Netcong, and Morristown, that have been designated through the NJDOT's Transit Village Initiative. Also supporting Transit Oriented Development in New Jersey is the Transit Friendly Planning Assistance program, which is run by NJ Transit to support land use decisions around transportation hubs. Municipalities in the Highlands Region that have received funding from this program include Morristown, Netcong, and Dover.

Recognizing that the agricultural industry is a vital component of the economy, welfare, and cultural landscape of New Jersey, the Regional Master Plan also supports agricultural viability in the Highlands Region. One of the major problems facing farmers in New Jersey is the ability to move large pieces of farm equipment on public roadways in order to access different farms and markets safely and efficiently. In order to ensure the safety and viability of farming as an occupation in the Highlands Region, safe travel routes for farmers need to be coordinated with county and local governments and State agencies such as the NJDOT and the NJDA. New transportation improvements to roads and bridges need to be designed to accommodate farming equipment, especially in rural areas. Alternative routes should also be explored where feasible, whereby developing interparcel access roads for farmers to pass between cropped lands without increasing impervious surfaces or venturing onto well traveled roadways. In order to better serve farmers in the Highlands Region, "Farm-to-Market" routes should be established to improve upon the safe and efficient movement of goods from farms and areas of supply to areas where goods are demanded such as downtowns or urban markets.

Kim Ball Kaiser

The Highlands Act establishes the protection and restoration of natural resources as priority goals. One of the critical challenges of the transportation system is one of balancing regional transportation needs and environmental integrity. Innovative approaches to roadway design put greater emphasis on ecological systems. The

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FIGURE 3.22: Roadway Network

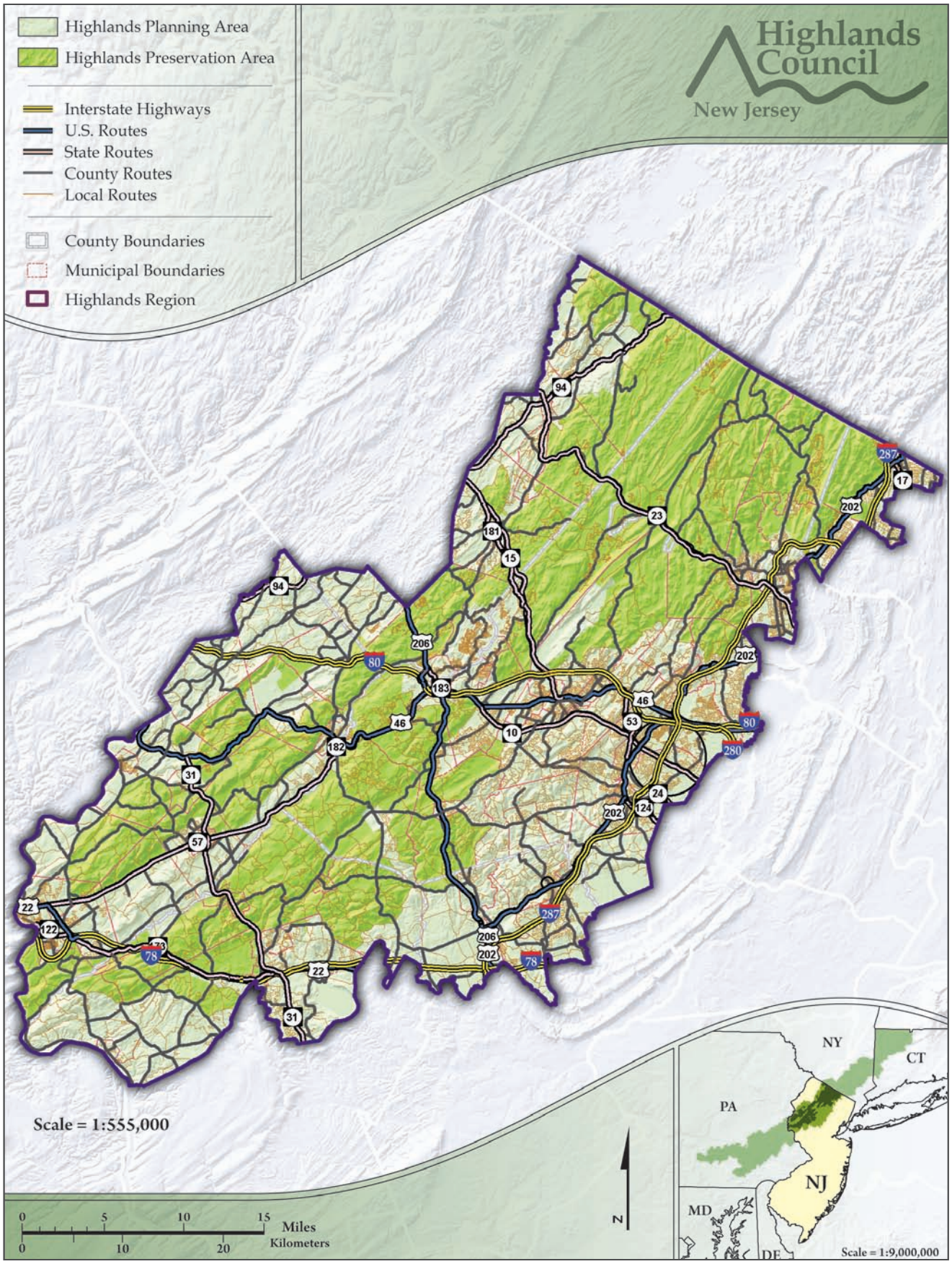

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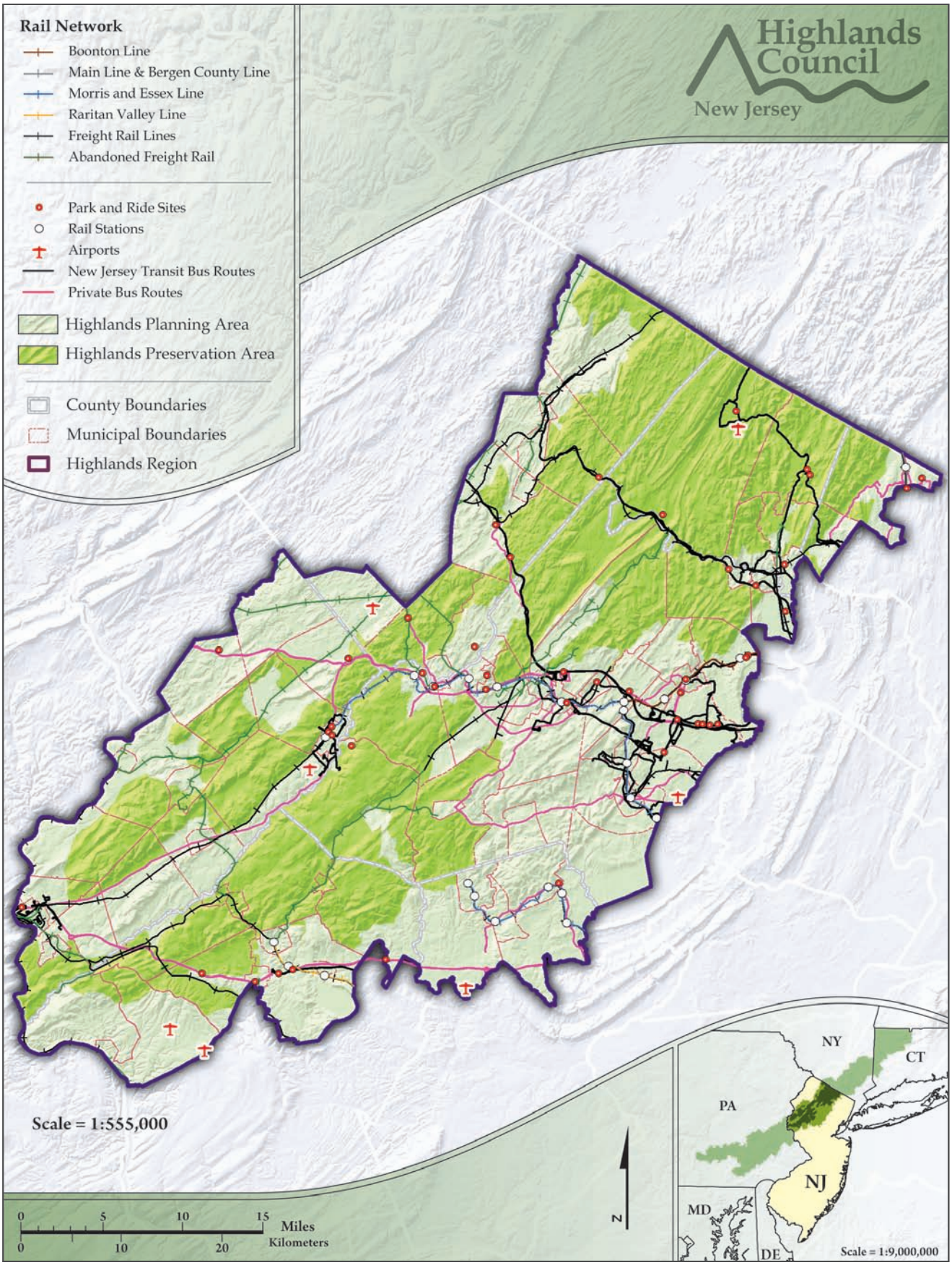
FIGURE 3.23: Transit Network



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term "Green Street" describes a series of low impact development approaches that seek to design a street system that protects water resources and minimizes the adverse affects of surface water runoff. The Regional Master Plan promotes site design measures which utilize low impact development practices as a key to reducing surface runoff pollution. Similarly, reducing surface parking requirements and encouraging shared parking also allows for reduced impervious surface areas. The Regional Master Plan also encourages context sensitive design as a strategy based on designing and planning projects in close collaboration with communities and stakeholders. This strategy encourages transportation officials to work with local stakeholders in order to design projects to reflect the people who live, work and travel in a certain area. This process of engaging communities can result in more improved transportation solutions which better address a particular community's transportation needs. The NJDOT and NJ Transit are encouraging communities statewide to develop a formal concept of what they want their towns to be in five, ten and twenty years. This approach allows for State agencies to then be a partner in fulfilling that vision and explaining any limitations to a particular project so that local expectations can be realized.

The technical basis and additional background information on transportation can be found in the Highlands Council's *Transportation System Preservation and Enhancement Technical Report*.

PART 6 Community Character

SUBPART A SOCIO-ECONOMIC CONDITIONS

The Highlands Region is a unique and dynamic place with distinct physical features, valuable natural resources, a diverse population, and a vital economy. This section describes socio-economic characteristics that define the Highlands Region, including population, income, employment, and land use. To understand the context of the Region's economic trends, the evaluation also includes statewide data. By monitoring socio-economic patterns, a greater understanding can be developed of the relationship between people, jobs, markets, and the forces shaping the regional economy.

Nathan McLean

There were approximately 821,547 people living in the Highlands Region in 2004. Between 1990 and 2004, the Highlands Region grew by 18 percent, an increase of about 126,000 people. The statewide population grew more slowly over the same 14-year period, increasing by about 12 percent.

Highlands Region counties on average have higher per capita incomes than New Jersey as a whole, and Highlands incomes rose somewhat faster than statewide between 1990 and 2000, with the fastest increases in Somerset County and the slowest in Passaic County. Median household income rose more slowly in the Highlands Region between 1990 and 2000 than in New Jersey as a whole, but remains substantially higher than the State average. Each county within the Highlands Region has unemployment rates below that of the State, indicating a stronger existing workforce.

The technical basis and additional background information on socio-economic conditions can be found in the Highlands Council's *Financial Analysis Technical Report*.

SUBPART B CURRENT LAND USE

Patterns of human development have shaped the land use of the Highlands Region. An examination of existing development patterns, in conjunction with features

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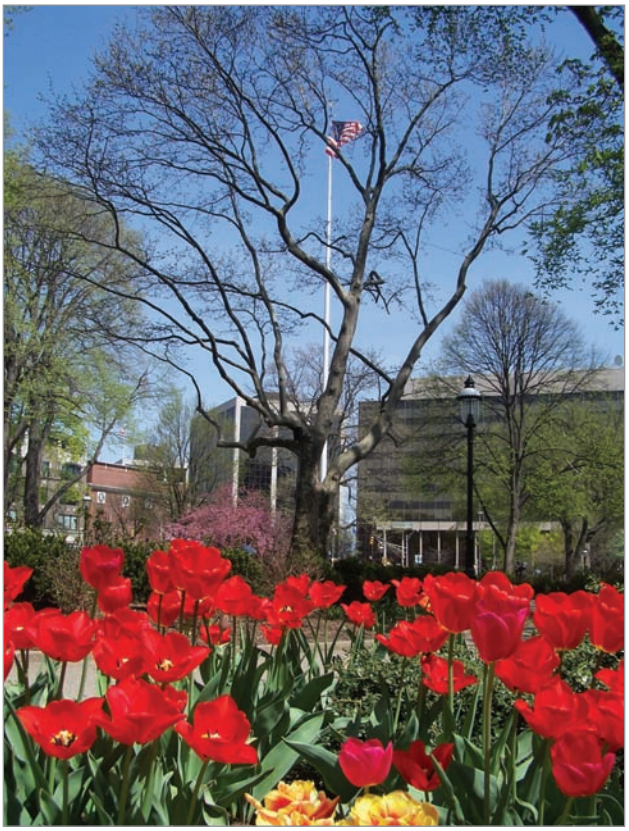
of the natural environment, reveals the implications of past development activities, future development opportunities, and resource restoration or enhancement needs.

1. LAND USE

The Council conducted a Developed Land Analysis that identified generalized developed areas based on current land uses, development activities, population density, impervious surfaces, and existing infrastructure. Approximately one quarter of the Highlands Region was classified as developed land in 2002 with most of that being residential land uses. The Planning Area contains the large majority (approximately 70 percent) of the developed lands in the Region.



Nathan McLean

The Council's analysis of population density identified concentrated areas of regional population density (see Figure 3.24 *Population Density* (2002)). Existing areas of development and areas that have been previously disturbed were identified in part by an impervious surface analysis (see Figure 3.25 *Impervious Surface*). The Council's Developed Land Analysis used indicators to characterize lands into the following land use categories capturing concentrations of previously developed lands ranging from compact development to lower density rural development (see Figure 3.26 *Developed Lands Analysis*):

- Core Developed Areas;
- Moderate Developed Areas;
- Suburban Fringe Developed Areas; and
- Rural Developed Areas.

The Highlands Council's approach will be to use the data gathered to inform Highlands municipalities and counties during Plan Conformance as they focus on regional and economic development opportunities. By using this information, local government entities will be able to modify their master plans to achieve greater environmental safeguards and protect cultural and aesthetic assets for their communities, as well as realize a predictable and sustainable economic future.

2. HOUSING

Housing contributes significantly to the land use pattern of the Highlands Region and is characterized by a diverse mix of older houses in smaller municipalities, more modern housing recently constructed in suburban and rural developments, and some infill developments. According to the 2000 Census, the Highlands Region had 296,543 housing units and an overall vacancy rate of approximately 4 percent. The housing stock is characterized by largely owner-occupied, single family detached homes, with 79 percent owner-occupied and 21 percent renter-occupied. Approximately half of the municipalities in the Highlands have a housing stock whose median age is 40 years or older.

Housing costs in the Highlands, as across the State, have been increasing. The average market value for a residential parcel in the 88 Highlands Region municipalities was $214,785 in 1990 and had risen to $310,694 by 2004, a 45 percent increase. Between 1990 and 2000, the Highlands Region added 33,441 housing units, increasing the housing stock by approximately 13 percent. Morris County added the greatest number of housing units while Somerset County had the greatest growth by percentage. Passaic County had the smallest increase in housing units measured both by number and percentage.

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FIGURE 3.24: Population Density (2002)

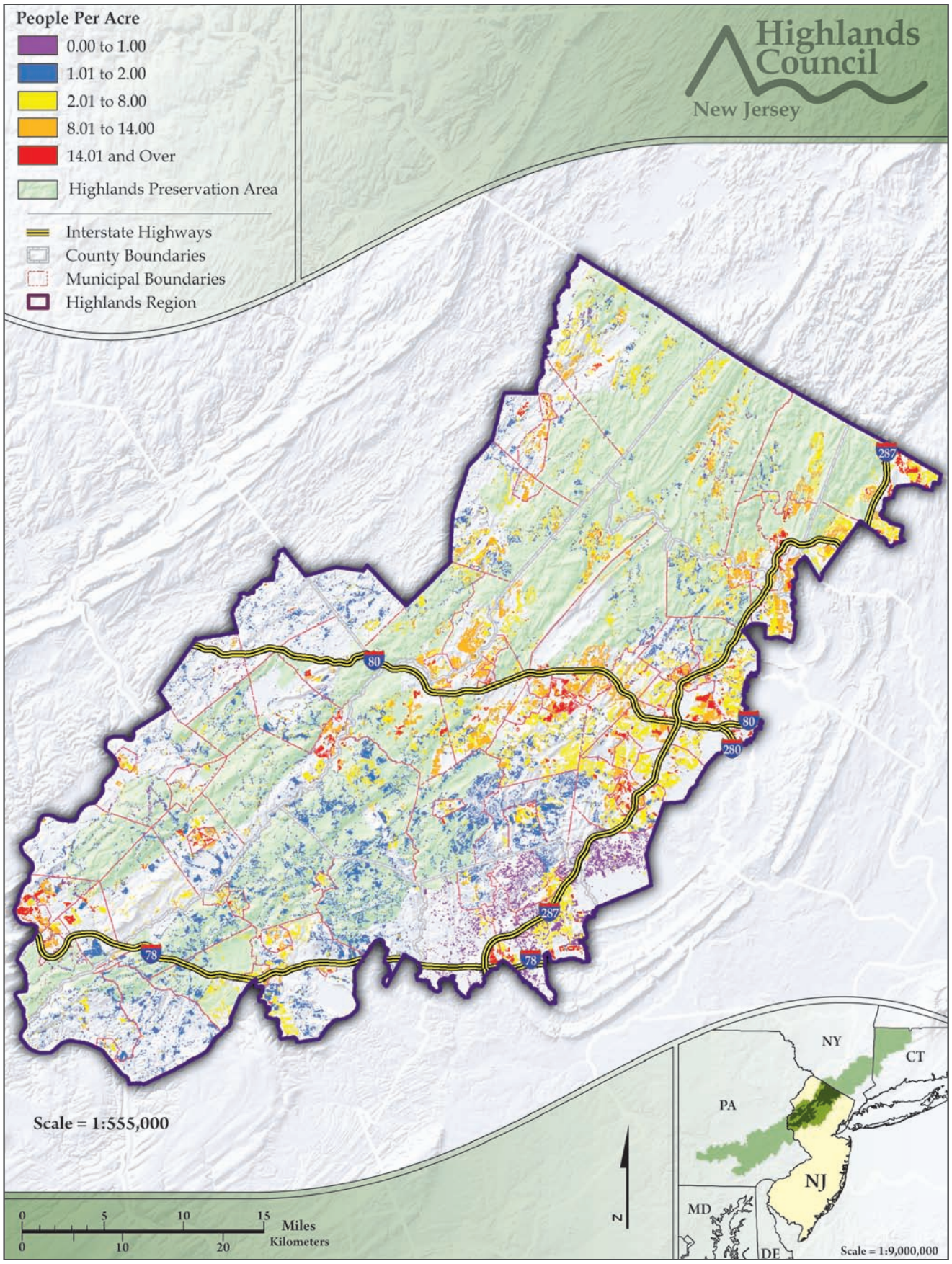

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FIGURE 3.25: Impervious Surface

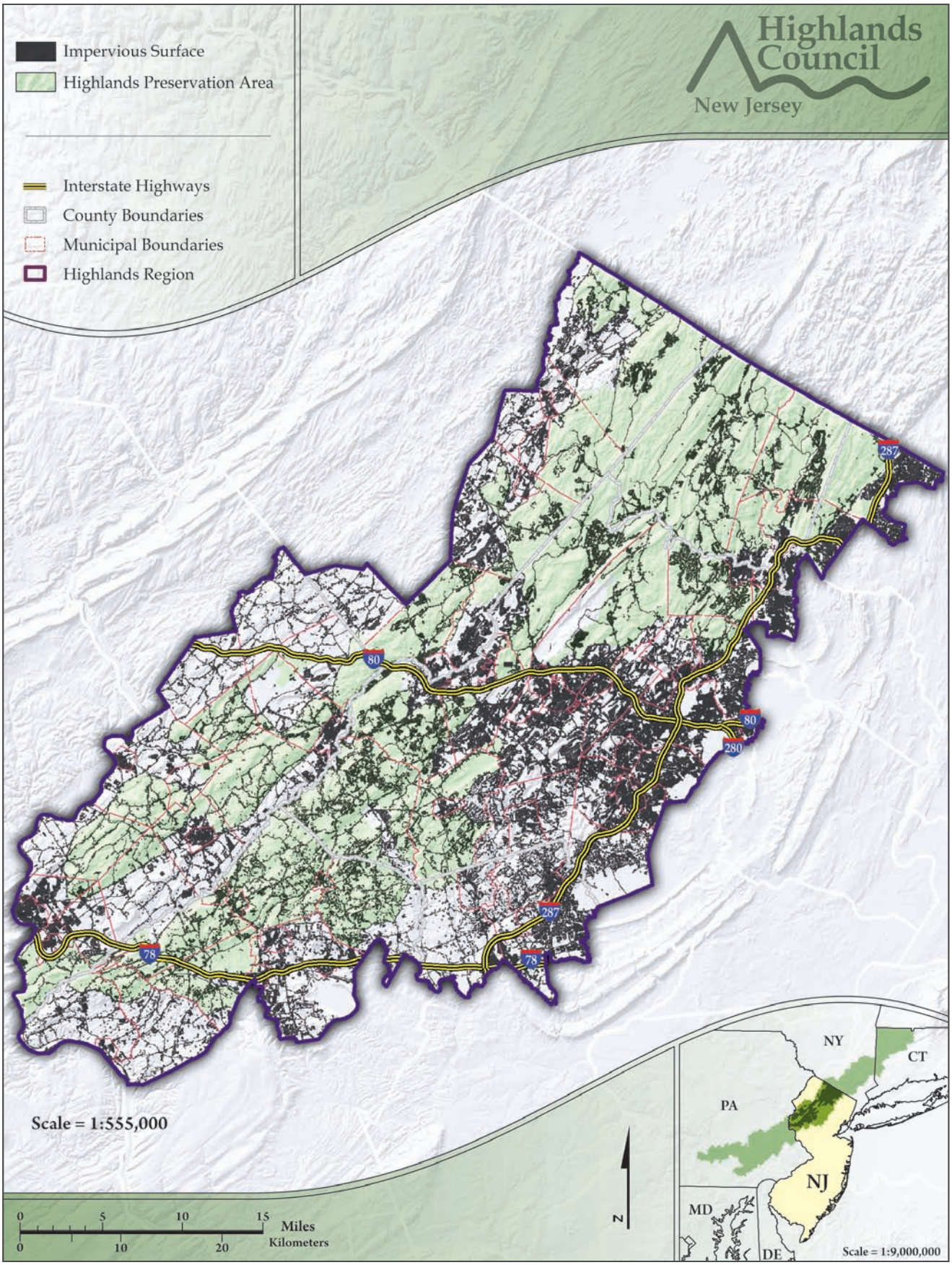

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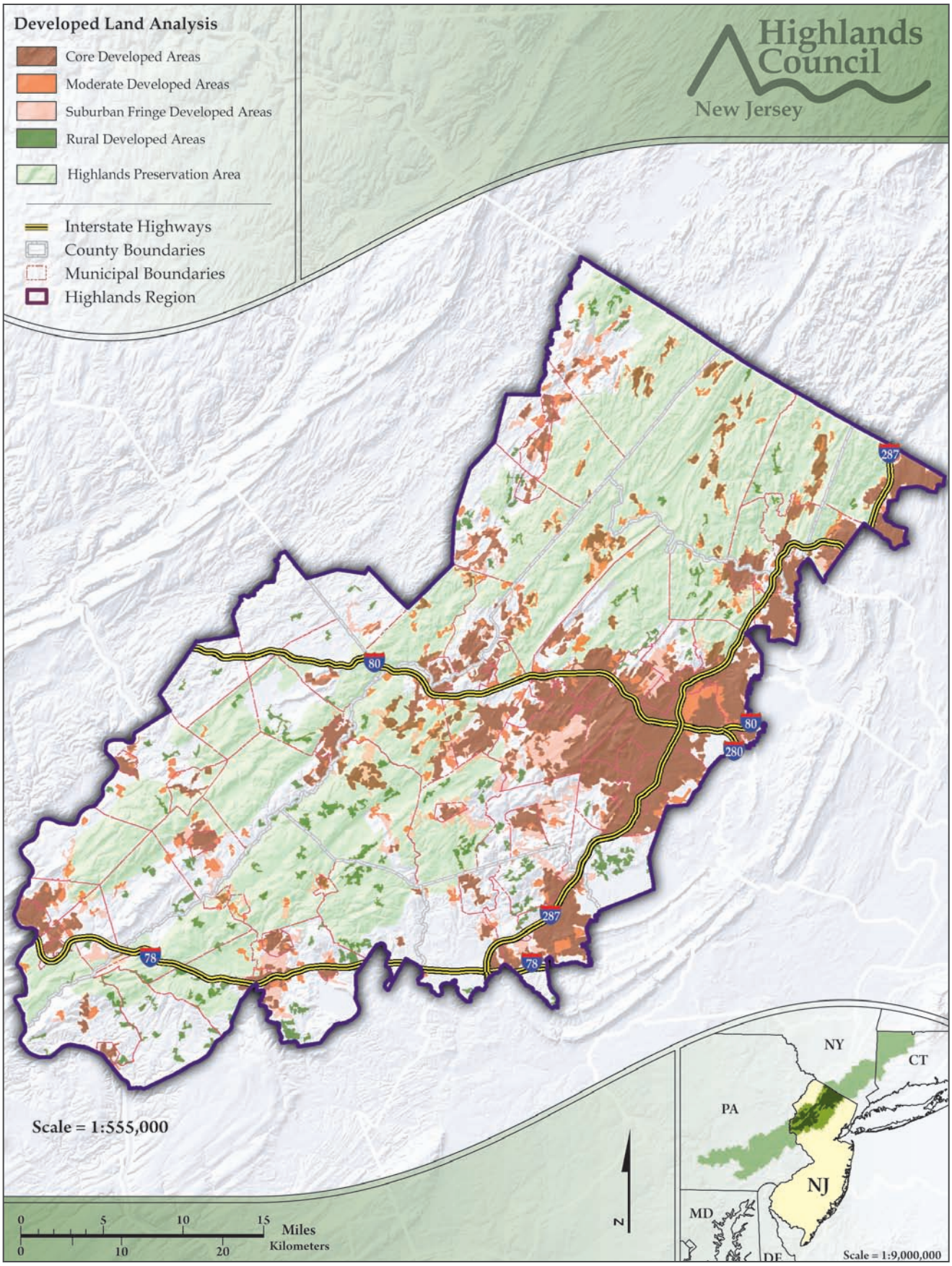
FIGURE 3.26: Developed Lands Analysis



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The New Jersey Supreme Court has determined, in its Mount Laurel decisions, that every municipality in a growth area has a constitutional obligation to provide through its land use regulations a realistic opportunity for a fair share of its region's present and prospective needs for housing for low and moderate income families. The Highlands Council is coordinating with the Council on Affordable Housing (COAH) to ensure that municipalities meet their housing obligations and that affordable housing is planned and sites are designed to meet the resource protection requirements of the Regional Master Plan. In the Highlands Region, there are currently 72 municipalities working with COAH to address their third round affordable housing obligations. COAH reports that as of February 2008, 7,400 units of affordable housing have been built and another 1,200 produced through Regional Contribution Agreements over the last 20 years. As third round plans become certified, the number of completed units will increase. The Highlands Council initiated a COAH Grant Program, to encourage Highlands municipalities to submit a Petition for Substantive Certification to COAH for their review and approval.

Table 3.1 *Highlands Region Housing Obligations* summarizes the rehabilitation share and prior round obligation, excluding any credits, reductions, and adjustments. It also provides COAH's household and employment projections, to which a municipality would apply a growth share ratio (after factoring for exclusions) to initially calculate the third round obligation (roughly for every five market-rate residential units constructed from January 1, 2004 to December 31, 2018, a one-unit affordable housing obligation is generated and for every 16 jobs resulting from new or expanded non-residential construction within the municipality from the same time period, a one-unit affordable housing obligation is generated).

TABLE 3.1: Highlands Region Housing Obligations

Highlands Region Housing Obligation	As Presented in the Adopted Third Round Rules	As Presented in the Proposed Amendments to the Third Round Rules
Rehabilitation Share	2,072	NA
1987-99 Prior Round Obligation	7,870	NA
Projections – Net Changes 2004-2018 (housing)	37,449	30,730
Projections – Net Changes 2004-2018 (employment)	84,084	100,268

3. ZONING

The Highlands Council compiled municipal zoning information from the 88 Highlands municipalities as of November 2005. The 1,304 individual municipal zones in the Region were consolidated into 16 Highlands Composite Zones (see Table 3.2 *Highlands Region Composite Zones*). The composite zones encompassing the greatest land area are Resource Residential and Rural Residential, which represent residentially zoned land with lot sizes ranging from over two acres to ten acres. The next most prevalent zone is Institutional/Public Lands, which includes open space, parks, and other civic uses, and represents 11 percent of all zoned land in the Highlands Region. Generally, the Planning Area has more lands which fall into residential zones of higher density while in the Preservation Area, the lower density residential zones predominate.

The Council's findings regarding existing zoning include the following:

- Current zoning places more than two-thirds of the non-residential floor space in areas that are inconsistent with the State Development and Redevelopment Plan;
- The current composite zoning in the Region has a very small mixed-use component, approximately one percent overall;
- Current zoning envisions future non-residential development in locations that do not have existing utilities; and
- Through adjustments to existing residential and non-residential zoning densities, a greater level of growth can be accommodated in more urban and suburban areas, and, in doing so, improve efficiency of existing utilities in areas served.

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TABLE 3.2: Highlands Region Composite Zones

Composite Zone	Acres	Percentage
Estate Residential	24,500	3%
Garden Apts.	144	0%
High Density Residential	33,796	4%
Industrial	32,999	4%
Institutional/Public Lands	87,559	11%
Low Density Residential	72,038	9%
Medium Density Residential	33,576	4%
Mixed Use	6,859	1%
Mixed Use/Age Restricted Housing	424	0%
Office/Commercial	19,676	2%
Retail	19,355	2%
Resource Residential	89,068	11%
Rural Residential	342,483	42%
Senior Age Restricted Housing	3,069	1%
Suburban Residential	42,604	5%
Townhouse/Attached Residential	4,354	1%
Highlands Region – Zoned Lands	**812,504**	**100%**

See the *Regional Land Use Conditions* and *Smart Design Guidelines Technical Report* for additional discussion regarding municipal zoning and the *Highlands Regional Build Out Technical Report* for an analysis of several land use development scenarios that evaluate municipal zoning.

SUBPART C DEVELOPMENT AND REDEVELOPMENT

The Highlands Act is premised on the fact that the trends of the past cannot be sustained and thus discourages "piecemeal, scattered, and inappropriate development" and contemplates a new, comprehensive, more sustainable pattern of development for the future. Land development must remain within limits that are sustainable and do not harm the natural and cultural resources of the Highlands Region. Land that will be available for development or redevelopment will be limited and must be utilized as efficiently as possible to provide for community needs, economic growth and uses that support the future of the Highlands as advanced by the Regional Master Plan.

1. REGIONAL AND LOCAL INITIATIVES

Regional development in the Highlands is intended to take advantage of the opportunities associated with development and/or redevelopment of brownfields and grayfields, transit villages, downtowns, and existing centers. Brownfields and grayfields are two types of sites which commonly possess characteristics worthy of investigation for purposes of redevelopment. The definition of a brownfield is, "any former or current commercial or industrial site that is currently vacant or underutilized and on which there has been or there is suspected to have been, a discharge of a contaminant." Grayfields are sites usually containing industrial or commercial facilities exhibiting signs of abandonment or underutilization in areas with existing infrastructure, but are generally not known to be contaminated. Grayfields may also include a residential component.

The Regional Master Plan strives to meet the Region's growth needs by guiding growth toward those areas with existing communities and available infrastructure, and less constrained by environmental factors.

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Redevelopment activities may be accommodated in previously settled areas, thus conserving natural resources and protecting drinking water supplies and advancing smart growth principles in the Region. Redevelopment can transform vacant, underutilized, or blighted properties into productive uses. New Jersey has a strong history of utilizing redevelopment to improve the physical infrastructure and facilities of its communities. As reported by the New Jersey Office of Smart Growth, there are currently multiple redevelopment initiatives in Highlands communities. Morristown, Dover, and Phillipsburg are examples of established communities pursuing redevelopment, revitalization and transit oriented development approaches in their land use planning. Currently, there are 21 communities in the Highlands Region that are participating in State programs targeted at smart growth planning, community development, and downtown revitalization including State Planning Commission designated centers, Urban Enterprise Zones, Main Street New Jersey, and Transit Villages.

Nathan McLean

2. SMART DESIGN CHOICES

Smart growth planning and sustainable design are complementary approaches to ensuring that development and redevelopment happen regionally at appropriate locations and utilize on-site design elements and construction techniques that add long term value to the built environment. Smart growth guides development toward locations where existing or planned infrastructure supports prosperous neighborhoods where people find housing, jobs, schools, and open spaces within proximity to one another. Sustainable design balances the various elements of the built and natural landscape to deliver long term beneficial results for the environment, economy, and society. Together, sustainable design and smart growth principles are an integral component of land use management in the Highlands.

Smart growth is the term given to the comprehensive planning process utilized in guiding, designing, and developing communities that are multi-faceted and balanced, located near appropriate community services and transportation, and fit within the natural landscape without undue detrimental impacts. Smart growth is largely about a thoughtful mix of development located in appropriate places. Smart growth concepts link the macro-scale of capacity-based land use planning to the micro-scale of site design.

Sustainability is described in the American Planning Association's *Policy Guide on Planning for Sustainability* as "the capability to equitably meet the vital human needs of the present without compromising the ability of future generations to meet their own needs by preserving and protecting the area's ecosystems and natural resources. The concept of sustainability describes a condition in which human use of natural resources, required for the continuation of life, is in balance with nature's ability to replenish them." Sustainable design encompasses all of the decisions related to how development occurs in the natural landscape and in the built environment. These decisions, which are largely in the realm of local government, determine whether the development will contribute positively to the overall environment and economy of an area or detract from it. The concept of sustainability and its application to land use management will guide regional preservation decisions and the identification of potential growth and redevelopment areas within the Highlands Region.

At the scale of site design, sustainable smart growth practices need to be supported by the implementation of sustainable or "green" design practices. A green and/or smart design process incorporates environmental considerations into every phase of development, and utilizes a holistic approach throughout each decision step. Green design principles focus on four broad areas: 1) location efficiency; 2) site design and layout (including landscaping); 3) infrastructure design and technology; and 4) building design (including conservation measures).

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1. **Location efficiency** applies to both regional scale and local scale decisions regarding where preservation is needed and where development is appropriate. Regional location efficiency reflects capacity-based planning which looks at how best to manage land use within the Region. It utilizes an examination of natural and built conditions to help identify where development is appropriate, the intensity and timing of development that may be supported, and where preservation is needed. Local scale decisions are focused on site specific conditions and locational efficiencies based on community needs as well as resource protection.
2. **Efficient site design and layout** requires a thorough understanding of the characteristics of individual sites. The process begins with a detailed site analysis and utilizes the results to design how structures, infrastructure, and open spaces are arranged in the landscape. Efficient site design considerations include location-specific details like microclimate to guide building orientation and landscape decisions geared toward maximizing the benefits of solar orientation, reducing energy costs and promoting low-maintenance landscaping.
3. **Infrastructure design** can be vital to the reduction of impacts from development on the natural environment. Low impact development is an element of smart growth that lets the natural features of the land guide site design and development. Low impact development techniques for managing stormwater, for example, are designed to more closely mimic the natural hydrologic characteristics of the land and reduce the adverse effects of runoff. Infrastructure design and construction should be approached with flexibility to allow for the use of creative technologies that can demonstrate significant reductions of the negative effects associated with traditional development methods.
4. **Conservation development** considerations include building design decisions that relate to the choice of building materials and systems. Building materials should be selected based on whether or not they are made from sustainable resources and the ease of transporting those supplies, ideally using locally produced materials. Interior and exterior building systems should be designed and constructed to be energy and resource efficient. Water conservation measures may include low flow valves, greywater re-use systems and rain cisterns for irrigation. Energy conservation in design includes the use of energy-efficient appliances and lighting, as well as the strategic placement of windows, shades, awnings, and overhangs.

The technical basis and additional background information on Community Character can be found in the Highlands Council's *Regional Land Use Conditions and Smart Design Guidelines Technical Report*.

Nathan McLean

SUBPART D FUTURE LAND USE

The Highlands Council utilized the results of the Resource Assessment to identify those lands within the Highlands Region with significant natural and ecological resources. Indicators were used to measure the relative quality of a particular resource, such as ground water recharge, watershed condition, Open Waters and Riparian Areas, forests, Critical Habitat, and slopes. Areas with significant agricultural lands and important farmland soils were also evaluated. A determination was made as to their quality and importance to the Highlands Region.

The Council then used the results of the Smart Growth analysis to identify the nature and extent of developed lands that have limited and dispersed environmental and agricultural resources. Areas were identified based upon existing patterns of development with particular emphasis on areas that are currently served by existing

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water and wastewater infrastructure. These findings were used to develop the Land Use Capability Map Series as follows:

1. Land Use Capability Zone Map;
2. Land Use Capability Water Availability Map;
3. Land Use Capability Public Community Water Systems Map;
4. Land Use Capability Domestic Sewerage Facilities Map; and
5. Land Use Capability Septic System Yield Map.

1. LAND USE CAPABILITY ZONE MAP

The goal of the Land Use Capability Zone Map is to address the requirements of the Highlands Act and provide regional guidance for the implementation of the policies contained in the Regional Master Plan. The challenge of the Land Use Capability Zone Map was to recognize the range and nature of land throughout the Highlands Region, and assign an overlay zone that best represents the requirements of the Highlands Act and the policies of the Regional Master Plan. As anticipated, and confirmed during the mapping process, there were areas that clearly met the criteria of an overlay zone definition, while other areas exhibited characteristics of more than one zone.

Twenty-one indicators were used to characterize the Highlands Region and to assign the most appropriate overlay zone classification. Three types of indicators were used, including feature based indicators, "intensity" indicators, and integrity-based indicators.

Feature based indicators capture the location and extent of geographic objects such as farms or areas served with wastewater utilities.

The "intensity" indicators were developed using a Highlands mapping approach that calculated the magnitude to which an area in question included a particular feature. These "intensity" indicators can be described as capturing the critical mass of a feature or combination of features.

The integrity-based indicators measure the relative degree of the quality of a particular resource – such as forest.

The technical basis and additional background information on land use can be found in the Highlands Council's *Land Use Capability Zone Map Technical Report*.

Inherent in the definition of each overlay zone is a determination of the overall carrying capacity for development. Carrying capacity has two basic components – natural resource capacity and infrastructure capacity – that must both be addressed in establishing an appropriate development density. Essentially, growth can only occur if the natural resource carrying capacity (e.g., water supply source, pollutant assimilative capacity, ecological viability) and infrastructure carrying capacity (e.g., public water supply, wastewater treatment, and transportation systems) are available.

Overlay zones build upon municipal zoning by establishing additional standards and criteria, and are intended to provide a means to address a special public interest (e.g., watershed management area, open space preservation, historic preservation, urban enterprise zone, etc.) that the underlying municipal zoning may not otherwise take into consideration.

Underlying municipal zoning establishes permitted land uses, while overlay zones may detail more site specific requirements aimed at a certain goal, with the stricter standard applying. In terms of the Regional Master Plan, examples of these standards may include best management practices related to preservation of agricultural lands or green building approaches for development initiatives.

The Highlands Council has developed three primary overlay zones (the Protection Zone, Conservation Zone, and Existing Community Zone) and four subzones (Wildlife Management Sub-Zone, Conservation Zone – Environmentally Constrained, Existing Community Zone – Environmentally Constrained, and Lake Community) each with their own purpose, application, and development criteria (see Figure 3.27 *Land Use Capability Zone Map)*. These zones apply within both the Preservation and Planning Areas, though at times with distinct policies and standards in compliance with Highlands Act requirements. The Highlands Council used a 75 acre minimum mapping threshold for the delineation of the three primary overlay zones.

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These zones distinguish between resource constrained lands, where development will be limited (Protection Zone), and those lands characterized by existing patterns of human development where, dependent on land or capacity constraints, additional growth may or may not be appropriate (Existing Community Zone). The Conservation Zone identifies those areas with a high concentration of agricultural lands and associated woodlands and environmental features, where development potential may be limited based on the limitations of available infrastructure to support development (e.g., water availability, the existence of concentrated environmental resources that are easily impaired by development, or the protection of important agricultural resources).

In addition to these three primary overlay zones, four sub-zones within the Protection, Conservation, and the Existing Community Zones have been identified. These constrained areas recognize regionally significant sensitive environmental features where development should be subject to limitations on resource protection, consumptive and depletive water use, and degradation of water quality. The constrained areas do not represent all environmental constraints, and additional environmental restrictions may apply during site planning.

The **Protection Zone** consists of high natural resource value lands that are important to maintaining water quality, water quantity and sensitive ecological resources and processes. Land acquisition is a high priority in the Protection Zone and development activities will be extremely limited; any development will be subject to stringent limitations on consumptive and depletive water use, degradation of water quality, and impacts to environmentally sensitive lands.

The **Wildlife Management Sub-Zone** consists of both areas managed by the United States Fish and Wildlife Service as part of the National Wildlife Refuge System and Wildlife Management Area System administered by the NJDEP Division of Fish & Wildlife's Bureau of Land Management. These areas are part of a network of lands and waters for conservation, management, and where appropriate, restoration of fish, wildlife, and plant resources and their habitats and permit compatible wildlife-dependent recreational uses such as hunting, fishing, wildlife observation and photography, and environmental education and interpretation. There is no minimum mapping threshold for the delineation of the Wildlife Management Sub-Zone.

The **Conservation Zone** consists of areas with significant agricultural lands and interspersed with associated woodlands and environmental features that should be preserved when possible. Non-agricultural development activities will be limited in area and intensity due to infrastructure constraints and resource protection goals.

The **Conservation Zone – Environmentally Constrained Sub-Zone** consists of significant environmental features within the Conservation Zone that should be preserved and protected from non-agricultural development. Development activities will be limited and subject to stringent limitations on consumptive and depletive water use, degradation of water quality, and impacts to environmentally sensitive lands.

The **Existing Community Zone** consists of areas with regionally significant concentrated development signifying existing communities. These areas tend to have limited environmental constraints due to previous development patterns, and may have existing infrastructure that can support development and redevelopment provided that such development is compatible with the protection and character of the Highlands environment, at levels that are appropriate to maintain the character of established communities.

The **Existing Community Zone – Environmentally Constrained Sub-Zone** consists of significant contiguous Critical Habitat, steep slopes and forested lands within the Existing Community Zone that should be protected form further fragmentation. They serve as regional habitat "stepping stones" to larger contiguous Critical Habitat and forested areas. As such, they are not appropriate for significant development, and are best served by land preservation and protection. Development is subject to stringent limitations on consumptive and depletive water use, degradation of water quality, and impacts to environmentally sensitive lands.

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The **Lake Community Sub-Zone** consists of patterns of community development that are within the Existing Community Zone within 1,000 feet of lakes. The Highlands Council focused on lakes that are 10 acres or greater and delineated lake management areas consisting of an area of up to 1,000 feet (depending on the protection focus) from the lake shoreline in order to protect water quality, resource features, shoreline development recreation, scenic quality and community character. A future management area is planned, encompassing the full lake watershed, for protection of the lake water quality. This zone has unique policies to prevent degradation of water quality, and watershed pollution, harm to lake ecosystems, and promote natural aesthetic values within the Existing Community Zone.

In terms of the overall breakdown of the Highlands Region by each of the Land Use Capability Zones (see Table 3.3 *Land Use Capability Zone Map – Acres and Percentages by Zone*) the Highlands Council found that nearly 75 percent of the Highlands Region is either in the Protection Zone or one of the four Sub-Zones (Wildlife Management, Existing Community-Environmentally Constrained, Conservation-Environmentally Constrained, or Lake Community).

An analysis of the composition of land use within each of the Land Use Capability Zones (see Table 3.4 *Land Use Characteristics by Land Use Capability Zone*) illustrate that the Protection Zone includes most of the forest, water and wetlands. The composition of the Existing Community Zone includes most of the residential, commercial and industrial uses, while the Existing Community – Environmentally Constrained Zones includes mostly forest, water, and wetlands, and demonstrates the existence of natural resources within an otherwise developed landscape. The Conservation Zone includes the vast majority of the agricultural uses within the Highlands Region.

TABLE 3.3: Land Use Capability Zone Map – Acres and Percentages by Zone

Land Use Capability Zone Map	Highlands Region	
	Area (acres)	Percent of Land Class
Protection Zone	430,198	50.06%
Wildlife Management Sub-Zone	46,463	5.41%
Conservation Zone	68,806	8.01%
Conservation – Environmentally Constrained Sub-Zone	115,474	13.44%
Existing Community Zone	145,682	16.95%
Existing Community – Environmentally Constrained Sub-Zone	32,098	3.74%
Lake Community Sub-Zone	20,637	2.40%
TOTAL	**859,358**	**100.00%**

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TABLE 3.4: Land Use Characteristics by Land Use Capability Zone

Land Classification (2002)	Protection Zone		Conservation Zone		Existing Community Zone	
	Area (acres)	Percent of Land Class	Area (acres)	Percent of Land Class	Area (acres)	Percent of Land Class
Residential	42,126	9.79%	13,331	19.37%	83,487	57.31%
Commercial	1,947	0.45%	827	1.20%	11,884	8.16%
Industrial	687	0.16%	364	0.53%	4,023	2.76%
Other Urban	12,190	2.83%	2,799	4.07%	20,105	13.80%
Agriculture	12,035	2.80%	38,924	56.57%	2,369	1.63%
Forest	285,895	66.46%	7,194	10.46%	10,805	7.42%
Water	21,437	4.98%	816	1.19%	6,070	4.17%
Wetlands	50,310	11.69%	3,825	5.56%	4,138	2.84%
Barren Land	3,571	0.83%	727	1.06%	2,800	1.92%
TOTAL	**430,198**	–	**68,806**	–	**145,682**	–

Land Classification (2002)	Wildlife Management Sub-Zone		Conservation – Environmentally Constrained Sub-Zone		Existing Community – Environmentally Constrained Sub-Zone	
	Area (acres)	Percent of Land Class	Area (acres)	Percent of Land Class	Area (acres)	Percent of Land Class
Residential	275	0.59%	2,650	2.29%	1,130	3.52%
Commercial	37	0.08%	87	0.07%	122	0.38%
Industrial	16	0.03%	59	0.05%	50	0.16%
Other Urban	1,035	2.23%	1,158	1.00%	1,030	3.21%
Agriculture	3,242	6.98%	52,322	45.31%	591	1.84%
Forest	29,649	63.81%	42,484	36.79%	21,947	68.38%
Water	2,046	4.40%	741	0.64%	1,279	3.99%
Wetlands	10,124	21.79%	15,460	13.39%	5,282	16.46%
Barren Land	40	0.09%	514	0.44%	666	2.07%
TOTAL	**46,463**	–	**115,474**	–	**32,098**	–

Land Classification (2002)	Lake Community Sub-Zone		Highlands Region	
	Area (acres)	Percent of Land Class	Area (acres)	Percent of Land Class
Residential	11,951	57.91%	154,949	18.03%
Commercial	973	4.71%	15,877	1.85%
Industrial	276	1.34%	5,474	0.64%
Other Urban	1,803	8.74%	40,121	4.67%
Agriculture	100	0.49%	109,582	12.75%
Forest	4,024	19.50%	401,999	46.78%
Water	402	1.95%	32,792	3.82%
Wetlands	810	3.92%	89,949	10.47%
Barren Land	297	1.44%	8,615	1.00%
TOTAL	**20,637**	–	**859,358**	**100.00%**

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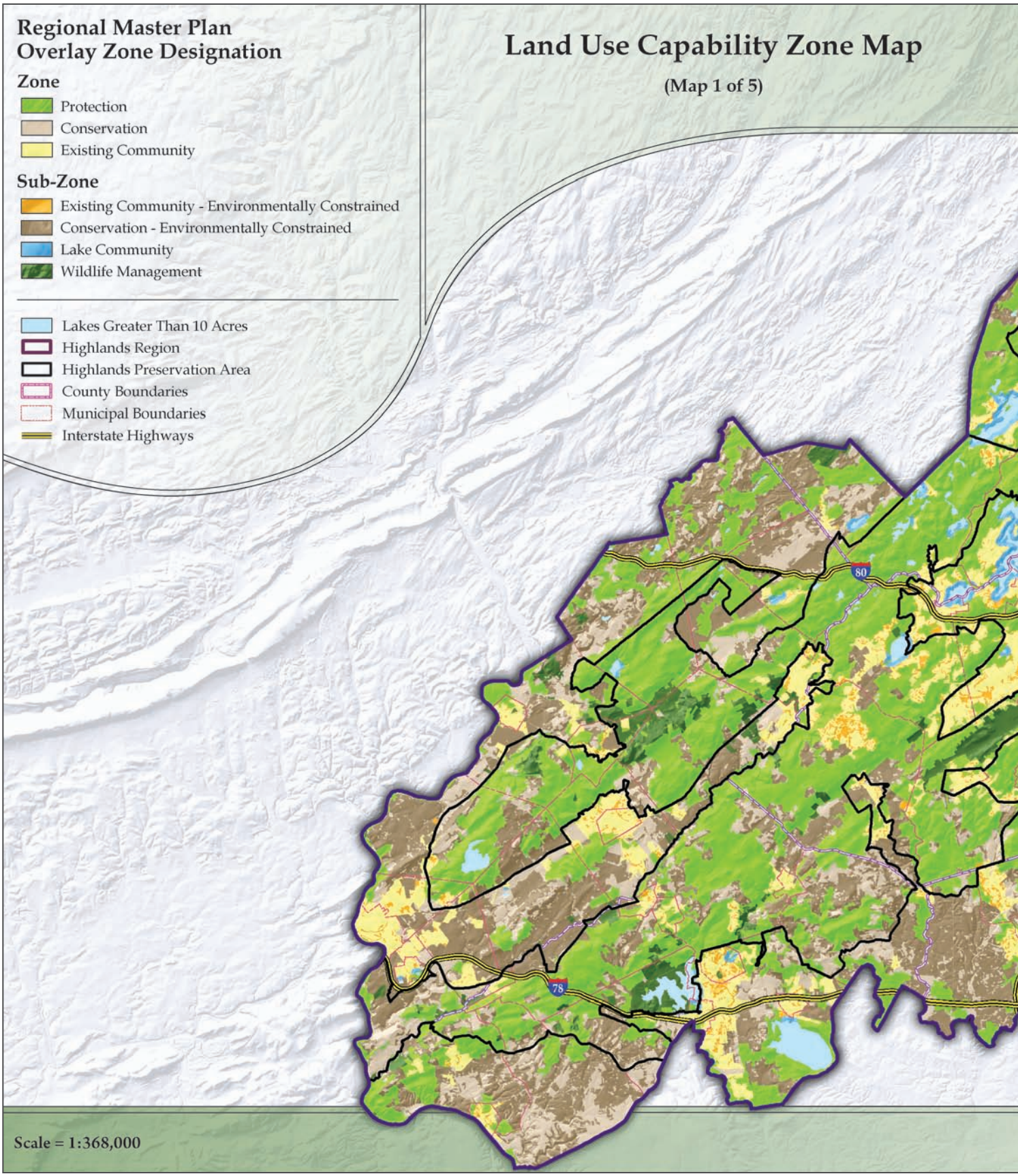
FIGURE 3.27



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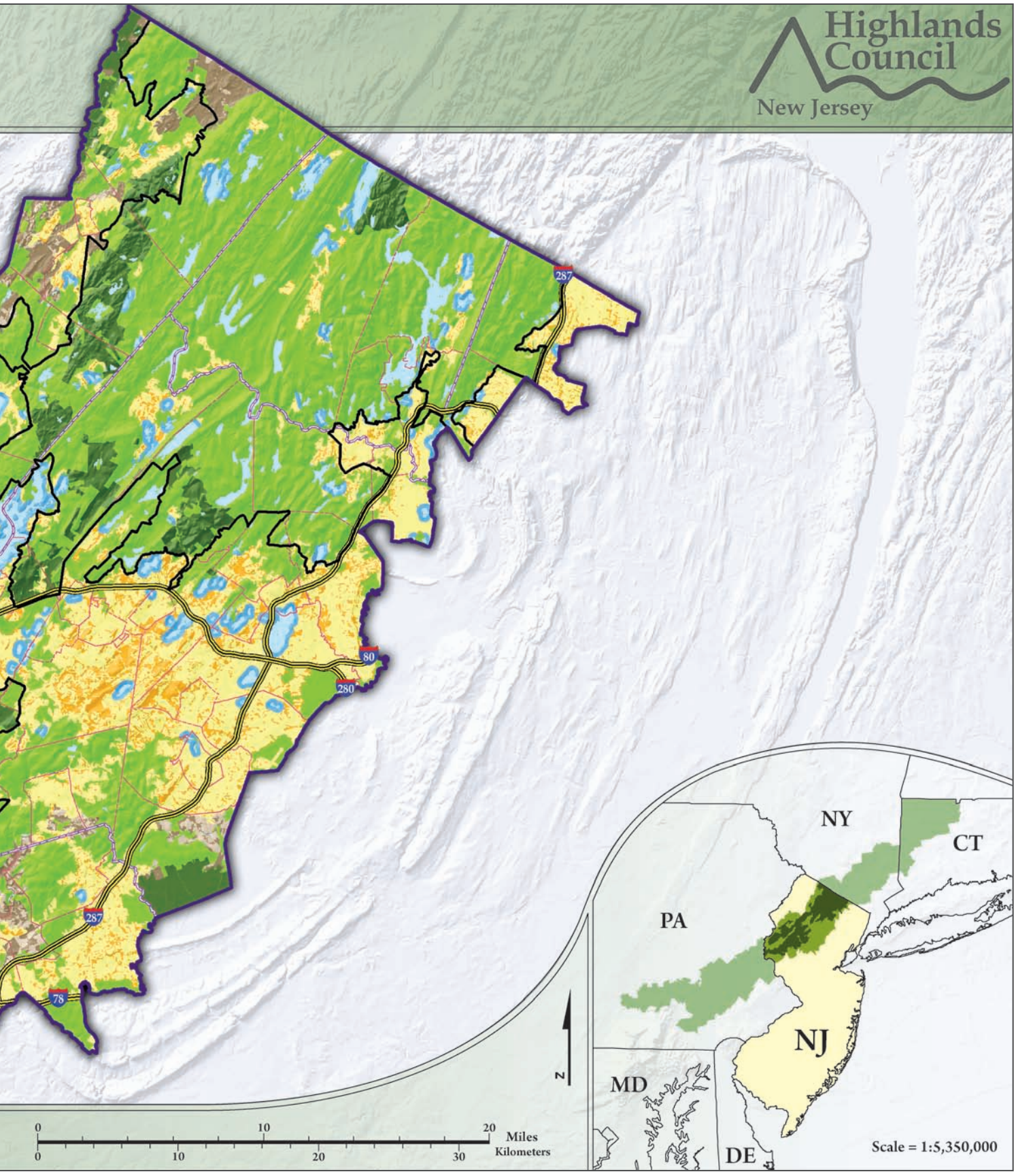

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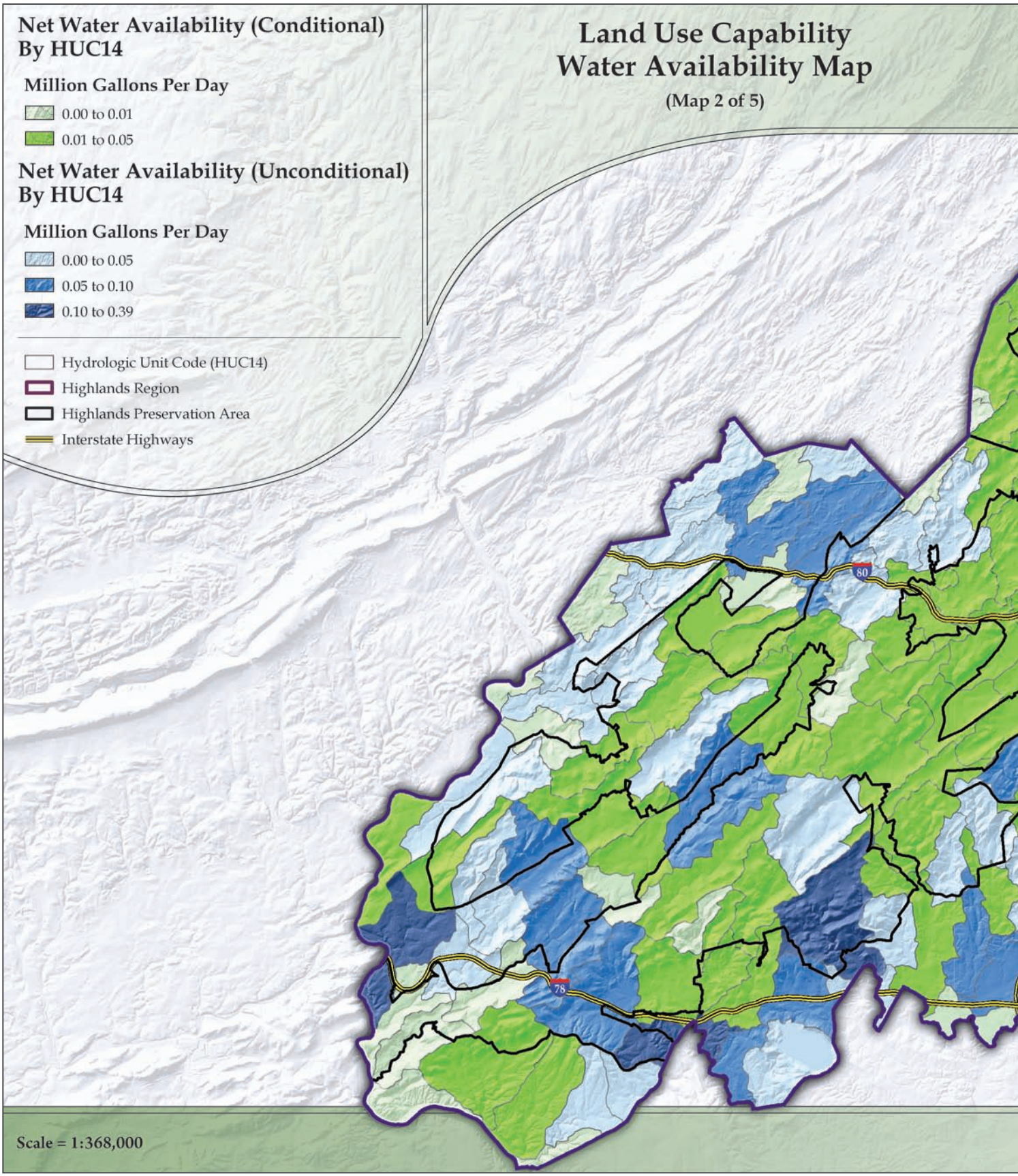
FIGURE 3.28



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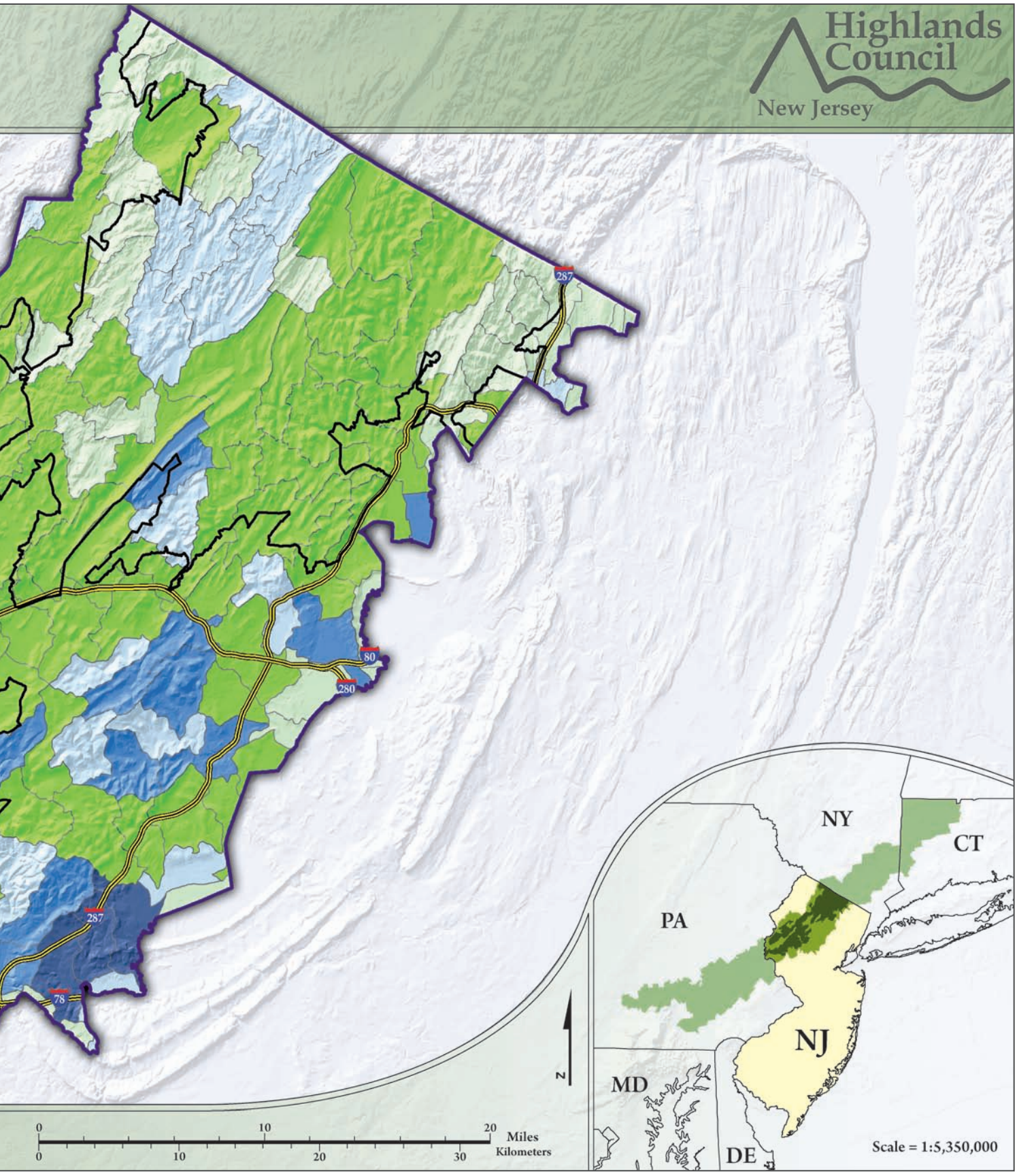

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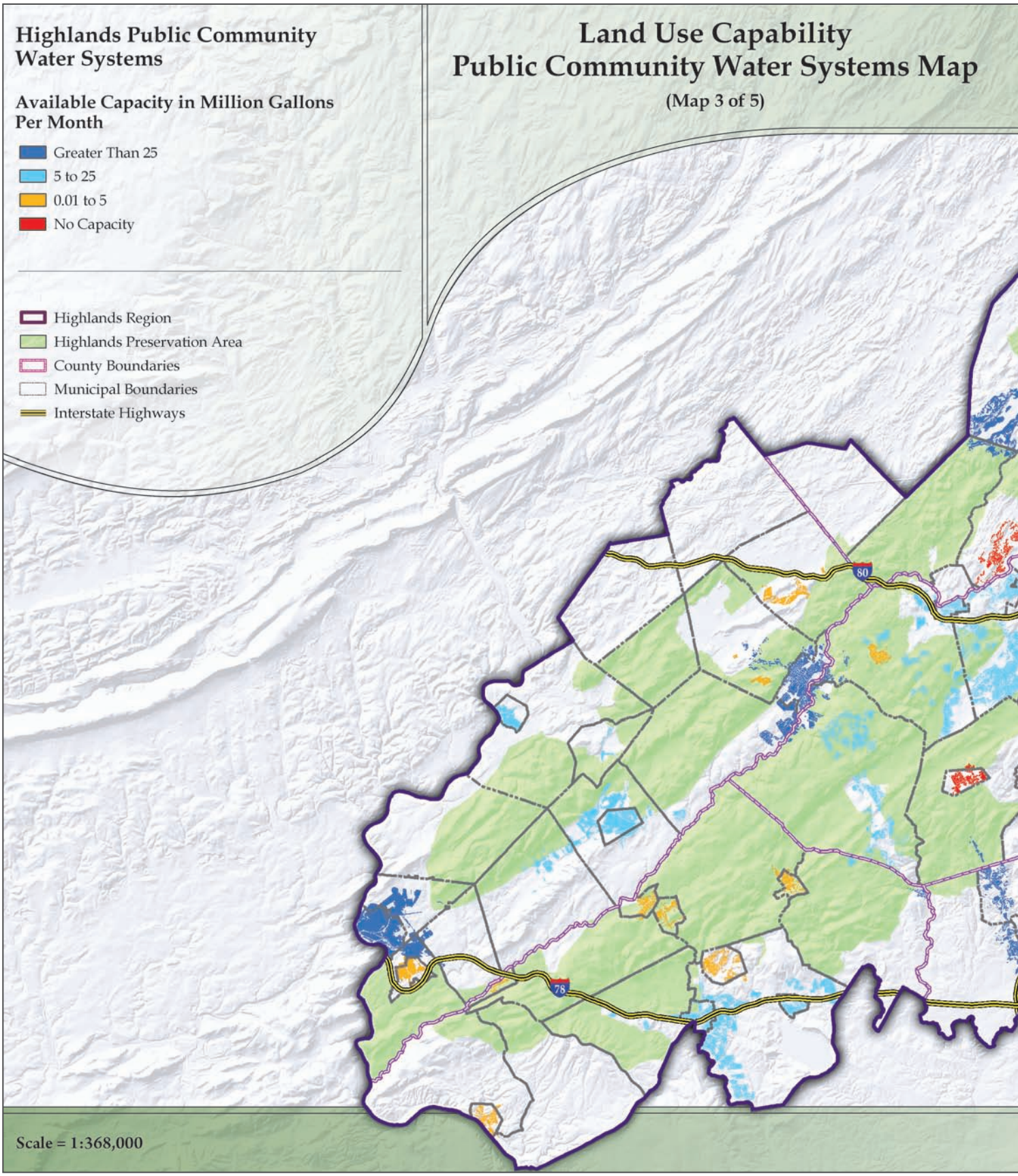
FIGURE 3.29



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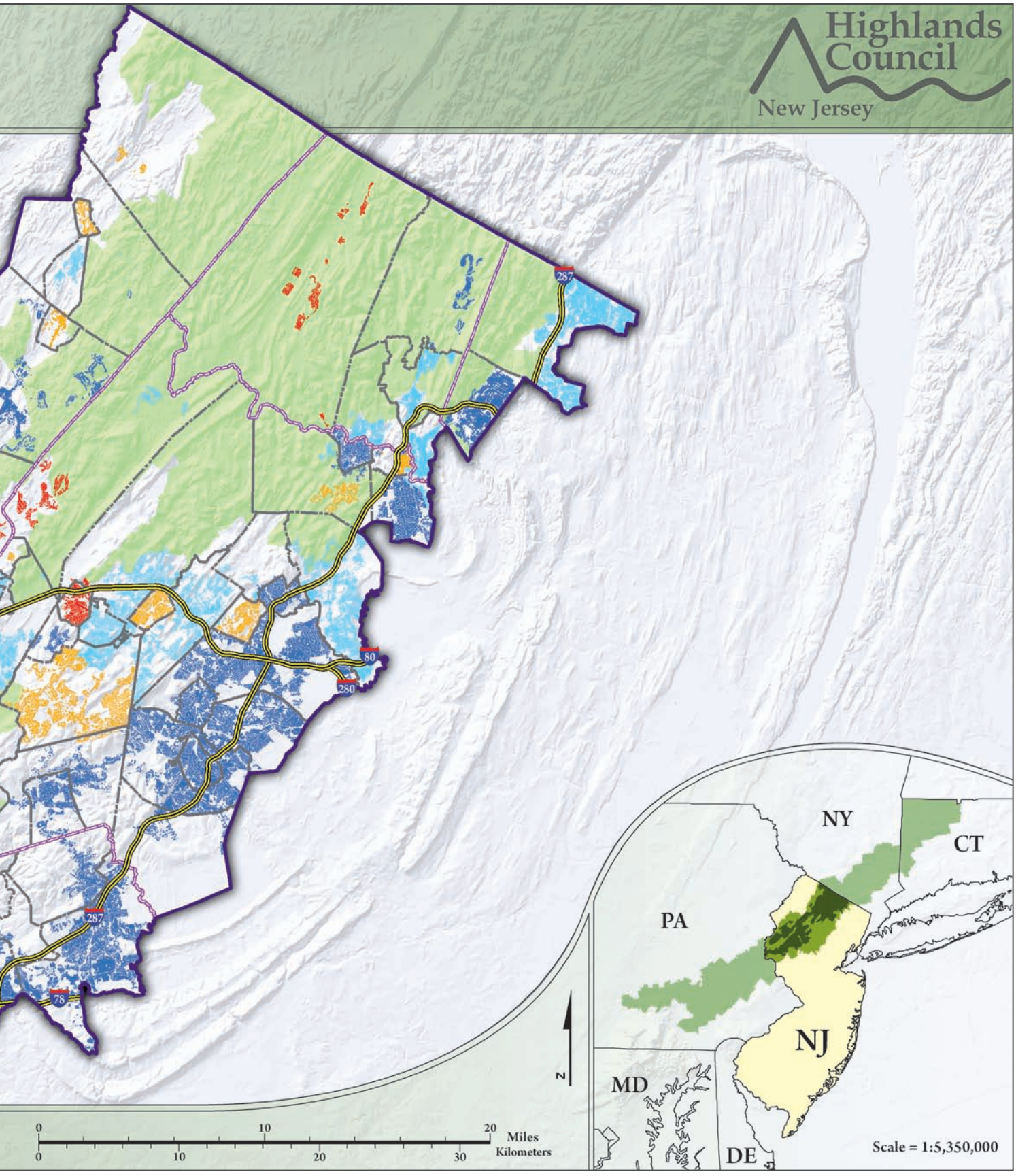

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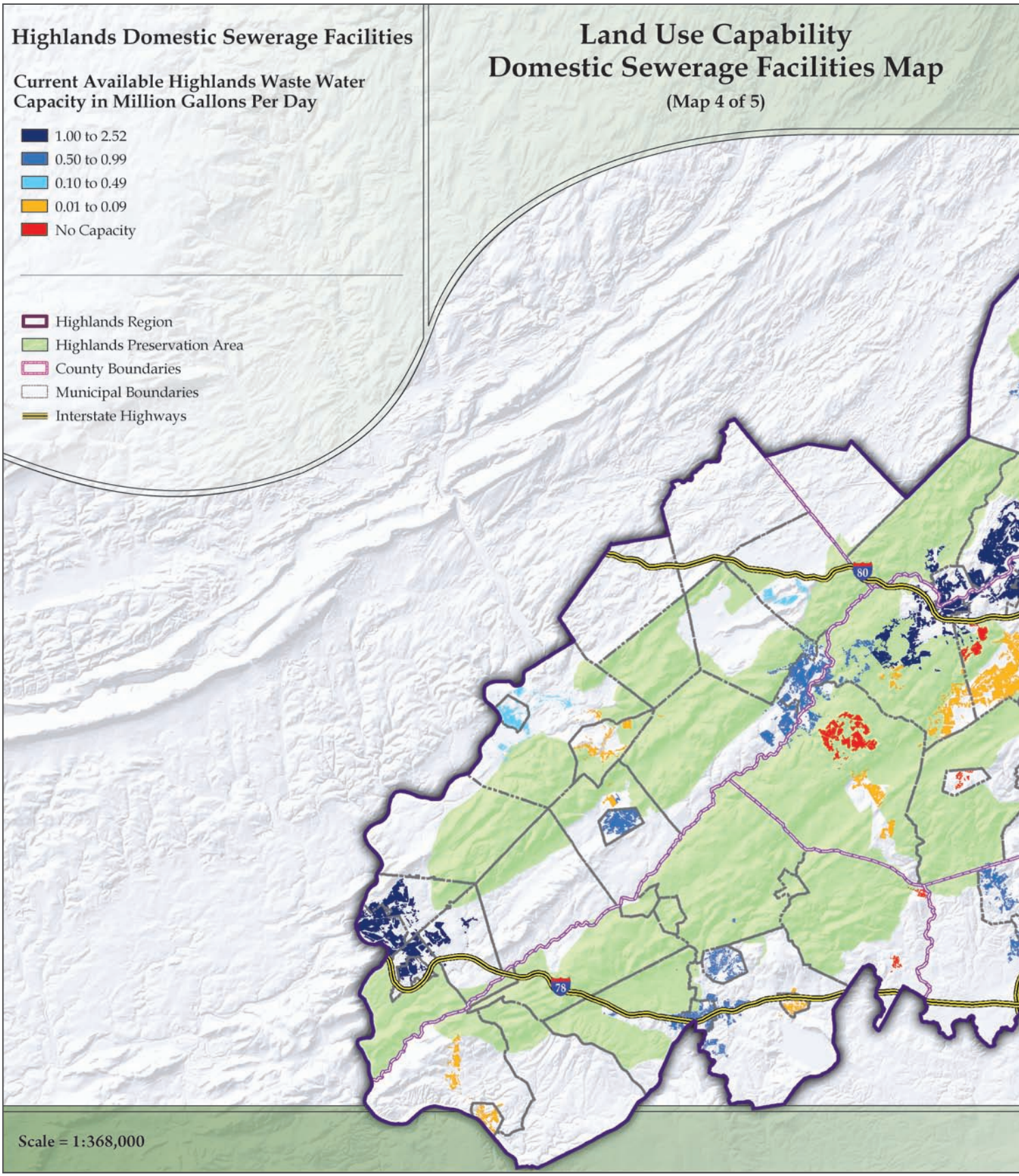

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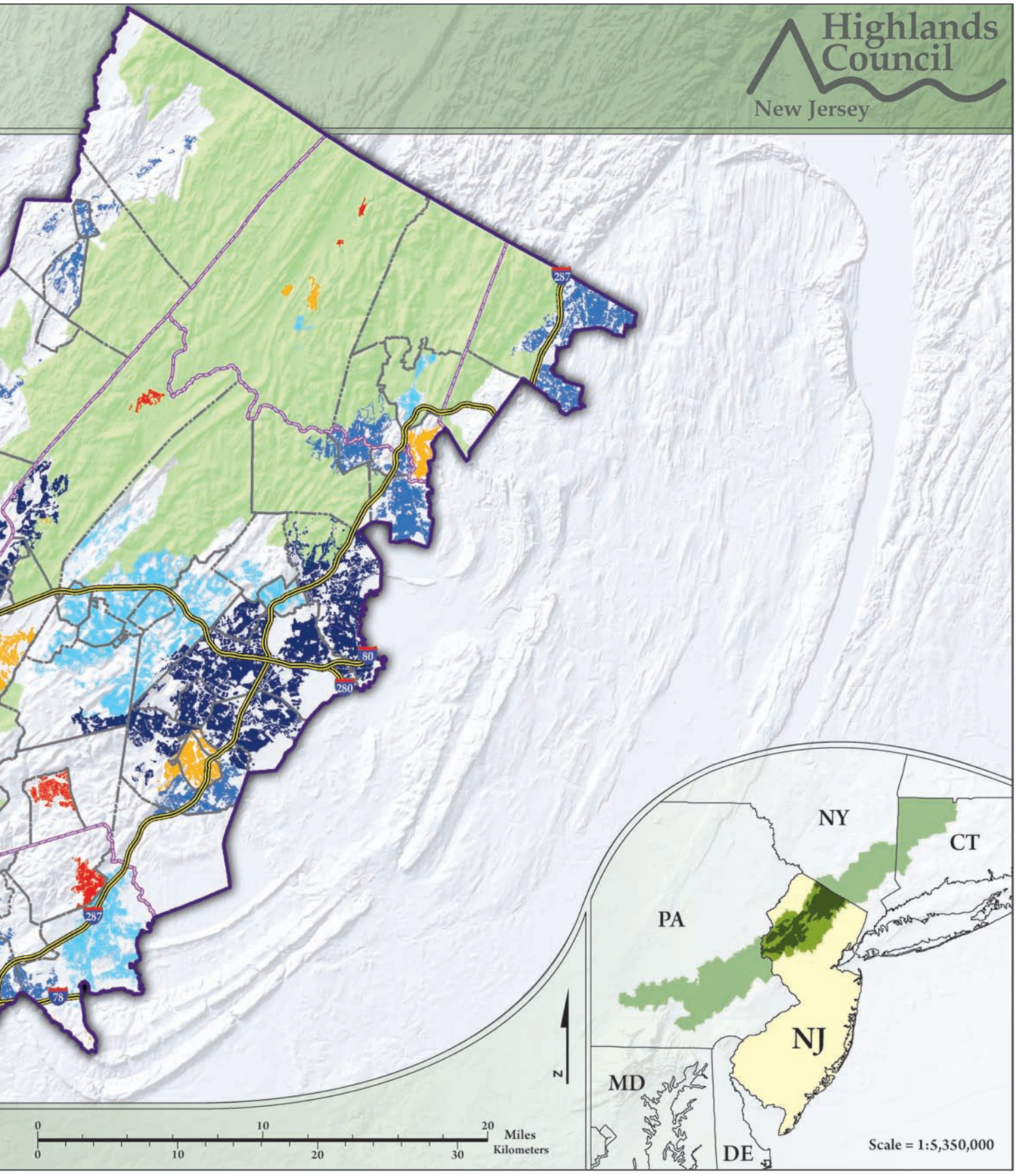

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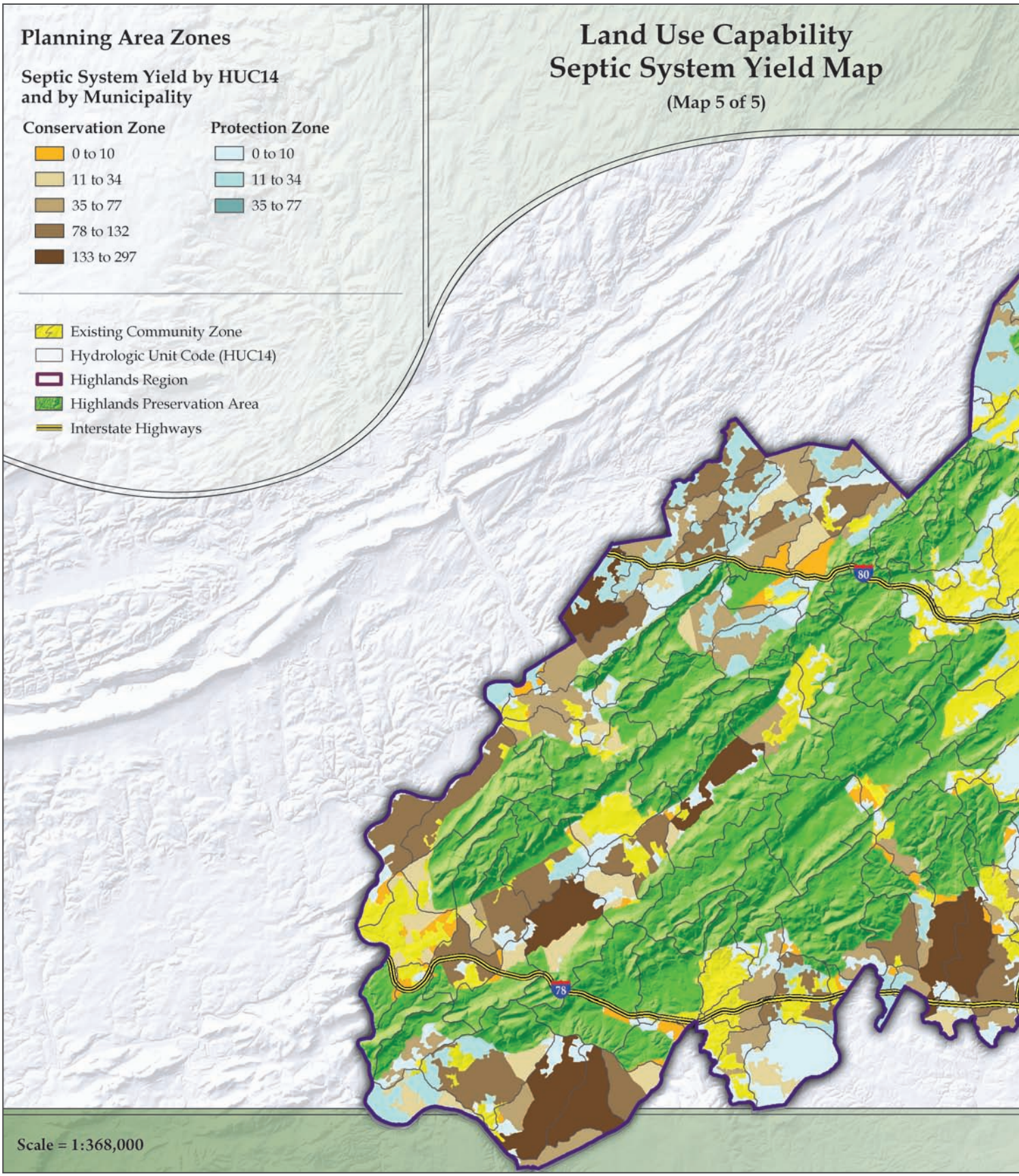
FIGURE 3.31



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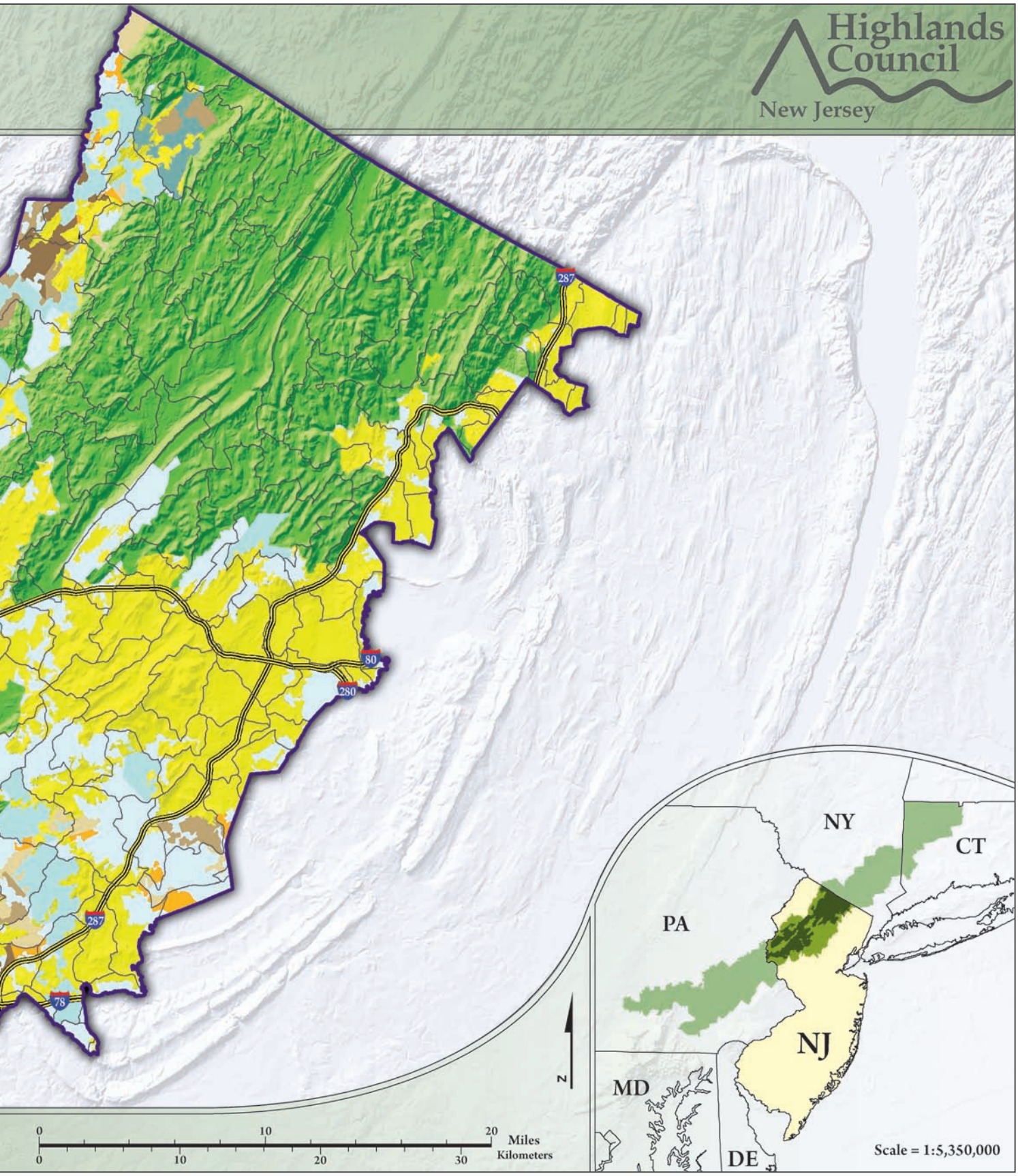

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PART 7 Landowner Equity

The Highlands Act recognizes that implementation of the Regional Master Plan, which directs and guides future development, inevitably has an impact on landowner expectations regarding future land use potential. The Act provides several mechanisms that seek to mitigate such impacts, including, but not limited to transfer of development rights, exemptions, waivers, and land acquisition. The transfer of development rights, exemptions and waivers are discussed below. Land acquisition is detailed in *Part 1 Natural Resources* and *Part 3 Agricultural Resources.*

SUBPART A TRANSFER OF DEVELOPMENT RIGHTS

Transfer of Development Rights (TDR) is a land use tool that permits the transfer of development potential from areas identified for preservation, called sending zones, to areas that are more appropriate to accommodate increased growth, called receiving zones. Landowners in the sending zones receive compensation for the transferable development potential of their property that has been restricted in support of preservation. Payment for this lost development potential comes from purchasers who buy credits representing the lost development potential of parcels in the sending zones. The credits then entitle the purchaser to build in a receiving zone at a density greater than that permitted in the existing zoning.

TDR has become an increasingly popular land use tool to preserve lands containing sensitive resources, whether those resources are environmental, agricultural, or historical. In New Jersey, TDR programs have been established for a number of purposes, including preserving farmland to maintain agricultural viability, and protecting ecologically important lands to maintain ecosystem health and high water quality.

Importantly, TDR recognizes that the development potential of a parcel of land may be separated from the other rights of property ownership, such as the right to possession, mineral rights, or the right to exclude others. TDR also recognizes that this development potential is transferable from one specific parcel to another. Once a parcel's development potential is severed, the parcel is encumbered with either a deed restriction or conservation easement generally limiting its future use to its current use in perpetuity. Underlying ownership of the encumbered parcel remains with the existing landowner until he or she decides to transfer the parcel. As for the transferred development potential, once it has been redeemed, (e.g., it has been used to increase development density or intensity in a receiving zone) it can never be used again.

There are a number of essential elements to any TDR program. The first is the identification of sending and receiving zones. Sending zones represent the areas which a municipality or regional entity desires to protect. They are the areas from which development potential is transferred or sent out. Receiving zones represent those areas that will accommodate the transferred development potential. These zones should have the infrastructure capacity, ecological integrity, and real estate market to support increased development and its attenuating growth impacts. Generally, both sending zones and receiving zones are identified at the outset of a TDR program and are incorporated into the overall zoning scheme as either specific zone districts or overlay zones. Sending zone identification tends to be the simplest step in establishing a TDR program because there is usually consensus regarding the need to protect specific resources. Identification of receiving zones tends to be more difficult. In addition to determining whether a potential receiving zone has the ecological integrity and infrastructure capacity to accept increased development, there is often the political challenge of overcoming reluctance to accept additional growth. Through careful planning and public input, however, these challenges may be overcome.

Another basic component of any TDR program is a determination of what development rights are going to be severed from sending zone parcels and available for sale and use in receiving zones. The process of defining what these rights are and how many rights should be given to a particular lot is known as allocation. Once these rights are defined, often expressed in the form of credits, they serve as a mechanism for the TDR development potential that is restricted on the sending zone parcel.

A TDR program must also have a process for recording, transferring, and tracking TDR credits from a parcel

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in a sending zone to their use in a receiving zone. Frequently, a TDR program will use a conservation restriction or easement to set forth the land uses that are prohibited and permitted on the parcel.

Many TDR programs utilize a TDR credit bank to support program administration. The bank serves as the clearinghouse for information regarding the program and administers the recording, transferring, and tracking of TDR credits. In addition to serving these administrative functions, the bank may also assist sellers and purchasers of TDR credits by providing or serving as a buyer or seller of last resort of TDR credits, or guaranteeing loans utilizing the TDR credits as collateral. The existence of a TDR credit bank establishes a degree of credibility for a TDR program particularly where the bank is able to purchase and sell credits. A TDR program relies on landowners and developers to see that there is a market for the credits, and that those credits have value. In some instances, the bank does not actively buy and sell TDR credits, but instead facilitates private transactions between buyers and sellers.

With the adoption of the Highlands Act, the State Legislature authorized the Highlands Council to establish a Highlands TDR Program. This program is to be regional in scope and is to be premised on the resource assessment and smart growth component of the Regional Master Plan. The framework and parameters of the program, called the Highlands TDR Program, are detailed in Chapter 4 - Goals, Policies, and Objectives.

Establishment of the Highlands TDR Program has been shaped by a number of circumstances. First and foremost, the program is guided by the TDR provision of the Highlands Act. This provision includes an initial requirement that the program be consistent with the State Transfer of Development Rights Act unless otherwise stated by the Highlands Act. The provision also requires that, in establishing the program, the Council:

- Identify sending zones and voluntary receiving zones (Section13.b and c);
- Working with municipalities, identify centers, designated by State Planning Commission as voluntary receiving zones (Section 13.d);
- Develop advisory or model TDR ordinances (Section 13.f);
- Conduct a real estate analysis of the Highlands Region (Section 13.g);
- Set the initial value of a development right (Section 13.h[1]); and
- Give priority consideration to any lands that comprise a major Highlands development that would have qualified for the third exemption under the Highlands Act but for the lack of a necessary State permit (Section 13.h[2]).

Second, the Highlands TDR Program has been influenced by the history and experiences of other TDR programs, particularly those in New Jersey such as the Pinelands Development Credit Program administered by the New Jersey Pinelands Commission and Pinelands Development Credit Bank.

Third and finally, program development has been affected significantly by circumstances unique to the Highlands Region. One of the first considerations is the scale of the program. Although not the largest TDR program in terms of number of acres in which development potential can be transferred, the Highlands TDR Program will certainly involve the largest number of municipalities. Within the Highlands Region, 88 municipalities may participate. The Highlands Act also allows for the additional 130 municipalities outside of the Region (land within the seven Highlands counties) to serve as voluntary receiving zones. Consequently, a total of 218 municipalities may be involved in the program.

Given the geographic scope of the Highlands Region, another significant consideration is the varying real estate market values that exist across the seven counties. For example, vacant property in Warren County as of 2004 had an average equalized assessed value of $15,452 per acre. In Bergen County, the comparable value was more than five times greater, averaging $84,964 per acre. Significant real estate market variability also exists among municipalities within a given county. It has been essential to consider these varied real estate values in developing the program.

Finally, significantly affecting program development is the fact that any receiving zones in the Highlands TDR Program are strictly voluntary. As noted above, the ability to develop with TDR credits in receiving

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zones establishes the demand for those credits. Without receiving zones, a market-based TDR program will not succeed. The Highlands Council has not been authorized to mandate specific receiving zones which municipalities must accommodate; the Highlands Council may only recommend areas that are appropriate but which the municipalities are under no obligation to accept. Fortunately, the Highlands Act provides a number of incentives to encourage municipal participation as receiving zones, and the Highlands Council has established a Receiving Zone Feasibility Grant Program to help defray costs incurred by municipalities that want to explore establishing such zones.

The technical basis and additional background information on the Highlands TDR Program can be found in the Highlands Council's *Transfer of Development Rights Technical Report*.

SUBPART B EXEMPTIONS AND WAIVERS

The Highlands Act provides for 17 exemptions from the provisions of the Act. If a project or activity falls within one of these 17 exemptions, the project or activity is exempt from the Highlands Act, the Highlands Preservation Area rules adopted by the NJDEP, the Regional Master Plan, and any municipal master plan or development regulations that are revised to conform to the Regional Master Plan.

The Highlands Council conducted an analysis of four of the most important exemptions to landowners. Two of the exemptions permit the construction of a single-family dwelling on an undeveloped parcel that lawfully existed as of August 10, 2004, the enactment date of the Highlands Act. The third allows for the reconstruction and limited expansion of any building or structure for any reason within 125 percent of the original footprint, provided that the reconstruction does not increase the impervious surface by one-quarter acre or more. The fourth exemption permits an improvement to a single family dwelling in existence on August 10, 2004, including but not limited to an addition, garage, shed, driveway, porch, deck, patio, swimming pool, or septic system.

The analysis reveals that tens of thousands of acres throughout the Region could potentially be developed under these four exemptions; the actual potential may be constrained by existing site conditions, ownership issues, zoning and other factors. While the exemptions are one of the primary means for landowners to utilize their properties where development potential is limited by the Highlands Act, the exercise of these exemptions may result in further fragmentation of the Region's ecosystems and the construction of additional impervious surface. Given this circumstance, the Highlands Regional Master Plan addresses the need to develop programs that attempt to mitigate these impacts, including programs to encourage non-contiguous clustering, intra-local government transfers of development rights and economic incentives.

In addition to the exemptions, the Highlands Act also provides the NJDEP with the authority to grant waivers from its Highlands rules on a case by case basis under certain circumstances. Under this authority, the NJDEP may issue waivers (a) where a project or activity is necessary in order to protect public health and safety; (b) for redevelopment in previously developed areas as identified by the Highlands Council, provided that the areas are either a brownfield site designated by the NJDEP or a site at which at least 70 percent of the area thereof is covered with impervious surface; or (c) necessary to avoid a taking of property without just compensation.

PART 8 Sustainable Economic Development

SUBPART A SUSTAINABLE ECONOMIC DEVELOPMENT

The Highlands Act states that "appropriate patterns of compatible residential, commercial, and industrial development, redevelopment, and economic growth" should be encouraged in certain areas of the Highlands, specifically "in or adjacent to areas already utilized for such purposes." The Highlands Act further states that this form of development is intended to "accommodate local and regional growth and economic development in an orderly way while protecting the Highlands environment." Thus economic growth must be accommodated in a sustainable manner; taking careful advantage of the unique and valuable built and natural resources of the Region.

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Economic activities will depend largely upon location and may include land development and redevelopment, but may also include non-development approaches such as business retention, expansion efforts, and tourism opportunities. Various locations are available to accommodate economic initiatives within the Highlands Region, including redevelopment of existing underutilized areas, development in areas without environmental constraints, and brownfields redevelopment. Economic activities should support both the local communities and the larger Region. Redevelopment is anticipated in established commercial areas as well as scattered abandoned or underutilized industrial sites and old retail buildings. These sites are often referred to a grayfields, reflecting the sea of asphalt that typically surrounds these types of sites. New growth may be accommodated in Planning Area communities where the land is able to accommodate new development and utilities can be made available. Brownfields are yet another opportunity for economic development and may serve to improve the environmental condition because these sites are contaminated in some manner and may be contributing pollutants into the surrounding environment. Remediation of brownfields is expensive and requires a return on investment in order to make the project economically feasible. In return, the site is cleaned and made available for redevelopment.

SUBPART B RECREATION AND TOURISM

With many areas of protected open space, panoramic views, and a rich history that spans from colonial times to the industrial era to the present, the Highlands offers residents and visitors a variety of recreational and tourism opportunities within a landscape that reflects history, exhibits scenic beauty, and provides outdoor recreational activities. Tourism is a major component of New Jersey's economy. It is the second largest industry in the state, accounting for extensive revenue and tourism-related jobs. Strategically located between New York City and Philadelphia, New Jersey is well positioned to take advantage of a significant tourism market. The Highlands Region, located within this market, is within a day's drive of over 20 million people.

Nathan McLean

The extensive and varied recreational, agricultural, cultural, historical, and scenic resources contained within the Highlands Region represent a substantial foundation for a regional tourism economy. It also serves the local population with many active and passive recreation facilities close to home.

Outdoor recreation and the tourism associated with it involve the interaction of people with an outdoor environment during their travel and leisure time. Outdoor recreation consists of active pursuits such as sports and games, as well as less active, more leisurely activities such as walking in the woods or bird watching. Outdoor resources accommodate two types of recreation activity: resource-based recreation and facility-based recreation. A community should have a mix of resource-based and facility-based recreation opportunities for its residents.

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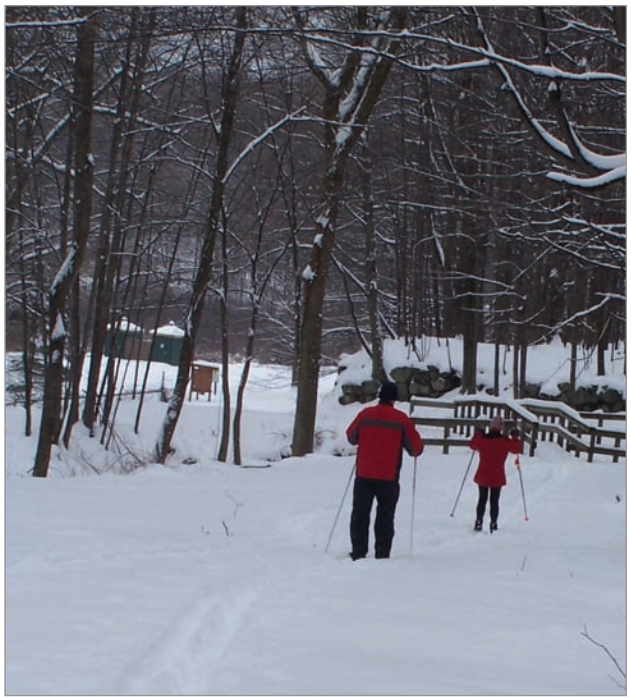
Enjoyment of resource-based recreation activities is directly linked to the health of the outdoor environment. Hikers, canoeists, cross-country skiers, and campers enjoy their experiences if the environment is clean and healthful. Fishing enthusiasts rely on clean water to support the trout they catch. If a stream's water is degraded such that fish cannot survive, fishing is in jeopardy. Resource-based recreation is dependent on a healthy environment.

Facility-based recreation is accommodated through a built facility. Typical facility-based recreation activities include indoor ice-skating, pool swimming, and sports requiring a field or court. Generally, the location of these facilities is less dependent on the natural surroundings than other forms of recreation. A tennis court can be built in the middle of a neighborhood, downtown, or in a barn in the countryside.

Agri-tourism represents an important and growing component of Highlands tourism. Agri-tourism is both a marketing strategy for farmers to expand their economic base and a recreational outlet for visitors to enjoy and share in the flavor of the farm environment. Tourist destinations associated with agricultural activities are available at approximately 60 farms which market opportunities for agri-tourism in the form of pick-your-own, farm tours, roadside markets, hayrides, corn mazes, petting farms, and Christmas tree farms. Additionally, full-scale vineyards, offer tours, tastings, grape stomping, festivals, and other tourist amenities.

Heritage tourism is a fast growing segment of the tourism market that is oriented toward a cultural heritage experience. It involves visiting historic and cultural places and artifacts and engaging in activities associated with the people and places of the past. The overall purpose is to gain an appreciation for the stories and the people that had a part in forming history. Heritage tourism uses resources that already exist and in this way is a sustainable activity. Additionally, with the proper planning heritage tourism can help support the preservation of these resources.



Nathan McLean

The technical basis and additional background information on recreation and tourism analysis can be found in the Highlands Council's *Historic, Cultural, Scenic, Recreation, and Tourism Technical Report*.

SUBPART C BASELINE ECONOMIC INDICATORS

Baseline Economic Indicators include regional economic and socio-economic data from a variety of sources that have been used to create a consolidated Highlands economic database. Assessing these economic conditions is important in order to address the financial implications of regional development and implementation of the Regional Master Plan.

Indicators have been identified that offer applicable data to various components of the Regional Master Plan. The indicators are based on standardized, and regularly reported economic indices that are available at a regional level. It was determined that traditional economic indices and property valuation statistics will provide the best indication of the health of the regional economy. Eight categories of Highlands Region baseline economic indicators have been established, including population, employment, households, income, property taxes, equalized property values, land transactions, and building permits. These indicators will be tracked

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at the municipal level by the Highlands Council and results will be shared with Highlands counties, municipalities, and State agencies for review and consistency. Indicators may also inform elements of the Cash Flow Timetable with associated financial implications, such as land valuation and land acquisition. The indicators will also include an evaluation of agricultural economic metrics for the Highlands Region in coordination with the United States Department of Agriculture, New Jersey Department of Agriculture, County Agriculture Development Boards and additional sources as appropriate.

Nathan McLean

SUBPART D CASH FLOW TIMETABLE

The Cash Flow Timetable is a requirement of the Highlands Act whereby the costs to implement the Regional Master Plan and the sources of revenue to cover the costs are formally accounted for over time. An important aspect of the Highlands Act is the creation of the Highlands Protection Fund, which is managed by the New Jersey Department of Treasury. It has been established primarily to provide financial assistance for tasks related to implementation of the Regional Master Plan, as well as to stabilize municipal budgets due to implications stemming from Regional Master Plan implementation.

In each of the last four State fiscal year annual appropriations acts (2005, 2006, 2007 and 2008), the following annual appropriations were credited to the Highlands Protection Fund for an annual total of $12 million:

- Regional Master Plan Compliance Aid – $1.75 million;
- Incentive Planning Aid – $2.65 million;
- Highland Property Tax Stabilization Aid – $3.6 million;
- Watershed Moratorium Offset Aid – $2.2 million; and
- Pinelands Property Tax Stabilization Aid – $1.8 million.

Since 2004, the Highlands Protection Fund has included State appropriations for compliance and incentive planning in the amount of $4.4 million per annum ($1.75 million per year for Compliance Aid and $2.65 million per year for Incentive Planning Grants). The Highlands Council Planning Grant funding has a current balance of over $21 million. In addition, municipalities that meet the conformance criteria outlined in Section 13.k. shall be eligible for a series of benefits including, but not limited to, TDR Incentive Grants of up to $250,000 per municipality.

1. PLANNING GRANTS

In recognition of the costs associated with municipalities and counties conforming to the Regional Master Regional Master Plan, the Act provided funding mechanisms so as to avoid placing undue financial burdens on these entities. Under Sections 13 and 18 of the Highlands Act, grants from the Highlands Protection Fund are available for distribution to municipalities and counties that conform to the Regional Master Plan and municipalities that participate in the Highlands TDR Program. For these purposes, the Highlands Council is authorized to distribute funds only from the Regional Master Plan Compliance Aid and Incentive Planning Aid portions of the Highlands Protection Fund. The remaining funds are authorized through the Property Tax Stabilization Board and Department of Treasury. The Highlands Council has intentionally retained as much of the planning grant allocation as possible for the conformance process. To date, the Highlands Council has approved more than $3.6 million in grant funds for Initial Assessments, Municipal Partnership Pilot Projects, COAH Certification Planning, County Planning and Analysis, Sustainable Agriculture, and Transfer of Development Rights Feasibility.

Initial Assessments

The Initial Assessment Grant program funds preliminary analyses of municipal and county Plan Conformance needs for lands within the Preservation Area where conformance is mandatory, as well as in the Planning Area where Plan Conformance is voluntary.

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These grants allow local jurisdictions to engage their professionals to assess the requirements and benefits of Plan Conformance. For 2008, the Highlands Council has allocated $1.5 million for the Initial Assessment Grant Program.

Municipal Partnership Projects (MP³)

Municipal Partnership Pilot Projects Grants have funded studies on topics such as redevelopment, town center and transit village developments, lake management strategies, alternative wastewater treatment technologies, water management plans, growth management strategies, eco-tourism, open space preservation, and historic preservation. Most of these studies were selected to be performed based on their anticipated applicability to other towns and counties in the Highlands Region.

COAH Certification Planning

The Highlands Council made funds available specifically for the purpose of assisting constituent municipalities in addressing their affordable housing requirements in accordance with the New Jersey Council on Affordable Housing (COAH), including substantive certifications and third round obligations ($12,500 per municipality for substantive certification applications and $7,500 per municipality for third round submissions).

County Planning & Analysis

The Highlands Council made grants available to the seven Highlands counties to conduct planning necessary for the development of the Regional Master Plan including digital parcel mapping, infrastructure mapping, wastewater capacity analysis, and an inventory of prior land use approvals.

Sustainable Agriculture

Highlands Region municipalities and counties are eligible for Sustainable Agriculture Grants, a grant program designed to promote sustainable agriculture within the frame work of protecting the Highlands Region's valuable and limited water supply. The agricultural grants concentrate on assisting the agriculture community by funding programs focusing in three areas: 1) integrated crop management, 2) market development, and 3) farmland preservation. Several grants have been made from this program.

Nathan McLean

Transfer of Development Rights Feasibility

In support of the TDR Program, the Highlands Council has developed a TDR Receiving Zone Feasibility Grant Program that will provide both financial and technical assistance to those municipalities that wish to explore the possibility of designating a TDR receiving zone in their community.

The Highlands Council also intends to award incentive grants in the future for Plan Conformance and Incentive Planning efforts for municipalities and counties within the Highlands Region. Plan Conformance Grants will be made available during the Plan Conformance process. Adequate funding is anticipated to assist municipalities and counties for the reasonable expenses associated with updating their master plans and land use regulations. The table below serves as a framework for the Highlands Council to allocate grant funds during the Plan Conformance process. The assumptions and analysis that were utilized are discussed in detail in the *Financial Analysis Technical Report*.

The Grant Awards section shown in Table 3.5 *Planning Grants Timetable* outlines the various Plan Conformance Grants, TDR Incentive Grants and Special Project Grants. The table indicates the Planning Grant cash flow analysis for a period beginning FY2008 and ending FY2014. The three components to the table include grant appropriations to the Highlands Council, both anticipated as well as those currently available, anticipated grant awards, and the corresponding balance carried forward.

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TABLE 3.5: Planning Grants Timetable

Appropriations	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	Total
RMP Compliance Aid	$5,865,000	$1,750,000	$1,750,000	$1,750,000	$1,750,000	$1,750,000	$1,750,000	$16,365,000
Incentive Planning Aid	$10,547,056	$2,650,000	$2,650,000	$2,650,000	$2,650,000	$2,650,000	$2,650,000	$26,447,056
Total Appropriations	$16,412,056	$4,400,000	$4,400,000	$4,400,000	$4,400,000	$4,400,000	$4,400,000	$42,812,056

Grant Awards	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	Total
Plan Conformance Grants	($3,500,000)	($6,000,000)	($4,000,000)	($2,750,000)	($2,750,000)	($2,750,000)	($2,750,000)	($24,500,000)
TDR Incentive Grants	($500,000)	($1,000,000)	($1,500,000)	($1,750,000)	($1,750,000)	($1,750,000)	($1,750,000)	($10,000,000)
Special Project Grants	($1,250,000)	($1,250,000)	($1,250,000)	($1,000,000)	($1,000,000)	($1,000,000)	($1,000,000)	($7,750,000)
Total Grant Awards	($5,250,000)	($8,250,000)	($6,750,000)	($5,500,000)	($5,500,000)	($5,500,000)	($5,500,000)	($42,250,000)

Net Surplus (Deficit) and Final Balances	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	Total
Total Appropriations	$16,412,056	$4,400,000	$4,400,000	$4,400,000	$4,400,000	$4,400,000	$4,400,000	$42,812,056
Total Grant Awards	($5,250,000)	($8,250,000)	($6,750,000)	($5,500,000)	($5,500,000)	($5,500,000)	($5,500,000)	($42,250,000)
Balance Carry Forward	$11,162,056	$7,312,056	$4,962,056	$3,862,056	$2,762,056	$1,662,056	$562,056	$562,056

2. TAX STABILIZATION

Another factor to be tracked by the Cash Flow Timetable is the expenditure of funds earmarked for tax stabilization purposes in the Highlands Region. The current procedures established in the Highlands Act are under review by the Highlands Property Tax Stabilization Board, which is in, but not of, the New Jersey Department of Treasury, to ensure sufficient justification and documentation of valuation changes. In FY2005, Passaic County submitted five appeals attributing a decline in property value directly related to the Highlands Act. A total of $88,653 was provided to three municipalities to offset the loss in tax revenues.

3. STATE AID

While State Aid takes into account municipal, county, and school needs, the Cash Flow Timetable is primarily focused on the Municipal Government Line, as specific aid programs are directly relevant to the implementation of the Regional Master Plan. Assistance provided to municipalities as part of their State Aid allocations may include funds such as Municipal Block Grants, Homeland Security Assistance Aid, Watershed Moratorium Offsets, Extraordinary Aid, and payments in lieu of taxes for open space purchased by the State under the Garden State Preservation Trust Program.

4. LAND ACQUISITION

The Cash Flow Timetable will also track and monitor sources of funding for the Highlands Land Acquisition program. This includes grants, donations, and loans from local, State, and federal agencies, and other governmental entities and programs, such as the TDR Program. In order to estimate the funds required for land preservation, the Financial Component includes an examination of recent trends in acquisition cost by existing land preservation programs, including the NJDEP Green Acres Program and the NJDA State Agriculture Development Committee (SADC) Farmland Preservation Program.

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In order to derive the cost of lands that are five and ten year priorities for land acquisition, the Highlands Council applied a series of assumptions to those lands within the confidential inventory, which are fully discussed in the *Financial Analysis Technical Report*. The findings of that analysis are as follows:

- The cost to preserve the five year agriculture confidential priority list is estimated at $544 million with the ten year priorities costing an additional $109 million, totaling $653 million.
- The cost to preserve the five year conservation confidential priority list is estimated at $599 million with the ten year priorities costing an additional $79 million, totaling $678 million.
- Total cost of preserving the entire agriculture and conservation priority lists is estimated at approximately $1.3 billion.

Total funding allocations from the Garden State Preservation Trust (GSPT) from 2000 through 2009 (2007 referendum) to the Green Acres Program account for approximately an average of $1.32 million (59 percent) annually. Approximately nine percent of the annual funding allocation from Green Acres was attributed to open space preservation in the Highlands Region based on historical acquisition costs. The SADC Program accounts for approximately an average of $84.87 million (38 percent) annually. Approximately 21 percent of the annual funding allocation from the SADC was attributed to farmland preservation in the Highlands Region based on historical acquisition costs. The total acquisition cost for both the Agriculture and Conservation Confidential Priority Lists is approximately $1.3 billion (162,557 acres). The GSPT figures for Green Acres would need to be consistent over the next ten years and enhanced considerably for SADC regarding agriculture to preserve the properties on both Confidential Priority Lists for agriculture and open space. Additional discussion on the Agriculture and Conservation Confidential Priority Lists is described in the Land Preservation and Stewardship Program in Chapter 5 and the *Financial Analysis Technical Report*.

PART 9 Air Quality

Air quality is directly correlated with on-road mobile sources such as automobiles, buses and trucks; however, air toxics also come from many other sources, including industrial facilities, utilities, commercial businesses, residential activities, and non-road mobile sources. Therefore air quality in the Highlands Region is influenced by mobile and stationary sources within and outside the Region. In 2004, 48 facilities reported releases in the Highlands Region. Five of these facilities that release more that 10,000 pounds per year of air toxics (all chemicals combined) account for over four-fifths of the point (industrial facilities and power plants) source releases in the Highlands Region. Haze consists of air pollutants from a variety of natural and manmade sources including windblown dust and soot from wildfires, fireplaces, motor vehicles, electric utility, and industrial fuel burning, and manufacturing operations. Power plants located outside the State also have a great impact on air quality in the Highlands Region.

Automobiles in New Jersey contribute 40 percent of the airborne pollutants and more than 80 percent of the airborne carcinogens. Since the Highlands Region is currently an air quality non-attainment area, federal guidelines require that new transportation plans and projects do not further contribute to air quality degradation.

Under the Federal Clean Air Act (1970, amended 1990), the United States Environmental Protection Agency (USEPA) is required to set National Ambient Air Quality Standards (NAAQS) for pollutants. The USEPA has set NAAQS for six criteria pollutants, including ozone (O3), particulate matter (PM) carbon monoxide (CO), sulfur dioxide (SO2), nitrogen oxides (NOx), and lead (Pb). Portions of New Jersey are in non-attainment (exceeds the NAAQS) for ozone, particulate matter and sulfur dioxide.

Ozone occurs naturally in the upper regions of the atmosphere and is critical to shielding the earth from harmful ultraviolet radiation. However, in the lower atmosphere where breathing air occurs, ozone is a harmful air pollutant, contributing to the formation of smog. Ground-level ozone is formed when pollutants such as volatile organic compounds (VOCs) and NOx emitted by automobiles and industrial facilities, chemical solvents, and other sources react in the presence of sunlight. The

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northern New Jersey-New York-Connecticut Non-attainment Area includes the Highlands Region.

Particulate Matter is a mixture of fine liquid and solid particles such as dust, smoke, mist, fumes, or soot that pollutes the air and water, causing serious health problems. Major contributors of particulates from in-State sources include diesel exhaust from on-road vehicles and wood smoke. Within the Highlands Region, Bergen, Passaic, Morris, and Somerset counties are designated non-attainment areas for PM, while Sussex, Warren, and Hunterdon counties are in attainment.

Sulfur Dioxide gases are formed when coal and oil fuel containing sulfur is burned. SO2 emissions from upwind power plants can be transformed into particulate matter and accounts for about half of the fine particulates in New Jersey's air. High concentrations of SO2 can result in temporary breathing impairment for asthmatic children and adults who are active outdoors. Within the Highlands Region, only the municipalities of Belvidere, Harmony, Oxford, White, and portions of Liberty Township in Warren County are non-attainment for SO2, primarily due to emissions from two power plants located in Pennsylvania. Through coordination with federal, regional, state, county, and local agencies and entities and in accordance with Regional Master Plan policies the Highlands Council will monitor and support the protection of regional air quality.

Taryn McLean

The technical basis and additional background information on transportation and air quality can be found in the Highlands Council's *Transportation System Preservation and Enhancement Technical Report* and the *Air Quality Assessment Technical Report*.

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GOALS, POLICIES, AND OBJECTIVES

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chapter 4 GOALS, POLICIES, AND OBJECTIVES

The Goals, Policies, and Objectives of the Highlands Regional Master Plan (RMP) provide the substantive standards and direction for implementing the goals and requirements of the Highlands Act, and are used in Chapters 5 and 6 as the basis for the implementation programs. Goals are defined as broad statements of intent, with Policies providing a more detailed statement of direction. Objectives, in turn, provide the specific, substantive requirements that will be used to measure implementation progress and plan conformance. Many will be used directly within Plan Conformance Standards and guidance developed by the Highlands Council, and often will affect land development. Others will be used in the development of long-term programs for improvement of the RMP, action by governmental and nongovernmental partners, and non-regulatory efforts of the Highlands Council to improve the Highlands Region. The sequence of the Goals, Policies, and Objectives follows the general outline of Chapter 3. Part 1 addresses a wide variety of natural resources, including forests, Highlands Open Waters and Riparian Areas, steep slopes, Critical Habitat, land preservation and stewardship, carbonate rock topography, and lake management. Part 2 focuses on water resources, regarding water resources availability, protection of water resources quantity, and water quality.

Part 3 addresses the sustainability of agricultural resources, while Part 4 focuses on the recognition and management of historical, cultural, archaeological, and scenic resources. Part 5 addresses transportation, including transit systems. Part 6 provides direction with regard to the nature and management of the Land Use Capability Zones, development and redevelopment, smart growth, and housing. Landowner equity issues, including the Highlands Transfer of Development Rights (TDR) Program and Highlands Act exemptions and waivers are the subject of Part 7. Parts 8, 9, and 10 address sustainable economic development, air quality, and local participation, respectively.

Each part and subpart provides a general narrative regarding the main issue and the critical issues addressed therein; they are not intended to be an extensive analysis. More detailed information is provided in Chapters 2 and 3, and in the various Technical Reports developed in support of the RMP.

PART 1 Natural Resources

The natural resources of the Highlands Region join to create a landscape that supports endangered species, scenic vistas, agriculture, small towns, manufacturing, and the water supplies for New Jersey's largest metropolitan areas. Forest, waterways, Critical Habitat, and agricultural soils are affected by and intermixed with steep slopes, limestone valleys and lake areas. In turn, these features have encouraged and shaped the prehistoric and historic pattern of human activity and settlements. Only in the last 50 years have the historic patterns been overcome by suburban patterns of development facilitated by new road systems and new zoning techniques that emphasize large lots rather than compact forms of growth. The Highlands Act was created largely to protect the Region's natural resources and the water supplies that depend upon them. The Highlands RMP is a critical component of this protection effort.

SUBPART A FOREST RESOURCES

The Highlands Region contains some of the most important forests in the state. These forests are vitally important to every element of the Highlands Region, including the natural and the built environment. Forests provide essential ecosystem functions, including the recharge of ground water aquifers that supply Highlands Region wells and surface water filtration, both of which are important to protecting essential drinking water supplies for the Highlands Region and for the state as a whole. Forests protect stream water quality, supporting wild trout and healthy aquatic communities. Forests sequester atmospheric carbon and contribute to combating global warming. Forests serve as habitat

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for plants and animals, and as forests constitute a majority of the Region's Critical Habitat, are critically important to the maintenance of biodiversity in one of the most populous states in the nation. Highlands forests offer important recreational resources and contribute to the Region's unique scenic value. In addition, when managed for sustainable use, forests can be a source of renewable wood products. Forests are a defining visible and functional feature of the Highlands Region.

The RMP acknowledges the Highlands Act exemption under N.J.S.A. 13:20-30.a(7) for activity conducted in accordance with an approved Woodland Management Plan, pursuant to section 3 of P.L.1964, c.48 (C.54:4-23.3) or the normal harvesting of forest products in accordance with a Forest Management Plan approved by the State Forester. Beyond exempt forestry activities, the Highlands Act mandates that the RMP provide for the protection of the Region's forests.

GOAL 1A: PROTECTION OF LARGE AREAS OF CONTIGUOUS FORESTED LANDS OF THE HIGHLANDS REGION TO THE MAXIMUM EXTENT POSSIBLE.

Policy 1A1: To meet the goal for the Preservation Area to "preserve extensive and, to the maximum extent possible, contiguous areas of land in its natural state," and to "protect the natural, scenic, and other resources of the Highlands Region, including but not limited to contiguous forests."

Policy 1A2: To limit human development in the Forest Resource Area in the Preservation Area in order to protect and enhance forest resources, forest ecosystem integrity, Critical Habitat, and the quantity and quality of water resources.

Objective 1A2a: Density mapping of the Region's contiguous forested lands as the Forest Resource Area.

Objective 1A2b: Implementation of regulations through Plan Conformance which limit permissible uses within the Forest Resource Area to maintenance of pre-existing uses and restoration of impaired forest areas; relief from strict adherence to these standards shall be permitted only upon approval of a forest mitigation plan and, for a major Highlands Development, approval of a Highlands Preservation Area Approval (HPAA) by the NJDEP.

Objective 1A2c: To prohibit through local development review and Highlands Project Review the deforestation of lands within the Forest Resource Area of the Preservation Area for human development except where authorized as an exemption by the Highlands Act, or is an agricultural or horticultural development as defined at N.J.S.A. 13:20-31 and meets the requirement of that provision of the Highlands Act, or if qualifying as a major Highlands Development, the project must, at a minimum, be in conformance with the New Jersey Department of Environmental Protection (NJDEP) Preservation Area Rules at N.J.A.C. 7:38-3.9.

Objective 1A2d: To prohibit through Plan Conformance, local development review and Highlands Project Review the expansion or creation of public water supply systems or public wastewater collection and treatment systems or community-based on-site wastewater facilities into forested areas of the Forest Resource Area within the Planning Area except as provided for in Policy 2J4 with Objectives 2J4a through 2J4d, and Policy 2K3 with Objectives 2K3a through 2K3e, and within the Preservation Area except as provided for in Policy 2I1 and Objectives 2I1a and 2I1b.

Objective 1A2e: To require through local development review and Highlands Project Review that projects qualifying as major Highlands Developments, affecting or potentially affecting forests outside the Forest Resource Area in the Preservation Area, comply with the NJDEP Preservation Area Rules at N.J.A.C. 7:38-3.9. All projects in the Preservation Area that are not major Highlands Developments shall comply with Policies 1A1 and 1A2.

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Policy 1A3: To promote the priority use of available funding to acquire forested lands within the Forest Resource Area.

Policy 1A4: To assign land within the Forest Resource Area a high priority for fee simple and easement acquisition.

Policy 1A5: To prohibit through local development review and Highlands Project Review forest clearcutting within the Forest Resource Area except in accordance with a Forest Management Plan approved by the State Forester.

GOAL 1B: PROTECTION AND ENHANCEMENT OF FORESTS IN THE HIGHLANDS REGION

Policy 1B1: To provide resource management guidance to encourage sustainable forest management, restoration, improved ecological health, carbon sequestration, and stewardship practices on public and private lands in the Forest Resource Areas within the Protection Zone and the Conservation Zone in the Planning Area.

Objective 1B1a: Implementation of resource management programs to encourage sustainable forest management, restoration and stewardship practices on public and private lands, including ecological and watershed protection measures such as those provided through New Jersey Forest Stewardship Program.

Objective 1B1b: Implementation of programs which encourage owners and operators of farmland with woodlots to obtain approved Forest Management Plans or Forest Stewardship Plans that conform to the protection standards of the RMP.

Objective 1B1c: Implementation of programs which encourage the inclusion of appropriate rare, threatened, and endangered wildlife and habitat protection and enhancement, and appropriate wildlife and invasive species management techniques in Forest Management Plans or in New Jersey Forest Stewardship Program's Forest Stewardship Plans adopted by any federal, state, county, or municipal government entity.

Objective 1B1d: Implementation of programs which encourage the application of agro-forestry practices and techniques within cultivated farmland located within both the Agriculture Resource Area and Forest Resource Area.

Objective 1B1e: To encourage private lands management of forests for non-commodity benefits (e.g., wildlife habitat, water quality, recreation) or traditional commodities (e.g., timber and wood products) in accordance with the New Jersey Forest Stewardship Program's Forest Stewardship Plan.

Policy 1B2: To limit, through local development review and Highlands Project Review, human development of forests to low impact residential development in the Protection Zone and the Conservation Zone in the Planning Area.

Objective 1B2a: Implementation through Plan Conformance of regulations which limit permissible uses within forested lands in High and Moderate Integrity Forest Subwatersheds of the Planning Area to 1) maintenance of pre-existing uses, 2) the removal of woody vegetation from forested lands subject to an approved Forest Management Plan, 3) forest stewardship practices in accordance with a New Jersey Forest Stewardship Program's Forest Stewardship Plan, or 4) low impact residential development that utilizes Low Impact Development Best Management Practices and an approved forest mitigation plan.

Objective 1B2b: Implementation of regulations through Plan Conformance which allow for redevelopment of previously developed areas and for other compatible uses that minimize losses to forested lands within Low Integrity Forest Subwatersheds in accordance with an approved forest mitigation plan or Low Impact Development Best Management Practices.

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Policy 1B3: To limit through local development review and Highlands Project Review deforestation in the Forest Resource Area and forested lands within High Integrity Forest Subwatersheds within the Existing Community Zone (ECZ) to maximum extent practicable.

Objective 1B3a: Implementation through Plan Conformance of regulations which limit the clearing of trees in conjunction with human development to circumstances where the clearing will not diminish the integrity of forest resources.

Objective 1B3b: Implementation of resource management programs to avoid loss of forests such as Low Impact Development Best Management Practices and mitigation and/or restoration.

Policy 1B4: To encourage the restoration of forest resources through forest management and stewardship practices.

Policy 1B5: To ensure that forest resources are protected on a site specific basis during local development review and Highlands Project Review.

Objective 1B5a: Applications for local development review and Highlands Project Review require identification of any forest area on and adjacent to a site in accordance with the Highlands Council's Method for Identifying Upland Forest Areas in the Highlands Region.

Policy 1B6: To encourage conformance with standards and criteria for sustainable forestry activities in order to conserve and enhance the Forest Resource Areas and forested lands within High Integrity Forest Subwatersheds within the Highlands Region.

Objective 1B6a: Forestry activities will be allowed within a Forest Resource Area or forested lands within a High Integrity Forest Subwatershed only in compliance with an approved Forest Management Plan.

Policy 1B7: To prohibit clear-cutting of forest lands except pursuant to an approved Forest Management Plan approved by the State Forester.

Policy 1B8: To encourage the development of forest management strategies and programs that improve the ecological health, water resource benefits, and scenic quality of Highlands forests.

GOAL 1C: CONFORMING MUNICIPALITIES AND COUNTIES INCLUDE FOREST PROTECTION PROGRAMS IN THEIR MASTER PLANS AND DEVELOPMENT REGULATIONS.

Policy 1C1: To require that conforming municipalities and counties address the protection of forested portions of Forest Resource Areas and High Integrity Forest Subwatersheds in their master plans and development regulations.

Objective 1C1a: Maintain forest cover to the maximum extent possible in the Highlands Region in the natural as well as the built environment.

Policy 1C2: To provide technical guidelines and procedures to assist municipalities and counties in the development of forest protection, mitigation, and community forestry plans for inclusion in municipal and county master plans and development regulations.

Objective 1C2a: Provide technical guidelines and procedures for development and implementation of Low Impact Development Best Management Practices to protect, enhance, and restore forest resources.

Objective 1C2b: Provide guidelines for the development of community forestry plans by municipalities for inclusion in municipal master plans.

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Objective 1C2c: Provide a model municipal tree ordinance for municipalities that allows active forest management with a Forest Management Plan approved by the State Forester.

Objective 1C2d: Support incentives and funding opportunities and provide criteria for demonstrating and maintaining intrinsic forest values and societal benefits through various means including, but not limited to, the use of stewardship benefit credits.

Objective 1C2e: Provide technical guidelines establishing forest clearing thresholds and mitigation requirements for inclusion in municipal development regulations.

Policy 1C3: To require that conforming municipalities adopt a tree clearing ordinance consistent with an approved community forestry plan under the New Jersey Forest Service Community Forestry Program as part of the municipal master plan and local development regulations.

Objective 1C3a: Standardize municipal tree protection ordinances throughout the Highlands Region to the extent feasible.

SUBPART B HIGHLANDS OPEN WATERS AND RIPARIAN AREAS

Highlands Open Waters and their associated Riparian Areas are a primary focus of the Highlands Act and must be protected, enhanced, and restored to ensure achievement of the Act's goals for water quality, water supply, and ecological sustainability. The Highlands Regional Master Plan (RMP) focuses on four areas of action to address the need to protect, restore, and enhance Highlands Open Waters and Riparian Areas:

- Identify and inventory each type of resource area;
- Evaluate the integrity of each type of resource area;
- Establish resource protection measures; and
- Establish programs to promote consistent standards for the protection, restoration, and acquisition of important waters and Riparian Areas of the Highlands Region.

Highlands Open Waters are defined by the Highlands Act as all springs, streams including intermittent streams, wetlands, and bodies of surface water, whether natural or artificial (excluding swimming pools), located wholly or partially within the boundaries of the Highlands Region. Highlands Riparian Areas are the lands associated with and bordering Highlands Open Waters that provide critical hydrologic, ecologic, and pollutant attenuation functions for the Open Waters. Highlands Open Waters and Riparian Areas exist in a wide variety of settings, ranging from preserved lands to urban areas. Some support very high quality ecosystems, while others are degraded by existing land uses, stream corridor modifications, stormwater flows, and pollutant loadings.

A high priority is for municipalities to develop and implement a Stream Corridor Protection/Restoration Plan that achieves the policies and objectives below, as refined using local scientific knowledge, with incorporation of local planning goals where they do not conflict with these policies and objectives. The Stream Corridor Protection/Restoration Plan will be used as a basis for both development review and restoration activities. Where a Stream Corridor Protection/Restoration Plan has not been approved by the Council, site-by-site development applications in municipalities will be required to strictly adhere to the RMP Goals, Policies, and Objectives below.

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

Policy 1D1: To establish and maintain an inventory of Highlands Open Waters and their integrity. Highlands Open Waters are all springs, streams including intermittent streams, wetlands, 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.

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Objective 1D1a: The Watershed Resource Value of Highlands HUC14 subwatersheds shall be established through an analysis of the relative amount of developed lands, habitat quality for threatened and endangered wildlife species, total forest and core forest in each HUC14 subwatershed.

Policy 1D2: To establish and maintain an inventory of Highlands Riparian Areas and their integrity.

Objective 1D2a: Highlands Riparian Areas shall consist of the floodprone areas, wetlands, soils that are hydric, alluvial or have a shallow depth to ground water, and wildlife passage corridors that are associated with Highlands Open Waters.

Objective 1D2b: The integrity value of Highlands Riparian Areas within each Highlands HUC14 subwatershed shall be established through an analysis of the relative amount of impervious cover, agricultural land use, density of road crossings of streams, vegetative condition, and habitat for wetland/water dependent threatened and endangered wildlife species of the Riparian Areas.

Policy 1D3: To periodically review and update, as necessary, the Watershed Resource Value and Riparian Area Integrity Values.

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 1D4a: Require that all applications for approval through local development review and Highlands Project Review include the identification and mapping of Highlands Open Waters.

Objective 1D4b: Preservation Area buffers for Highlands Open Waters shall comply with the Highlands Preservation Area rules at N.J.A.C. 7:38, which provide that all major Highlands developments are prohibited within Highlands Open Waters and its adjacent 300 foot buffer in the Preservation Area except for linear development, which may be permitted provided that there is no feasible alternative for the linear development outside Highlands Open Waters or its buffer. Structures or other land improvements existing within Highlands Open Waters buffer in the Preservation Area on August 10, 2004 may remain, provided that the area of disturbance is not increased other than through a HPAA. For purposes of this Objective when considering land for conversion to non-agricultural land uses, historic or current agricultural land uses shall not be considered "land improvements," "development," "land disturbances," or "land uses."

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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 1D4d: Structures or other land improvements existing within a Highlands Open Waters buffer of the Planning Area on August 10, 2004 may remain, provided that the area of disturbance shall not be increased unless approved through local development review or Highlands Project Review in compliance with RMP policies and objectives. For purposes of this Objective when considering land for conversion to non-agricultural land uses, historic or current agricultural land uses shall not be considered "land improvements," "development," "land disturbances," or "land uses."

Objective 1D4e: In the Protection and Conservation Zones of the Planning Area, proposed disturbances of Highlands Open Waters buffers shall only occur in previously disturbed areas, unless a waiver is granted by the Highlands Council under Policy 7G2. For purposes of this Objective when considering land for conversion to non-agricultural land uses, historic or current agricultural land uses shall not be considered "land improvements," "development," "land disturbances," or "land uses." Such proposed disturbances must demonstrate full utilization of the following performance standards in the listed order, to demonstrate the necessity of an encroachment into Highlands Open Waters buffers: 1) avoid the disturbance of Highlands Open Waters buffers; 2) minimize impacts to Highlands Open Waters buffers; and 3) mitigate all adverse impacts to Highlands Open Waters buffers so that there is no net loss of the functional value of the buffer, in compliance with Objective 1D4h. Minimization and mitigation opportunities shall be considered only upon a clear and convincing demonstration by the applicant that the protection buffer can not be avoided and in no case shall the remaining buffer be reduced to less than 150 feet from the edge of Highlands Open Waters, unless a waiver is granted by the Highlands Council under Policy 7G2 and the proposed disturbance complies with Objective 1D4c.

Objective 1D4f: In the ECZ of the Planning Area, proposed disturbances of Highlands Open Waters buffers shall only occur in previously disturbed areas, unless a waiver is granted by the Highlands Council under Policy 7G2 and the proposed disturbance complies with Objective 1D4c. For purposes of this Objective when considering land for conversion to non-agricultural land uses, historic or current agricultural land uses shall not be considered "land improvements," "development," "land disturbances," or "land uses." Such disturbances shall employ performance standards such that all proposed disturbances of Highlands Open Waters buffers shall employ Low Impact Development Best Management Practices to mitigate all adverse modification to Highlands Open Waters buffers so that there is no net loss of the functional value of the buffer, in compliance with Objective 1D4h.

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.

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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.

Objective 1D4i: Develop through Plan Conformance and implement stream corridor or subwatershed-based Stream Corridor Protection/Restoration Plans which shall include Steps 1, 2, and 3, and may include Steps 4 and 5:

1. Identify areas where existing development, land disturbances, or land uses are within Highlands Open Waters buffers have removed or substantially impaired natural vegetation communities, and have significantly reduced or impaired the functional values of Highlands Open Waters buffers. For purposes of this Objective when considering land for conversion to non-agricultural land uses, historic or current agricultural land uses shall not be considered "land improvements," "development," "land disturbances," or "land uses";
2. Identify and require opportunities for restoration of areas identified in Step 1 as part of mitigation requirements under a Highlands Act waiver or Objectives 1D4e and 1D4f, and public or nongovernmental restoration/stabilization projects;
3. Identify the extent of stream corridor features that are critical to supporting the functions of a healthy Highlands Open Waters buffer and that extend beyond the buffers required by Objectives 1D4b and 1D4c. The 300 foot buffer in these areas may be expanded to be most protective of these features which may include, but are not limited to, Critical Habitat, pollutant source areas identified through scientific techniques, and steep slopes;

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4. Where Highlands Open Waters buffers include areas identified in Step 1, regarding Category 2 surface waters in the Planning Area only, the Stream Corridor Protection/Restoration Plan may identify where, based on scientific analysis of site-specific conditions (e.g., topography, vegetation cover type, habitat, soil type, upstream land uses and pollution inputs, width of floodplain, rate, and volume of run-off), a buffer of less than the full 300 feet (but including the undisturbed buffer area at a minimum) is sufficient to maintain or improve the protection of Highlands Open Waters and Riparian Areas. The plan must identify alternative buffers that provide functional buffer values at least equivalent to existing conditions and are no less than 150 feet or no less than the extent allowed in State or municipal regulation (including Objectives 1D4b and 1D4c), whichever is greater. Further, the plan shall include a functional value assessment to ensure that there is no net loss in the overall functional value of the subwatershed's stream buffers. Buffers established through this process shall be determined based on site conditions rather than fixed distances, reflecting findings of the scientific analysis, and shall be used in the site design and development review process regarding determinations of restoration, continued use, or increased use of the disturbed buffer area. Buffer averaging for the purpose of accommodating development proposals is deemed not to meet the requirements of this provision; and

5. Where a proposed Highlands Redevelopment Area would not meet, in full, Objectives 1D4b through 1D4h but affects an undisturbed buffer area determined to not be necessary for the protection of the functional values for Highlands Open Waters buffer (as determined through scientific analysis of site-specific conditions), modification of the undisturbed buffer may be allowed to no less than the extent allowed in State or municipal regulation. However the Council shall first determine that there is no alternative to the proposed reduction of the buffer, and require a showing of no impact to the functional values of the buffer and provision of alternative approaches to enhancing or protecting Highlands Open Waters and resources of the buffer area. Restoration or enhancement of buffer functional values shall be provided on-site or within the same stream reach to achieve a net improvement of existing buffer functional values.

Objective 1D4j: The Highlands Council may require on a case-by-case basis, through Highlands Project Review, an expansion of the 300 foot buffer to protect the habitat of a water or wetlands-dependant rare, threatened or endangered species, to the minimum expansion necessary to achieve protection of that 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 1D5a: Require that all applications for approval through local development review and Highlands Project Review include the identification and mapping of Highlands Riparian Areas, including those identified by the Highlands Council and by site-specific analysis.

Objective 1D5b: Limit disturbance of existing natural vegetation or increases in impervious area within High and Moderate Integrity Riparian Areas in any Land Use Capability Zone to the minimum alteration feasible in areas beyond Highlands Open Waters buffer requirements; protect the water quality of adjacent Highlands Open Waters; and maintain or restore habitat value of the Riparian Area.

Objective 1D5c: Prohibit modifications to Riparian Areas in the Protection Zone except where a waiver is approved by the NJDEP or the Highlands Council under Policy 7G1 or 7G2.

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Objective 1D5d: Restrict modifications to Riparian Areas in the ECZ, other than those addressed by Objective 1D5b, that would alter or be detrimental to the water quality and habitat value of a Riparian Area.

Objective 1D5e: Implement Low Impact Development Best Management Practices for any development activity proposed within a Riparian Area, which minimize both alterations of natural vegetation and increases in impervious area, in compliance with Policies 6N3 and 6N4 and provide for mitigation through restoration of impaired Riparian Areas in the same HUC14 subwatershed.

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).

Objective 1D5g: Require identification and implementation of opportunities where the restoration and enhancement of previously impaired Riparian Areas are feasible and appropriate as mitigation to any allowable modification to Riparian Area requirements.

Policy 1D6: To establish priorities for preservation of Riparian Areas.

Objective 1D6a: Assign high priority to land acquisition and development restrictions for lands within both High Resource Value Watersheds and High Integrity Riparian Areas.

Objective 1D6b: Consistent with Policy 1H1, identify opportunities for and implement Riparian Area restoration practices on public and private lands that give priority to ecological and watershed protection measures.

SUBPART C STEEP SLOPES

Steep slopes within the Highlands Region play an important ecological, recreational, scenic, and functional role. Steep slopes and rocky ridgelines provide specialized habitats that are home to rare plant and animal species. Areas of steep slope provide popular recreational opportunities including hiking, climbing, and wildlife observation. Ridgelines, hillsides, and steep slopes provide scenic views and vistas, which contribute to the rural character of the Highlands Region and help to define the landscape. Disturbance of areas containing steep slopes can trigger erosion and sedimentation, resulting in the loss of topsoil. Silting of wetlands, lakes, ponds, and streams damages and degrades wetland and aquatic habitats, especially trout streams that are found throughout the Highlands and receive the State's highest water quality protections. Steep slope disturbance can also result in the loss of habitat quality, degradation of surface water quality, silting of wetlands, and alteration of drainage patterns. These processes, when severe, can also result in land slumping and landslides that can damage both developed property and ecosystems. The severity and extent of slopes, soil characteristics, and land cover all affect the potential for damages from the disturbance of steep slopes. The identification and classification of steep slopes is important in order to effectively manage critical natural resources in the Highlands Region.

GOAL 1E: **PROTECTION AND ENHANCEMENT OF THE NATURAL, SCENIC, AND OTHER RESOURCES OF THE HIGHLANDS REGION BY PROTECTION OF STEEP SLOPES FROM INAPPROPRIATE DEVELOPMENT AND DISTURBANCE.**

Policy 1E1: To develop, maintain, and improve a mapped inventory of steep slope areas in the Highlands Region.

Objective 1E1a: A mapped inventory of the Steep Slope Protection Area in the Highlands Region showing areas that are a minimum of 5,000 square feet for any combination of the following categories of steep slopes: a) 10% to less than 15%, b) 15% to less than 20%, and c) 20% and greater.

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Objective 1E1b: Periodic updates and refinements to the Steep Slope Protection Area.

Objective 1E1c: Apply Light Detection and Ranging (LiDAR) technology to develop a two-foot interval contour topographic map as a basis for refining the identification of the Steep Slope Protection Area.

Policy 1E2: All lands with slopes of 20% or greater and lands within Riparian Areas with slopes of 10% and greater shall be considered as Severely Constrained Slopes.

Policy 1E3: All non-Riparian Area lands having a slope of 15% to less than 20% which are forested shall be considered Moderately Constrained Slopes.

Policy 1E4: All non-Riparian Area lands having a slope of 15% to less than 20% which are non-forested with one or more of the following characteristics shall be considered Constrained Slopes: a) highly susceptible to erosion; b) shallow depth to bedrock; or c) a Soil Capability Class indicative of wet or stony soils.

Policy 1E5: All non-Riparian Area lands having a slope of 15% to less than 20%, which are non-forested, are not highly susceptible to erosion, and do not have a shallow depth to bedrock or a Soil Capability Class indicative of wet or stony soils, shall be considered Limited Constrained Slopes.

Policy 1E6: To require through local development review and Highlands Project Review that applications for development include topographic information identifying the location of any Steep Slope Protection Areas located on the parcel proposed for development.

Policy 1E7: To require through local development review and Highlands Project Review that applications for development involving parcels of land with slopes of 10% or greater include identification of forested lands, areas which are highly susceptible to erosion, depth to bedrock, and Soil Capability Classes.

Policy 1E8: To prohibit through local development review and Highlands Project Review land disturbance within areas which are Severely Constrained Slopes and Moderately Constrained Slopes, except for linear development in both the Preservation and Planning Areas that meets the requirements of N.J.A.C. 7:38-3.8(c)1-4.

Policy 1E9: To require through local development review and Highlands Project Review the use of Low Impact Best Development Practices for any land disturbance or human development within areas which are Constrained or Limited Constrained Slopes, or that involves an approved disturbance of a Severely Constrained or Moderately Constrained Slope.

Policy 1E10: To require that conforming municipalities and counties implement the steep slope protection provisions of Policies 1E2 through 1E9 through master plans and development regulations.

Policy 1E11: To provide technical guidelines and assistance in support of Plan Conformance activities.

SUBPART D CRITICAL HABITAT

Biodiversity is the variety of plant species, animal species, and all other organisms found in a particular environment and is a critical indicator of ecological integrity. The protection of habitats that are critical to maintaining biodiversity contributes to the protection of rare, threatened, and endangered plant and animal species of the Highlands Region. As discussed in Chapter 2, there are three categories of Critical Habitat in the Highlands Region: 1) Critical Wildlife Habitat (habitat for rare, threatened, or endangered species); 2) Significant Natural Areas (regionally significant ecological communities, including habitat for documented threatened and endangered plant species); and 3) vernal pools (confined, ephemeral wet depressions that support distinctive, and often endangered, species

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that are specially adapted to periodic extremes in water pool levels). Critical Wildlife Habitat and Significant Natural Areas are designated based on the presence of, and associated habitat required for the survival and propagation of, species of concern. Vernal pools are certified by the NJDEP, and to protect and promote the biodiversity of vernal pools, the Highlands Council has determined that a terrestrial habitat protection buffer of 1,000 feet around vernal pools will generally address the habitat requirements of vernal pool-breeding wildlife. The Critical Habitat area for each is established based on mapped information but may be modified based on site-specific field information that disproves the mapped information.

Protection of Critical Habitat will depend heavily on two approaches. A high priority is for municipalities to develop and implement a Council-approved Critical Habitat Conservation and Management Plan that achieves the standards and criteria below, as refined using local scientific knowledge, with incorporation of local planning goals where they do not conflict with the standards and criteria. The Critical Habitat Conservation and Management Plan will be used for both development review and restoration activities. Where a Critical Habitat Conservation and Management Plan has not been approved by Council, site-by-site development applications in municipalities will be required to adhere to the RMP Goals, Policies, and Objectives below.

GOAL 1F: PROTECTION AND ENHANCEMENT OF CRITICAL WILDLIFE HABITATS, SIGNIFICANT NATURAL AREAS, AND VERNAL POOLS.

Policy 1F1: Critical Habitat shall be:

1. Critical Wildlife Habitat, defined as those areas within the NJDEP's Landscape Project Version 3 that are Landscape Rank 3 through 5 and Landscape Rank 2 with Highlands Conservation Rank of Critically Significant or Significant.
   a. Landscape Rank 5 – Habitat supporting a federally listed threatened or endangered species;
   b. Landscape Rank 4 – Habitat supporting a species designated as State Endangered;
   c. Landscape Rank 3 – Habitat supporting a species designated as State Threatened; and
   d. Landscape Rank 2 – Habitat supporting a species designated as Special Concern. The Highlands Conservation Rank index for each species occurrence based upon how critical the Highlands Region is to the continued existence of the species within New Jersey. Following are the Highlands Conservation Ranks that were used:
      i. Critically Significant (Rank 3) – If habitats in the Highlands Region were lost, that species would not exist in the State;
      ii. Significant (Rank 2) – Highlands Region habitats play a significant role for that species' existence in the State;
2. Significant Natural Areas, defined as the 95 NJDEP Natural Heritage Priority Sites, including habitat for documented threatened and endangered plant species, and lands that include unique or regionally significant ecological communities and other significant natural sites or features; and
3. Vernal pools, defined as NJDEP-certified vernal pools plus a 1,000 foot protection buffer.

Policy 1F2: To prohibit through Plan Conformance, local development review and Highlands Project Review the direct impact of new human development or expansion or increased intensity of existing development within Critical Habitat.

Policy 1F3: To assign land within Critical Habitat a high priority for fee simple and/or easement acquisition with periodic monitoring of easement restrictions protecting Critical Habitat, species, and ecological communities from any changes in land use or management practices that would impair these resources.

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Policy 1F4: To promote the restoration and enhancement of impaired lands in Critical Habitat.

Policy 1F5: To establish a Habitat Conservation and Management Program, including minimum performance standards and criteria for the protection, enhancement, and restoration of lands within Critical Habitat.

Objective 1F5a: Implement the Habitat Conservation and Management Program through a Critical Habitat Conservation and Management Plan to include performance standards to be required through local development review and Highlands Project Review.

Objective 1F5b: Establish performance standards such that all development shall employ Low Impact Development Best Management Practices to, in this order: 1) avoid the disturbance of Critical Habitat, 2) minimize impacts to Critical Habitat, and 3) mitigate all adverse modification to Critical Habitat so that there is no net loss of habitat value. Habitat value is determined by quantity (e.g., acreage), quality (e.g., core forest vs. edge forest), type (e.g., scrub-shrub), and function (e.g., winter hibernacula for timber rattlesnakes). The mitigation requirement of no net loss of habitat value shall ensure that all four elements are accounted for and included in the mitigation design. Mitigation must meet the habitat and life-cycle requirements of the specific impacted species.

Objective 1F5c: Establish performance standards that include a requirement and criteria for mitigation of disturbed Critical Habitat. Mitigation shall be required for all adverse modification to Critical Habitat so that there is no net loss of habitat value based on the criteria in Objectives 1F5a and 1F5b.

Objective 1F5d: Establish performance standards for the enhancement or restoration of historically disturbed Critical Habitat.

Objective 1F5e: The Critical Habitat Conservation and Management Plan shall include a GIS or map-series Critical Habitat Overlay District for inclusion in municipal master plans to identify Critical Habitat that highlights:

- Habitat in need of protection from fragmentation and other anthropogenic impacts;
- Habitat critical to maintaining wildlife and plant populations; and
- Habitat that serves other essential ecosystem functions, including, but not limited to, carbon sequestration and ground water recharge.

Objective 1F5f: The Critical Habitat Conservation and Management Plan shall include guidelines for a municipal habitat stewardship program, including, but not limited to prevention of habitat fragmentation through open space preservation and corporate, non-profit, and community involvement in creating, protecting, and restoring habitat.

Policy 1F6: To require that applications for any local development review and Highlands Project Review for Critical Habitat be subject to minimum standards and criteria outlined in the Habitat Conservation and Management Plan.

Objective 1F6a: Prohibit direct impacts from new development or expansion or increased intensity of existing development that will jeopardize the continued existence of, or result in the likelihood of the destruction or adverse modification of Critical Habitat, except as permitted through the issuance of a waiver under Policy 7G1 or 7G2.

Objective 1F6b: Prohibit indirect impacts from activity that is off-site, adjacent to, or within Critical Habitat that will jeopardize the continued existence of, or result in the likelihood of the destruction or adverse modification of Critical Habitat, except as permitted through the issuance of a waiver under Policy 7G1 or 7G2.

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Objective 1F6c: Waiver applications under Policy 7G2 for local development in a municipality with a Council-approved Critical Habitat Conservation and Management Plan shall be subject to the minimum standards and criteria for waiver provisions as set forth in the plan, to the maximum extent practicable.

Objective 1F6d: Waiver applications under Policy 7G2 for development in a municipality without a Council-approved Critical Habitat Conservation and Management Plan shall be subject to the Low Impact Development Best Management Practices required in Objective 1F5b.

Objective 1F6e: A vernal pools protection buffer may be reduced only if an applicant can demonstrate, to the satisfaction of the Highlands Council in coordination with the NJDEP's Endangered and Nongame Species Program, that the reduction is the minimum feasible and that:

- In an undisturbed wetland, documented and field-determined vernal pool-breeding wildlife require a smaller protective buffer, as documented in scientific literature; or
- Existing land uses present a significant, insurmountable and permanent barrier to the migration or viability of vernal pool-breeding wildlife that is infeasible to mitigate.

Requirements for demonstrating the above criteria shall be included in the Critical Habitat Conservation and Management Plan.

Objective 1F6f: A Critical Wildlife Habitat area or Significant Natural Area delineation may be modified if an applicant can demonstrate, to the satisfaction of the Highlands Council in coordination with the NJDEP's Endangered and Nongame Species Program or Natural Heritage Program, that:

- The nature of the site is such that it does not provide habitat for species of concern;
- The species of concern are not present on the site during any critical part of their life cycle, do not depend upon the site for food, shelter or breeding, and the habitat on the site is either unsuitable or not critical to species' recovery in the Region; or
- Existing land uses present a human, natural or development barrier to the use of the site by species of concern.

Requirements for demonstrating the above criteria shall be included in the Critical Habitat-Conservation and Management Plan.

Policy 1F7: To require through local development review and Highlands Project Review that projects qualifying as major Highlands Developments, affecting or potentially affecting Critical Habitat in the Preservation Area, comply with the NJDEP Preservation Area Rules at N.J.A.C. 7:38-3.11 and with the minimum standards and criteria outlined in the Critical Habitat Conservation and Management Plan. All projects in the Preservation Area that are not major Highlands Developments shall comply with Policies 1F1 through 1F6.

Policy 1F8: To establish standards and procedures, in coordination with the NJDEP's Endangered and Nongame Species Program or Natural Heritage Program, for the identification of lands where it is necessary that Critical Wildlife Habitat, Significant Natural Areas, or vernal pool buffers be expanded in order to protect an individual species or ecological community in the event that it is determined that a larger area is required to protect the functional integrity of the habitat.

Policy 1F9: To establish standards and criteria for the identification of Critical Habitat features in coordination with the NJDEP's Endangered and Nongame Species Program or Natural Heritage Program.

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GOAL 1G: INCLUSION OF CRITICAL HABITAT AREA MANAGEMENT PROGRAMS IN THE MASTER PLANS AND DEVELOPMENT REGULATIONS OF CONFORMING MUNICIPALITIES AND COUNTIES.

Policy 1G1: To require that conforming municipalities and counties identify Critical Habitat and management programs in their master plans and development regulations.

Policy 1G2: To require that conforming municipalities and counties include approved Habitat Conservation and Management Plans in master plans and development regulations.

SUBPART E LAND PRESERVATION AND STEWARDSHIP

Public and private investment in land preservation over the years has preserved nearly a third of the Highlands Region. Maintaining the land in a natural condition is necessary to preserve and enhance ecosystem integrity and to protect drinking water supplies. The Highlands Act contemplates preservation of additional open space resources in order to protect and enhance ecosystem function, protect drinking water resources, and provide for passive and active recreational lands. In order to accomplish these purposes, the case for preservation and stewardship must be addressed by the Highlands Council including identifying and maintaining an inventory of open space and preserved lands, coordinating and implementing strategies for land preservation and stewardship among preservation partners, and ensuring that sufficient financial, institutional, and innovative resources are available for land preservation and stewardship.

Open space preservation currently occurs through compensation to landowners through fee simple or easement acquisition, donations, and bequests. However, it will also occur, under the Highlands TDR Program, through the sale of such credits. Agriculture, forestry, and historic structures are also a vital component of the preserved landscape and the Goals, Policies, and Objectives specifically addressing these issues are outlined in Agricultural Resources, Highlands Forest Resources, and Historic, Cultural, Archaeological, and Scenic Resources. The Land Preservation and Stewardship Goals, Policies, and Objectives address land preservation in the Highlands Region holistically.

GOAL 1H: PROTECTION OF CRITICAL RESOURCES THROUGH LAND PRESERVATION AND STEWARDSHIP OF OPEN SPACE THROUGHOUT THE HIGHLANDS REGION.

Policy 1H1: To identify and maintain an inventory of private and public open space land holdings and conservation easements in the Highlands Region.

Objective 1H1a: Create a coordinated and continually updated open space database that includes preserved lands and stewardship activities by municipal, county, state and federal agencies, non-profit organization, and individuals.

Policy 1H2: To serve as a regional clearinghouse for information regarding preservation programs and funding sources for land acquisition, restoration and enhancement; technical assistance; and long-term stewardship of preserved lands, for public and private organizations in order to maximize land preservation efforts in the Highlands Region.

Objective 1H2a: Promote the coordination by appropriate federal, state, county, and municipal land preservation agencies of open space acquisition activities under new or existing programs, including identification of high priority lands for preservation, stewardship initiatives, and funding needs.

Objective 1H2b: Create a landowner assistance program to provide technical assistance and guidance with regard to land preservation options and the Highlands TDR Program to owners of land which should not be developed in order to protect water resources and environmentally sensitive resources.

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Objective 1H2c: Implement or support implementation of new, innovative, and alternative methods and programs of land preservation that are deemed most appropriate for the Highlands Region.

Policy 1H3: To develop and maintain a confidential inventory of open space lands and farmland within Conservation Priority Areas and Agricultural Priority Areas which should be preserved.

Objective 1H3a: Include, within the confidential inventory, those lands which are five and ten year priorities for land acquisition in the Highlands Region in order to determine the cost of implementing the RMP.

Objective 1H3b: Coordinate Highlands Region priority open space preservation and land stewardship activities with the NJDEP Green Acres Program and the State Agriculture Development Committee (SADC) with regard to land acquisition and preservation priorities in the Highlands Region.

Objective 1H3c: Coordinate with the NJDEP, the review of applications for Green Acres diversions for consistency with the RMP.

Policy 1H4: To advocate for the establishment of dedicated sources of funding for the preservation and stewardship of open space lands in the Highlands Region including, but not limited to:

1. Dedicated sources of State revenue to be used for open space preservation in the Highlands Region, such as coordination with the NJDEP Green Acres Program for re-authorization of the Garden State Preservation Trust (GSPT) Fund, including a dedicated fund for the anticipated land acquisition needs of the Highlands Region, and enactment of a water user fee.
2. Dedicated sources of State revenue for a reserve fund to capitalize the Highlands Development Credit Bank.
3. An ongoing program to secure significant federal funding in support of land acquisition and stewardship efforts in the Highlands Region including, but not limited to, additional appropriations under the Federal Highlands Conservation Act (HCA).
4. An ongoing program to seek funding for land acquisition and stewardship from unique sources of funding such as gifts, endowments and donations, and federal and state court-imposed fines for natural resource damages.
5. A dedicated source of revenue for the preservation and stewardship of open space through a surcharge on public water supply system rates for any system that directly or indirectly relies on Highlands water resources for more than 5% of their annual needs.
6. A Highlands Conservation Trust to secure monies from alternate sources of funding to assist in land acquisition and stewardship.

Policy 1H5: To encourage municipalities and counties to establish and fund local open space acquisition and stewardship programs or to expand existing open space and stewardship programs.

Policy 1H6: To support legislation to extend the dual appraisal methodology used by the GSPT for lands in the Highlands Region beyond the June 30, 2009 expiration date to a minimum of five years beyond adoption of the RMP.

Policy 1H7: To identify and designate a Special Environmental Zone in 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, fee simple acquisition, easement acquisition, transfer of development programs, and development regulations.

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Objective 1H7a: Create and maintain a Special Environmental Zone based upon RMP Conservation Priority Area rank and indicators designed to identify lands with the highest water resource and environmental integrity.

Objective 1H7b: Adopt and enforce development regulations which prohibit the development of those portions of a parcel of land which are located within a Special Environmental Zone.

Objective 1H7c: Require through Plan Conformance, local development review, Highlands Project Review, and the NJDEP review under N.J.A.C. 7:38 that development shall not occur within a Special Environmental Zone. In any Special Environmental Zone, any exemption identified through Policy 7F1 or waiver issued under the Highlands Act under Policy 7G1 or 7G2 shall be conditioned upon a determination that the State or local government unit has exhausted all means for the permanent preservation of these lands through use of preservation tools including, but not limited to, fee simple acquisition, easement acquisition, and TDR.

Objective 1H7d: Prepare and deliver documents to appropriate land preservation/acquisition agencies identifying parcels of land wholly or partially within a Special Environmental Zone.

Objective 1H7e: Implement the Highlands TDR Program as a means of permanently preserving land in a Special Environmental Zone.

GOAL 1I: CONFORMING MUNICIPALITIES AND COUNTIES INCLUDE OPEN SPACE PRESERVATION AND LAND STEWARDSHIP PROGRAMS IN THEIR MASTER PLANS AND DEVELOPMENT REGULATIONS.

Policy 1I1: To require conforming municipalities and counties to include an open space preservation and land stewardship element in their master plans.

Policy 1I2: To require conforming municipalities and counties to: identify and delineate existing preserved open space, including fee simple and easements; maintain a current Recreation and Open Space Inventory (ROSI) where required by the NJDEP Green Acres Program; and identify lands subject to stewardship programs in their master plans and provide that information to the Highlands Council.

Policy 1I3: To require conforming municipalities and counties to require conservation or land stewardship easements, enforceable by the Highlands Council and at least one of the following: the appropriate municipality, the County Agriculture Development Board, the SADC, Green Acres, or a non-profit land trust organized pursuant to § 501 (c)(3) of the federal tax code and engaged in the protection of land for the purpose of providing long-term stewardship of important resources as a condition of development approval for lands within parcels proposed for development that are identified for preservation on a proposed site plan or subdivision plat.

Policy 1I4: To require conforming municipalities and counties to establish stewardship and monitoring programs for preserved lands owned by the municipality or county by fee acquisition or easement acquisition. Such programs can be administered by the municipality or county, or a non-profit land trust organized pursuant to § 501 (c)(3) of the federal tax code and engaged in the protection of land for the purpose of providing long-term stewardship of important resources.

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GOAL 1J: PRESERVATION OF FORESTS IN PRIVATE OWNERSHIP THROUGH CREATION OF A FOREST PRESERVATION EASEMENT PROGRAM.

Policy 1J1: To promote the creation of a Forest Preservation Easement Program for the Highlands Region, eligible for use through the SADC or the Green Acres Program.

Objective 1J1a: Achieve maximum preservation of working forests through the Forest Preservation Easement Program.

SUBPART F CARBONATE ROCK (KARST) TOPOGRAPHY

The term karst describes a distinctive topography that indicates dissolution of underlying carbonate rocks (such as limestone and dolomite) by surface water or ground water over time. This dissolution process causes surface depressions and the development of such features as sinkholes, sinking streams, enlarged bedrock fractures, caves, and underground streams. Sinking streams range in size from intermittent streams to perennial rivers. They may sink through a segment of the stream bed or through a discrete opening such as a fracture or cave entrance, and then reappear further downstream. Sinkholes function as funnels, directing surface water runoff into karst aquifers with little or no attenuation of any transported contaminants. Stormwater basins, septic system leaching fields, sewers, agricultural runoff, lawn runoff, underground pipelines, and soil disturbance may also contribute contaminants directly to ground water through karst features. Soils in sinkhole bottoms may be thin or non-existent. In addition to ground water concerns, communities in karst areas must contend with safety concerns. Sinkholes present a geologic hazard as they may undermine such infrastructure as stormwater basins, roads, sewer lines, septic systems, and natural gas lines.

Beyond the potential deleterious effects of karst areas with respect to ground water and public safety, karst features provide natural, scenic, and recreational resource values. Karst aquifers are high yielding, particularly where carbonate rock is overlain by permeable materials such as glacial sands and gravels. These prolific aquifers have significance as water supplies and are extremely vulnerable to contamination. Karst areas often offer unique topographic features and opportunities for outdoor recreation. They typically occupy valley bottoms, producing dramatic contrasts in relief and valuable scenic vistas, especially when viewed from the higher elevations of ridges. Carbonate rock areas also offer unique habitats that contribute to the Region's biodiversity such as the calcareous wetland fens of the upper Wallkill River valley and the limestone forests of the Johnsonburg Swamp Preserve in Frelinghuysen Township.

The Highlands Region has several large areas with carbonate rock formations, usually located in river valleys such as the Musconetcong, the South Branch of the Raritan and the Lamington Rivers. Karst features exist in some, but not all, of these areas.

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

Policy 1K1: To map and make readily available to the public areas of the Highlands Region that are underlain by carbonate rocks to define a Carbonate Rock Area.

Policy 1K2: To identify and delineate through local development review and Highlands Project Review land areas that drain surface water into the Carbonate Rock Area, as changes in the quantity, quality, and rate of discharge of surface water runoff from upslope lands can impair ground water resources in the Carbonate Rock Area.

Policy 1K3: To establish and maintain inventories of karst features and subwatersheds that drain directly to Carbonate Rock Areas in the Highlands Region.

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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 1K4b: Applications for site plan or subdivision approval will include a multi-phased geotechnical site investigation (e.g., test borings, test pits) to locate any potential karst features and potential hazards to public health and safety, structures, and ground water quality.

Objective 1K4c: Local development reviews and Highlands Project Reviews and requirements shall ensure that all potential hazards to public health and safety, structures and ground water quality, including but not limited to concentrated surface water flows that dissolve carbonate rock, are fully addressed and mitigated in the construction plans and subsequent approval process, with the maximum emphasis on nonstructural measures, including, but not limited to, avoidance of modifications to the karst features.

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.

Objective 1K4e: Highlands Project Reviews and requirements and local development reviews (where applicable) shall prohibit new land uses and facilities that constitute unacceptable risks of discharge due to karst topography where karst features have been identified, including but not limited to:

- Underground storage tanks;
- Solid waste landfills;
- Hazardous waste storage and disposal; and
- Hazardous materials storage and handling.

Objective 1K4f: High priority is given, and state agency coordination will be undertaken, with respect to management and remedial action regarding high risk land uses and facilities where karst features have been identified including, but not limited to:

- Known contaminated sites such as Superfund sites, brownfields, and landfills;
- Hazardous waste storage, handling, and disposal facilities;
- Failing septic systems; and
- Existing underground storage tanks.

SUBPART G LAKE MANAGEMENT

The management of lands surrounding lakes is an important issue for the Highlands Region. Overdeveloped, damaged, and poorly managed shoreland areas can result in the degradation of water quality, harm the lake ecosystem, decrease natural aesthetic values, and cause an overall loss of property values for lake communities. Lakes can be harmed by pollutant sources in the watershed area draining to them. Polluted lakes can, in turn, damage downstream streams and rivers. Most existing lake communities are fully built out, predate modern environmental protection requirements, and have limited potential for major land use changes. Some have sewer systems, but many rely on septic systems (or even cesspools) on inadequately sized lots, where direct contamination of the lakes is possible. Past NJDEP studies indicate that nearly every public lake (privately-owned lakes were not evaluated) is experiencing unacceptable contamination, often including excessive bacteria and nutrients. In addition, many lake communities have been

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evolving from summer communities to year-round communities, and many are experiencing greatly intensified land uses as the original buildings are torn down and replaced by much larger structures. Addressing land uses within lake communities allows for potential opportunities to improve community value, to protect the cultural and historic resources often associated with lake communities, to protect natural resources and enhance and restore the quality of lake environments in the Region, and in some cases, to allow for in-fill development where appropriate.

GOAL 1L: PROTECTION OF HIGHLANDS REGION LAKES FROM THE IMPACTS OF PRESENT AND FUTURE DEVELOPMENT.

Policy 1L1: To establish a Lake Management Area around all Highlands Region lakes of greater than ten acres in size.

Policy 1L2: To establish tiers of lake management appropriate to management strategies that help protect lake water quality and community value from the impacts of present and future development.

Objective 1L2a: Lake management programs shall use the following management tiers around all Highlands Region lakes of greater than ten acres in size:

- A Shoreland Protection Tier consisting of an area measured 300 foot or the first property line perpendicular from the shoreline of the lake;
- A Water Quality Management Tier consisting of an area measured 1,000 foot perpendicular from the shoreline of the lake, including the Shoreland Protection Tier;
- A Scenic Resources Tier consisting of an area measured 300 to 1,000 foot perpendicular from the shoreline of the lake, scaled based upon the view distance from the opposite shoreline, and determined through the size and layout of the lake, with wider portions of lakes having longer view distances; and
- A Lake Watershed Tier consisting of the entire land area draining to the lake, through the evaluation of drainage areas using LiDAR topographic analyses or other topographic data where LiDAR data are not available.

Policy 1L3: To establish unique standards (as compared to lakes within the Protection and Conservation Zones) for the Lake Community Sub-Zone within the ECZ within 1,000 feet of lakes, particularly with respect to the Shoreline Protection Tier, to prevent degradation of water quality, harm to lake ecosystems, and promote aesthetic values within the ECZ.

Policy 1L4: To establish and implement management strategies to help protect lake water quality and ecosystem values from the impacts of present and future development for all lakes.

Objective 1L4a: Implementation of standards through Plan Conformance regarding lake ecosystem and water quality in the Shoreland Protection Tier to address direct and proximate impacts upon the lake, including but not limited to shoreline modification and development (including limits to the hardscaping of shorelines using bulkheads, rip-rap, and walls), docks, piers, boathouses, dredging, vegetation removal, and increased impervious cover. Pollutant discharges shall also be addressed, including the potential for contamination from septic systems, cesspools and other wastewater management systems within the tier that are failing or are inadequately designed and constructed. As such systems fail, landowners should be required to provide upgraded treatment (whether on-site or through public or community systems) to minimize pollutant movement to the lake. Standards for the Lake Community Sub-Zone and for the Protection and Conservation Zones may be distinct to the extent necessary to recognize the existence of significant development within the Lake Community Sub-Zone.

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Objective 1L4b: Implementation of standards through Plan Conformance regarding land use compatibility and water quality in the Water Quality Management Tier, to prevent or minimize continuous pollutant sources that can contribute pollutants overland or through ground water to the lake from greater distances than the Shoreland Protection Tier.

Objective 1L4c: Implementation of standards through Plan Conformance regarding the protection of visual and scenic resources in the Scenic Resources Tier, including but not limited to requirements for vegetative screening of buildings, building height limitations, and limits on tree and understory removal for reasons other than public health and safety or as the minimum necessary to make reasonable use of the designated building envelope for the parcel proposed for development. Standards for the Lake Community Sub-Zone and for the Protection and Conservation Zones may be distinct to the extent necessary to recognize the existence of significant development within the Lake Community Sub-Zone.

Objective 1L4d: Implementation of lake restoration plans to restore, protect and, where possible, enhance lake water quality through management of pollutant sources in the Lake Watershed Tier, including but not limited to the development, adoption and implementation of TMDLs by the NJDEP pursuant to the Water Quality Management Planning Rules, N.J.A.C. 7:15. Ongoing coordination will be undertaken with the Greenwood Lake and Lake Hopatcong Commissions as well as individual lake associations, as appropriate, regarding lake management issues.

Policy 1L5: To require that conforming municipalities adopt and implement for all lakes the standards applicable to the Shoreland Protection and Water Quality Management Tiers; the standards applicable to the scenic resources tier shall be adopted and implemented for all public lakes (e.g., with shorelines that are not entirely privately-held and managed through a lake association), and for privately-held lakes to the extent feasible under law, recognizing the existence of previously approved lake community development plans.

Objective 1L5a: Shoreland Protection and Water Quality Management Tier requirements shall apply to all new development, regardless of lake ownership.

Objective 1L5b: Scenic Resource Tier requirements shall apply to all lakes with public access and to lakes with no public access that are not entirely managed by a single homeowner or lake community association. For lakes that are privately-held and managed by a single homeowner or lake community association, the scenic resource tier requirements shall be voluntary.

Policy 1L6: To require that conforming municipalities develop and adopt lake restoration plans, with sufficient input from lake community residents and landowners, for each of the municipality's developed lakes that has been identified as water quality impaired, to include watershed delineation, description of point and nonpoint sources of pollution in the watershed, lake monitoring schedules, existing and proposed in-lake management techniques, and recommended watershed best management practices. TMDLs adopted by the NJDEP to address known pollution problems may be used as lake restoration plans. For lakes that are privately-held and managed by a single homeowners or lake community association, the municipality may require that the association share in or assume the costs of developing such plans.

Objective 1L6a: Provide Lake Management Plan guidance to municipalities that includes watershed delineation mapping methodology, point and nonpoint source pollution references, example lake monitoring schedule with monitoring goals and methods, existing successful in-lake management techniques, and best management practices.

Objective 1L6b: Septic systems and cesspools on small lots in close proximity to lakes shall be replaced with upgraded individual treatment systems, communal septic systems or community-based wastewater systems wherever feasible and cost-effective, with the selection of replacement technology to ensure minimal secondary impacts, including potential reductions

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in net water availability, maximum environmental benefit, and financial viability. Community-based systems should not provide for additional land development capacity except for exempt lots within that existing lake community that are not environmentally constrained, or for areas that are otherwise permitted to have wastewater service under the Goals, Policies, and Objectives in Part 2, Subpart D, Sustainable Development, and Water Resources.

GOAL 1M: PROTECT THE UNIQUE CHARACTER OF HIGHLANDS LAKE COMMUNITIES.

Policy 1M1: To provide guidance regarding evaluation of and standards for lake character and aesthetics that shall be adopted by municipal ordinance for application to public lakes, or that may be voluntarily adopted by privately-owned lake communities within their by-laws and regulations.

Policy 1M2: To encourage increased public access to publicly-owned lakes, within the lake's carrying capacity and while maintaining the lake character.

Policy 1M3: To discourage or control teardowns that result in altered lake community character, and the potential loss of historic and cultural values, and to encourage community-supported limitations in lot coverage and building height for new construction.

Policy 1M4: To establish and implement performance and development standards through local development review and Highlands Project Review for shoreline uses which achieve compatibility among shoreline activities and nearby neighborhoods.

Policy 1M5: To encourage municipalities to utilize recreational sites as opportunities to educate the public regarding the ecological value of lake environs.

Policy 1M6: To encourage municipalities to explore appropriate means to provide public recreation at the shoreline and on the water while ensuring retention of opportunities for passive recreation (e.g., natural areas, open space).

GOAL 1N: MAINTAIN PUBLIC AND PRIVATE LAKES, OR RESTORE LAKE BEDS AND DOWNSTREAM AREAS WHEN LAKES ARE DRAINED.

Policy 1N1: To develop innovative financing and administrative mechanisms for the maintenance and operation of public and private dams and lakes, where those dams and lakes provide a continuing public or private purpose.

Policy 1N2: To restore appropriate habitats in the lake beds and to prevent, mitigate, or restore downstream habitats from damages due to lake drainage, when dams are allowed to fail or are deliberately breached or removed.

PART 2 Water Resources and Water Utilities

A fundamental purpose of the Highlands Act is to protect water supplies for human use and ecological sustainability both within and outside of the Highlands Region. The Highlands RMP addresses five fundamental issues with regard to water resources in the Highlands Region:

- The availability of water resources for human and ecological use;
- The protection and restoration of water resource availability;
- The protection, restoration, and enhancement of water quality;
- The management of land development patterns and densities to ensure that the carrying capacity of water resources are not exceeded; and
- The cost-effective and efficient provision and use of water utility capacity in a manner that ensures compatibility with the carrying capacity of water resources.

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SUBPART A WATER RESOURCES AVAILABILITY

The availability of water for human use is a critical factor in determining the capacity for growth and continued economic vitality for both existing development and agriculture within and outside the Highlands Region. The availability of water for ecological purposes is critical to sustaining the aquatic ecosystems of streams, ponds and lakes in the Highlands Region. The Highlands RMP provides a method for identifying the quantity of available water resources in the Highlands Region, which is used to identify areas where water resources are or are not sufficient to support existing human and ecological uses, and to support future uses. Where sufficient water availability exists, the method fairly allocates available water resources among future human uses as shown in the Land Use Capability Zone Map. Where water resources have been stressed, additional planning and mitigation is necessary.

The Goals, Policies, and Objectives for water resources availability establish a method for determining available water for human use by each subwatershed (HUC14), of which 183 are in (or partially in) the Highlands Region. Surface water availability from existing reservoir systems are addressed through regulations of the NJDEP and a major purpose of the RMP is to protect the safe yields of those reservoir systems by limiting upstream use of ground waters, which has the added benefit of protecting aquatic ecosystems. Ground water availability is determined using stream flow information, with thresholds based upon the predominant Land Use Capability Zone for each subwatershed. Net water availability reflects current uses, and may show surpluses or deficits. For all subwatersheds, municipal Plan Conformance requires development of Water Use and Conservation Plans that will set priorities for the use of available water (where net water availability is positive) and will establish methods to reduce and, where feasible, eliminate deficits where they exist. In all cases, efficient use of water is required to make the best use of limited resources. Where deficits exist and a Water Use and Conservation Plan has not yet been adopted, limited amounts of conditional water availability are provided for uses that will be permitted while the deficits are reduced through water conservation and enhanced recharge. The amount of mitigation is determined based on the amount of water use proposed and the severity of the current deficit, but is never less than 125%; mitigation will be required prior to the water use where either the proposed water use or current deficit is large.

GOAL 2A: **PROTECTION OF THE VALUE OF THE HIGHLANDS REGION AS AN "ESSENTIAL SOURCE OF DRINKING WATER, PROVIDING CLEAN AND PLENTIFUL DRINKING WATER FOR ONE-HALF OF THE STATE'S POPULATION" (HIGHLANDS ACT, SECTION 2), ALONG WITH THE ECOLOGICAL VALUES OF CLEAN WATER, THROUGH THE PROTECTION, ENHANCEMENT AND RESTORATION OF WATER RESOURCES QUANTITY, FLOW CHARACTERISTICS AND QUALITY AS FUNDAMENTAL TO ENSURING THAT THERE ARE ADEQUATE WATER SUPPLIES TO SUPPORT THESE NEEDS.**

Policy 2A1: To identify and periodically update net water availability and water deficits as a factor in the Land Use Capability Water Availability Map.

Policy 2A2: To ensure that increasing water demands do not exceed Net Water Availability or exacerbate existing deficits of subwatersheds. Net Water Availability is affected at a subwatershed level by location and extent of Land Use Capability Zone Map and its status as Current Deficit Area or Existing Constrained Area.

GOAL 2B: **PROTECTION, RESTORATION AND ENHANCEMENT OF WATER QUALITY AND QUANTITY OF SURFACE AND GROUND WATERS (SECTIONS 10.B(1) AND 10.C(1)), AND TO DETERMINE "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…" (SECTION 11.A.(1)(A)).**

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Policy 2B1: To track and consider water availability in local development review and Highlands Project Review.

Policy 2B2: To estimate Net Water Availability on a HUC14 subwatershed basis.

Objective 2B2a: Establish Ground Water Capacity by HUC14 subwatershed by subtracting the subwatershed's MA7CD10 (minimum average seven day low flow with a return period of ten years, also known as the 7Q10) from the September median stream flow.

Objective 2B2b: Establish Ground Water Availability thresholds for application to HUC14 subwatersheds based on the Land Use Capability Zone and watershed resource value, and as modified by status as an Existing Constrained Area. Ground Water Availability shall be determined by multiplying Ground Water Capacity by percentage thresholds specified in the following table that are related to the nature of the environmental resources and conservation objectives of the Plan for each Zone. Ground Water Availability within the Protection Zone and Conservation Zone shall emphasize the integrity of aquatic ecosystems by ensuring that Ground Water Capacity is predominantly reserved for maintenance of stream flows, recognizing the regional significance of these resources; in the Conservation Zone, Ground Water Availability thresholds shall also specifically recognize agricultural water needs. Ground Water Availability within Existing Community Zone subwatersheds shall provide for the protection of water supply, water resources and ecological values of the Region.

GROUND WATER AVAILABILITY THRESHOLDS AS PERCENTAGE AGE OF GROUND WATER CAPACITY

Predominant Land Use Capability Zone (or Watershed Value)	Standard Threshold	Existing Constrained Area*
Protection Zone (High)	5%	5%
Conservation Zone (Moderate)	5% non-agricultural 10% agricultural	5% + 2003 Depletive & Consumptive Use (up to Standard Threshold)
Existing Community Zone (Low)	20%	5% + 2003 Depletive & Consumptive Use (up to Standard Threshold)

**Within HUC14 Subwatershed upstream of a Current Deficit Area*

Objective 2B2c: Estimate Net Water Availability for each HUC14 subwatershed by subtracting from Ground Water Availability an estimate of maximum monthly consumptive and depletive ground water and surface water use (other than from reservoir storage or other supply with a NJDEP approved safe yield). Adjust consumptive and depletive water use to account for the return of wastewater to the same HUC14 subwatershed from which the water originated, or as appropriate, water originating from another HUC14 subwatershed.

Objective 2B2d: Designate Current Deficit Areas as those HUC14 subwatersheds where the Net Water Availability is less than zero.

Objective 2B2e: Designate Existing Constrained Areas as those HUC14 subwatersheds that have positive Net Water Availability and are upstream of and contributing flow to a Current Deficit Area.

Objective 2B2f: Modify Net Water Availability in Existing Constrained Areas to be the 2003 consumptive and depletive ground and surface water use plus 5% of the Ground Water Capacity (up to the standard thresholds assigned to each Land Use Capability Zone) to ensure continued stream flows to downstream Current Deficit Areas, emphasizing techniques including, but not limited to, water reuse, recycling and conservation.

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Policy 2B3: To conditionally provide water availability (Conditional Water Availability) within a Current Deficit Area with appropriate standards regarding its use.

Objective 2B3a: A Current Deficit Area subwatershed that is primarily within the Protection Zone or Conservation Zone shall be assigned Conditional Water Availability not to exceed an aggregate of 1% of Ground Water Capacity, and will be applied to consumptive and depletive water uses that comply with the mitigation requirement in Objective 2B8b.

Objective 2B3b: A Current Deficit Area subwatershed that is primarily within the Existing Community Zone shall be assigned Conditional Water Availability not to exceed an aggregate of 2% of Ground Water Capacity, and will be applied to consumptive and depletive water uses that comply with the mitigation requirement in Objective 2B8b.

Objective 2B3c: The Highlands Council will track the use of Conditional Water Availability within each Current Deficit Area allocated during local development review and Highlands Project Review and adjust remaining Conditional Water Availability accordingly.

Policy 2B4: To strictly limit consumptive and depletive water uses to the water availability in each HUC14 subwatershed and to establish priorities for water uses that implement the policies and objectives of the RMP.

Objective 2B4a: Give highest priority for the use of non-agricultural Net Water Availability or Conditional Water Availability within Protection Zone and Conservation Zone subwatersheds, through a Water Use and Conservation Plan developed under Objective 2B8c, local development review and Highlands Project review:

1. To address through a waiver under Policy 7G1 or 7G2 a documented existing or imminent threat to public health and safety from contaminated domestic and other on-site water supplies that is of sufficient scale to justify a public water supply and where no alternative is feasible that would sufficiently assure long-term protection of public health and safety. Such needs shall have highest priority for Net Water Availability;
2. To serve development permitted through a Highlands Redevelopment Area or takings waiver under Policy 7G1 or 7G2;
3. To serve a cluster development that complies with Objective 2J4b; and
4. To serve affordable housing projects where at least 10% of the units are affordable.

Objective 2B4b: The highest priority for use of Net Water Availability or Conditional Water Availability within ECZ subwatersheds, through a Water Use and Conservation Plan developed under Objective 2B8c, local development review and Highlands Project review to serve documented threats to public health and safety from contaminated water supplies, designated TDR Receiving Zones, infill development, designated Highlands Redevelopment Area, affordable housing projects where at least 10% of the units are affordable, or new areas for development that meet all other requirements of the RMP.

Objective 2B4c: Establish and implement mandatory stormwater reuse for recreational and other non-agricultural irrigation, as well as other non-potable water purposes to minimize both the volume of stormwater discharges and water withdrawals for these purposes.

Objective 2B4d: The highest priority for agricultural water uses in the Conservation Zone shall be those Preservation Area uses that promote agricultural and horticultural uses and opportunities that are compatible with protection of the Highlands environment, and those Planning Area uses that promote the continuation and expansion of agricultural, horticultural, recreational, and cultural uses and opportunities. Compatible agricultural and horticultural uses shall minimize consumptive water uses through efficiency measures.

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Policy 2B5: To require, through Plan Conformance (including through a Water Use and Conservation Plan developed under Objective 2B8c), local development review, and Highlands Project Review, the use of water conservation, recycling and reuse methods (where appropriate) and devices for any redevelopment or development activity, including renovations to existing residential, institutional, commercial or industrial buildings, to minimize consumptive water use tailored to meet the resource protection and other goals for each Zone and considering subwatershed-specific conditions and Net Water Availability status.

Objective 2B5a: Coordinate with NJDEP to encourage water conservation, reuse, recycling, and other related measures and mitigation for water distribution system losses both in Highlands municipalities and in municipalities supplied with Highlands water.

Policy 2B6: To require through Plan Conformance (including through a Water Use and Conservation Plan developed under Objective 2B8c), local development review, Highlands Project Review, and interagency coordination that proposed public water supply and wastewater service areas, new or increased water allocations and bulk water purchases will not directly or indirectly cause or contribute to a Net Water Availability deficit, and where feasible will help mitigate any existing deficit.

Objective 2B6a: Areawide Water Quality Management Plans (WQMPs), Wastewater Management Plans (WMPs) or their amendments shall ensure that the proposed service area will not directly or indirectly cause or contribute to a Net Water Availability deficit, and shall be in conformance with any Water Use and Conservation Plan developed under Objective 2B8c.

Objective 2B6b: NJDEP Water Allocation decisions and Highlands Project Reviews shall ensure that any new or increased water allocation permits within the Highlands Region are in conformance with the policies and objectives of the RMP and do not result in significant reductions in safe yields for any water supply facility with an existing water allocation permit and the NJDEP-approved safe yield.

Policy 2B7: To ensure through Plan Conformance (including through a Water Use and Conservation Plan developed under Objective 2B8c), local development review, and Highlands Project Review that the use of Net Water Availability and Conditional Water Availability within each subwatershed supports development patterns that are in conformance with RMP policies and objectives.

Objective 2B7a: Establish and implement best management practices for recreational, landscape irrigation and other practices through applicable State and federal programs.

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.

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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.

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SUBPART B PROTECTION OF WATER RESOURCES QUANTITY

The Highlands RMP focuses on a variety of measures to protect the replenishment of water resources in the Highlands Region through ground water recharge and other means, to ensure the maintenance of aquatic ecosystems and human water uses. Science agenda items include improvements to the methods for estimating Net Water Availability, safe yields and passing flow requirements, better watershed delineations, and improved tracking of water and wastewater flows across watershed boundaries. The protection of Prime Ground Water Recharge Areas is emphasized, as these areas provide the most productive recharge of waters that are critical for stream flow and water supply wells. Protection is provided for both the quantity and quality of recharge.

GOAL 2C: REFINEMENT OF WATER AVAILABILITY METHODS AND ESTIMATES.

Policy 2C1: To improve estimates of Net Water Availability over time, including testing, development and adoption of ecologically-based assessment techniques to evaluate the high and low flow needs of streams necessary to maintain the health of aquatic ecosystems, and the relationship between ground water recharge, ecological flow needs, consumptive water uses and estimates of water availability for both ground and surface water resources.

Policy 2C2: To evaluate potable water supply reservoir safe yield and passing flow requirements and examine the effects of upstream consumptive and depletive water uses on safe yields and of passing flows on Highlands Open Waters and recommend regulatory changes to the NJDEP as appropriate.

Policy 2C3: To develop a more refined Hydrologic Unit Map using LiDAR technology and high resolution digital elevation modeling to support more detailed geographic estimates of water availability.

Policy 2C4: To develop more refined estimates of the effects on Net Water Availability regarding the exportation and importation of water and wastewater.

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

Policy 2D1: To map and maintain an inventory of ground water recharge potential for the Highlands Region.

Policy 2D2: To delineate Prime Ground Water Recharge Areas as those lands within a HUC14 subwatershed that have the highest recharge volumes as of the most recent land use/land cover data available, relative to other land areas, and in the aggregate provide 40% of total ground water recharge during drought conditions.

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.

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Objective 2D3c: Implement master plans and development review ordinances through Plan Conformance that protect Prime Ground Water Recharge Areas and minimize the potential for disruption of recharge in such areas by development.

Objective 2D3d: Establish minimum site design guidelines and permissible uses within a Prime Ground Water Recharge Area, including identification of land use categories or other activities posing sufficient risk of contamination that are not allowed within Prime Ground Water Recharge Areas.

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.

Objective 2D3f: Implement programs for Prime Ground Water Recharge Areas which encourage redevelopment of previously developed areas and allow for other compatible uses that improve recharge area productivity or water quality.

Objective 2D3g: Require through Plan Conformance and local health ordinances, that existing land uses that have a significant potential to result in major discharges of pollutants to ground water or to the land surface (including but not limited to non-sanitary wastewater effluent and any major sources of potential discharges such as spills and leaks), such that they may degrade ground water quality within a Prime Ground Water Recharge Area, shall incorporate ongoing management of toxic chemical sources and prohibition of unregulated discharges, so that the potential for ground water contamination is minimized and the opportunity for discharge discovery and control is maximized.

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 2D4a: Development shall not occur in Prime Ground Water Recharge Areas unless necessary to avoid Critical Habitat, Highlands Open Waters Buffers and Moderately and Severely Constrained Steep Slopes.

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 2D4c: Require through Plan Conformance, local development review and Highlands Project Review that the disruption of Prime Ground Water Recharge Area shall be minimized through the implementation of Low Impact Development Best Management Practices meeting the requirements of Objective 2D3a.

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Objective 2D4d: Require through Plan Conformance, local development review and Highlands Project Review that the disruption of Prime Ground Water Recharge Area, after conformance with Objectives 2D4a, 2D4b and 2D4c is achieved, shall be limited to no greater than 15% of the Prime Ground Water Recharge Area on the site and shall be preferentially be sited on that portion of the Prime Ground Water Recharge Area that has the lowest ground water recharge rates and the lowest potential for aquifer recharge.

Objective 2D4e: Prohibit through Plan Conformance, local development review and Highlands Project Review the expansion or creation of public water supply systems or public wastewater collection and treatment systems or community-based on-site wastewater facilities into a Prime Ground Water Recharge Area within the Protection or Conservation Zone within the Planning Area except as provided for in Policy 2J4 with Objectives 2J4a through 2J4d, and Policy 2K3 with Objectives 2K3a through 2K3e, and within the Preservation Area except as provided for in Policy 2I1 and Objectives 2I1a and 2I1b.

Objective 2D4f: Prohibit through Plan Conformance, local development review and Highlands Project Review new land uses, including those identified through Objective 2D3d, that have a significant potential to result in the discharge of persistent organic chemicals sources (including but not limited to existing discharges of industrial or other non-sanitary wastewater effluent) to ground water or to the land surface within a Prime Ground Water Recharge Area, such that they may degrade or contribute to the degradation of ground water quality.

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.

GOAL 2E: 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.

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SUBPART C WATER QUALITY

The Highlands RMP focuses on a variety of measures to protect, enhance and restore as necessary the quality of water resources in the Highlands Region to ensure that human and ecological water uses have water quality appropriate to those uses, and that human water uses do not alter water quality in unacceptable ways.

GOAL 2F: ASSESSMENT AND RESTORATION OF SURFACE AND GROUND WATER QUALITY OF THE HIGHLANDS REGION.

Policy 2F1: To identify surface and ground water resources currently impaired or at risk of impairment, and in need of protection, restoration, or enhancement.

Policy 2F2: To coordinate with the NJDEP regarding a unified water quality assessment and the development and implementation of Total Maximum Daily Loads (TMDLs), where necessary, for all surface waters within the Highlands Region.

Policy 2F3: To coordinate with the NJDEP regarding a unified ground water quality assessment, monitoring, and attainment program.

Policy 2F4: To coordinate with the NJDEP regarding efforts to monitor areas of known contamination to ground water resources within the Highlands Region and activities to remediate and restore water quality.

Policy 2F5: To coordinate with the NJDEP and other agencies to identify impairments and implement improved regulatory actions and management practices that will also support the water quality goals of the Highlands Act.

Policy 2F6: To remedy the pollutant sources associated with existing or historic land uses in conjunction with redevelopment.

GOAL 2G: PROTECTION, RESTORATION AND ENHANCEMENT OF THE WATER QUALITY OF THE HIGHLANDS REGION.

Policy 2G1: To evaluate locations and densities of development which are sustainable in conjunction with the use of best management practices applicable to these various water resource needs and support the protection and management of critical lands for water quality purposes.

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.

Objective 2G3a: Prohibit land uses that would increase pollutant loadings to waters for which TMDLs have been adopted by the NJDEP unless in compliance with the relevant TMDL.

Objective 2G3b: Ensure that new land uses draining to a stream designated as impaired but lacking a TMDL (e.g., Sublist 5) avoid increased pollutant loadings for the parameter or parameters for which a TMDL is required.

Objective 2G3c: WQMPs, WMPs or amendments shall demonstrate that the proposed service area will not directly or indirectly support development that would be in violation of an adopted TMDL.

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.

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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.

Objective 2G6c: Require conforming municipal and county master plans and development regulations to incorporate relevant TMDLs, additional water quality protection measures and wellhead protection for public water supply wells and nitrate standards as development standards.

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 2H: LIMITATION OF THE TYPE AND AMOUNT OF HUMAN DEVELOPMENT IN THE WELLHEAD PROTECTION AREAS OF PUBLIC WATER SUPPLY WELLS.

Policy 2H1: To identify Wellhead Protection Areas for public community and public noncommunity nontransient water supply wells in or affecting the Highlands Region.

Objective 2H1a: Coordinate with the NJDEP to establish and maintain an inventory of Wellhead Protection Areas in or affecting the Highlands Region.

Objective 2H1b: Identify land uses within the Wellhead Protection Areas that have a significant potential for contributing pollutants of concern to ground water.

Objective 2H1c: Each Wellhead Protection Area shall include three tiers. The time of travel for ground water to the well in Tier 1 shall be up to two years; Tier 2 shall be up to five years; and Tier 3 shall be up to 12 years. Each tier shall include the area of each smaller tier within it.

Policy 2H2: To develop and implement, through Plan Conformance, local development review and Highlands Project Review, resource protection measures to protect and enhance ground water and water supply resources within Wellhead Protection Areas consistent with the source water assessments for each water supply source.

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Objective 2H2a: Prohibit land uses that have a significant potential to result in the discharge of pathogens (including, but not limited to, septic systems and engineered stormwater infiltration from surfaces with significant potential for contact with pathogenic contaminants) to ground water or to the land surface within a designated Tier 1 Wellhead Protection Area, such that they may degrade or contribute to the degradation of ground water quality. Require that the construction of sewer lines within Tier 1 of a Well Head Protection Area prevent seepage of untreated sewage into ground water.

Objective 2H2b: Prohibit land uses that have a significant potential to result in the discharge of persistent organic or toxic chemicals sources (including but not limited to existing discharges of industrial or other non-sanitary wastewater effluent) to ground water or to the land surface within a designated Tier 2 Wellhead Protection Area, such that they may degrade or contribute to the degradation of ground water quality.

Objective 2H2c: Require that land uses that have a significant potential to result in major discharges of persistent organic or toxic pollutants to ground water or to the land surface (including but not limited to non-sanitary wastewater effluent and any major sources of potential discharges such as spills and leaks), such that they may degrade ground water quality within a designated Tier 3 Wellhead Protection Area, shall incorporate ongoing management of toxic chemical sources and prohibition of unregulated discharges, so that the potential for ground water contamination is minimized and the opportunity for discharge discovery and control is maximized.

Policy 2H3: To develop educational materials to further the understanding of the importance of Wellhead Protection Areas to protect ground water supply.

Policy 2H4: To prepare design standards in order to encourage appropriate conservation-based design.

Objective 2H4a: Require site specific and municipal stormwater management plans to address wellhead protection requirements.

Objective 2H4b: Encourage stormwater reuse for non-agricultural irrigation and other non-potable water purposes to minimize the volume of stormwater discharges (other than from clean sources) within a Tier 1 or Tier 2 Wellhead Protection Area.

Objective 2H4c: Develop technical guidelines and procedures for the identification of potable sources at risk and protection of Wellhead Protection Areas for public water supply wells in the Highlands Region.

Objective 2H4d: Develop technical guidelines and procedures for wellhead protection best management practices to protect ground water quality.

Policy 2H5: To require that conforming municipalities revise master plans and development regulations to address wellhead protection requirements.

Objective 2H5a: Develop model master plan elements and land development regulations for Wellhead Protection Areas.

Objective 2H5b: Restrict development activities that pose threats to the water quality of public water supply wells.

Objective 2H5c: Ensure that development activities and existing land use activities implement best management practices to protect the quality of ground water within Wellhead Protection Areas.

Objective 2H5d: Amend Areawide WQMPs or WMPs for conforming municipalities and counties to ensure that any activity associated with the proposed service area will not adversely affect a Wellhead Protection Area.

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SUBPART D SUSTAINABLE DEVELOPMENT AND WATER RESOURCES

The Highlands RMP includes a variety of measures to ensure that future development is at densities necessary to remain within the carrying capacity of water resources for both quality and quantity, and to ensure that water supply and wastewater utility capacities are made available in ways that provide maximum regional benefit within the constraints of water availability and water quality protection, and are used in ways that provide cost-effective and efficient service. Highlands Act restrictions on the creation or extension of water supply and wastewater utility services in the Preservation Area are emphasized. Likewise, RMP restrictions are placed on such extensions into the Protection and Conservation Zones and the Environmentally-Constrained Sub-Zones of the Planning Area except where allowed through Highlands Act waivers or for cluster development that meets certain standards. Septic system densities for new development are provided, along with requirements for maintenance of all wastewater treatment systems.

GOAL 2I: LIMITATION OF THE EXPANSION OF WATER AND WASTEWATER INFRASTRUCTURE IN THE PRESERVATION AREA.

Policy 2I1: To prohibit the expansion or creation of public water supply systems, public wastewater collection and treatment systems and community on-site treatment facilities in the Preservation Area unless approved through a Highlands Applicability Determination (HAD) or a HPAA with waiver pursuant to N.J.A.C. 7:38 and Policy 7G1.

Objective 2I1a: Designated sewer service areas in the Preservation Area shall be restricted to the Existing Area Served as of August 10, 2004, except to serve development that is approved through a HAD or a HPAA with waiver pursuant to N.J.A.C. 7:38 and Policy 7G1.

Objective 2I1b: The expansion or creation of public water supply systems, public wastewater collection and treatment systems and community on-site treatment facilities in the Preservation Area as approved through a HPAA with waiver pursuant to N.J.A.C. 7:38 and Policy 7G1 shall maximize the protection of sensitive environmental resources including avoidance of Highlands Open Waters buffer areas, Riparian Areas, the forested portion of the Forest Resource Area, agricultural lands of Agricultural Resource Areas (ARAs), Steep Slopes, Prime Ground Water Recharge Areas, and Critical Habitat.

Policy 2I2: To identify through Plan Conformance and Highlands Redevelopment Area designation procedures those lands of the Preservation Area that may be appropriate for the extension or creation of public water supply systems, public wastewater collection and treatment systems and community on-site treatment facilities for redevelopment that would meet the waiver requirements of N.J.A.C. 7:38 and Policy 7G1.

GOAL 2J: ALL EXISTING AND FUTURE DEVELOPMENT IN THE HIGHLANDS REGION THAT USE PUBLIC WATER SUPPLY SYSTEMS ARE SERVED BY ADEQUATE AND APPROPRIATE INFRASTRUCTURE.

Policy 2J1: To establish and maintain an inventory of Highlands Public Community Water System infrastructure, including developed parcels with current connections to existing utility service areas.

Objective 2J1a: The development and maintenance of an inventory of Existing Areas Served.

Objective 2J1b: The development and maintenance of an inventory of the service areas and capacity of Highlands Public Community Water Supply Systems, including a comprehensive data base of water utilities that are dependent on Current Deficit Areas or Existing Constrained Areas as a source of water, with estimates of the extent to which service area demands and water allocation permits may exceed available water.

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Objective 2J1c: The development of an estimate of available water supply capacity for each Highlands Public Community Water Supply System.

Objective 2J1d: The identification of remaining available water supply system capacity to support regional growth opportunities within the Highlands Region.

Policy 2J2: To ensure, through Plan Conformance and Highlands Project Review, that Highlands Public Community Water Systems conform with Policy 2B6.

Objective 2J2a: Limit future water system demand and reduce existing demand where feasible by water systems that are dependent on Current Deficit Areas or Existing Constrained Areas as a source of water.

Objective 2J2b: Limit future water system demands to levels that will not create a Current Deficit Area where one does not currently exist.

Policy 2J3: To identify, through Plan Conformance, the RMP Water Resources Science Agenda and other means, areas of the Highlands Region with existing or imminent threats to public health and safety from contaminated domestic and other on-site water supplies that are of sufficient scale to potentially justify the extension or creation of a public water supply.

Policy 2J4: To minimize, through Plan Conformance, local development review and Highlands Project Review, the creation or extension of public water supply systems within the Protection Zone, the Conservation Zone and the Environmentally-Constrained Sub-zones of the Planning Area, and to allow for the creation or extension of public water supply systems where appropriate within the ECZ.

Objective 2J4a: Prohibit new, expanded, or extended public water systems within the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area unless they are shown to be necessary for and are approved by the Highlands Council for one or more of the purposes listed below. For approvals regarding parts 1, 2, and 3, the project must maximize the protection of sensitive environmental resources such as Highlands Open Waters buffer areas, Riparian Areas, the forested portion of the Forest Resource Area, agricultural lands of ARAs, Steep Slopes, Prime Ground Water Recharge Areas and Critical Habitat. For approvals regarding part 3, the project must avoid disturbance of Highlands Open Waters buffer areas, Riparian Areas, Steep Slopes and Critical Habitat, and must minimize disturbance of the forested portion of the Forest Resource Area, agricultural lands of ARAs, and Prime Ground Water Recharge Areas. The extension or creation of systems shall follow the requirements in Objective 2J4b (parts 2 and 3). The applicable purposes are:

1. To address through a waiver under Policy 7G1 or 7G2 a documented existing or imminent threat to public health and safety from contaminated domestic and other on-site water supplies that is of sufficient scale to justify a public water supply and where no alternative is feasible that would sufficiently assure long-term protection of public health and safety. Such needs shall have highest priority for allocation of existing system capacity;
2. To address development permitted through a Highlands Redevelopment Area or takings waiver under Policy 7G1 or 7G2; or
3. To serve a cluster development that meets all requirements of Objective 2J4b.

Objective 2J4b: Clustered development served by public water supply within the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area shall be approved only if the following conditions are met:

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1. The development impacts are otherwise consistent with the requirements of the RMP, including provisions for mandatory clustering in ARAs pursuant to Policy 3A5;
2. Extension of an existing public water system will occur only where the cluster development is within or immediately adjacent to an Existing Area Served with available capacity;
3. Creation of a new public water system will occur only where such development is not within or immediately adjacent to an Existing Area Served with available capacity;
4. The clustered development preserves at least 80% of the cluster project area in perpetuity for environmental protection or agricultural purposes. To the maximum extent feasible the developed portion (e.g., not including wetlands, Highlands Open Waters buffers, and recreational lands) occupies no more than 10% of the cluster project area if served by a public or community on-site wastewater system; and
5. Where the preserved land in the cluster project area is dedicated to agricultural purposes, the cluster development ordinance and an Agriculture Retention/Farmland Preservation Plan supports continued agricultural viability of the agricultural land and requires the implementation of best management practices, including development and implementation of a Farm Conservation Plan that addresses the protection of water and soil resources prepared by the USDA Natural Resources Conservation Service (NRCS), Technical Service Provider (TSP), appropriate agent or NJDA staff, and approved by the local Soil Conservation District (SCD).

Objective 2J4c: Allow the expansion or creation of public water systems within the ECZ of the Planning Area, other than the Environmentally-Constrained Sub-zone, to serve lands which are appropriate for designated TDR Receiving Zones, infill, or redevelopment, to meet needs and protection requirements equivalent to Objective 2J4a within the ECZ, or to serve new areas for development that meet all other requirements of the RMP. TDR Receiving Zones, affordable housing projects (where the affordable units exceed 10% of the total units), infill and redevelopment shall have higher priority for capacity than expansion of public water service areas within this Zone.

Objective 2J4d: All development within the Highlands Region, in areas that are not served by public water systems, shall be at a density that can be supported by on-site wells. Where cluster development in the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area will be served by on-site wells, and the undeveloped land is preserved for agricultural purposes in perpetuity, the cluster development in combination with the Agriculture Retention/Farmland Preservation Plan required by Objective 2J4b shall provide for Best Management Practices that protect the on-site wells from contamination resulting from agricultural practices and shall include provisions to minimize or reduce net pollutant loadings from the total cluster project area including the preserved agricultural lands.

Policy 2J5: To prohibit, through local development review and Highlands Project Review, new or increased water resource transfers between subwatersheds unless it is demonstrated that no other option exists to meet public health, safety and welfare objectives and where such transfers do not result in impairment of resources in the subwatershed from which water is proposed to be transferred.

Policy 2J6: To encourage water recycling/reuse measures, such as domestic and institutional gray water systems, where appropriate, to minimize water use in existing land uses.

Policy 2J7: To require water resource management for all development in the Highlands Region, through local development review and Highlands Project Review.

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Objective 2J7a: Require the maximum feasible water conservation and recycling for any redevelopment or development activity, including renovations to existing single family residences and commercial/industrial buildings.

Objective 2J7b: Require consideration of and the cost-effective use of recycled or re-used water rather than potable public water for non-potable purposes such as fountains, and non-essential uses such as golf courses, certain recreational, commercial, or agricultural uses.

Objective 2J7c: Require that new residential development served by public community water systems, be except where also served by septic systems, at a minimum density of 1/2 acre per dwelling unit for the developed part of the site (e.g., not including wetlands, Highlands Open Waters buffers, recreational space), to ensure cost-effective utility service.

Objective 2J7d: Require that new non-residential development served by public water systems, except where also served by septic systems, be designed to target a floor area ratio (FAR) of 0.84 for the developed part of the site (e.g., not including wetlands, Highlands Open Waters buffers, recreational lands) to the maximum extent feasible, as a means to maximize parking and employment efficiency and compact development.

Policy 2J8: To ensure continued refinement and development of the RMP.

Objective 2J8a: Implement a coordinated program with the NJDEP to track ground water and surface water withdrawals and water allocations within the Highlands Region to maintain current estimates of net utility capacity and to fill critical missing data gaps.

Objective 2J8b: Coordinate with the NJDEP, water purveyors and water utilities to ensure that service areas and franchise areas are supplied by and consistent with sustainable yields from their designated sources.

Objective 2J8c: Determine where water quality improvements are necessary or beneficial for the improvement of Net Water Availability or protection of existing drinking water supplies, develop watershed-based plans to achieve such improvements, and develop mechanisms to implement these plans.

GOAL 2K: ALL EXISTING AND FUTURE DEVELOPMENT IN THE HIGHLANDS REGION THAT USE PUBLIC WASTEWATER TREATMENT SYSTEMS ARE SERVED BY ADEQUATE AND APPROPRIATE INFRASTRUCTURE.

Policy 2K1: To establish and maintain an inventory of Highlands public wastewater management infrastructure, including developed parcels with current connections to existing utility service areas.

Objective 2K1a: The development and maintenance of an inventory of Existing Areas Served.

Objective 2K1b: The development and maintenance of an inventory of the service areas and capacity of Highlands Domestic Sewerage Facilities.

Objective 2K1c: The development of an estimated Available Wastewater Treatment Capacity for each Highlands Domestic Sewer Facility.

Objective 2K1d: The identification of remaining available wastewater treatment capacity to support regional growth opportunities within the Highlands Region.

Policy 2K2: To base projected demand for current needs, appropriate economic revitalization and opportunities for designated TDR Receiving Zones within Existing Areas Served on existing maximum three month demands plus an estimate of redevelopment needs based on either Highlands Council regional analyses or more detailed local analyses, to assess whether there is adequate treatment capacity to encourage redevelopment.

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Policy 2K3: To provide adequate, appropriate, efficient and cost-effective wastewater management to all development in the Highlands Region, through Plan Conformance, local development review, and Highlands Project Review.

Objective 2K3a: Areawide WQMPs, including WMPs and project-specific amendments, shall be examined for consistency with requirements of this Plan. The Highlands Council shall prepare and transmit to NJDEP consistency determinations for these amendments prior to the NJDEP decision in accordance with N.J.A.C. 7:38-1.1 and N.J.A.C. 7:15.

Objective 2K3b: Existing wastewater collection and treatments systems which are non-compliant with state water quality standards for wastewater treatment and effluent discharge shall be prohibited from collecting and treating additional wastewater until the treatment systems are fully compliant with State permit requirements.

Objective 2K3c: Prohibit new, expanded, or extended public wastewater collection and treatment systems and community on-site treatment facilities within the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area unless they are shown to be necessary for and are approved by the Highlands Council for one or more of the purposes listed below. For approvals regarding parts 1, 2, and 3, the project must maximize the protection of sensitive environmental resources such as Highlands Open Waters buffer areas, Riparian Areas, the forested portion of the Forest Resource Area, agricultural lands of ARAs, Steep Slopes, Prime Ground Water Recharge Areas and Critical Habitat. For approvals regarding part 3, the project must avoid disturbance of Highlands Open Waters buffer areas, Riparian Areas, Steep Slopes and Critical Habitat, and must minimize disturbance of the forested portion of the Forest Resource Area, agricultural lands of ARAs, and Prime Ground Water Recharge Areas. The choice of extension or creation of systems shall follow the requirements in Objective 2K3d (2 and 3). The applicable purposes are:

1. To address through a waiver under Policy 7G1 or 7G2 a documented existing or imminent threat to public health and safety from a pattern of failing septic systems (where the failing systems cannot reasonably be addressed through rehabilitation or replacement) or highly concentrated septic systems, where the threat is of sufficient scale to justify a public wastewater collection and treatment system or community on-site treatment facility and where no alternative is feasible that would sufficiently assure long-term protection of public health and safety. To address other issues of public health and safety, such needs shall have highest priority for allocation of existing system capacity;
2. To address development permitted through a Highlands Redevelopment Area or takings waiver under Policy 7G1 or 7G2; or
3. To serve a cluster development that meets all requirements of Objective 2K3d.

Objective 2K3d: Clustered development served by a public wastewater collection and treatment system or community on-site treatment facility within the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area shall be approved only if the following conditions are met:

1. The development impacts are otherwise consistent with the requirements of the RMP, including provisions for mandatory clustering in ARAs pursuant to Policy 3A5;
2. Extension of an existing public wastewater collection and treatment system will occur only where the cluster development is within or immediately adjacent to an Existing Area Served with available capacity;

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3. Creation of a community on-site treatment facility will occur only where such development is not within or immediately adjacent to an Existing Area Served with available capacity, where the proposed system is designed, permitted, and constructed at a capacity limited to the needs of the clustered development, and where the system does not create the potential for future expansion into areas that are not the subject of cluster developments immediately adjacent to the initial cluster served;
4. The cluster development preserves at least 80% of the cluster project area in perpetuity for environmental protection or agriculture purposes. To the maximum extent feasible the developed portion of the project area (e.g., not including wetlands, Highlands Open Waters buffers, and recreational lands) occupies no more than 10% of the cluster project area if served by a public or community on-site wastewater system; and
5. Where the preserved land in the cluster project area is dedicated to agricultural purposes, the cluster development ordinance and an Agriculture Retention/Farmland Preservation Plan supports continued agricultural viability of the agricultural land and requires the implementation of best management practices, including development and implementation of a Farm Conservation Plan that addresses the protection of water and soil resources prepared by the USDA NRCS, TSP, appropriate agent or NJDA staff, and approved by the local SCD.

Objective 2K3e: Allow the expansion or creation of wastewater collection systems within the ECZ of the Planning Area, other than the Environmentally-Constrained Sub-zone, to serve lands which are appropriate for designated TDR Receiving Zones, infill or redevelopment, to meet needs and protection requirements equivalent to those provided at Objective 2K3c within the ECZ, or to serve new areas for development that meet all other requirements of the RMP. The highest priority for allocation of excess or additional wastewater treatment capacity is to areas where there are clusters of failed septic systems that are located within or adjacent to Existing Areas Served. TDR Receiving Areas, where designated, affordable housing projects (where the affordable units exceed 10% of the total units), infill and redevelopment shall have higher priority for capacity than other developments requiring expansion of sewer service areas.

Objective 2K3f: All development within the Highlands Region, in areas which are not served by public wastewater collection and treatment system or community on-site treatment facility, shall be at a density that can be supported by septic systems under Goal 2L. Where cluster development in the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-Zones of the Planning Area shall be served by on-site wells, and the undeveloped land is preserved for agricultural purposes in perpetuity, the cluster development and the Agriculture Retention/Farmland Preservation Plan required by Objective 2K3d in combination shall include provisions for best management practices that protect the on-site wells from contamination resulting from agricultural practices and shall include provisions to minimize or reduce net pollutant loadings from the total cluster project area including the preserved agricultural lands.

Policy 2K4: To ensure the efficiency and cost-effectiveness of public wastewater collection and treatment systems, through Plan Conformance, local development review, and Highlands Project Review.

Objective 2K4a: Require that new residential development served by public wastewater collection and treatment systems be at a minimum density of 1/2 acre per dwelling unit for the developed part of the site (e.g., not including wetlands, Highlands Open Waters buffers, and recreational space) to ensure cost-effective utility service.

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Objective 2K4b: Require that new non-residential development served by public wastewater collection and treatment systems be designed to target a floor area ratio (FAR) of 0.84 for the developed part of the site (e.g., not including wetlands, Highlands Open Waters buffers, recreational space) to the maximum extent feasible, as a means to maximize parking and employment efficiency and compact development.

Objective 2K4c: Require the use of recycled or re-used water wherever possible including aesthetic purposes and non-potable purposes such as fountains, golf courses, and other recreational, commercial or agricultural uses.

GOAL 2L: ENSURE THAT ON-SITE WASTEWATER SYSTEM DISCHARGES DO NOT EXCEED THE NATURAL CAPACITY OF GROUND WATER TO ATTENUATE LOADINGS, EXACERBATE EXISTING NITRATE IMPAIRMENT, OR CONTRIBUTE TO POTENTIAL NITRATE IMPAIRMENT FOR SUBWATERSHEDS OF THE HIGHLANDS REGION.

Policy 2L1: To use nitrate concentrations in ground water as an indicator of water quality, and to use nitrate dilution modeling as the primary method for assessing the carrying capacity of lands for development that relies on septic systems for wastewater treatment.

Objective 2L1a: Determine background median concentrations of nitrate in ground water by HUC14 subwatershed.

Objective 2L1b: Identify the factors affecting the suitability of densities for development that relies on septic systems for wastewater treatment.

Objective 2L1c: Develop appropriate protection measures to minimize contamination of ground water from septic systems.

Objective 2L1d: Develop drought ground water recharge estimates by HUC14 subwatershed for use in the NJDEP nitrate dilution model.

Policy 2L2: To use the median background nitrate concentrations in ground water in the Highlands Region as a basis for establishing on-site wastewater treatment densities through Plan Conformance, local development review, and Highlands Project Review.

Objective 2L2a: Use the median concentrations of nitrate in ground water for Planning Area HUC14 subwatersheds where the Protection Zone is predominant as the nitrate target for new development reliant on septic systems within the Protection Zone. The median is 0.72 mg/L.

Objective 2L2b: Use the median concentrations of nitrate in ground water for Planning Area HUC14 subwatersheds where the Conservation Zone is predominant as the nitrate target for new development reliant on septic systems within the Conservation Zone. The median is 1.87 mg/L.

Objective 2L2c: Use the NJDEP Highlands Preservation Area rules and nitrate thresholds for the Preservation Area.

Objective 2L2d: Use a nitrate target of 2 mg/L for the Existing Community Zone within Planning Area, on a project-by-project basis, where new development will rely on septic systems.

Objective 2L2e: New residential development using septic systems where clustering or conservation design techniques are employed shall have a gross density (for all parcels involved in the development proposal) based on the nitrate dilution target appropriate for the Land Use Capability Zone, but with the density for the developed portion of the site based on a nitrate dilution target not to exceed 10 mg/L or any more stringent requirement as required by N.J.A.C. 7:15.

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Objective 2L2f: Carrying capacity shall be documented through the Land Use Capability Septic System Yield Map as the number of allowable septic systems per Conservation and Protection Zone for each HUC14 subwatershed, taking into account the nitrate target, the HUC14 subwatershed drought ground water recharge, and the acreage that is privately owned, undeveloped or underdeveloped, and not preserved.

Objective 2L2g: New residential development utilizing septic systems shall be designed in a manner that ensures that the untreated well water meets the State drinking water quality standards and that minimizes the risk of well contamination due to the flow of septic system plumes within or between developed lots, addressing general ground water flow patterns, major fracture systems and other appropriate geological, geophysical, and hydrogeological issues.

Policy 2L3: To prepare and maintain an inventory of areas where existing ground water or surface water quality is impaired to such a degree that any increase in nitrate concentration would have an adverse impact on water quality.

Policy 2L4: To establish methods for restoration of ground water quality for subwatersheds where existing ground water is impaired on a subwatershed by subwatershed basis.

Policy 2L5: To establish minimum standards for the placement, design, monitoring and maintenance of septic systems necessary to protect, restore, and enhance ground water quality.

GOAL 2M: REFINEMENT AND IMPROVEMENT OF THE GROUND WATER RESOURCE MANAGEMENT ELEMENT.

Policy 2M1: To monitor and assess nitrate-related impacts and other pollutants enumerated in the Private Well Testing Act to water resources within the Highlands Region.

Objective 2M1a: To monitor well water and surface water for nitrate concentrations, as funding is available, to evaluate background nitrate changes on a HUC14 subwatershed basis and to track new sources of nitrates from Highlands development projects on a site specific basis.

Policy 2M2: To develop appropriate and innovative resource management programs to protect, restore, and enhance subwatersheds where existing ground water quality is impaired.

Objective 2M2a: Identify innovative technologies that may be appropriate for the design, installation, and maintenance of on-site wastewater treatment systems to minimize impairment to ground water or surface water quality due to elevated nitrate concentrations and other pollutant loads from septic systems provided the systems meet the minimum standards of N.J.A.C 7:9A.

PART 3 Agricultural Resources

Agriculture is a vital component of the Highlands Region's culture, landscape and economy. It provides important economic benefits to the Highlands Region in the form of agricultural production and agri-tourism, provides a local food source to area residents using less energy than would be required to import produce from other regions, and helps maintain the Highland's rural character. Agriculture is also an industry in which the land is the primary instrument of production. Therefore it is imperative to retain the land base and preserve contiguous areas of agriculture to sustain and enhance agricultural resources and the agricultural industry.

The major Goals, Policies, and Objectives for Agricultural Resources seek to meet two essential objectives of the Highlands Act; the preservation of agricultural land and the viability of the agricultural industry. The New Jersey Legislature declared that the agricultural lands in active production in the Highlands Region are important resources

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of the State that should be preserved, and that the agricultural industry in the Highlands Region is a vital component of the economy, welfare, and culture of the Garden State. The Legislature also declared that the maintenance of agricultural production and a positive agricultural business climate should be encouraged to the maximum extent possible whenever appropriate in the Highlands Region. The Goals, Policies, and Objectives below lay the foundation to carry out these objectives, and to provide incentives and funding opportunities, to not only preserve agriculture, but to encourage best management practices (BMPs) that enhance the resources of the Highlands Region. As stewards of the land, many farmers already implement BMPs, and the Goals, Policies, and Objectives seek to reward these individuals with incentives and cost-share opportunities.

GOAL 3A: PROTECTION AND ENHANCEMENT OF AGRICULTURAL RESOURCES AND THE AGRICULTURAL INDUSTRY IN THE HIGHLANDS REGION.

Policy 3A1: To create and maintain an inventory of preserved farms, farmland assessed lands, other lands in agricultural use, and undeveloped vacant lands which contain soils which are highly suitable for agricultural use in the Highlands Region.

Policy 3A2: To consider Prime, Statewide Importance, Unique, and Locally Important soils as Important Farmland Soils which are critical agricultural resources of the Highlands Region.

Policy 3A3: To delineate Agricultural Resource Areas in the Highlands Region as those areas of contiguous and the most concentrated agricultural uses, using Important Farmland Soils as a critical factor.

Policy 3A4: To promote farmland preservation and limit non-agricultural uses within the ARAs and accord priority to the preservation of agricultural lands within Agricultural Priority Areas, through fee simple acquisition, easement acquisition, TDR, and other agricultural land conservation techniques.

Objective 3A4a: Create and maintain a confidential inventory of agricultural lands in the ARAs, in coordination with the New Jersey Department of Agriculture (NJDA) and the SADC, to prioritize the preservation of farmland.

Objective 3A4b: Implement through Plan Conformance Agriculture Retention/Farmland Preservation Plan elements and development regulations promoting preservation in the ARAs and limiting non-agricultural uses within the ARA to those uses that support the preservation of farmland, avoid conflicts with agriculture, maintain and enhance the sustainability and continued viability of the agricultural industry, protect important farmland soils, and meet resource management and protection requirements of the RMP.

Policy 3A5: Where it is not feasible to preserve agricultural lands within the ARA by such methods as fee simple acquisition, easement acquisition, or a TDR Program, require mandatory clustering through Municipal Plan Conformance, local development review and Highlands Project Review for residential development in an ARA. Cluster development within the Planning Area that incorporates public or community on-site wastewater utilities shall meet the requirements of Policy 2J4 with Objectives 2J4a through 2J4d, and Policy 2K3 with Objectives 2K3a through 2K3e, and within the Preservation Area shall meet the requirements of Policy 2I1 and Objectives 2I1a and 2I1b, and where reliant on septic systems shall meet the requirements of Objective 6I1a.

Objective 3A5a: Implement regulations requiring that cluster or conservation design development proposed within an ARA support the preservation of farmland, avoid conflicts with agriculture, maintain and enhance the sustainability and continued viability of the agricultural industry, protect Important Farmland Soils, and meet resource management and protection requirements of the RMP.

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Objective 3A5b: Implement regulations requiring that all cluster or conservation design development proposed in an ARA be buffered appropriately with existing natural resources, such as hedgerows or trees, or with new buffers to avoid conflicts between non-agricultural development and agricultural activities, and to protect existing agricultural uses and sensitive environmental resources.

Objective 3A5c: Implement regulations requiring that all land preserved in perpetuity for environmental protection or agricultural purposes as a result of clustering be subject to a conservation easement enforceable by the Highlands Council and at least one of the following: the appropriate municipality, for agricultural purposes the CADB or the SADC and for environmental purposes Green Acres or a qualified land trust non-profit organization.

Objective 3A5d: Where the preserved land in the cluster project area is dedicated to agricultural purposes, the cluster development ordinance and an Agriculture Retention/Farmland Preservation Plan supports continued agricultural viability of the agricultural land and requires the implementation of best management practices, including development and implementation of a Farm Conservation Plan that addresses the protection of water and soil resources prepared by the USDA NRCS, TSP, appropriate agent or NJDA staff, and approved by the local SCD.

Policy 3A6: To permit through local development review and Highlands Project Review limited development, including family and farm labor housing in ARAs which are necessary to support the viability of the agricultural operation, in coordination with the NJDA and the SADC, and subject to compliance with the resource management and protection requirements of the RMP.

Objective 3A6a: Implement regulations allowing for construction of ancillary structures and family and farm labor housing that is necessary to support the viability of the agricultural operation, upon a demonstration that the proposed development is consistent with the resource management and protection requirements of the RMP.

Policy 3A7: To implement programs which encourage owners and operators of farmland with woodlots within Agricultural Resource Areas to prepare and implement approved Forest Management Plans that conform to the resource management and protection requirements of the RMP.

Objective 3A7a: Coordinate with the NJDEP State Forester and conservation experts to provide guidance for the development of Forest Management Plans that improve the maintenance of ecosystem and water resource values of the Highlands Region.

Policy 3A8: To serve as a regional clearinghouse for information regarding agriculture preservation and stewardship funding and programs, protection and enhancement of the agricultural industry, and technical assistance for public and private organizations in order to maximize agriculture preservation efforts in the Highlands Region.

Objective 3A8a: Encourage coordinated activities of appropriate federal, State, county, municipal, and non-profit representatives for agriculture preservation and stewardship funding and programs, and technical assistance in order to maximize agriculture preservation efforts in the Highlands Region.

Objective 3A8b: Coordinate with the State Historic Preservation Office (SHPO) and the SADC to include historic structures in tax incentive and adaptive reuse funding programs.

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GOAL 3B: PROTECTION AND ENHANCEMENT OF AGRICULTURAL SUSTAINABILITY AND VIABILITY OF THE AGRICULTURAL INDUSTRY WITHIN THE HIGHLANDS REGION.

Policy 3B1: To encourage private and public owners of lands within an ARA to lease open lands to farmers and/or to manage open space lands in a manner which is compatible with adjoining agricultural uses.

Policy 3B2: To promote research and study, and support proposals to enhance the long-term viability of the agricultural industry in the Highlands Region through innovative programs including, but not limited to, health care, banking practices, housing, food distribution, education, energy, and labor.

Policy 3B3: To seek additional funding from any and all state and federal funding programs to maintain and enhance sustainability and continued viability of the agricultural industry within the Highlands Region.

Policy 3B4: To support incentives and funding opportunities for the control of invasive species, white-tailed deer reduction programs, and the water value of well-managed agricultural lands.

Policy 3B5: To promote and enhance innovative agricultural practices and programs that promote long-term viability of the agricultural industry including, but not limited to, direct marketing, organic farming, agri-tourism such as farmers markets and road side stands, niche markets, and community supported agriculture.

GOAL 3C: MINIMIZE CONSTRUCTION OF NON-AGRICULTURAL DEVELOPMENT-INDUCING WATER AND WASTEWATER INFRASTRUCTURE IN AGRICULTURAL RESOURCE AREAS.

Policy 3C1: To prohibit through Plan Conformance, local development review and Highlands Project Review the development of additional water and wastewater infrastructure in a ARA within the Conservation and Protection Zones of the Planning Area, unless they meet the requirements of Policy 2J4 with Objectives 2J4a through 2J4d, and Policy 2K3 with Objectives 2K3a through 2K3e, and will maximize the preservation of agricultural lands within the ARA.

GOAL 3D: PROTECTION AND ENHANCEMENT OF SURFACE AND GROUND WATER QUALITY AND NATURAL RESOURCES IN THE HIGHLANDS REGION AND AGRICULTURAL RESOURCE AREAS.

Policy 3D1: To work with the SADC and the GSPT to establish incentives for any landowner in the Highlands Region seeking to preserve land under the farmland preservation program that would be provided in exchange for the landowner agreeing to permanently restrict the amount of impervious surface and agricultural impervious cover on the farm to a maximum of 5% of the total land area of the Farm Management Unit.

Policy 3D2: To require any agricultural or horticultural development in the Preservation Area and the Planning Area which involves new agricultural impervious cover, since enactment of the Highlands Act, to the total land area of a Farm Management Unit (either individually or cumulatively) of greater than 3% but less than 9%, to develop and implement a Farm Conservation Plan prepared by the USDA NRCS, TSP, appropriate agent, or NJDA staff, and approved by the local SCD.

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Policy 3D3: To require any agricultural or horticultural development in the Preservation Area and the Planning Area which involves new agricultural impervious cover, since enactment of the Highlands Act, to the total land area of a Farm Management Unit (either individually or cumulatively) of 9% or greater to develop and implement a Resource Management System Plan prepared by the USDA NRCS, TSP, appropriate agent, or NJDA staff, and approved by the local SCD.

Policy 3D4: To promote the use of appropriate alternative and innovative wastewater treatment systems to provide enhanced protection of surface and ground water quality in ARAs of the Conservation Zone.

Policy 3D5: To promote efforts to increase the use of USDA NRCS and Farm Service Agency cost-share programs, Integrated Pest Management, and Integrated Crop Management programs and other innovative management techniques, in coordination with the NJDA and Rutgers Cooperative Extension, that reduce pesticide and fertilizer use and promote Best Management Practices in conjunction with agricultural activities.

Policy 3D6: To identify subwatersheds with elevated nitrate levels and develop and implement management plans to enhance water quality in these subwatersheds while maintaining and enhancing agricultural viability.

GOAL 3E: CONFORMING MUNICIPALITIES AND COUNTIES INCLUDE AGRICULTURE RETENTION/FARMLAND PRESERVATION PLAN ELEMENTS IN THEIR MASTER PLANS AND DEVELOPMENT REGULATIONS.

Policy 3E1: To prepare technical guidelines for the preparation of an Agriculture Retention/Farmland Preservation Plan (AR/FPP) element for inclusion in municipal and county master plans and development regulations.

Policy 3E2: To require conforming municipalities and counties to include an AR/FPP element consistent with the RMP in municipal and county master plans and development regulations.

Policy 3E3: To require conforming municipalities and counties, with farmland preservation programs or a significant agricultural land base, to incorporate Right to Farm provisions, in accordance with N.J.S.A. 4:1C-1 et seq. and N.J.A.C. 2:76-2, in their master plans and development regulations.

Policy 3E4: To address agricultural or horticultural development and agricultural or horticultural use through Plan Conformance in accordance with the Right to Farm Act, N.J.S.A. 4:1C-1, and in coordination with the NJDA, the SADC, and the CADB.

Objective 3E4a: To cooperatively develop, in coordination with the SADC, specific Agricultural Management Practices that address air and water quality control, noise control, pesticide control, fertilizer application, integrated pest management, labor practices, and other related activities consistent with the resource management and protection requirements of the RMP.

Objective 3E4b: To develop municipal and county development regulations through Plan Conformance that are consistent with the Right to Farm Act and necessary to address agricultural practices that pose a direct threat to public health and safety.

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PART 4 Historic, Cultural, Archaeological, and Scenic Resources

The Highlands Region contains important historic, cultural, archaeological, and scenic resources and the Highlands Act includes goals for their protection. These resources provide the public with an understanding of how the land and the people of the Highlands Region have changed over time. They are also important for fostering an appreciation for the events that contributed to the development of the towns, villages, and cities of the Highlands Region.

Historic resources include buildings, structures, districts, areas or sites which are significant to the history or culture of a place or time and connect communities with their pasts. Cultural resources include sites, artifacts, or materials which relate to the people and how they live or lived. Cultural resources also reflect the way in which a community currently lives and the values which are important to it. Scenic resources are sites, landscapes and vistas that are remarkable or distinctive because of geology, topography, vegetation, history, culture ,or use of land. In the Highlands Region, topography forming ridgelines and mountainsides, panoramic views, streams and rivers, forests, agricultural landscapes, and leafy suburbs are important scenic resources. The Highlands Council has assembled a Historic and Cultural Resource Inventory and a Scenic Resources Inventory.

GOAL 4A: PROTECTION AND PRESERVATION OF THE HISTORIC, CULTURAL AND ARCHAEOLOGICAL RESOURCES OF THE HIGHLANDS REGION.

Policy 4A1: To maintain and periodically update the Highlands Region Historic and Cultural Resources Inventory.

Objective 4A1a: Encourage municipalities and counties to include a historic, cultural, and archaeological survey(s) as part of the Historic Preservation Plan element of their master plans.

Policy 4A2: To provide a process whereby resources may be nominated, considered, and included in the Highlands Historic and Cultural Resources Inventory.

Objective 4A2a: Evaluate the cultural and historic significance of the concentration of abandoned mines within the Highlands Region.

Objective 4A2b: Consider the inclusion of cultural sites of regional significance due to their importance in the history of the region.

Policy 4A3: To ensure through local development review, where a municipality has adopted an historic preservation ordinance under Policy 4C2, that human development does not adversely affect the character or value of resources which are listed on the Highlands Historic and Cultural Resource Inventory to the maximum extent practicable.

Objective 4A3a: All development and redevelopment applications shall include submission of a report identifying potential historic, cultural and/or archaeological resources on the subject property or immediately adjacent properties.

Objective 4A3b: Historic, cultural, and/or archaeological resources identified through the development review process shall be evaluated for inclusion in the Highlands Region Historic and Cultural Resources Inventory and local surveys, as appropriate.

Policy 4A4: To require that the impact of proposed human development on the historic and cultural resources of the Highlands Region be addressed during local development review and Highlands Project Review and approval.

Objective 4A4a: All applications for site plan or subdivision approval shall include identification of any cultural, historic, or archaeological resources in the Highlands Region which are listed on the Highlands Historic and Cultural Resource Inventory and may be affected by the proposed development.

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Objective 4A4b: Where a municipality has adopted an historic preservation ordinance under Policy 4C2, all development which affects identified cultural, historic sites/districts, or archaeological resources shall comply with minimum standards for the preservation of the affected resources.

Policy 4A5: To use the US Secretary of the Interior's Standards for the Treatment of Historic Properties as guidance for municipal historic and cultural preservation review and include, at a minimum, the preservation and re-use of historic structures.

Policy 4A6: To coordinate the Highlands Council's activities with regard to the historic sites/districts and cultural resources with the New Jersey Historic Trust and the SHPO.

Policy 4A7: To promote historic and cultural heritage tourism in the Highlands Region.

Policy 4A8: To encourage municipalities and counties to establish an advisory historic preservation body to review and make recommendations on applications for development or municipal permits which affect historic, cultural, and archaeological resources listed on the Highlands Historic and Cultural Resources Inventory.

Policy 4A9: To advocate on the federal and state levels for grants and financial incentives to aid landowners in the preservation and maintenance of historic, cultural, and archaeological resources.

GOAL 4B: PROTECTION AND ENHANCEMENT OF THE SCENIC RESOURCES WITHIN THE HIGHLANDS REGION.

Policy 4B1: To maintain and periodically update the Highlands Scenic Resources Inventory.

Objective 4B1a: Encourage municipalities, or groups of municipalities and/or counties, to conduct a scenic inventory(ies) to identify locally and regionally significant scenic resources, and involve local residents.

Policy 4B2: To provide a process whereby regionally significant resources may be nominated, considered and included in the Highlands Scenic Resources Inventory.

Policy 4B3: To ensure that human development does not adversely affect the character or value of resources which are listed on the Highlands Scenic Resources Inventory.

Policy 4B4: To establish minimum standards to ensure that Highlands Scenic Resources are not impaired by new human development.

Policy 4B5: To require that the impact of proposed human development on the scenic resources of the Highlands Region be addressed during local development review and Highlands Project Review and approval.

Objective 4B5a: All development applications shall include identification of any scenic resources in the Highlands Region that are listed on the Highlands Scenic Resources Inventory and may be affected by the proposed development.

Objective 4B5b: All development which affects identified scenic resources shall comply with minimum standards for the preservation of the affected resources.

Objective 4B5c: Any proposed action that requires federal permits, involves federal grants, or involves other federal actions that may impact the resource values of the Musconetcong National Scenic and Recreational River and the Lower Delaware National Scenic and Recreational River, pursuant to section 10(a) of the National Wild and Scenic Rivers Act, shall require review by the National Park Service, National Wild and Scenic Rivers Program.

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Policy 4B6: To advocate on the federal and state levels for grants and financial incentives to aid landowners in the maintenance and protection of scenic resources.

GOAL 4C: CONFORMING MUNICIPALITIES AND COUNTIES INCLUDE MINIMUM STANDARDS FOR HISTORIC, CULTURAL, ARCHAEOLOGICAL, AND SCENIC PROTECTION IN MUNICIPAL AND COUNTY MASTER PLANS AND LAND DEVELOPMENT REGULATIONS.

Policy 4C1: To require that conforming municipalities and counties include a Historic, Cultural, and Scenic Resource Protection Element in municipal and county master plans and development regulations and update the Historic and Cultural Resources Inventory through local development reviews.

Policy 4C2: To encourage that conforming municipalities and counties adopt a local historic preservation ordinance with minimum standards for the protection and enhancement of historic, cultural, and archaeological resources listed in the Highlands Historic and Cultural Resources Inventory in their development regulations.

Policy 4C3: To require that conforming municipalities and counties include minimum standards for the protection and enhancement of scenic resources listed in the Highlands Scenic Resources Inventory in their development regulations.

PART 5 Transportation

The Highlands Regional transportation system is a complex network of roads, highways, railways, and bridges which support various modes of travel, including private automobile, buses, truck, passenger and freight rail, airport, bicycle, and walking. There are four major commuter rail lines with 24 stations on these lines which are located within the Highlands Region as well as seven regional airport facilities. The Region is served by four interstate highways, eight state roads, and many county and local roads. In general, most of the highways and roads within the Highlands Region operate at or above design capacity. There is limited intra-regional bus service except for extensive commuter service which is provided by NJ Transit and by private operators, particularly in Morris County and along the Route 78 and 80 corridors. The seven regional airport facilities within the Region vary in size and aircraft capacity.

The Highlands Act (Section 11) requires that the Regional Master Plan (RMP) address the preservation and enhancement of the transportation system and the promotion of a balanced, efficient transportation system that is consistent with resource protection needs and smart growth strategies. The Highlands Act (Section 10c(10)) Planning Area goal requires that the transportation component preserve the mobility of the transportation network, maintain the transportation infrastructure of the Region and recognize projects that promote a sound and balanced transportation system consistent with smart growth principles. The RMP policies support the requirements of the Act and recognize the need to evaluate transportation projects that may result in unintended growth due to increased motorized vehicle roadways.

GOAL 5A: PROVISION OF SAFE AND EFFICIENT MOBILITY WITHIN THE HIGHLANDS, AND BETWEEN THE HIGHLANDS AND DESTINATIONS OUTSIDE OF THE REGION.

Policy 5A1: To ensure that the Highlands transportation system provides safe and efficient intra-regional and inter-regional mobility and that critical safety road improvements use design and engineering controls to minimize induced demand and maximize resource protection.

Policy 5A2: To ensure that the Highlands transportation system affords the Highlands private economic sector, including agriculture, cost-effective transportation for raw materials, products, and employees.

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Objective 5A2a: Encourage the movement of goods from the roadway network to the freight rail network wherever possible.

Objective 5A2b: Evaluate opportunities to increase freight service through the reactivation of abandoned freight lines.

Objective 5A2c: Ensure sustainability of regional airport facilities and appropriately include the role of general aviation in meeting regional transportation planning needs.

Policy 5A3: To improve public safety through implementation of traffic calming measures in areas with high pedestrian activity.

Policy 5A4: To provide for safe and efficient pedestrian connections including features such as sidewalks, proper lighting, signage, shelters, and green street initiatives consistent with the NJDOT's Pedestrian Safety Initiative.

Policy 5A5: To promote safe routes for children to travel to and from school in support of the NJDOT's Safe Routes to School Program.

GOAL 5B: MAINTENANCE OF A SAFE AND EFFECTIVE LEVEL OF SERVICE ON THE EXISTING HIGHLANDS ROAD SYSTEM WITHOUT THE USE OF CAPACITY IMPROVEMENTS THAT COULD TRIGGER ADDITIONAL DEVELOPMENT IN AREAS THAT ARE NOT APPROPRIATE FOR "GROWTH INDUCING" LAND USES.

Policy 5B1: To promote more efficient use of existing road capacity by appropriate means, including but not limited to increased bus, van, jitney, and car pool ridership.

Policy 5B2: To require through Plan Conformance and Highlands Project Review an evaluation of potential growth inducing effects such as substantial new land use, new residents, or new employment that could occur as a result of road improvements for increased motorized vehicle traffic capacity.

Policy 5B3: To prohibit through Plan Conformance and Highlands Project Review road improvements in the Highlands Region in areas for which a Growth Inducing Study, conducted in consultation with agencies including but not limited to the NJDOT, demonstrates that proposed improvements do not support the RMP resource protection and smart growth policies and are likely to be growth-inducing for lands with limited or no capacity to support human development without a significant adverse impact on the Highlands ecosystem.

GOAL 5C: TRANSPORTATION IMPROVEMENTS WITHIN THE HIGHLANDS REGION THAT ARE CONSISTENT WITH THE HIGHLANDS REGIONAL MASTER PLAN.

Policy 5C1: To ensure, to the extent practicable, that proposed transportation improvements which are not consistent with the RMP be modified to be consistent or be re-evaluated in the context of state and regional planning goals.

Policy 5C2: To coordinate with NJDOT, NJ Transit, NJTPA, counties and municipalities with regard to transportation planning and strategies within both the Highlands Region and the larger 13-county metropolitan planning region.

Objective 5C2a: Highlands Region transportation site development activities will reflect RMP resource protection, development, and redevelopment goals.

Policy 5C3: To limit road improvements through local development review and Highlands Project Review where roads are constrained by topography, forested lands, or the community character of land uses fronting on the road.

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Policy 5C4: To support economic development by ensuring that transportation planning and improvements support regional development, redevelopment, and tourism opportunities.

Objective 5C4a: Increase tourism opportunities through innovative multi-modal transportation measures and accessible transit schedules.

Objective 5C4b: Support regional tourism economy through enhanced street furnishings, directional signage, and Highlands Region tourism information.

Objective 5C4c: Support regional tourism through the recognition and protection of scenic resource view sheds along scenic byways and road corridors.

Policy 5C5: To recognize and support the unique needs of the agricultural industry to move farm vehicles and goods along transportation corridors, and establish safe travel routes for farmers and agri-tourism in order to ensure the safety and viability of farming as an occupation in the Highlands Region.

Policy 5C6: To require conforming municipalities to adopt a Circulation Plan Element that coordinates with the land use plan and demonstrates consistency with the RMP.

Policy 5C7: To require conforming counties to adopt a transportation plan that supports local and regional land use planning that promotes connectivity, shared service opportunities, long-term transportation network needs and demonstrates consistency with the RMP.

Policy 5C8: To evaluate the existing and proposed Residential Site Improvement Standards (RSIS) in the context of the RMP and develop recommendations for amendments that would minimize detrimental environmental impacts resulting from new residential developments while maximizing utility efficiency in a manner that addresses community and landscape character.

GOAL 5D: A MULTI-MODAL TRANSPORTATION SYSTEM WHICH FACILITATES THE MOVEMENT OF PEOPLE AND GOODS WITHIN AND THROUGH THE HIGHLANDS REGION WITHOUT ADVERSELY AFFECTING ECOSYSTEM INTEGRITY AND COMMUNITY CHARACTER.

Policy 5D1: To promote the use of mass transit and other alternative modes of transportation within the Highlands Region.

Objective 5D1a: Increase the performance of the public and private bus carrier systems within the Highlands Region.

Objective 5D1b: Increase overall transit ridership and the use of multi-modal transportation systems for peak hour travel.

Objective 5D1c: Increase employer initiated transit opportunities in the Highlands Region such as shuttle bus service, van, jitney and car pool service, and innovative car sharing rental options.

Policy 5D2: To promote transit improvements within the Highlands Region which primarily support intra-regional mobility.

Policy 5D3: To promote priority for transportation improvements which primarily improve intra-regional mobility.

Policy 5D4: To promote transit improvements that will increase capacity for inter-regional mobility.

Policy 5D5: To encourage and promote recreation and tourism through appropriate transportation measures, accessible transit schedules, and enhanced street furnishings and information and directional signage.

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GOAL 5E: MINIMIZATION OF TRAVEL DEMAND AND VEHICLE MILES OF TRAVEL.

Policy 5E1: To promote land use patterns that support a balance of jobs to housing as a means of reducing average trip lengths.

Objective 5E1a: Development and redevelopment which provides housing and jobs in close proximity.

Objective 5E1b: Development and redevelopment in close proximity to rail stations and along bus routes.

Policy 5E2: To promote municipal and county master plans and development regulations which facilitate the development of mixed land uses in locations that result in reduced average trip lengths, increase community and regional connectivity and support existing development patterns.

Policy 5E3: To promote land use patterns which facilitate use of alternative modes of transportation including walking and the use of bicycles.

Policy 5E4: To promote shared parking programs in support of mixed use development and redevelopment.

Objective 5E4a: Circulation plan elements that include, where appropriate, a municipal and county evaluation of shared parking opportunities to support transit, commuter, commercial and mixed-use neighborhoods through a comprehensive parking study.

PART 6 Future Land Use

The Highlands RMP establishes a framework for future land use which guides development away from environmentally sensitive lands and agricultural lands. This framework also promotes compact development and redevelopment in or adjacent to existing developed areas where adequate public facilities are available to serve new growth and development, provided that such development and redevelopment is compatible with existing land uses and community character. The Goals, Policies and Objectives for Future Land Use address the basis for Land Use Capability Zones and Sub-Zones, methods for modifying RMP data layers and maps through RMP Updates, applicable standards for Plan Adjustments, local build out analyses, and general guidelines for new land uses in the Zones and Sub-Zones.

SUBPART A LAND USE CAPABILITY ZONES

The LUCM Series provides the basis for defining the six zones of the Highlands Region, which are found in both the Preservation and Planning Areas. These six zones include three major zones (the Protection Zone, the Conservation Zone, and the Existing Community Zone) and three sub-zones (the Lake Community Zone, and the Environmentally-Constrained Sub-Zone within both the Conservation Zone, and the Existing Community Zone). These Zones and Sub-Zones are then related to a series of additional information layers, using both tabular results and maps, to help define the land use capability of the various parts of the Highlands Region. Details on the delineation of the Land Use Capability Zones are provided within the *Land Use Capability Zone Map Technical Report*.

The Protection Zone include lands within the Highlands Region which contain the highest quality resource value lands, which are essential to maintaining and enhancing water quality and quantity and preserving ecological function. The Protection Zone includes regionally significant lands that serve to protect environmentally sensitive resources of the Highlands Region.

The Conservation Zone includes lands of significant agricultural importance and associated natural resource lands that are adjacent to, or in common ownership with, land used for agricultural purposes. Development potential in the Conservation Zone is limited in location and intensity because of agricultural and natural resource protection requirements and infrastructure constraints.

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The Existing Community Zone includes those areas characterized by existing development with comparatively fewer natural resource constraints than the Protection and Conservation Zones; they often are currently or more easily served with public infrastructure. The Existing Community Zone includes previously developed lands of regional significance in size, geography and infrastructure that may include areas of opportunity for future growth and development, including development and redevelopment which may involve the use of Highlands Development Credits (HDC), provided that such growth and development are consistent and compatible with existing community character, natural resource constraints and is desired by the municipality.

GOAL 6A: USE THE HIGHLANDS LAND USE CAPABILITY MAP SERIES AS A FRAMEWORK FOR DETERMINING THE CHARACTER, LOCATION, AND MAGNITUDE OF NEW GROWTH AND DEVELOPMENT IN THE HIGHLANDS REGION.

Policy 6A1: To use the LUCM Series as a geographic framework for land use planning and management within the Highlands Region.

Objective 6A1a: A Highlands LUCM Series based on the most current, relevant and available data.

Policy 6A2: To develop a program for RMP Updates for all substantive components of the RMP based upon the receipt of new, corrected or updated factual information and verification by the Highlands Council, when and where necessary to improve the accuracy of the RMP.

Objective 6A2a: The facilitation and coordination of the exchange of factual information for the purpose of updating municipal and county planning elements and the RMP.

Objective 6A2b: An ongoing update process to accept factual updates, verify the information and use it, when and where necessary, to improve the accuracy of the RMP.

Objective 6A2c: A centralized repository for verified and approved factual updates which can be administered locally and shared regionally.

GOAL 6B: PRESERVATION OF THE LAND AND WATER RESOURCES AND ECOLOGICAL FUNCTION OF HIGHLANDS AREAS IN THE PROTECTION ZONE.

Policy 6B1: To preserve high quality land and water resources and ecological function within the Protection Zone.

Objective 6B1a: The Protection Zone of the Highlands Land Use Capability Zone Map shall include regionally significant environmental resources to the maximum extent feasible.

Policy 6B2: To limit use and development of land in Protection Zone through appropriate policies regarding resource protection, septic system densities, water supply and wastewater utilities and water availability.

Policy 6B3: To give the highest land acquisition priority to non-preserved, undeveloped lands within the Protection Zone in the Preservation Area.

Policy 6B4: To define a Sub-Zone of the Land Use Capability Zone Map that reflect areas managed by the United States Fish and Wildlife Service as part of the National Wildlife Refuge System and Wildlife Management Area System administered by the NJDEP Division of Fish & Wildlife's Bureau of Land Management.

GOAL 6C: LIMITATION OF DEVELOPMENT IN THE PROTECTION ZONE TO DEVELOPMENT AND REDEVELOPMENT WHICH DOES NOT ADVERSELY AFFECT THE NATURAL RESOURCES OF THE HIGHLANDS REGION ECOSYSTEM.

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Policy 6C1: To limit new human development in the Protection Zone to redevelopment, exempt activities, and environmentally-compatible low density new land uses, in accordance with RMP resource protection needs and water quality and quantity capacity constraints and to ensure that the impacts of development using exemptions under the Highlands Act (see Policy 7F1) are considered in regional protection measures.

Objective 6C1a: Centers in the Protection Zone, potentially including clustered development, shall be at densities appropriate to the Zone, the community character, the State Development and Redevelopment Plan, and the use of septic systems or community wastewater systems.

Policy 6C2: To ensure through Plan Conformance, local development review and Highlands Project Review that any future development or redevelopment which does occur in a Protection Zone is subject to standards and criteria which protect the land and water resources of the Protection Zone from any potential adverse impact to the maximum extent possible.

Policy 6C3: To encourage owners of lands which are eligible for exemptions under the Highlands Act (see Policy 7F1) to voluntarily offer their land for acquisition, participate in the TDR program, or use cluster or conservation design development in cooperation with other exempt landowners, and comply with standards and criteria which protect the land and water resources of the Highlands Region from any adverse impacts.

Policy 6C4: To establish voluntary programs whereby owners of land who are eligible for exemptions under the Highlands Act (see Policy 7F1) have an incentive to develop or use such exemptions in a manner which limits or mitigates any potential adverse impacts on the land and water resources of the Protection Zone.

GOAL 6D: PROTECTION AND ENHANCEMENT OF AGRICULTURAL USES AND PRESERVATION OF ASSOCIATED LAND AND WATER RESOURCES IN HIGHLANDS AREAS IN THE CONSERVATION ZONE.

Policy 6D1: To protect existing agricultural uses in the Conservation Zone from incompatible development.

Objective 6D1a: The Conservation Zone of the Land Use Capability Zone Map shall include regionally significant agricultural lands within the Highlands Region.

Policy 6D2: To promote the expansion of sustainable and economically viable agricultural activities in the Conservation Zone where not constrained by existing environmentally sensitive resources.

Policy 6D3: To limit through Plan Conformance, local development review and Highlands Project Review the use and development of lands within the Conservation Zone to agriculture use and development, including ancillary and support uses, redevelopment of existing developed areas, and environmentally-compatible low density land uses that are to the maximum extent possible achieved in compact development patterns, to be designed and developed in a manner which is compatible with the long term use of adjacent land for agricultural purposes.

Objective 6D3a: Identification of major environmentally sensitive areas within the Conservation Zone as environmentally constrained sub-zones, and preparation and implementation of standards ensuring that development capacity is directed away from such areas to the maximum extent feasible.

Objective 6D3b: Centers in the Conservation Zone, potentially including clustered development, shall be at densities appropriate to the Zone, the community character, the State Development and Redevelopment Plan, and the use of septic systems or community wastewater systems.

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GOAL 6E: INCORPORATION OF REGIONAL DEVELOPMENT PATTERNS AND RELATED ENVIRONMENTALLY SENSITIVE AREAS WITHIN EXISTING COMMUNITY ZONES.

Policy 6E1: To promote the location of sustainable and economically viable development activities in the Existing Community Zone where not constrained by existing environmentally sensitive resources.

Objective 6E1a: The Existing Community Zone in the Highlands Land Use Capability Zone Map shall include existing previously developed areas of regional significance.

Policy 6E2: To define sub-zones of the Land Use Capability Zone Map that reflect resource management needs specific to environmentally-sensitive lands and lake communities within the Existing Community Zone.

Objective 6E2a: Identification of major environmentally sensitive areas within the Existing Community Zone as environmentally constrained sub-zones, and preparation and implementation of standards ensuring that development capacity is directed away from such areas to the maximum extent feasible.

Objective 6E2b: Identification of developed lake communities within the Existing Community Zone as Lake Community Sub-Zones, and preparation and implementation of standards ensuring management of land uses within the Sub-Zones for protection and restoration of lake quality, ecosystems and community character to the maximum extent feasible.

GOAL 6F: SUPPORT OF COMPACT DEVELOPMENT, MIXED USE DEVELOPMENT AND REDEVELOPMENT AND MAXIMIZATION OF WATER, WASTEWATER AND TRANSIT INFRASTRUCTURE INVESTMENTS FOR FUTURE USE OF LAND AND DEVELOPMENT WITHIN THE EXISTING COMMUNITY ZONE.

Policy 6F1: To promote compatible development and redevelopment within the ECZ.

Policy 6F2: To promote the restoration and redevelopment of brownfields, particularly those located in or adjacent to transportation corridors or transit stations. In cases where redevelopment is not appropriate, encourage "brownfield to greenfield" approaches.

Policy 6F3: To ensure that development activities within the ECZ are subject to standards and criteria which ensure that development and redevelopment incorporate smart growth principles and do not adversely affect natural resources.

Policy 6F4: To ensure that development and redevelopment within the ECZ are served by adequate public facilities including water supply, wastewater treatment, transportation, educational and community facilities.

Policy 6F5: To ensure that development and redevelopment in the ECZ are compatible with existing community character.

Policy 6F6: To encourage new population growth, where desired by the municipality, and development in the ECZ is in the form of center based and mixed use development.

Objective 6F6a: Center based development initiatives shall be planned within the Existing Community Zone at densities appropriate to the Zone, the community character, the State Development and Redevelopment Plan. Densities of five dwelling units and above are encouraged, and are required in areas designated as voluntary TDR Receiving Zones where TDR benefits are sought under the Highlands Act.

Policy 6F7: To encourage redevelopment in the Existing Community Zone as a means to relieve development pressure from more environmentally sensitive areas.

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SUBPART B RMP UPDATES, MAP ADJUSTMENTS, AND LOCAL BUILD OUT ANALYSES

The Regional Master Plan (RMP) Update process is provided for making factual improvement to the RMP, whether regarding mapped or other information that affects land use capability. The Map Adjustment process allows for limited changes to the Land Use Capability Zone Map based on local planning factors; compliance with the protection standards of the RMP must be ensured and no net loss of resources or resource values may occur, among other limitations. During the Plan Conformance process, a municipality will complete a local build out analysis, using the Highlands Build Out Model with local information. In addition, general policies are provided in this section for the Zones and Sub-Zones, which are supplemented in the following sections.

GOAL 6G: CONTINUALLY UPDATE AND IMPROVE THE HIGHLANDS LAND USE CAPABILITY MAP SERIES.

Policy 6G1: To develop a program for RMP Updates for all substantive components of the RMP, based upon the receipt of new, corrected or updated factual information and verification by the Highlands Council, when and where necessary to improve the accuracy of the RMP.

Policy 6G2: To develop a program allowing for petitions by municipalities and counties (with accompanying mu nicipal support by resolution) for a Map Adjustments to the Land Use Capability Zone Map in the Highlands Region.

Objective 6G2a: A Council review process to assess local initiatives where Map Adjustments may be approved to the Land Use Capability Zone Map's designations of Protection and Conservation Zones or the Environmentally-Constrained Sub-Zones.

Objective 6G2b: Map Adjustments proposed to change Protection and Conservation Zones or the Environmentally-Constrained Sub-Zones may be approved by the Highlands Council where it finds that the petition does not result in deleterious impacts to the affected or adjacent Land Use Capability Zones or to RMP policies and objectives applicable to adjacent or nearby lands, and the petitioner demonstrates that the proposed adjustment:

1. Complies with the intent and purposes of the Highlands Act and the RMP and demonstrates that Highlands resource protection and smart growth planning principles have been addressed;
2. Will result in no net loss of Highlands resources or resource values (including but not limited to water availability, water quality, Critical Habitat, and agriculture) within the Region or as appropriate, within any HUC 14 subwatershed, such that on the whole, the results equal or exceed the resource protections provided by the RMP;
3. Will under no circumstance result in the allocation of water or wastewater capacity in excess of that available in any HUC 14 subwatershed; and
4. Cannot appropriately or adequately be addressed via other options, such as:
   - Waivers under The Highlands Act;
   - Exemptions from the Highlands Act; and
   - RMP Updates Program.

Where a Map Adjustment creates opportunity for an increase in density, such density must be offset by an equivalent reduction in density elsewhere in the Region, or alternatively, by use of HDCs.

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Where a petition seeks the creation or extension of an ECZ, it must demonstrate that the area in question can accommodate ECZ-appropriate development. The Council will look most favorably upon ECZ petitions that create a meaningful opportunity to provide affordable housing; improve the balance of housing and employment; and promote the use of alternative modes of transportation, such as transit, by for example, a location proximate to Highlands Baseline Transportation and Transit features.

Objective 6G2c: Map adjustments that will change an Existing Community Zone to another Land Use Capability Zone or Sub-Zone may be approved by the Highlands Council where it finds that the affected area

1. Is not currently developed at a density and scale that prevents the area from providing the agricultural or environmental protection benefits of the Conservation or Protection Zones, or the Environmentally-Constrained Sub-Zones;
2. Is not currently served by public wastewater infrastructure;
3. Includes ecological or agricultural attributes that are associated with the Conservation or Protection Zones; and
4. Does not include a designated Redevelopment Site or TDR Receiving Zone.

Policy 6G3: To require conforming counties and municipalities to review the parcel based Developed Land Inventory, and identify additional developed properties appropriate for the inventory, and track development activities in the Highlands Region.

Policy 6G4: To evaluate land use capability and support planning for development, redevelopment and infill that meets RMP policies and objectives.

Objective 6G4a: Provide a Highlands Build Out Model that evaluates RMP policies, supports State, regional and local requirements, and provides a consistent framework for water supply, wastewater, transportation and affordable housing planning and the SDRP Plan Endorsement process.

Objective 6G4b: Counties shall, through Plan Conformance, use the Highlands Build Out Model or its equivalent to prepare a utilities plan element of the County Master Plan that evaluates available development capacity based on lands, resources, and utilities.

Objective 6G4c: Municipalities shall, through Plan Conformance, use the Highlands Build Out Model to develop a local build out analysis that incorporates RMP policies and objectives to evaluate land use capability and capacity planning.

SUBPART C REGIONAL GUIDANCE FOR DEVELOPMENT AND REDEVELOPMENT

The RMP emphasizes that new development should protect environmentally sensitive and agricultural lands, be located in areas with existing development wherever feasible, and be designed in ways that make efficient use of land while creating sustainable communities. This section provides general policies that address these issues.

GOAL 6H: GUIDE DEVELOPMENT AWAY FROM ENVIRONMENTALLY SENSITIVE AND AGRICULTURAL LANDS AND PROMOTE DEVELOPMENT AND REDEVELOPMENT IN OR ADJACENT TO EXISTING DEVELOPED LANDS.

Policy 6H1: To protect, restore, or enhance sensitive environmental resources of the Highlands Region, including but not limited to Forests, Critical Habitat, Highlands Open Waters and their buffers, Riparian Areas, Steep Slopes, Prime Ground Water Recharge Areas, Wellhead Protection Areas, and ARAs.

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Objective 6H1a: Identification of lands within the Highlands Region which contain sensitive environmental resources of the Highlands Region.

Objective 6H1b: Prevent the extension or creation of water and wastewater utility services in the Protection Zone, Conservation Zone, and Environmentally Constrained Sub-Zones of the Planning Area, unless they meet the requirements of Policy 2J4 with Objectives 2J4a through 2J4d, and Policy 2K3 with Objectives 2K3a through 2K3e, and will maximize the protection of agricultural and environmentally sensitive resources.

Objective 6H1c: Encourage the protection, restoration and enhancement of Environmentally-Constrained Sub-Zones of the Conservation and Existing Community Zones of the Planning Area through measures that may include but are not limited to: fee simple and easement acquisition (see Policy 1H2 and Policy 3A5); designation as TDR Sending Zones (see Policy 7B4); incentives for development and implementation of Forest Stewardship Plans (see Policy 1B1) and Resource Management System Plans (see Policy 3A8) for forestry and agricultural operations, respectively; restoration of Highlands Open Waters buffers (see Objective 1D4i); and restoration of Critical Habitat (see Policy 1F3).

Objective 6H1d: Cluster and conservation design development plans and regulations shall consider existing community character, incorporate smart growth design principles, and require Low Impact Development including but not limited to: locating development adjacent to existing infrastructure such as water, wastewater, transportation, and public facilities to limit the degree of new impervious surface, and permitting smaller residential lots in order to incorporate community open space and existing natural resources into the design.

Policy 6H2: To protect and promote agriculture by protecting and enhancing lands within the Highlands Region currently or capable of being used for agricultural purposes and ensuring that lands associated with or adjacent to agricultural lands are not developed in a manner that conflicts with the ongoing agricultural uses.

Objective 6H2a: Identification of Agricultural Resource Areas within the Highlands Region.

Policy 6H3: To require conforming municipalities and counties to include site development programs, such as clustering, to preserve land in perpetuity for environmental protection or agricultural purposes.

Policy 6H4: To promote compatible growth opportunities that include in-fill development, adaptive re-use, redevelopment, and brownfields redevelopment in existing developed areas.

Objective 6H4a: Identification of existing developed areas within the Highlands Region using the Developed Lands Analysis.

Objective 6H4b: Identification of brownfields, grayfields and underutilized properties that have potential for redevelopment that is compatible with resource protection and smart growth principles.

Policy 6H5: To promote land uses which create a sense of place with attractive, walkable neighborhoods that support community connectivity of developed lands and community facilities.

Objective 6H5a: Communities of place with a mix of uses which promote multi-purpose trips, through proximity of neighborhood retail, commercial, and entertainment uses to residential land uses that create communities that are largely self-sufficient regarding daily needs.

Objective 6H5b: Communities of place with a pattern of development which promotes the use of transit, walking, and biking.

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Policy 6H6: To integrate public parks and green spaces into development and redevelopment projects and ensure restoration of impaired natural resources to the extent required by law, at a minimum, and where feasible to a greater extent to maximize long term value of the project.

Policy 6H7: Provisions and standards relating to regional growth activities which increase the intensity of development shall be discretionary for conforming municipalities and counties.

Policy 6H8: Regional growth, where accepted through local planning and regulations, should identify opportunities to maximize land use intensity while protecting natural features and community character.

Objective 6H8a: Development and redevelopment initiatives shall encourage the use of HDC as a means to enhance the existing or adjacent community while protecting local and regional natural resources.

Objective 6H8b: Preparation and implementation of standards ensuring that development protects environmentally sensitive resources in all Land Use Capability Zones and Sub-Zones.

Policy 6H9: To incorporate smart growth principles and green building design and technology in development and redevelopment initiatives.

GOAL 6I: CONFORMING MUNICIPALITIES AND COUNTIES INCORPORATE REGIONAL AND LOCAL LAND AND WATER RESOURCE PLANNING AND MANAGEMENT PROGRAMS IN THEIR MASTER PLANS AND DEVELOPMENT REGULATIONS.

Policy 6I1: To require that conforming municipalities and counties include land and water resource planning and management programs in their master plans and development regulations.

Objective 6I1a: Adopt municipal and county master plans and land development regulations that require that cluster developments preserve in perpetuity for environmental protection or agricultural purposes at least 80% of the cluster project area. To the maximum extent feasible the developed portion (i.e., not including wetlands, Highlands Open Waters buffers, and recreational lands) occupies no more than 10% of the cluster project area if served by a public or community on-site wastewater system.

Objective 6I1b: Municipal and county master plans and development regulations which require appropriate and potable water, wastewater disposal, and transportation facilities.

Policy 6I2: To encourage conforming municipalities and counties to include voluntary programs with incentives for the development or use of Highlands Act exemptions (see Policy 7F1) in a manner which limits or mitigates any potential adverse impacts on the land and water resources of the Protection Zone.

Policy 6I3: To require conforming municipalities and counties to incorporate land and water resource planning and management programs for the Conservation Zone which protect natural resources from the adverse impacts and support agricultural sustainability.

Objective 6I3a: Municipal and county master plans and development regulations that ensure that new non-agricultural development is compatible with the long term vitality of agriculture in the Conservation Zone.

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SUBPART D REDEVELOPMENT

Redevelopment is a planning tool that converts underutilized areas, brownfields, and grayfields into new land uses through structure replacement, infill, and adaptive reuse approaches. Redevelopment will help to meet the Region's growth needs by optimizing the efficient use of previously settled areas with existing communities and available infrastructure, thus conserving natural resources. Brownfields and grayfields are two types of sites which commonly possess characteristics worthy of investigating for purposes of redevelopment. The definition of a brownfield is, "any former or current commercial or industrial site that is currently vacant or underutilized and on which there has been or there is suspected to have been, a discharge of a contaminant." Grayfields are sites usually containing industrial or commercial facilities exhibiting signs of abandonment or underutilization in areas with existing infrastructure, but without evidence or expectation of contamination. As a concept, these sites are termed "Highlands Redevelopment Areas."

In the Preservation Area, Highlands Redevelopment Areas are limited to redevelopment sites and brownfield sites as designated by the Highlands Council, which are then eligible for waivers from the NJDEP. In the Planning Area, Highlands Redevelopment Areas include redevelopment sites and brownfield sites using the Preservation Area definition, but may in addition include grayfields and underutilized areas, depending on the Land Use Capability Zone of the area. Infill is permissible in any of the Highlands Redevelopment Areas as long as the area meets the designation requirements. Highlands Redevelopment Areas may be designated for the entire property, a portion of the property, or for collections of contiguous parcels in part or in whole.

GOAL 6J: **ACCOMMODATION OF REGIONAL GROWTH AND DEVELOPMENT NEEDS THROUGH THE REUSE AND REDEVELOPMENT OF PREVIOUSLY DEVELOPED AREAS, INCLUDING BROWNFIELDS, GRAYFIELDS, AND UNDERUTILIZED SITES.**

Policy 6J1: To encourage Preservation Area redevelopment of sites with 70% or greater impervious surfaces or a brownfield in areas designated by the Highlands Council as Highlands Redevelopment Areas in accordance with N.J.A.C 7:38-6.6 and 6.7.

Policy 6J2: To encourage redevelopment in the ECZ in the Planning Area of brownfields, grayfields, and other previously developed areas that have adequate water, wastewater, transportation capacity, and are appropriate for increased land use intensity or conversion to greenfields, as approved through Plan Conformance or the Highlands Redevelopment Area Designation process.

Policy 6J3: To encourage redevelopment in the Conservation and Protection Zones in the Planning Area of brownfields and grayfields that have adequate water, wastewater, transportation capacity, and are appropriate for increased land use intensity or conversion to greenfields, as approved through Plan Conformance or the Highlands Redevelopment Area Designation process.

GOAL 6K: **CONCENTRATE RESIDENTIAL, COMMERCIAL AND INDUSTRIAL DEVELOPMENT, REDEVELOPMENT, AND ECONOMIC GROWTH IN EXISTING DEVELOPED AREAS IN LOCATIONS WITH LIMITED ENVIRONMENTAL CONSTRAINTS, ACCESS TO EXISTING UTILITY, AND TRANSPORTATION INFRASTRUCTURE.**

Policy 6K1: To promote redevelopment of brownfields, grayfields, and other previously developed areas in a manner consistent with the goals and requirements of the Plan.

Objective 6K1a: Establish interagency teams as necessary to support and expedite redevelopment and development activities that conform to the Plan.

Objective 6K1b: Encourage and support the use of planning and financing tools that are available through state agencies and programs for appropriate redevelopment.

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GOAL 6L: CONFORMING MUNICIPALITIES AND COUNTIES CONSIDER DEVELOPMENT, REDEVELOPMENT AND BROWNFIELDS OPPORTUNITIES IN THEIR MASTER PLANS.

Policy 6L1: To require that conforming municipalities identify any development, redevelopment, and brownfield opportunities in the local land use plan element of their master plans, as appropriate.

Objective 6L1a: Municipal review of the Redevelopment and Infill Analysis Tool.

Policy 6L2: To require that conforming municipalities amend development regulations and zoning to enable project implementation of local redevelopment initiatives that are identified under Policy 6L1 and locally endorsed through Plan Conformance.

Objective 6L2a: Municipal review of local redevelopment projects consistent with RMP smart growth and Low Impact Development policies and objectives.

Policy 6L3: To require that conforming municipalities identify existing and planned community facilities and encourage shared service opportunities as part of the local Community Facility Plan element.

GOAL 6M: PROTECTION AND ENHANCEMENT OF HIGHLANDS RESOURCES THROUGH THE REMEDIATION OF CONTAMINATED SITES IN REGION.

Policy 6M1: Encourage and support the restoration and redevelopment or open space use of contaminated areas.

Objective 6M1a: Coordinate with the NJDEP on Highlands Brownfield designations and in support of a mechanism that facilitates remedial activities within the Highlands Region.

Objective 6M1b: Evaluate mechanisms for remedial activities that apply resource protection, enhancement, and restoration approaches that allow for a minimal redevelopment footprint, encourage "brownfields to greenfields" approaches, and include green energy and building concepts.

Objective 6M1c: Any restoration of contaminated sites shall be conducted in accordance with the criteria required by the NJDEP's Technical Requirements for Site Remediation (N.J.A.C. 7:26E).

Objective 6M1d: As needed to ensure resource protection, prepare enhanced remediation standards for application in the Highlands Region through the NJDEP's Technical Requirements for Site Remediation (N.J.A.C. 7:26E).

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SUBPART E SMART GROWTH

Smart growth is an approach to resource planning and management where growth and development are concentrated and organized around "centers" with compact, walk-able, bicycle-friendly land use patterns, typically including mixed-use development with a range of housing choices. It generally reflects value for long-range, regional considerations of sustainability over short-term economic benefits. Smart growth promotes land use patterns with a sense of community and place, multi-modal and alternative modes of transportation, a balance of employment and housing, and an equitable distribution of the costs and benefits of development. It also includes the preservation and enhancement of natural and cultural resources. Finally, as an efficient and less automobile dependent pattern and form of growth, it reduces energy use, which in turn improves air quality and reduces carbon dioxide emissions linked to global warming.

Low Impact Development is an element of smart growth that achieves improved protection of environmental resources. It is an environmentally sensitive approach to land use planning that uses a variety of landscape and design techniques to manage development activities to mitigate potential adverse impacts on the natural environment. Low Impact Development encompasses a broad array of development and management techniques and can be implemented in resource management practices, stormwater management methods, and low impact "green" construction activities. Low Impact Development for resource management is applied as Best Management Practices and is geared toward protection and conservation of the resources. Low Impact Development for stormwater management is aimed at capturing rainfall onsite, filtering it through vegetation and allowing it to recharge ground water. Low Impact Development treats stormwater as a resource. Low Impact Development for site design includes stormwater management techniques as well as other measures designed to reduce site disturbance, limit impervious coverage and utilize the natural features of a site to guide site development. Similar Low Impact Development techniques may be applied for each of these purposes with the overall goal of minimizing adverse impacts of the activity.

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

Policy 6N1: To establish smart growth programs and Low Impact Development principles for use within the Highlands Region to guide and control development and redevelopment throughout the Highlands Region.

Objective 6N1a: Conservation development standards which protect natural resources, environmentally sensitive areas, open space and agricultural lands, and enhance community character.

Objective 6N1b: Implement flexible site development review programs that allow for adjustments such as reduction of minimum setbacks, modification of uniform road frontage requirements, increase in maximum permitted height or allowing non-contiguous clustering of development entitlements where necessary to mitigate or eliminate adverse impacts on Highlands natural resources.

Objective 6N1c: Development standards which recognize that portions of a parcel proposed for development which are not developable may be considered for the purpose of satisfying on-site passive open space requirements.

Objective 6N1d: Minimum requirements for water conservation measures in site layout and structures, including but not limited to water efficient landscaping (including use of native and drought-tolerant plant species), rain collection systems, use of gray water, and water-efficient landscape irrigation.

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Objective 6N1e: Minimum requirements for use of micro-climate conditions to maximize solar gain for winter heating and minimize solar gain during high temperature summer conditions.

Objective 6N1f: Minimum requirements for re-use and recycling of building materials when development involves demolition.

Objective 6N1g: Minimum requirements that all development include energy efficient features in site layouts and all structures.

Objective 6N1h: Design roadway improvements to have minimum impacts on Highlands resources by assessing alternative designs regarding drainage, impervious cover, native vegetation, and other "green street" considerations.

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.

Objective 6N2a: Implementation of on-site stormwater management features that maintain, restore and enhance the pre-existing natural drainage patterns of the site.

Objective 6N2b: Limitations on the amount of impervious cover allowed on a site as a means to protect and increase stormwater infiltration and reduce stormwater runoff.

Objective 6N2c: Minimum requirements for site-specific hydrologic studies during local development review and Highlands Project Review which identify the velocity, volume and pattern of water flow into, through, and off of the parcel proposed for development.

Objective 6N2d: Minimum requirements that stormwater management systems employ a "design with nature" approach.

Objective 6N2e: Minimum requirements for use of grass channels, dry swales, wet swales, infiltration basins, bio-swales and water gardens, green roofs, and other low impact approaches to attenuate and control stormwater and provide multiple environmental benefits.

Policy 6N3: To require through Plan Conformance that municipalities and counties adopt Low Impact Development practices to minimize land disturbance during construction activities.

Objective 6N3a: Local development review programs which require a site specific analysis of environmental features and constraints of the property proposed for development as a basis for determining compliance with sustainable design requirements.

Objective 6N3b: Limitation of site disturbance, clearing and grading to the minimum necessary to make reasonable use of the designated building envelope for the development parcel.

Objective 6N3c: Reduce impacts of construction activities by controlling soil erosion, sedimentation traveling to water bodies, and airborne dust.

Policy 6N4: To require through Plan Conformance that municipalities and counties adopt Low Impact Development Best Management Practices where disturbance of Highlands resources is proposed, including but not limited to Steep Slopes, forest resources, Critical Habitat, Highlands Open Waters and Riparian Areas, and Prime Ground Water Recharge Areas.

Objective 6N4a: Identification of Highlands resources as an early step in site planning in order to avoid disturbance, in conformance with the RMP.

Objective 6N4b: Avoid or minimize the net loss of Highlands resources through site design so that the allowable development to the maximum extent practical is located on portions of the project site that lack Highlands resources.

Objective 6N4c: Maintain the quality and value of Highlands resources through site design so that any allowable disturbance of Highlands resources has the minimum impact possible,

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including but not limited to, minimization of disturbances to natural vegetation and topography, of the exposure of stormwater runoff to pollutant-generating land uses, and modification of the hydrologic response to precipitation from natural patterns.

Policy 6N5: To require through Plan Conformance that municipalities and counties incorporate programs for community and neighborhood design that support a variety of housing options, mixed uses, redevelopment, adaptive re-use of historic sites and structures, and infill development in their master plans and development regulations.

Objective 6N5a: Minimum requirements for the use of Low Impact Development and sustainable design practices to support affordable maintenance of housing, particularly affordable housing.

Objective 6N5b: Local development regulations and guidelines that advocate mixed use development and redevelopment where appropriate.

Objective 6N5c: Local development regulations and guidelines that incorporate form-based zoning, where appropriate, to support compact, walkable communities.

Objective 6N5d: Increased opportunities for pedestrian and bicycle networks, including sidewalks, bike lanes, trails, and supportive facilities such as bike racks.

Objective 6N5e: Local development regulations and guidelines that advocate shared parking, driveways, and other infrastructure in order to limit paved surfaces.

Policy 6N6: To require through Plan Conformance that municipalities and counties include community outreach, collaboration, and meaningful involvement from the local population in the development of planning and design regulations and programs.

SUBPART F HOUSING AND COMMUNITY FACILITIES

The Highlands RMP seeks to address a full range of housing needs for the Region. This includes housing needs for low and moderate income ranges as well as middle and upper income ranges. In addition, the Region should support a variety of housing types such as rental housing, multi-family housing, age-restricted housing, and supportive and special needs housing. Housing issues can be complex and are related to economic, social, and environmental considerations. Communities should plan for a sensible balance of land uses, including job and housing opportunities, open space, services, and community facilities. The Highlands RMP seeks to provide mechanisms to address the need for a full range of variety and choice in housing opportunities in the Highlands Region, while protecting the character and natural resources of the Region and acknowledging infrastructure limitations.

GOAL 6O: MARKET-RATE AND AFFORDABLE HOUSING SUFFICIENT TO MEET THE NEEDS OF THE HIGHLANDS REGION WITHIN THE CONTEXT OF ECONOMIC, SOCIAL, AND ENVIRONMENTAL CONSIDERATIONS AND CONSTRAINTS.

Policy 6O1: To establish a region-wide, comprehensive approach to addressing housing needs in the Highlands Region, serving all age groups, income levels, and mobility options.

Objective 6O1a: A comprehensive housing program addressing regional housing needs within the context of preserving the character and environmental integrity of the Highlands.

Objective 6O1b: An interagency partnership with the COAH in support of the achievement of both the resource protection requirements of the RMP and the municipal constitutional obligation, in "growth areas," to provide a realistic opportunity for the construction of a fair share of affordable housing for low and moderate income households.

Objective 6O1c: Preserve and monitor existing stocks of affordable housing.

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Policy 602: To promote, where appropriate and permitted by the Land Use Capability Zone, center-based development approaches that address a mix of housing types, support mixed uses, and implement compact development approaches.

Policy 603: To promote, where appropriate and permitted by the Land Use Capability Zone, affordable housing within new residential and mixed use development, redevelopment, or adaptive reuse projects.

Policy 604: To encourage the targeting of new housing to areas with compatible existing densities and within walking distance of schools, employment, transit, and community facilities and services.

Policy 605: To locate and maintain community facilities and services that support compact development patterns, shared services, and provide a high level of service.

Policy 606: To require that conforming municipalities identify existing and planned community facilities and encourage shared service opportunities as part of the local Community Facility Plan element.

Policy 607: To require that conforming municipalities implement both the resource protection requirements of the RMP along with the New Jersey Supreme Court's doctrine, in its Mount Laurel decisions, that every municipality in a "growth area" has a constitutional obligation to provide through its land use regulations, sound land use, and long range planning, a realistic opportunity for a fair share of its region's present and prospective needs for housing for low and moderate income families.

Policy 608: To require that conforming municipalities update and adopt a housing element, fair share plan, and implementing ordinance(s) to reflect current conditions and resource protection requirements of the RMP.

Objective 608a: Conforming municipalities, through housing plans, will evaluate and provide for alternate mechanisms to address affordable housing obligations where RMP resource protection standards restrict the ability of planned but not built sites to be developed for affordable housing.

PART 7 Landowner Equity

The Highlands Act recognizes that implementation of the RMP, which directs and guides future development, inevitably has an impact on reasonable landowner expectations regarding future land use potential. The Act provides several mechanisms that seek to mitigate such impacts, including a TDR Program, land acquisition, exemptions, and waivers.

The Act requires the Highlands Council to establish a regional Highlands TDR Program. This is intended as an equitable means of guiding human development away from sensitive lands in the Highlands Region to areas both within the Region as well as outside the boundaries of the Highlands Region, but within other parts of the seven Highlands counties which are suitable for more intense human development. The Act contemplates that transferable development rights will be allocated to the owners of land which should not be developed at all or be developed at very low densities and impacts, and that voluntary TDR Receiving Zones for HDCs will be identified. The Highlands TDR Program is required to be consistent with the State Transfer of Development Rights Act, except as otherwise expressly provided for in the Highlands Act TDR provisions (Section 13.a).

The Highlands RMP also recognizes the need to set priorities for acquisition or purchase of conservation easements in those lands within the Region that have the most significant resource values. To this end, the RMP includes numerous policies to address open space acquisition and farmland preservation.

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Additionally, the Highlands Act includes 17 exemptions. If a project or activity falls within one of these 17 exemptions, the project or activity is exempt from the Highlands Act, the Highlands Preservation Area rules adopted by the NJDEP, the RMP, and any municipal master plan or development regulations that are revised to conform to the RMP.

Tens of thousands of acres throughout the Region could potentially be developed under the exemptions based upon an analysis conducted by the Highlands Council. While the exemptions are one of the primary means for landowners to utilize their properties where development potential is limited by the Highlands Act, the exercise of these exemptions may result in further fragmentation of the Region's ecosystems due to the construction of additional impervious surface. Given this circumstance, the RMP addresses the need to develop voluntary programs that attempt to mitigate these impacts, including programs to encourage non-contiguous clustering, intra-local government transfers of development rights and economic incentives.

Lastly, the Act provides the NJDEP with the authority to grant waivers from its Highlands rules on a case by case basis under certain circumstances. Under this authority, the NJDEP may issue waivers (1) where a project or activity is necessary in order to protect public health and safety; (2) for redevelopment in previously developed areas as identified by the Highlands Council, provided that the areas are either a brownfield site designated by the NJDEP or a site at which at least 70% of the area thereof is covered with impervious surface; or (3) necessary to avoid a taking of property without just compensation.

GOAL 7A: **PROTECTION OF LANDS THAT HAVE LIMITED OR NO CAPACITY TO SUPPORT HUMAN DEVELOPMENT WITHOUT COMPROMISING THE ECOLOGICAL INTEGRITY OF THE HIGHLANDS REGION, THROUGH MECHANISMS INCLUDING BUT NOT LIMITED TO A REGION-WIDE TRANSFER OF DEVELOPMENT RIGHTS PROGRAM.**

Policy 7A1: Transferable development rights shall be used by willing municipalities to guide growth and development away from ecologically sensitive lands and towards lands which have the capacity to support additional human development without compromising the ecological integrity of the Highlands Region. These rights shall also be used to guide growth towards lands outside of the Highlands Region, but within the seven Highlands counties, to willing municipalities.

Objective 7A1a: Creation of a region-wide Highlands TDR Program as soon as practicable.

Objective 7A1b: Identification and implementation of any and all program elements which would promote the transfer and use of development rights.

Policy 7A2: To maximize the preservation of Preservation Area properties outside of the Existing Community Zone or a Highlands Redevelopment Area, with emphasis on properties with the highest Conservation Priority scores and Agricultural Priority scores, through acquisition or donation of fee simple and easement ownership.

GOAL 7B: **PROVISION FOR COMPENSATION THROUGH A REGION-WIDE PROGRAM OF TRANSFERABLE DEVELOPMENT RIGHTS TO LANDOWNERS WHOSE PROPERTIES HAVE LIMITED OR NO CAPACITY TO SUPPORT ADDITIONAL DEVELOPMENT BASED UPON ANALYSES CONDUCTED BY THE HIGHLANDS COUNCIL AND WHO ARE DISPROPORTIONATELY BURDENED BY THE PROVISIONS OF THE HIGHLANDS ACT.**

Policy 7B1: The Highlands TDR Program shall seek to mitigate impacts of the Highlands Act and the Highlands RMP on reasonable landowner development expectations which have been disproportionately affected.

Policy 7B2: The Highlands TDR Program shall establish a transferable development right to be known as a "Highlands Development Credit."

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Policy 7B3: All lands within the Preservation Area, except for those in the Existing Community Zone and approved Highlands Redevelopment Areas, shall be eligible to serve as Sending Zones under the Highlands TDR Program.

Policy 7B4: Upon municipal conformance, all lands within the Planning Area, except for those in the Existing Community Zone and approved Highlands Redevelopment Areas, shall be eligible to serve as Sending Zones under the Highlands TDR Program.

Policy 7B5: The Highlands TDR Program shall provide for the allocation of HDCs to eligible Sending Zone parcels where reasonable future development expectations have been disproportionately limited by the provisions of the Highlands Act or implementation of the programs established by the RMP.

Policy 7B6: Lands in the Existing Community Zone and approved Highlands Redevelopment Areas shall not be eligible for an allocation of HDCs.

Policy 7B7: Establish a Highlands TDR Program which is sufficiently certain and predictable to allow Sending Zone landowners to sell Highlands Development Credits or borrow against the value of such credits.

Objective 7B7a: Establishment of eligibility criteria for an allocation of HDCs.

Objective 7B7b: Creation of a process by which affected landowners can apply to the Highlands Council for an allocation of HDCs.

Objective 7B7c: Establishment of a HDC conveyance system, including covenants and restrictions on the use of Sending Zone parcels.

Objective 7B7d: Creation of a tracking system for HDCs which provides public records for the transfer and use of HDCs.

Objective 7B7e: Establishment of Receiving Zones where HDCs can be used as soon as possible.

Objective 7B7f: Active transfer and use of HDCs throughout the Highlands Region and the seven Highlands counties.

Objective 7B7g: Review and assessment of the Highlands TDR Program five years after the effective date of the Highlands RMP.

Policy 7B8: The determination as to whether a particular parcel of land is disproportionately limited by the provisions of the Highlands Act or implementation of the Highlands RMP shall be based upon the development potential as of August 9, 2004, based upon municipal zoning and land use regulations then in effect; State and federal environmental laws and regulations then in effect; and a determination of whether development is precluded or severely constrained by the restrictions imposed pursuant to the Highlands Act.

Policy 7B9: The allocation of HDCs to individual Sending Zone parcels shall be adjusted according to the location of the parcel within the Highlands Region, the comparative development potential of the parcel, and whether a Sending Zone landowner chooses to exercise an applicable Highlands Act exemption.

GOAL 7C: CREATION OF A HIGHLANDS DEVELOPMENT CREDIT BANK.

Policy 7C1: A Highlands Development Credit Bank shall be created and become operational as soon as possible.

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Policy 7C2: The Highlands Development Credit Bank shall be authorized to serve and shall serve as a region-wide information clearinghouse.

Policy 7C3: The Highlands Development Credit Bank shall be authorized to buy and sell HDCs.

Policy 7C4: The Highlands Development Credit Bank shall be authorized to serve as the official records keeper of the Highlands TDR Program, including recording and tracking all HDC transactions and use.

Policy 7C5: The Highlands Development Credit Bank shall be authorized to enter into any agreement which promotes the transfer and use of HDCs, provided that the substance of the agreement is not in conflict with any express provision of the Highlands Act or the State Transfer of Development Rights Act (N.J.S.A. 40:55D-137 et seq.).

Policy 7C6: The Highlands Development Credit Bank should establish a program for the purchase of HDCs as soon as possible.

Policy 7C7: The Highlands Development Credit Bank should seek to provide an opportunity for Sending Zone landowners to sell their HDCs in advance of the establishment of Receiving Zones.

Objective 7C7a: Funding for the purchase of HDCs prior to the establishment of Receiving Zones pursuant to municipal Plan Conformance.

Objective 7C7b: A purchase of HDCs program which gives priority to landowners who can demonstrate unique and extenuating financial circumstances as a direct result of the Highlands Act.

Policy 7C8: The Highlands Development Credit Bank shall monitor real estate values throughout the Highlands region and shall submit an annual report to the Highlands Council, including a recommendation with regard to the minimum value of a HDC.

Policy 7C9: To secure sufficient capitalization for operation of the Highlands Development Credit Bank.

GOAL 7D: ESTABLISHMENT OF SUFFICIENT HIGHLANDS RECEIVING ZONES TO CREATE A POSITIVE MARKET FOR TDR CREDITS.

Policy 7D1: Lands located within the Existing Community Zone or Highlands Redevelopment Areas may be designated as Receiving Zones by a Highlands municipality upon approval by the Highlands Council, provided that such Receiving Zones are consistent with the RMP.

Policy 7D2: Lands located within the Conservation Zone may be designated as Receiving Zones by a Highlands municipality upon approval of the Highlands Council, provided that such Receiving Zones are consistent with the RMP and the development does not conflict with the maintenance of viable agriculture.

Policy 7D3: A municipality located within a Highlands County, but not within the Highlands Region, may also designate Receiving Zones to participate in the Highlands TDR Program upon approval of the Highlands Council, provided that the municipality seeks endorsement by the State Planning Commission as required by subsection l of section 13 of the Highlands Act.

Policy 7D4: A Highlands municipality in the Planning Area may seek designation of Receiving Zones and participate in the Highlands TDR Program without regard to whether such municipality is in conformance with the Highlands RMP upon approval of the Highlands Council, provided that the municipality seeks endorsement by the State Planning Commission as required by the State Transfer of Development Rights Act.

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Policy 7D5: The Highlands Council shall provide technical assistance to Highlands municipalities in support of designating appropriate Receiving Zones.

Policy 7D6: The Highlands Council shall provide Highlands municipalities with financial grants-in-aid for planning and feasibility studies in support of designating appropriate Receiving Zones.

Policy 7D7: A Highlands municipality may limit the use of HDCs to intra-municipal transfers in designated Receiving Zones if the Highlands Council determines that the goals, policies and objectives of the Highlands RMP will be best served by a determination of conformance, notwithstanding the limited use of HDCs within the municipality.

Policy 7D8: The Highlands Council shall seek legislation that permits municipalities outside of the seven Highlands counties to designate Receiving Zones that may accept HDCs.

GOAL 7E: MAXIMIZATION OF THE TRANSFER AND USE OF HDCS.

Policy 7E1: The Highlands Council shall develop and implement incentive mechanisms to create the highest possible demand for HDCs.

Policy 7E2: The Highlands Council shall identify ways and means by which the highest possible value of HDCs can be achieved.

Policy 7E3: The Highlands Council shall promote the availability of capital funding for municipal infrastructure which is required to support additional human development achieved using HDCs.

Policy 7E4: The Highlands Council shall seek and support priority allocation of available State and federal funding for Highlands municipalities which have established TDR Receiving Zones for HDCs.

Policy 7E5: The Highlands Council shall seek legislation that requires the payment of a fee to the Highlands Development Credit Bank for any increases in density or intensity of development beyond the allowable development yield as of the effective date of the act, where that development relies on a potable water source located in the Highlands Region and the development is situated in any municipality other than a conforming municipality.

Policy 7E6: After the date of Highlands Council determination of conformance, any municipal action that results in a density increase or change of use with more intense development will require a project applicant to secure HDCs prior to municipal approval.

GOAL 7F: ENSURE THAT HIGHLANDS ACT EXEMPTIONS ARE PROPERLY ISSUED AND MONITORED.

Policy 7F1: To provide guidance on the activities that are exempt from the provisions of the Highlands Act, the RMP, any rules or regulations adopted by NJDEP pursuant to the Highlands Act, and any amendments to a master plan, development regulations, or other regulations adopted by a local government unit specifically to conform them with the RMP.

Objective 7F1a: Provide a guidance document that outlines the process for obtaining approval of the 17 exemptions available under the Highlands Act. These detailed exemptions are summarized below:

1. Construction of a single family dwelling for one's own use or family use on a lot owned by the individual on August 10, 2004.
2. Construction of a single family dwelling on a lot in existence on August 10, 2007 provided that the construction does not result in the ultimate disturbance of one acre or more of land or a cumulative increase in impervious surface by one-quarter acre or more.

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3. Developments that received certain municipal approval and specific NJDEP Approvals on or before March 29, 2004 where construction beyond site preparation commenced on or before August 10, 2007.
4. Reconstruction of buildings or structures within 125% of the footprint of the lawfully existing impervious surfaces provided there is not an increase in impervious surface by one-quarter acre or more (not applicable to conversion of an agricultural or horticultural building or structure to a non-agricultural or non-horticultural use).
5. Improvement to a single family dwelling in existence on August 10, 2004, including but not limited to an addition, garage, shed, driveway, porch, deck, patio, swimming pool, or septic system.
6. Expansion of or improvement to any existing places of worship, schools, or hospitals for non-residential purposes.
7. Activities conducted pursuant to approved woodland and forest management plans.
8. Construction or extension of trails (with non-impervious surfaces) on public or private lands.
9. Public transportation or infrastructure systems – Routine maintenance and operations, rehabilitation, preservation, reconstruction, or repair, consistent with the goals and purposes of the Act without any new through-capacity travel lanes.
10. Transportation safety projects by a State entity or local government unit, provided that the activity does not result in the construction of any new through-capacity travel lanes.
11. Public utility lines, rights of way, or systems – Routine maintenance and operations, rehabilitation, preservation, reconstruction, repair, or upgrade by a public utility, consistent with the goals and purposes of the Act.
12. Reactivation of rail lines and rail beds existing on August 10, 2004.
13. Public infrastructure projects approved by public referendum prior to January 1, 2005 or a capital project approved by public referendum prior to January 1, 2005.
14. Mining or quarrying on any mine, mine site, or construction materials facility existing on June 7, 2004.
15. Site Remediation of contaminated sites.
16. Military lands existing on August 10, 2004.
17. Affordable Housing pursuant to Settlements in Planning Area 1 or Planning Area 2.

Objective 7F1b: Provide guidance that the Highlands Act exemptions apply for the entire Highlands Region including both the Preservation Area and the Planning Area.

Objective 7F1c: Preservation Area exemptions issued by the NJDEP in accordance with N.J.A.C. 7:38, shall be required, where appropriate, prior to consideration of a local development review or a Highlands Project Review. Guidance shall specify the exceptions where a review may proceed absent an exemption determination from the NJDEP.

Objective 7F1d: Planning Area exemptions, issued by the Highlands Council, shall be required, where appropriate, prior to consideration of a local development review or a Highlands Project Review. Guidance shall specify the exceptions where a review may proceed absent such an exemption determination. Applications for exemptions submitted to the Highlands Council shall be based upon the application requirements exemptions codified in N.J.A.C. 7:38.

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Objective 7F1e: Projects in the Planning Area that nearly qualify for exemptions #3 and #17, which are limited by the Highlands Act to major Highlands development in the Preservation Area, should be given priority consideration for a waiver where appropriate.

Objective 7F1f: Activities authorized under exemptions #9 and #11, which require a finding that the activity is consistent with the goals and purposes of the Highlands Act, shall be based upon a finding that the proposed activities are consistent with Highlands Act, the RMP, any rules or regulations adopted by the NJDEP pursuant to the Highlands Act, 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.

Objective 7F1g: Highlands municipalities and counties may not issue Highlands Act exemption determinations. Delegation of Highlands Act exemption determinations, in the Highlands Region, may be authorized for conforming municipalities and counties through specific delegation approvals issued by the Highlands Council and the NJDEP.

Objective 7F1h: Ensure that Highlands Act exemption determinations are limited to the activities specifically authorized under the Act. While the construction activities of a single family dwelling may be authorized under an exemption, water conservation requirements, septic maintenance requirements, or any other activities related to the use of that dwelling are not exempt.

Policy 7F2: To monitor and track activities which are, or may be, deemed to be exempt from the provisions of the Highlands Act.

Objective 7F2a: Develop and maintain an inventory of the exemptions that have been formally issued and map the land disturbance authorized under these exemptions.

Objective 7F2b: Develop and maintain an inventory of the exemptions that may be exercised and map the potential land disturbance that may occur under these exemptions.

GOAL 7G: 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.

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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.

GOAL 7H: MITIGATION TO THE MAXIMUM EXTENT POSSIBLE OF THE IMPACTS OF EXEMPT DEVELOPMENT ON THE ECOSYSTEM INTEGRITY OF THE HIGHLANDS REGION THROUGH USE OF INNOVATIVE LAND USE PROGRAMS.

Policy 7H1: To encourage municipalities with jurisdiction over lands which are entitled to any exemption(s) under Section 30 of the Highlands Act to establish voluntary, incentive-based land use programs to avoid adverse impacts to the Highlands ecosystem or to the fiscal integrity of the municipality.

Objective 7H1a: Establish an intra-municipal TDR Program for landowners whose property is entitled to an exemption under Section 30 of the Highlands Act and who voluntarily apply for and receive transferable development rights under a municipal TDR program.

Objective 7H1b: Establish municipal clustering programs which allow for the clustering of development rights from willing landowners whose property is entitled to an exemption under the Highlands Act, for both contiguous and non-contiguous properties, so as to minimize the impact of such exempted development on the ecological integrity of the Highlands Region.

Policy 7H2: To provide an opportunity for landowners whose property is entitled to an exemption under the Highlands Act to voluntarily apply for and receive an allocation of Highlands Development Credits in lieu of developing on-site under the provisions of Section 30.

PART 8 Sustainable Economic Development

The Highlands Act establishes natural resource protection as the fundamental goal for the Highlands Region but recognizes that development, redevelopment, and economic growth in certain appropriate areas of the Region are in the best interests of all citizens of the State, providing innumerable social, cultural, and economic benefits and opportunities. The long term integrity of the Highlands Region requires economic and fiscal vitality as well as the preservation of natural resources. Economic development can be broadly described as any effort or activity that improves general economic health. It may involve a range of activities aimed at increasing the local tax base and providing employment opportunities, and efforts can range in scale from local to regional.

In the Highlands Region, economic development plans can be developed for municipalities that chose to grow and those that chose not to; individual economic development activities will vary based on local conditions but all will contribute to achieving regional economic vitality. In some areas, the sustainable use of the natural resources of the Region, such as agriculture, forestry, and tourism, will remain a critical local economic initiative, while other areas may be well suited for technology-dependent enterprises ranging from home occupations to corporate headquarters. Main street or downtown revitalization and business retention efforts may be the primary economic initiative for some municipalities. Economic development in the Highlands Region must be sustainable over time, and will depend heavily on renewal and improvement of economic output without continual development of undeveloped lands. As such, strategies must consider land development and non-development approaches to achieving economic development goals.

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GOAL 8A: SUSTAINABLE ECONOMIC DEVELOPMENT IN THE HIGHLANDS REGION.

Policy 8A1: To maintain and expand the existing job and economic base by promoting appropriate, sustainable, and environmentally compatible economic development throughout the Highlands Region.

Objective 8A1a: Highlands Economic Development Program to identify and promote sustainable economic development opportunities in the Highlands Region, in a manner that integrates economic, social, and environmental factors.

Objective 8A1b: Serve as an advocate and technical resource for Highlands economic development initiatives in work with municipalities, counties, regional agencies, and the private sector to promote sustainable economic development in the Highlands Region.

Objective 8A1c: Public private partnerships to support economic development initiatives.

Objective 8A1d: Positive fiscal impact to local governments and the Region through appropriate economic development initiatives.

Policy 8A2: To preserve the high quality of life in the Highlands Region through economic planning and implementation of the RMP.

Policy 8A3: To identify and pursue state and federal programs that offer financial and/or technical assistance for sustainable economic development in the Highlands Region.

Policy 8A4: To serve as a clearinghouse for economic development opportunities in the Highlands Region.

Objective 8A4a: Identification, marketing, and support of Highlands Region areas including brownfield sites that may be appropriate for local and regional economic development initiatives.

Objective 8A4b: A long-term Economic Tracking Program as a means to continually assess the long-term economic progress of the Region through specified economic indicators in order to establish Highlands trends and to support municipal economic plan elements.

Policy 8A5: To advocate for appropriate public investment in the Highlands Region through the strategic location of public facilities and institutions that will spur sustainable and appropriate economic activity.

Policy 8A6: To require that conforming municipalities develop an economic plan element that provides strategies for achieving sustainable and appropriate economic development consistent with local desire and identifies any development, redevelopment, and brownfield opportunities.

Objective 8A6a: Coordinate with municipalities and counties as local and regional strategies are developed to improve the tax base and to create jobs and economic opportunities consistent with the policies and objectives of the RMP.

GOAL 8B: PROTECTION AND ENHANCEMENT OF THE AGRICULTURE INDUSTRY IN THE HIGHLANDS REGION.

Policy 8B1: To enhance the sustainable economic benefits of agricultural practices in the Highlands Region.

Objective 8B1a: Coordinate activities with the NJDA and other entities to maximize the potential benefits of existing programs that sustain agriculture.

Policy 8B2: To protect and enhance the agricultural economy in the Highlands Region.

Objective 8B2a: Coordinate activities with the NJDA and other entities to ensure a sustainable agricultural industry and agricultural operations that improve farm incomes and the long-term viability of farming.

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GOAL 8C: EXPANSION OF COMPATIBLE AND SUSTAINABLE TOURISM AND RECREATION WITHIN THE HIGHLANDS REGION.

Policy 8C1: To promote recreation and tourism based economic initiatives, which derive economic benefit from sustainable use of the natural resources of the Highlands Region.

Objective 8C1a: Identification of specific economic development initiatives which would encourage and promote eco-, agri- and heritage tourism in the Highlands Region.

Policy 8C2: To enhance the Region's tourism infrastructure in order to increase visitors to the Highlands Region.

Objective 8C2a: Encourage the development of overnight accommodations and other services to support recreation and tourism attractions in the Highlands Region, where appropriate and permitted by Land Use Capability Zone.

Objective 8C2b: Encourage transit-oriented recreation and tourism connections.

Policy 8C3: To promote public and private tourism attractions in the Highlands Region through the marketing of natural resources, the arts, cultural, historic, scenic, agricultural, and recreational resources, urban amenities, and accommodations.

Policy 8C4: To support local, state, and federal eco-, agri- and heritage tourism programs.

Policy 8C5: To advocate for state and federal funding of recreation and tourism initiatives in the Highlands Region.

GOAL 8D: EXPANSION OF INNOVATIVE TECHNOLOGY AND ENTREPRENEURIAL BUSINESSES INCLUDING HOME OFFICE, ENERGY EFFICIENCY, AND RESOURCE CONSERVATION ENTERPRISES IN THE HIGHLANDS REGION.

Policy 8D1: To ensure opportunities for home office, entrepreneurial, and other small business activities in the Highlands Region.

Objective 8D1a: Municipal and county development regulations which permit the establishment of home occupations, participation in small business incubator programs, and use of innovative technologies that promote compact design, native species landscaping, Low Impact Development, energy efficiency and resource conservation in support of comprehensive RMP goals.

GOAL 8E: ESTIMATE AND TRACK OVER TIME THE COSTS AND BENEFITS ASSOCIATED WITH PLAN IMPLEMENTATION AND THE PROTECTION OF CRITICAL RESOURCES OF THE HIGHLANDS REGION.

Policy 8E1: The Cash Flow Timetable shall track the revenues and costs associated with the Highlands Protection Fund, with the exception of the Pinelands Property Tax Stabilization Aid category. Four components that shall be tracked in the Cash Flow Timetable include:

- Planning Grants Program (including Incentive Planning Aid and RMP Compliance Aid);
- Highlands Property Tax Stabilization Aid;
- State Aid for Local Government Units (Watershed Moratorium Offset Aid and other State Aid funding); and
- Land Acquisition Tracking.

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PART 9 Air Quality

The Highlands Act recognizes that the Highlands Region includes "exceptional natural resources such as clean air" (Section 2) and the Highlands RMP seeks to establish mechanisms for the protection and enhancement of air quality resources for the Highlands Region that consider the interplay of air quality conditions at local, regional, interstate, and global levels. The RMP policies support the State Global Warming Response Act in reducing the level of greenhouse gas emissions in the state by the year 2020 through the reduction of mobile sources, resource protection and energy efficient practices. The RMP also recognizes the importance of the State Energy Master Plan as a means to plan and evaluate for energy efficiency and greenhouse gas reductions at all levels of government.

GOAL 9A: REDUCTION OF AIR POLLUTION THROUGH USE OF ALTERNATIVE AND EFFICIENT MODES OF TRANSPORTATION AND THE USE OF RENEWABLE ENERGY SOURCES.

Policy 9A1: To encourage capital facility development and redevelopment that leads to attainment of the National Ambient Air Quality Standards (NAAQS).

Policy 9A2: To support continued, consistent and thorough air quality monitoring and assessment programs as a means of evaluating and managing major air toxic point sources that affect the Region.

Policy 9A3: To encourage land use development and redevelopment practices that promote center-based growth and mixed-use development and offer alternative modes of transportation as a means to reduce automobile dependency, vehicle miles traveled, vehicle trip length, and duration, for the reduction of local and regional air pollutants and of carbon dioxide emissions linked to global warming.

Policy 9A4: To encourage and support state and federal air quality monitoring for the Highlands Region and regulatory action to reduce levels of air pollutants including but not limited to: ozone, carbon dioxide, sulfur compounds, volatile organic compounds, methane, and fine particulate matter pollutants in the Highlands Region.

Policy 9A5: To encourage energy efficient design and green building practices in support of regional resource protection and smart growth planning policies.

Objective 9A5a: Encourage development design, as appropriate, to include measures to avoid, limit or mitigate the creation of air pollutants, including but not limited to reduced vehicle emissions, ambient air toxic substances, and hazardous air pollutants as related to development practices and end use activities.

Policy 9A6: To support State and federal initiatives that will reduce air pollution emanating from power plants, incinerators and landfills within and affecting the Highlands Region and particularly in Warren County due to out-of-State power plant air pollution.

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PART 10 Local Participation

The Highlands Act calls for local participation in the development and implementation of the RMP. Plan Conformance is voluntary in the Planning Area and mandatory in the Preservation Area and in both cases, municipal participation will be critical to ensure that the RMP achieves its goals. In addition, the programs and policies of the RMP must be effectively coordinated and must remain effective over time. Cooperation between other governmental and nongovernmental interests will also be important.

GOAL 10A: MAXIMIZE MUNICIPAL PARTICIPATION TO ENSURE THE REGIONAL MASTER PLAN ACHIEVES ITS LONG TERM GOALS OF PROTECTING, ENHANCING AND RESTORING HIGHLANDS RESOURCES AND MAINTAINING A SUSTAINABLE ECONOMY IN THE HIGHLANDS REGION.

Policy 10A1: To ensure that programs and policies are effectively coordinated to promote the purpose and provisions of the RMP, through efforts with all levels of government, including local, county, regional, State, and federal agencies.

Policy 10A2: To ensure sufficient local participation in the development of the RMP and on-going work of the Highlands Council.

Objective 10A2a: Engage stakeholder groups and individuals in public participation opportunities that provide meaningful input in the Highland Council planning process.

Policy 10A3: To ensure maximum RMP Conformance by municipalities and counties to achieve the highest level of protection for all important natural systems and resources of the Highlands.

Objective 10A3a: Provide benefits and incentives to municipalities and counties that conform to the RMP.

Policy 10A4: To ensure the long term success of the RMP, evaluate regional conditions, identify new or emerging issues, and develop future RMP priorities through the tracking and monitoring of regional indicators.

Objective 10A4a: Prepare a Highlands RMP Monitoring Review Report triennially to ensure that the RMP is meeting its goals.

Objective 10A4b: Prepare a fiscal impact assessment that measures the overall economic health of the Region as compared to the rest of the State, to be included in the Highlands RMP Monitoring Review Report.

Policy 10A5: To ensure the long term success of the RMP, evaluate regional conditions, identify new or emerging issues, and develop future RMP priorities through the tracking and monitoring of regional indicators.

Objective 10A5a: Prepare a Highlands RMP Monitoring Review Report at least every six years to ensure that the RMP is meeting its goals.

Objective 10A5b: Prepare a fiscal impact assessment that measures the overall economic health of the Region as compared to the rest of the State, to be included in the Highlands RMP Monitoring Review Report.

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NOTES:

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PROGRAMS

- **PART 1**
  Natural Resources
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  Water Resources and Water Utilities
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The Goals, Policies, and Objectives of Chapter 4 provide detailed statements of intent and standards for the Regional Master Plan (RMP). This chapter provides an overview of how these concepts will be implemented through programs – approaches to specific environmental or planning issues that respond to the relevant Goals, Policies, and Objectives for that topic. The programs include an issue overview, a program summary, a discussion of relevant Policies and Objectives that are addressed by the program, and a series of program components that, in combination, encompass the program itself. Many Goals, Policies, and Objectives are addressed by programs in this chapter. Others are addressed in Chapter 6 on Implementation, such as Plan Conformance, Consistency and Coordination, Highlands Project Review, and RMP Improvements. It is important to note that the provisions of Chapter 5 (Programs) and Chapter 6 (Implementation) shall be governed by the specific standards set forth in the Goals, Policies, and Objectives.

The programs in this chapter are grouped according to the parts of the Goals, Policies, and Objectives, as follows:

GOALS, POLICIES, AND OBJECTIVES PART	REGIONAL MASTER PLAN PROGRAM
Natural Resources	• Forest Resource Management and Sustainability • Restoration of Streams and Riparian Areas • Critical Habitat Conservation and Management • Land Preservation • Carbonate Rock (Karst) Topography • Lake Management Areas
Water Resources and Water Utilities	• Highlands Restoration: Water Deficits • The Efficient Use of Water • Water Quality Restoration • Water and Wastewater Utilities • Wastewater System Maintenance
Agricultural Resources	• Agricultural Sustainability, Viability, and Stewardship
Historic, Cultural, Archaeological, and Scenic Resources	• Historic Resource Protection • Scenic Resource Protection
Transportation	• Transportation Safety and Mobility
Future Land Use	• Land Use Capability Analysis • Cluster/Conservation Design Development • Redevelopment • Smart Growth and Community Design Handbook • Housing and Community Facilities • Low Impact Development
Landowner Equity	• Highlands Transfer of Development Rights (TDR)
Sustainable Economic Development	• Sustainable Regional Economy
Air Quality	• Air Quality

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The programs in this chapter are implemented through a combination of municipal and county Plan Conformance, local development review, Highlands Project Review, and non-regulatory activities implemented by the Highlands Council and a variety of other governmental and non-governmental entities. The programs address all major steps necessary to achieve the Goals, Policies, and Objectives of the RMP for the specific topic. Steps may include , but not be limited to, development of guidance documents, creation of resource management plans, adoption of municipal ordinances or county development review rules, adoption of Highlands Project Review procedures, interagency and intergovernmental coordination, and development of funding sources. The Highlands Council will monitor implementation of these steps in various ways, including the Plan Conformance and RMP Monitoring Programs discussed in Chapter 6. Municipalities and counties may engage in program activities that exceed the requirements discussed in Chapter 4 and this chapter. They also, under a number of RMP policies and Programs, may develop approaches that achieve at least equal protection of Highlands resources but use modified standards, where those standards are approved by the Highlands Council through overarching plans, such as Water Use and Conservation Plans, Critical Habitat Conservation and Management Plans, and Stream Corridor Protection/Restoration Plans. In each case, the intent is to provide better protection and restoration of Highlands resources. Absent the approval of such plans, the RMP policies and objectives are applied without modification unless a Highlands Act waiver is approved.

PART 1 Natural Resources

FOREST RESOURCE MANAGEMENT AND SUSTAINABILITY

Issue Overview

Dwight Hiscano

The Highlands Region contains some of the most important forests in the state. These forests are vitally important to every element of the Highlands Region, including the natural and the built environment. Forests provide essential ecosystem functions, including the recharge of aquifers that supply Highlands Region wells and surface water filtration, both of which are important to protecting essential drinking water supplies for the Highlands Region and for the State as a whole. Forests protect stream water quality, supporting wild trout and healthy aquatic communities. Forests sequester atmospheric carbon and contribute to combating global warming. Forests serve as habitat for plants and animals, and as forests constitute a majority of the Region's critical habitat, are critically important to the maintenance of biodiversity in one of the most populous states in the nation. Highlands forests offer important recreational resources and contribute to the Region's unique scenic value. In addition, when managed for sustainable use, forests can be as source of renewable wood products. Forests are a defining visible and functional feature of the Highlands Region.

The RMP acknowledges the Highlands Act exemption under N.J.S.A. 13:20-28.a(7) for activity conducted in accordance with an approved woodland management plan, pursuant to Section 3 of P.L.1964, c.48 (C.54:4-23.3) or the normal harvesting of forest products

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Issue Overview (continued)	in accordance with a Forest Management Plan approved by the State Forester. Beyond exempt forestry activities, the Highlands Act mandates that the RMP provide for the protection of the Region's forests. Current forest management practices, incentives and regulations are evaluated that will support the continuation and enhancement of science based management of the forest resource for long term societal benefits for future generations. Despite being the most densely populated state in the nation, forests cover 45% of New Jersey's land mass and 54% of the total of land area (approximately 464,200 acres) of the Highlands Region.
Program Summary	This program seeks to balance the need to protect forest resources, biodiversity, and water resources with the economic use and continued sustainable management of forests. The program seeks to promote active stewardship to provide/optimize the multiple benefits and services forests provide including clean air, clean water, soil protection, recreation, wildlife habitat, and forest products. The foundation has been set for continued scientific management and long term sustainability of forest resources in the Highlands Region.
RMP Policies and Objectives Addressed	**Policy 1A2.** To limit human development in the Forest Resource Area in the Preservation Area in order to protect and enhance forest resources, forest ecosystem integrity, Critical Habitat, and the quantity and quality of water resources. ***Objective 1A2c.*** To prohibit through local development review and Highlands Project Review the deforestation of lands within the Forest Resource Area of the Preservation Area for human development except where authorized as an exemption by the Highlands Act, or is an agricultural or horticultural development as defined at N.J.S.A. 13:20-31 and meets the requirement of that provision of the Highlands Act, or if qualifying as a major Highlands Development, the project must, at a minimum, be in conformance with the New Jersey Department of Environmental Protection (NJDEP) Preservation Area Rules at N.J.A.C. 7:38-3.9. ***Objective 1B1a.*** Implementation of resource management programs to encourage sustainable forest management, restoration and stewardship practices on public and private lands, including ecological and watershed protection measures such as those provided through New Jersey Forest Stewardship Program. ***Objective 1B1b.*** Implementation of programs which encourage owners and operators of farmland with woodlots to obtain approved Forest Management Plans or Forest Stewardship Plans that conform to the protection standards of this Plan. ***Objective 1B1c.*** Implementation of programs which encourage the inclusion of appropriate rare, threatened, and endangered wildlife and habitat protection and enhancement, and appropriate wildlife and invasive species management techniques in Forest Management Plans or in New Jersey Forest Stewardship Program's Forest Stewardship Plans adopted by any federal, state, county, or municipal government entity. ***Objective 1B1e.*** To encourage private lands management of forests for non-commodity benefits (e.g., wildlife habitat, water quality, recreation) or traditional commodities (e.g., timber and wood products) in accordance with the New Jersey Forest Stewardship Program's Forest Stewardship Plan. **Policy 1B2.** To limit, through local development review and Highlands Project Review, human development of forests to low impact residential development in the Protection Zone and the Conservation Zone in the Planning Area. ***Objective 1B2a.*** Implementation through Plan Conformance of regulations which limit permissible uses within forested lands in High and Moderate Integrity Forest Subwatersheds of the Planning Area to 1) maintenance of pre-existing uses, 2) the removal of woody vegetation from forested lands subject to an approved Forest Management Plan, 3) forest stewardship practices in accordance with a New Jersey Forest Stewardship Program's Forest Stewardship Plan, or 4) low impact residential development that utilizes Low Impact Development Best Management Practices and an approved forest mitigation plan.

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RMP Policies and Objectives Addressed (continued)	***Objective 1B2b.*** Implementation of regulations through Plan Conformance which allow for redevelopment of previously developed areas and for other compatible uses that minimize losses to forested lands within Low Integrity Forest Subwatersheds in accordance with an approved forest mitigation plan or Low Impact Development Best Management Practices. **Policy 1B3.** To limit through local development review and Highlands Project Review deforestation in the Forest Resource Area and forested lands within High Integrity Forest Subwatersheds within the Existing Community Zone (ECZ) to maximum extent practicable. ***Objective 1B3a.*** Implementation through Plan Conformance of regulations which limit the clearing of trees in conjunction with human development to circumstances where the clearing will not diminish the integrity of forest resources. ***Objective 1B3b.*** Implementation of resource management programs to avoid loss of forests such as Low Impact Development Best Management Practices and mitigation and/or restoration. **Policy 1B5.** To ensure that forest resources are protected on a site specific basis during local development review and Highlands Project Review. **Policy 1B6.** To encourage conformance with standards and criteria for sustainable forestry activities in order to conserve and enhance the Forest Resource Areas and forested lands within High Integrity Forest Subwatersheds within the Highlands Region. **Policy 1B8.** To encourage the development of forest management strategies and programs that improve the ecological health, water resource benefits, and scenic quality of Highlands forests. **Policy 1C1.** To require that conforming municipalities and counties address the protection of forested portions of Forest Resource Areas and High Integrity Forest Subwatersheds in their master plans and development regulations. ***Objective 1C1a.*** Maintain forest cover to the maximum extent possible in the Highlands Region in the natural as well as the built environment. **Policy 1C2.** To provide technical guidelines and procedures to assist municipalities and counties in the development of forest protection, mitigation, and community forestry plans for inclusion in municipal and county master plans and development regulations. ***Objective 1C2a.*** Provide technical guidelines and procedures for development and implementation of Low Impact Development Best Management Practices to protect, enhance, and restore forest resources. ***Objective 1C2b.*** Provide guidelines for the development of community forestry plans by municipalities for inclusion in municipal master plans. ***Objective 1C2c.*** Provide a model municipal tree ordinance for municipalities that allows active forest management with a Forest Management Plan approved by the State Forester. ***Objective 1C2d.*** Support incentives and funding opportunities and provide criteria for demonstrating and maintaining intrinsic forest values and societal benefits through various means including but not limited to the use of stewardship benefit credits. ***Objective 1C2e.*** Provide technical guidelines establishing forest clearing thresholds and mitigation requirements for inclusion in municipal development regulations. **Policy 1C3.** To require that conforming municipalities adopt a tree clearing ordinance consistent with an approved community forestry plan under the New Jersey Forest Service Community Forestry Program as part of the municipal master plan and local development regulations. ***Objective 1C3a.*** Standardize municipal tree protection ordinances throughout the Highlands Region to the extent feasible.

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Forest Sustainability	For long term sustainability of the forest resource in the Highlands there must be proactive management of deer populations, non-native invasive species, and reductions in the rate of forest fragmentation. • Criteria and indicators are needed to measure the sustainability of the forest resource. Data needs to be collected to assess long term sustainability. • Incentives must be developed for invasive species control and management of white tailed deer populations. • Low impact development standards must be adopted to prevent further fragmentation of forest habitats. Valuation methods are needed for carbon sequestration, invasive species control, and management activities tied to forest health improvement and the intrinsic societal values of forests including water quality protection.
Provide a Model Municipal Tree Ordinance	A model tree protection ordinance that provides protection of water resources, maintain forest cover, and regulate forest loss associated with land use change, while exempting forest management activities conducted, under a forest management plan approved by the State Forester and in conformance with New Jersey's Best Management Practices, will be provided by the Highlands Council. This ordinance will provide consistency in municipal regulation across the Region. The following standards should apply: • Municipalities should adopt an ordinance which meets the intent of the Highlands RMP as far as exempting forest management activities conducted under a forest management plan approved by the State Forester. • Ordinances should be consistent, to the extent possible, to provide equal protection of the resource throughout the Region. • Ordinances should include methods to protect trees and forest cover during construction.
Provide Guidance for Community Forestry Plans for Highlands	Community Forestry Plans are used to maintain and improve forest cover in developed areas. Increased urban forest cover will improve stormwater retention, water quality, air quality, community character, and quality of life for residents of Highlands communities. They will be encouraged for municipalities during Plan Conformance. Grants are currently available from the New Jersey Forest Service to fund a portion of costs for these Plans. Many Highlands municipalities are operating under tree deficits where they are removing more trees than are planted. In many communities the Community Forest resource is nearing the end of its life expectancy and replacement trees have not been planted in advance in anticipation of mass loss of the resource. Community Forestry Plans are adopted as components of Municipal Master Plans and address portions of these plans.
Provide Guidance for Forest Conservation and Mitigation Plans	Forest Conservation and Mitigation Plan guidance would be provided by the Highlands Council and distributed to all municipalities for use in the site plan review process. • Forest Conservation Plans would be completed to protect existing trees on development and redevelopment sites to maintain the maximum forest cover long term. • Forest Mitigation Plans would be developed for all areas from which forests are cleared resulting in an alteration in land use (deforestation). Mitigation banks (planting focus areas) can be designated by municipalities and monitored by the Council.

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Provide Guidance for Forest Stewardship Plans for Preserved Lands	Guidance for Forest Stewardship Plans should be provided for and their use encouraged for all preserved lands and for private lands within the Highlands. Preserved lands include non-profit, municipal, county, and State owned lands. Stewardship of these lands will provide and optimize the multiple benefits and services forests provide including clean air, clean water, soil protection, recreation, wildlife habitat, and forest products. A partial cost-share reimbursement is available for non-profits through the New Jersey Forest Service Forest Stewardship Program. Additional funding sources for implementation should be developed.

RESTORATION OF STREAMS AND RIPARIAN AREAS

Issue Overview

Nathan McLean

Streams transport floodwater, stormwater, and suspended materials; support aquatic ecosystems, protect fish and wildlife habitat; and provide recreation opportunities and aesthetic beauty. Riparian areas moderate fluctuations in water temperature, help maintain ground water recharge and stream base flow, stabilize stream banks, and provide flood storage areas. During high flow or overland runoff events, riparian areas reduce erosion and sediment loads to surface water and remove excess nutrients and contaminants from flood water. Riparian areas also provide habitat for a variety of wildlife and support terrestrial and aquatic food webs through deposition of woody debris.

Stream and riparian area quality and function are influenced by intensity and type of land use. Anthropogenic disturbance to these systems disrupt the transport, storage, and quality of water that is critical to ecological functions. Land use change, increased impervious surfaces, and riparian vegetation removal decrease infiltration capacity within riparian areas, increase overland storm or flood water runoff, erode stream banks, alter stream profile, degrade water quality, alter stream flow regime, and damage aquatic fish and benthic communities.

The Highland Act requires that the RMP protect, restore, and enhance the Region's waters. To meet this goal, several RMP policies and objectives address the requirement for preventing disturbance to high quality systems, and for restoring the Region's streams and riparian areas.

Program Summary

The Highlands RMP focuses on several areas of action to address the need to protect, restore, and enhance Highlands Open Waters and Riparian Areas. The Stream Restoration Program will promote consistent standards for the protection, restoration, and acquisition of important waters and riparian areas of the Highlands Region. The program will include guidance for the restoration of degraded streams and riparian areas.

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RMP Policies and Objectives Addressed

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 1D4i. Develop through Plan Conformance and implement stream corridor or subwatershed-based Stream Corridor Protection/Restoration Plans which shall include Steps 1, 2, and 3, and may include Steps 4 and 5:

1. Identify areas where existing development, land disturbances, or land uses are within Highlands Open Waters buffers have removed or substantially impaired natural vegetation communities, and have significantly reduced or impaired the functional values of Highlands Open Waters buffers. For purposes of this Objective when considering land for conversion to non-agricultural land uses, historic or current agricultural land uses shall not be considered "land improvements," "development," "land disturbances," or "land uses";
2. Identify and require opportunities for restoration of areas identified in Step 1 as part of mitigation requirements under a Highlands Act waiver or Objectives 1D4e and 1D4f, and public or non-governmental restoration/stabilization projects;
3. Identify the extent of stream corridor features that are critical to supporting the functions of a healthy Highlands Open Waters buffer and that extend beyond the buffers required by Objectives 1D4b and 1D4c. The 300 foot buffer in these areas may be expanded to be most protective of these features which may include, but are not limited to, Critical Habitat, pollutant source areas identified through scientific techniques, and steep slopes;
4. Where Highlands Open Waters buffers include areas identified in Step 1, regarding Category 2 surface waters in the Planning Area only, the Stream Corridor Protection/Restoration Plan may identify where, based on scientific analysis of site-specific conditions (e.g., topography, vegetation cover type, habitat, soil type, upstream land uses and pollution inputs, width of floodplain, rate, and volume of run-off), a buffer of less than the full 300 feet (but including the undisturbed buffer area at a minimum) is sufficient to maintain or improve the protection of Highlands Open Waters and Riparian Areas. The plan must identify alternative buffers that provide functional buffer values at least equivalent to existing conditions and are no less than 150 feet or no less than the extent allowed in State or municipal regulation (including Objectives 1D4b and 1D4c), whichever is greater. Further, the plan shall include a functional value assessment to ensure that there is no net loss in the overall functional value of the subwatershed's stream buffers. Buffers established through this process shall be determined based on site conditions rather than fixed distances, reflecting findings of the scientific analysis, and shall be used in the site design and development review process regarding determinations of restoration, continued use, or increased use of the disturbed buffer area. Buffer averaging for the purpose of accommodating development proposals is deemed not to meet the requirements of this provision; and

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RMP Policies and Objectives Addressed (continued)	5. Where a proposed Highlands Redevelopment Area would not meet, in full, Objectives 1D4b through 1D4h but affects an undisturbed buffer area determined to not be necessary for the protection of the functional values for Highlands Open Waters buffer (as determined through scientific analysis of site-specific conditions), modification of the undisturbed buffer may be allowed to no less than the extent allowed in State or municipal regulation. However the Council shall first determine that there is no alternative to the proposed reduction of the buffer, and require a showing of no impact to the functional values of the buffer and provision of alternative approaches to enhancing or protecting Highlands Open Waters and resources of the buffer area. Restoration or enhancement of buffer functional values shall be provided on-site or within the same stream reach to achieve a net improvement of existing buffer functional values. **Policy 1D5.** Protect the integrity of the Riparian Areas through the application of RMP standards during local development review and Highlands Project Review. ***Objective 1D5b.*** Limit disturbance of existing natural vegetation or increases in impervious area within High and Moderate Integrity Riparian Areas in any Land Use Capability Zone to the minimum alteration feasible in areas beyond Highlands Open Waters buffer requirements; protect the water quality of adjacent Highlands Open Waters; and maintain or restore habitat value of the Riparian Area. ***Objective 1D5c.*** Prohibit modifications to Riparian Areas in the Protection Zone except where a waiver is approved by NJDEP or the Highlands Council under Policy 7G1 or 7G2. ***Objective 1D5d.*** Restrict modifications to Riparian Areas in the ECZ, other than those addressed by Objective 1D5b, that would alter or be detrimental to the water quality and habitat value of a Riparian Area. ***Objective 1D5g.*** Require identification and implementation of opportunities where the restoration and enhancement of previously impaired Riparian Areas are feasible and appropriate as mitigation to any allowable modification to Riparian Area requirements. ***Objective 1D6b.*** Consistent with Policy 1H1, identify opportunities for and implement Riparian Area restoration practices on public and private lands that give priority to ecological and watershed protection measures.
Stream and Riparian Functional Assessment	The Highlands Council guidance for assessing stream corridor and riparian area condition will provide a comprehensive methodology for conducting a stream and riparian functional assessment to value or "score" specific stream reaches and riparian areas. Assessed stream and riparian area value or "score" will dictate both the prioritization for preservation of lands draining to high quality streams and riparian areas and the extent and type of restoration required for impaired streams and riparian areas. The functional value assessment will provide a measurable and scientific approach to ensure improvements to one or more of the functional values that stream buffers provide while ensuring that there is no net loss of any of the functional elements resulting from a proposed restoration project. The use of a functional value assessment provides a tool to set measureable management objectives for restoration and enhancement of impaired Highlands Open Waters and Riparian Areas.
Stream Corridor Protection/ Restoration Plans	The Highlands Council will develop technical guidance for use by municipalities during Plan Conformance to develop and implement municipality-wide stream corridor or subwatershed-based Stream Corridor Protection/Restoration Plans. Two key element of these plans shall be: 1) to identify areas where existing development, disturbances, or land uses are within Highlands Open Waters buffers and have reduced or impaired the functional values of those buffers; and 2) to identify opportunities for restoration of those areas as part of mitigation requirements under a Highlands Act waiver or RMP Objectives 1D4e and 1D4f, and public or non-governmental remedial projects.

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Development of Stream Restoration Guidance	The Highlands Council will develop technical guidance for use by municipalities for the restoration of impaired streams. Highlands Council guidance for stream restoration may include goals and design guidelines for restoration of channel profile, flood control, sediment control, improved drainage, bank stabilization, improvement of aquatic habitat, and restoration of the ecological functions and processes of a stream and its adjacent riparian area and floodplain. Existing guidance manuals, *Stream Restoration Design*, developed by the Natural Resources Conservation Service (NRCS), and *Stream Corridor Restoration*, developed by the Federal Interagency Stream Corridor Restoration Working Group, will be used as two examples for the Council's work.
Development of Riparian Restoration Guidance	The Highlands Council will develop or adapt technical guidance for use by municipalities for the restoration of impaired riparian areas. Highlands Council guidance for stream restoration may include goals and design guidelines for restoration of riparian vegetation, improvement of riparian wildlife habitat, increased riparian buffer width, reduction of impervious surface coverage, and restoration of the ecological functions and processes of a riparian area with its adjacent stream and upland terrestrial habitat. *Stream Corridor Restoration*, developed by the Federal Interagency Stream Corridor Restoration Working Group will be used as one example for the Council's work.
Implementation of Stream and Riparian Area Restoration Projects	The Highlands Council will encourage restoration of streams and riparian areas by public and private landowners, government agencies, non-profit organizations and other interested parties wherever feasible. Opportunities for restoration include, but are not limited to: • Redevelopment projects in areas containing previously degraded streams and riparian areas; • Transportation projects where restoration of previously degraded streams and riparian areas can be cost-effectively incorporated into the capital project; • Implementation of Watershed Restoration Plans approved by the NJDEP; and • Park development capital projects, where restoration of prior damage can be cost-effectively incorporated into the capital project.

CRITICAL HABITAT CONSERVATION AND MANAGEMENT

Issue Overview

Mike Anderson

Biodiversity is the variety of plant species, animal species, and all other organisms found in a particular environment and is a critical indicator of ecological viability. The protection of habitats that are critical to maintaining biodiversity contributes to the protection of rare, threatened, and endangered plant and animal species of the Highlands Region.

It is important that Highlands Region critical habitat be protected and, where disturbed, be restored in both quality and function. The Highland Act provides for the protection of the Region's critical habitat for plants and animals. To meet this goal of the Act, several RMP policies and objectives address the requirement for protecting this resource element of the Highlands Region ecosystem.

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Program Summary	The RMP focuses on several areas of action to address the need to protect critical habitat. The *Critical Habitat Conservation and Management Program* will promote consistent standards for the protection, restoration, and acquisition of the three categories of critical habitat in the Highlands Region: 1) Critical Wildlife Habitat (habitat for rare, threatened, and endangered species); 2) Significant Natural Areas (regionally significant ecological communities); and 3) NJDEP-certified vernal pools (confined, ephemeral wet depressions that support distinctive [and often endangered] species that are specially adapted to periodic extremes in water pool levels).
RMP Policies and Objectives Addressed	**Policy 1F2.** To prohibit through Plan Conformance, local development review and Highlands Project Review the direct impact of new human development or expansion or increased intensity of existing development within Critical Habitat. **Policy 1F3.** To assign land within Critical Habitat a high priority for fee simple and/or easement acquisition with periodic monitoring of easement restrictions protecting Critical Habitat, species, and ecological communities from any changes in land use or management practices that would impair these resources. **Policy 1F4.** To promote the restoration and enhancement of impaired lands in Critical Habitat. **Policy 1F5.** To establish a Habitat Conservation and Management Program, including minimum performance standards and criteria for the protection, enhancement, and restoration of lands within Critical Habitat. ***Objective 1F5a.*** Implement the Habitat Conservation and Management Program through a Critical Habitat Conservation and Management Plan to include performance standards to be required through local development review and Highlands Project Review. ***Objective 1F5b.*** Establish performance standards such that all development shall employ Low Impact Development Best Management Practices to, in this order: 1) avoid the disturbance of Critical Habitat, 2) minimize impacts to Critical Habitat, and 3) mitigate all adverse modification to Critical Habitat so that there is no net loss of habitat value. Habitat value is determined by quantity (e.g., acreage), quality (e.g., core forest vs. edge forest), type (e.g., scrub-shrub), and function (e.g., winter hibernacula for timber rattlesnakes). The mitigation requirement of no net loss of habitat value shall ensure that all four elements are accounted for and included in the mitigation design. Mitigation must meet the habitat and life-cycle requirements of the specific impacted species. ***Objective 1F5c.*** Establish performance standards that include a requirement and criteria for mitigation of disturbed Critical Habitat. Mitigation shall be required for all adverse modification to Critical Habitat so that there is no net loss of habitat value based on the criteria in Objectives 1F5a and 1F5b. ***Objective 1F5d.*** Establish performance standards for the enhancement or restoration of historically disturbed Critical Habitat. ***Objective 1F5e.*** The Critical Habitat Conservation and Management Plan shall include a GIS or map-series Critical Habitat Overlay District for inclusion in municipal master plans to identify Critical Habitat that highlights: • Habitat in need of protection from fragmentation and other anthropogenic impacts; • Habitat critical to maintaining wildlife and plant populations; and • Habitat that serves other essential ecosystem functions, including, but not limited to, carbon sequestration and ground water recharge. ***Objective 1F5f.*** The Critical Habitat Conservation and Management Plan shall include guidelines for a municipal habitat stewardship program, including, but not limited to prevention of habitat fragmentation through open space preservation and corporate, non-profit, and community involvement in creating, protecting, and restoring habitat.

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RMP Policies and Objectives Addressed (continued)

Policy 1F6. To require that applications for any local development review and Highlands Project Review for Critical Habitat be subject to minimum standards and criteria outlined in the Habitat Conservation and Management Plan.

Objective 1F6a. Prohibit direct impacts from new development or expansion or increased intensity of existing development that will jeopardize the continued existence of, or result in the likelihood of the destruction or adverse modification of Critical Habitat, except as permitted through the issuance of a waiver under Policy 7G1 or 7G2.

Objective 1F6b. Prohibit indirect impacts from activity that is off-site, adjacent to, or within Critical Habitat that will jeopardize the continued existence of, or result in the likelihood of the destruction or adverse modification of Critical Habitat, except as permitted through the issuance of a waiver under Policy 7G1 or 7G2.

Objective 1F6c. Waiver applications under Policy 7G2 for local development in a municipality with a Council-approved Critical Habitat Conservation and Management Plan shall be subject to the minimum standards and criteria for waiver provisions as set forth in the plan, to the maximum extent practicable.

Objective 1F6d. Waiver applications under Policy 7G2 for development in a municipality without a Council-approved Critical Habitat Conservation and Management Plan shall be subject to the Low Impact Development Best Management Practices required in Objective 1F5b.

Objective 1F6e. A vernal pools protection buffer may be reduced only if an applicant can demonstrate, to the satisfaction of the Highlands Council in coordination with NJDEP's Endangered and Nongame Species Program, that the reduction is the minimum feasible and that:

- In an undisturbed wetland, documented and field-determined vernal pool-breeding wildlife require a smaller protective buffer, as documented in scientific literature; or
- Existing land uses present a significant, insurmountable and permanent barrier to the migration or viability of vernal pool-breeding wildlife that is infeasible to mitigate.

Requirements for demonstrating the above criteria shall be included in the Critical Habitat Conservation and Management Plan.

Objective 1F6f. A Critical Wildlife Habitat area or Significant Natural Area delineation may be modified if an applicant can demonstrate, to the satisfaction of the Highlands Council in coordination with NJDEP's Endangered and Nongame Species Program or Natural Heritage Program, that:

- The nature of the site is such that it does not provide habitat for species of concern;
- The species of concern are not present on the site during any critical part of their life cycle, do not depend upon the site for food, shelter or breeding, and the habitat on the site is either unsuitable or not critical to species' recovery in the Region; or
- Existing land uses present a human, natural or development barrier to the use of the site by species of concern.

Requirements for demonstrating the above criteria shall be included in the Critical Habitat Conservation and Management Plan.

Policy 1F7. To require through local development review and Highlands Project Review that projects qualifying as major Highlands Developments, affecting or potentially affecting Critical Habitat in the Preservation Area, comply with the NJDEP Preservation Area Rules at N.J.A.C. 7:38-3.11 and with the minimum standards and criteria outlined in the Critical Habitat Conservation and Management Plan. All projects in the Preservation Area that are not major Highlands Developments shall comply with Policies 1F1 through 1F6.

Policy 1F8. To establish standards and procedures, in coordination with the NJDEP's Endangered and Nongame Species Program or Natural Heritage Program, for the identification of lands where it is necessary that Critical Wildlife Habitat, Significant Natural Areas, or vernal pool buffers be expanded in order to protect an individual species or ecological community in the event that it is determined that a larger area is required to protect the functional integrity of the habitat.

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RMP Policies and Objectives Addressed (continued)	**Policy 1F9.** To establish standards and criteria for the identification of critical habitat features in coordination with NJDEP's Endangered and Nongame Species Program or Natural Heritage Program. **Policy 1G1.** To require that conforming municipalities and counties identify Critical Habitat and management programs in their master plans and development regulations. **Policy 1G2.** To require that conforming municipalities and counties include approved Habitat Conservation and Management Plans in master plans and development regulations.
Development of Municipal Conservation and Management Overlay District Ordinance	To protect the Highlands Region critical habitat, the Highlands Council will develop or adapt a conservation and management overlay district ordinance for use by municipalities for inclusion in municipal master plans. The purpose of the overlay district ordinance is to identify critical habitat within each municipality, highlighting: habitat in need of protection from fragmentation and other anthropogenic impacts; habitat critical to maintaining wildlife and plant populations; and habitat that serves other essential ecosystem functions such as carbon sequestration and ground water recharge.
Development of Critical Habitat Conservation and Management Guidance	The Highlands Council will develop a Critical Habitat Conservation and Management Plan Guidance document to be used by municipalities to incorporate standards and criteria for protection, conservation and management of Critical Habitat into municipal master plans. Highlands Council guidance for habitat conservation and management will include, but not be limited to: 1) requirements to avoid Critical Habitat unless allowed by a waiver based on the Highlands Act or for projects that are in conformance with the Critical Habitat Conservation and Management Plan; 2) Low Impact Development Best Management Practices for such development designed to, in order of preference: a) avoid disturbance of Critical Habitat, b) minimize impacts, and c) mitigate adverse modification to Critical Habitat; 3) performance and design standards for direct and indirect impacts from development within or adjacent to Critical Habitat; 4) mitigation standards for no net loss of Critical Habitat; 5) methods for achieving restoration of the ecological functions and processes of impaired or disturbed Critical Habitat; 6) procedures for modifications to vernal pool boundaries; 7) procedures for modifications to Critical Wildlife Area and Significant Natural Areas; 8) prevention of habitat fragmentation through open space preservation; 9) strategies for securing corporate, non-profit, and community involvement in creating, protecting, and restoring habitat.
Ensuring Implementation of Critical Habitat Conservation and Management	Where a development project affecting Critical Habitat is proposed, a conforming municipality will require implementation of habitat conservation and management practices as a condition of local approval.
Implementation of Critical Habitat Conservation, Restoration and Management Projects	The Highlands Council will encourage critical habitat conservation and management by public and private landowners, government agencies, non-profit organizations and other interested parties wherever feasible. Opportunities for conservation, restoration and management include, but are not limited to: • Redevelopment projects in areas containing previously degraded habitat; • Stewardship projects for undeveloped land on large corporate campuses; • Park development capital projects, where restoration of prior damage can be cost-effectively incorporated into the capital project; and • Mitigation projects or other activities included as components of Natural Resources Damage Assessment settlements.

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LAND PRESERVATION AND STEWARDSHIP

Issue Overview

Nathan McLean

Public and private investment in land preservation over the years has protected nearly a third of the Highlands Region as perpetual open space. Maintaining the land in a natural condition is necessary to preserve ecosystem integrity and protect drinking water supplies. The Highlands Act contemplates preservation of additional open space resources in order to protect and enhance ecosystem function, protect drinking water resources, and preserve natural and recreational lands.

The Highlands Region contains some of the most important forests in the state. These forests are vitally important to every element of the Highlands Region, including the natural and the built environment. Forests provide essential ecosystem functions, including the recharge of aquifers that supply Highlands Region wells and surface water filtration, both of which are important to protecting essential drinking water supplies for the Highlands Region and for the state as a whole. Forests protect stream water quality, supporting wild trout and healthy aquatic communities. Forests sequester atmospheric carbon and contribute to combating global warming. Forests serve as habitat for plants and animals, and as forests constitute a majority of the Region's critical habitat, are critically important to the maintenance of biodiversity in one of the most populous states in the nation. The designation of National Wildlife Refuges and New Jersey Wildlife Management Areas as the Wildlife Management Sub-Zone is a recognition of the importance such areas have. When managed for sustainable use, forests can be as source of renewable wood products. Forests are a defining visible and functional feature of the Highlands and constitute a majority of critical habitat in the Region.

Agriculture is another important part of the essential character of the Highlands Region's culture, landscape, and economy. It provides important economic benefits to the Highlands Region in the form of agricultural production and agri-tourism, provides food to area residents using less energy than would be required to import produce from other regions, and helps maintain the Highland's rural character.

Programs specifically addressing Agriculture, Forestry, and Historic, Cultural, Archaeological, and Scenic resources as economic landscapes are outlined in the *Sustainable Agriculture Program, the Forest Resource Management and Sustainability Program*, and the *Historic, Cultural, Archaeological, and Scenic Program*. This program addresses land preservation in the Highlands Region.

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Program Summary	One of the fundamental aspects of the Highlands Act is the emphasis on land preservation to ensure that public funds and other resources are focused on protection of critical Highlands resources. In order to accomplish this purpose, the case for land preservation and critical issues surrounding preservation must be addressed by the Highlands Council. The Council must create the criteria for the identification of critical lands, the priorities for land preservation, implementation strategies for land preservation and stewardship, and a process to ensure that sufficient financial and institutional resources are available for land preservation and stewardship. Successful land preservation requires four basic elements—targeting of land acquisition priorities based on a sound rationale, buyers with funding or other incentives, sellers willing to accept a buyer's offer, and stewardship of the acquired open space. (Management of working farms and forests are addressed in the *Sustainable Agriculture Program and Forest Resource Management and Sustainability Program.*) Additionally, a federal, State, and county interagency working group will aid in coordinating land acquisition activities, identification of high priority lands, stewardship initiatives, and funding needs.
RMP Policies and Objectives Addressed	**Policy 1A1.** To meet the goal for the Preservation Area to "preserve extensive and, to the maximum extent possible, contiguous areas of land in its natural state," and to "protect the natural, scenic, and other resources of the Highlands Region, including but not limited to contiguous forests." **Policy 1A2.** To limit human development in the Forest Resource Area in the Preservation Area in order to protect and enhance forest resources, forest ecosystem integrity, Critical Habitat and the quantity and quality of water resources. ***Objective 1A2b.*** Implementation of regulations through Plan Conformance which limit permissible uses within the Forest Resource Area to maintenance of pre-existing uses and restoration of impaired forest areas; relief from strict adherence to these standards shall be permitted only upon approval of a forest mitigation plan and, for a major Highlands Development, approval of a Highlands Preservation Area Approval (HPAA) by the NJDEP. ***Objective 1A2c.*** To prohibit through local development review and Highlands Project Review the deforestation of lands within the Forest Resource Area of the Preservation Area for human development except where authorized as an exemption by the Highlands Act, or is an agricultural or horticultural development as defined at N.J.S.A. 13:20-31 and meets the requirement of that provision of the Highlands Act, or if qualifying as a major Highlands Development, the project must, at a minimum, be in conformance with the New Jersey Department of Environmental Protection (NJDEP) Preservation Area Rules at N.J.A.C. 7:38-3.9. **Policy 1A3.** To promote the priority use of available funding to acquire forested lands within the Forest Resource Area. **Policy 1A4.** To assign land within the Forest Resource Area a high priority for fee simple and easement acquisition. **Policy 1H1.** To identify and maintain an inventory of private and public open space land holdings and conservation easements in the Highlands Region. ***Objective 1H1a.*** Create a coordinated and continually updated open space database that includes preserved lands and stewardship activities by municipal, county, state and federal agencies, non-profit organization, and individuals. **Policy 1H2.** To serve as a regional clearing house for information regarding preservation programs and funding sources for land acquisition, restoration, and enhancement; technical assistance; and long-term stewardship of preserved lands, for public and private organization in order to maximize land preservation efforts in the Highlands Region.

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RMP Policies and Objectives Addressed (continued)

Objective 1H2a. Promote the coordination by appropriate federal, state, county, and municipal land preservation agencies of open space acquisition activities under new or existing programs, including identification of high priority lands for preservation, land stewardship initiatives, and funding needs.

Objective 1H2b. Create a landowner assistance program to provide technical assistance and guidance with regard to land preservation options and the Highlands TDR Program to owners of that which should not be developed in order to protect water resources and environmentally sensitive resources.

Objective 1H2c. Implement or support new, innovative, and alternative methods and programs of land preservation that are deemed most appropriate for the Highlands Region.

Policy 1H3. To develop and maintain a confidential inventory of open space lands and farmland within the Conservation Priority Areas and Agricultural Priority Areas which should be preserved.

Objective 1H3a. Include, within the confidential inventory, those lands which are five and ten year priorities for land acquisition in the Highlands Region in order to determine the cost of implementing the RMP.

Objective 1H3b. Coordinate Highlands Region priority open space preservation and land stewardship activities with the NJDEP Green Acres Program and the State Agriculture Development Committee (SADC) with regard to land acquisition and preservation priorities in the Highlands Region.

Objective 1H3c. Coordinate with the NJDEP, the review of applications for Green Acres diversions for consistency with the RMP.

Policy 1H4. To advocate for the establishment of dedicated sources of funding for the preservation and stewardship of open space lands in the Highlands Region including, but not limited to:

1. Dedicated sources of State revenue to be used for open space preservation in the Highlands Region, such as coordination with the NJDEP Green Acres Program for reauthorization of the Garden State Preservation Trust (GSPT) Fund, including a dedicated fund for the anticipated acquisition needs of the Highlands Region, and enactment of a water user fee.
2. Dedicated sources of State revenue for a reserve fund to capitalize the Highlands Development Credit Bank.
3. An ongoing program to secure significant federal funding in support of land acquisition and stewardship efforts in the Highlands Region including, but not limited to, additional appropriations under the Federal Highlands Conservation Act (HCA).
4. An ongoing program to seek funding for land acquisition and stewardship from unique sources of funding such as gifts, endowments and donations, and federal and state court-imposed fines for natural resource damages.
5. A dedicated source of revenue for the preservation and stewardship of open space through a surcharge on public water supply system rates for any system that directly or indirectly relies on Highlands water resources for more than 5% of their annual needs.
6. A Highlands Conservation Trust to secure monies from alternate sources of funding to assist in land acquisition and stewardship.

Policy 1H5. To encourage municipalities and counties to establish and fund open space acquisition and stewardship programs or to expand existing open space and stewardship programs.

Policy 1H6. To support legislation to extend the dual appraisal methodology used by the GSPT for lands in the Highlands Region beyond the June 30, 2009 expiration date to a minimum of five years beyond the adoption of the RMP.

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RMP Policies and Objectives Addressed (continued)	**Policy 1H7.** To identify and designate a Special Environmental Zone in 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, fee simple acquisition, easement acquisition, transfer of development programs, and development regulations. *Objective 1H7a.* Create and maintain a Special Environmental Zone based upon RMP Conservation Priority Area rank and indicators designed to identify lands with the highest water resource and environmental integrity. *Objective 1H7b.* Adopt and enforce development regulations which prohibit the development of those portions of a parcel of land which are located within a Special Environmental Zone. *Objective 1H7c.* Require through Plan Conformance, local development review, Highlands Project Review, and the NJDEP review under N.J.A.C. 7:38 that development shall not occur within a Special Environmental Zone. In any Special Environmental Zone, any exemption identified through Policy 7F1 or waiver issued under the Highlands Act under Policy 7G1 or 7G2 shall be conditioned upon a determination that the State or local government unit has exhausted all means for the permanent preservation of these lands through use of preservation tools including, but not limited to, fee simple acquisition, easement acquisition, and TDR. *Objective 1H7d.* Prepare and deliver documents to appropriate land preservation/acquisition agencies identifying parcels of land wholly or partially within a Special Environmental Zone. *Objective 1H7e.* Implement the Highlands TDR Program as a means of permanently preserving land in a Special Environmental Zone. **Policy 1J1.** To promote the creation of a Forest Preservation Easement Program for the Highlands Region, eligible for use through the SADC or the Green Acres Program. *Objective 1J1a.* Achieve maximum preservation of working forests through the Forest Preservation Easement Program. **Policy 3A4.** To promote farmland preservation and limit non-agricultural uses within the Agricultural Resource Areas (ARA) and accord priority to the preservation of agricultural lands within Agricultural Priority Areas, through fee simple acquisition, easement acquisition, TDR, and other agricultural land conservation techniques. *Objective 3A5a.* Implement regulations requiring that cluster or conservation design development proposed within an ARA support the preservation of farmland, avoid conflicts with agriculture, maintain and enhance the sustainability and continued viability of the agricultural industry, protect Important Farmland Soils, and meet resource management and protection requirements of the RMP.
Identification of Critical Lands	An important factor in protecting environmentally critical areas is identifying existing preserved lands in the Highlands Region and the resources that are already protected. A total of 273,457 acres of the Highlands Region are primarily preserved open space or preserved farmland in a combination of federal, State, county municipal, nonprofit, and private ownership. These lands represent a diverse catalog of the public and private land and water areas available for recreation or presently protected as open space. Developing a comprehensive open space dataset throughout the Highlands Region is a highly complex undertaking. There are over a dozen agencies and organizations which contribute to open space identification and each has its own structure for recording open space data to meet its business model. Time, accuracy, precision and completeness differences all play a role in making the assemblage a difficult and imprecise product. The Highlands Council has acquired available data and will work with all agencies and organizations who contribute to open space recordkeeping to develop a data standard which meets individual needs of each agency or organization while at the same time improving open space inventories at a regional scale. Figure 5.1 *Conservation Priority Area* displays the relative value of the important critical resources in order to provide a prioritization mechanism for the future land preservation activities in the Highlands Region.

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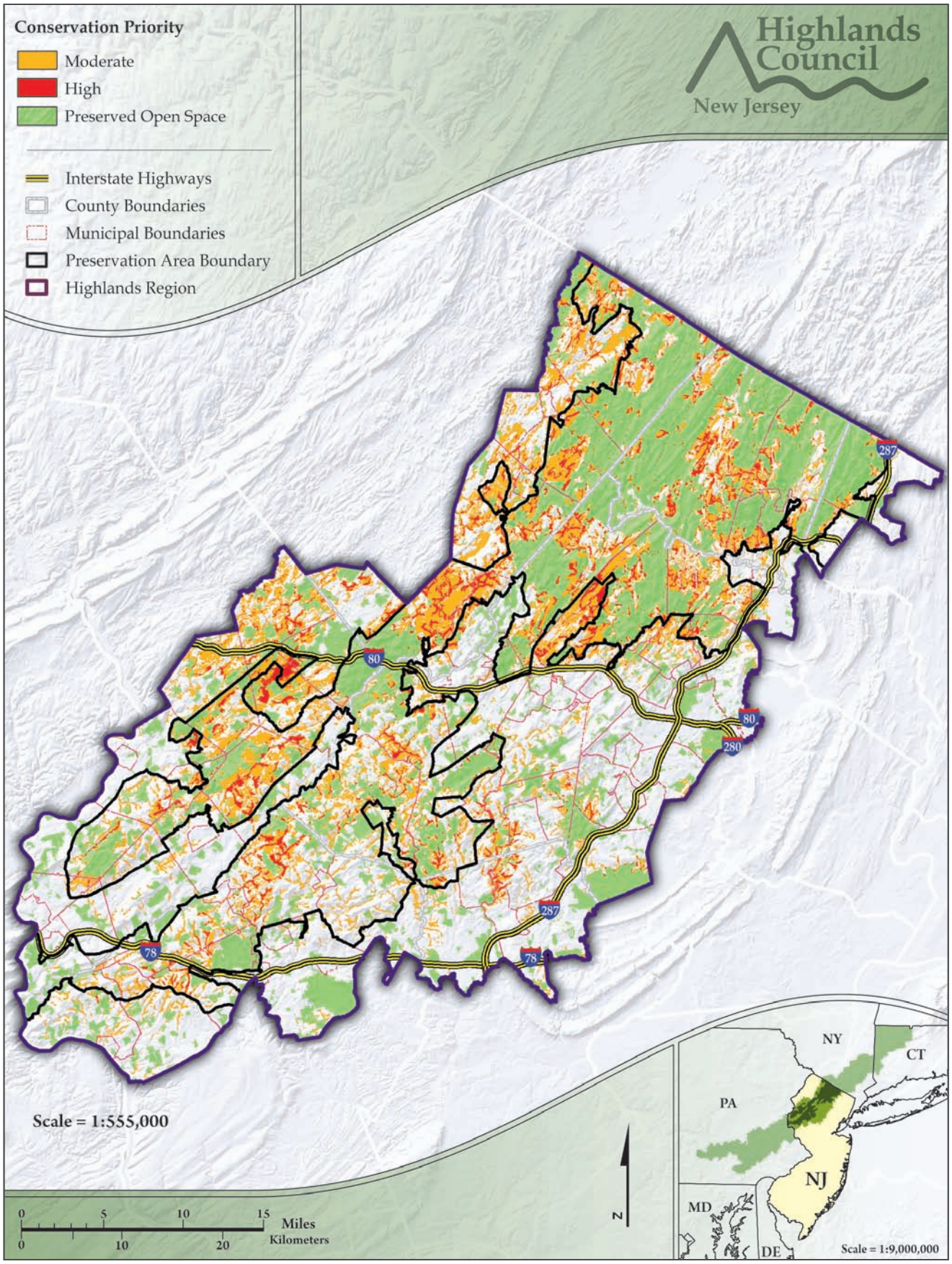
FIGURE 5.1: Conservation Priority Area



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Establishment of Land Preservation Priorities and a Special Environmental Zone	In order to protect the important critical resources of the Highlands Region, preservation of the lands in which these resources are located must be encouraged and funded. However, since funds are not limitless, the resource values of lands must be ranked in terms of their importance and long-term viability. In order to determine high priority areas in the Highlands Region for preservation, the Council used the results of the Resource Assessment to identify and prioritize those lands within the Highlands Region which have the highest water and ecological resource values. These values are based on a combination of indicators using methodologies discussed elsewhere in the RMP which measure the quantity and quality of regional resources such as: watershed conditions, Highlands Open Waters, Riparian Areas, prime ground water recharge areas, forests, Critical Habitat, and steep slopes. Moreover, existing protected lands, showing the historic pattern of land preservation activities in the Region, will be identified and integrated with the ecological resource value to identify priority areas for conservation. This prioritization process will enable the Council to identify a confidential inventory of open space lands and farmland within the *Conservation Priority Area* and the *Agricultural Priority Area* and a Special Environmental Zone in the Preservation Area to respond to Section 12.a of the Highlands Act, which are areas that should not be developed due to their importance for water resource and ecological protection. The Highlands Council used its identification of *Conservation Priority Area* and other data to identify the Special Environmental Zone. Preservation of the Special Environmental Zone will occur through a variety of regulatory and preservation programs, including coordination with the NJDEP regarding both. Figure 5.2 *Special Environmental Zone* displays the approximately 19,000 acres within the Special Environmental Zone as identified by the Highlands Council. The Council has estimated that approximately $136 million will be needed to preserve the entire Special Environmental Zone.
Implementation of Strategies for Land Preservation by Maximizing Current Land Preservation Funding Programs	One of the fundamental aspects of the Highlands Act is the emphasis on land preservation to ensure that public funds and other resources are focused on protection of critical Highlands resources. The *Land Preservation and Stewardship Technical Report* identifies ten federal, State, county, municipal, and nonprofit land preservation funding programs. The Highlands Council will collaborate and coordinate with agencies (in particular the NJDEP Green Acres Program, the NJDA, and SADC), local governments, and local organizations to target and preserve natural and agricultural spaces in support of the RMP.
Determine the Cost of Five and Ten Year Priorities for Land Acquisition Within the Confidential Inventory	In order to derive the cost of lands that are five and ten year priorities for land acquisition, the Highlands Council applied a series of assumptions to those lands within the confidential inventory, which are fully discussed in the *Financial Analysis Technical Report*. The findings of that analysis are as follows: • The cost to preserve the five year agriculture confidential priority list is estimated at $544 million with the ten year priorities costing an additional $109 million, totaling $653 million. • The cost to preserve the five year conservation confidential priority list is estimated at $599 million with the ten year priorities costing an additional $79 million, totaling $678 million. • Total cost of preserving the entire agriculture and conservation priority lists is estimated at approximately $1.3 billion. Total funding allocations from the GSPT from 2000 through 2009 (2007 referendum) to the Green Acres Program account for approximately an average of $132 million (59%) annually. Approximately 9% of the annual funding allocation from Green Acres was attributed to open space preservation in the Highlands Region based on historical acquisition costs. The SADC Program accounts for approximately an average of $84.9 million (38%) annually. Approximately 21% of the annual funding allocation from SADC was attributed to farmland preservation in the Highlands Region based on historical acquisition costs.

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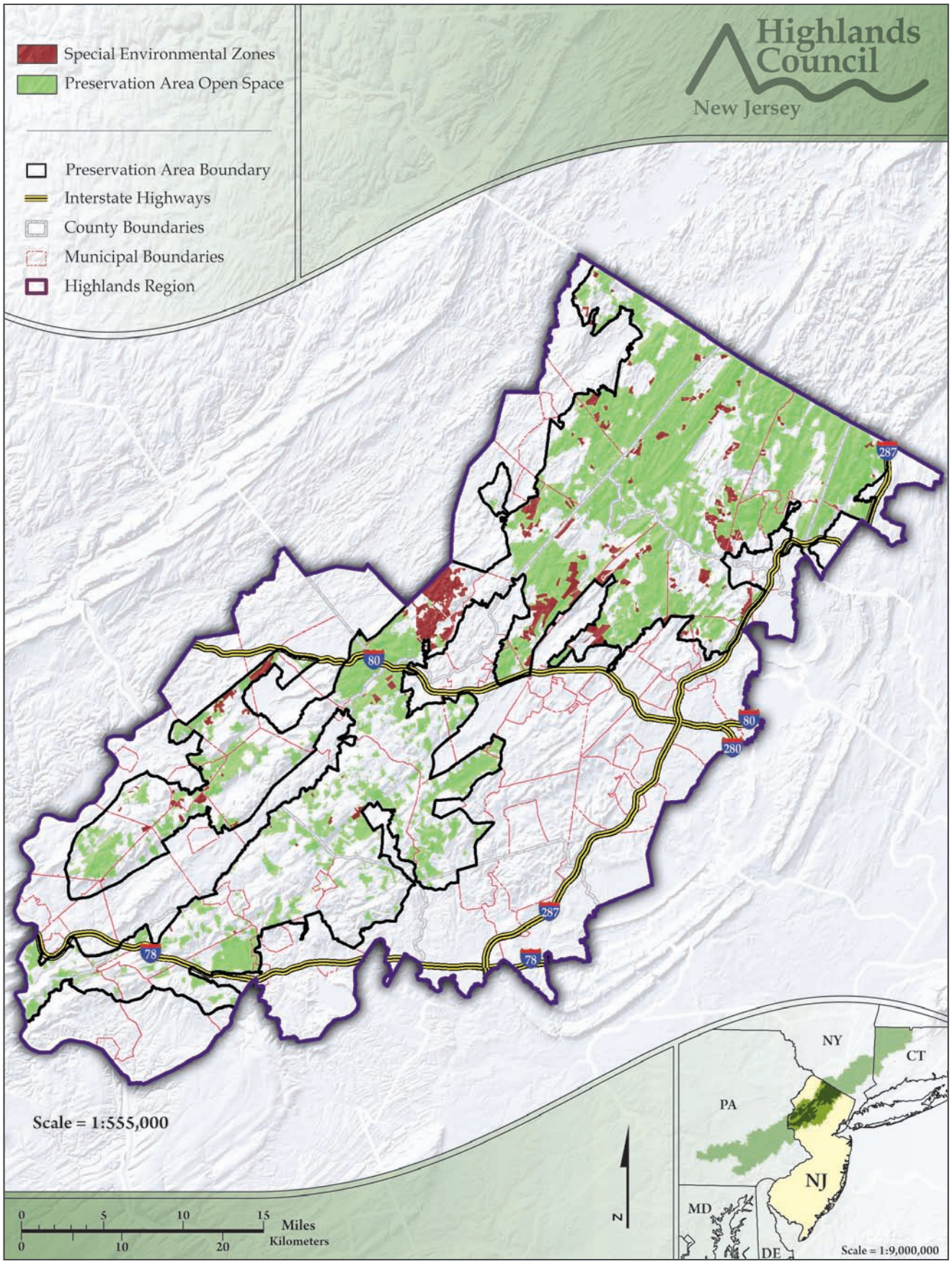
FIGURE 5.2: Special Environmental Zone



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Determine the Cost of 5 and 10 Year Priorities for Land Acquisition Within the Confidential Inventory (continued)	The total acquisition cost for both the Agriculture and Conservation Confidential Priority Lists is approximately $1.3 billion (162,557 acres). The GSPT figures for Green Acres would need to be consistent over the next ten years and enhanced considerably for SADC regarding agriculture to preserve the properties on both Confidential Priority Lists for agriculture and open space. It is important to keep the momentum going in preserving Highlands open rural landscapes, natural areas such as the forests, working farms and crucial watersheds. As a result, conservation acquisitions need to be maintained at least at current levels. Moreover, funds for farmland preservation should be at least doubled in order to prevent the loss of farms to non-agricultural development and achieve a critical mass of preserved farmland to sustain the agriculture industry. It should be noted that the current preserved lands show that the preserved conservation land area (239,694 acres) is over eight times the preserved farmland (33,763 acres) in the Highlands Region, emphasizing the need for increased emphasis on farmland preservation. Preserving land is a challenge in planning and a challenge in public finance. In partnership with the federal, State, county and municipal governments, and non-profit land trusts, preserving open space and farmland can be accomplished.
Implementation of Strategies for Land Stewardship by Maximizing Current Land Stewardship Funding Programs	The *Land Preservation and Stewardship Technical Report* also identifies 23 federal, State, county, municipal, and nonprofit conservation and stewardship funding programs. The Highlands Council will collaborate and coordinate with agencies (in particular the NJDEP Green Acres Program, the NJDA, and SADC), governments, and local organizations to properly manage the preserved natural and agricultural spaces in support of the RMP. This effort is necessary to ensure that the natural resources targeted for acquisition are not later lost through insufficient stewardship.
Establishment of New/Alternative/ Innovative Land Preservation Programs	The Highlands Council will examine and assess for use in the Highlands Region a broad range of options and programs developed by other states to create incentives for landowners to keep their properties in agriculture, working forests, or natural condition, voluntarily. The following are examples of some of the programs for review by the Council. This list is not exhaustive but is the basis for future research. • Conservation Tax Credits; • Installment purchase Options/Agreements; • Property Tax Relief; • Next Generation Farmland Acquisition Program; • Statewide or Regional Local Land Trust/Fee Simple; • Term Conservation Easements; • Land Preservation Tontines; • Agricultural Conservation Pension; and • Mandatory Source Water Protection Programs for Water Purveyors. Additionally, the Highlands Council will collaborate with NJDEP and SADC to develop an adequate method to preserve forested lands through easements to allow them to remain in private ownership and properly maintained through woodland management, in addition to the TDR mechanism established through the Highlands Act. Given the fact that the Highlands Region is over 50% forested and maintaining forest land is important to protecting water quality, a program specifically for purchasing forest land easements should be available. All of these programs are further detailed in the *Land Preservation and Stewardship Technical Report*.

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Establishment of New/Alternative/ Innovative Stewardship Programs	For long-term sustainability of the natural and agriculture resources in the Highlands Region, there must be proactive management of deer populations and other non-native species, reduction in the rate of forest fragmentation and the creation of incentives for landowners to retain property in its natural or agricultural state. The Highlands Council will collaborate with the NJDEP and the NJDA to develop these management techniques and incentives. Additionally, intrinsic values for forests and agriculture (including water quality and water supply protection) should be established to enhance the justification for preservation of such lands.
Development of Cluster/ Conservation Design Development Standards	Not all lands that are considered critical can be preserved because of limited funds and other factors. As a result, techniques and systems that enable limited growth and the preservation of open lands are needed. The Highlands Council will develop Cluster/Conservation Design Development Standards that support the RMP and which take advantage of, but are not limited to, techniques such as clustering and lot-size averaging.
Identification of Willing Sellers	The GSPT legislation requires that direct acquisitions by Green Acres and the State Agricultural Development Committee be from willing sellers. The Highlands Council will develop an outreach and education program for Highlands landowners to help them take advantage of funding opportunities and incentives available for land preservation.
Establishment of a Land Preservation and Stewardship Technical Assistance Program	The Highlands Council will establish a technical assistance program for land preservation and stewardship. For example, 29 Highlands municipalities do not have open space trust funds and the municipalities and counties that do may not be maximizing their potential; the Council can provide assistance in creating or amending their open space trust funds. Additionally, land acquisition by fee purchase or by easement is a major tool to protect natural resources and agricultural lands. Guaranteeing that these resources remain intact and viable is an overarching responsibility of the preserved landowner and easement holder. The Highlands Council will establish a program to aid in the development of federal, State, municipal, nonprofit, and individual stewardship plans which will include, but not be limited to, baseline documentation, monitoring, landowner/user relations, and enforcement.
Establishment of Dedicated Sources of Funding for Land Preservation and Stewardship in the Highlands Region	The Highlands Council supports a dedicated, directed, and stable source of acquisition and stewardship funding. Additionally, the Council supports the reauthorization of the GSPT Fund and efforts to create a statutory funding mechanism for water quality and watershed land acquisitions. In recognition of this support, the Highlands Council will explore, in addition to existing funding sources, securing other stable, dedicated sources of funding such as: • A Highlands water user fee; • A reserve fund to capitalize the Highlands TDR Program; • A program to secure significant federal funding in support of land preservation and stewardship; • A program to seek funding for preservation and stewardship from unique funding sources; • A surcharge on public water supply systems rates that use Highlands water; and • A Highlands Conservation Trust to secure funds from alternate funding sources.

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CARBONATE ROCK (KARST) TOPOGRAPHY	
Issue Overview	The term karst describes a distinctive topography that indicates dissolution of underlying carbonate rocks (such as limestone and dolomite) by surface water or ground water over time. This dissolution process causes surface depressions and the development of such features as sinkholes, sinking streams, enlarged bedrock fractures, caves, and underground streams. Sinking streams and sinkholes direct surface water runoff into karst aquifers with little or no attenuation of any transported contaminants. In addition to ground water concerns, communities in karst areas must contend with safety concerns as sinkholes can have damaging effects to large manmade objects. Understanding the relevant land use concerns in carbonate rock areas can facilitate planning and site design measures that may accommodate economically feasible development while avoiding health, safety and environmental risks. The Carbonate Rock Program seeks to map areas that are underlain by carbonate rocks to define Carbonate Rock Areas in the Highlands Region and to map those subwatersheds that drain directly to Carbonate Rock Areas. Then, through project review, applications for development in Carbonate Rock Areas shall be required to conduct geotechnical investigations to locate any potential karst features, and those in contributing subwatersheds must ensure that their projects will not contaminate ground waters in the Carbonate Rock Areas. Local development reviews and Highlands Project Reviews shall ensure that all potential hazards to public health and safety, structures and ground water quality are fully addressed and mitigated in the construction plans and subsequent approval process, with the maximum emphasis on nonstructural measures, including, but not limited to, avoidance of modifications to the karst features. These project reviews will facilitate the Council's maintenance of a karst feature inventory for the Highlands Region.
Program Summary	Implementation of a Carbonate Rock Program is necessary to address the potential problems that are common to karst areas. The program is not intended to restrict development yields, but rather to provide for the adoption of a site assessment and design process for karst areas that allows applicants, municipalities, counties, and the Council to identify any karst concerns at a site and to incorporate appropriate design features in order to minimize future sinkhole (or other karst feature) formation, damage to development, and the potential for ground water contamination. The Highlands Council has utilized existing New Jersey Geologic Survey (NJGS) and United States Geological Survey (USGS) data to map those areas of the Highlands Region that are underlain by carbonate rocks. These areas collectively are referred to as the Carbonate Rock Area. Since changes in the quantity, quality, and rate of discharge of surface water runoff from upslope lands can impair ground water resources in the Carbonate Rock Area, lands that drain surface water into the Area will be delineated by the Council using Light Detection and Ranging (LiDAR) technology topographic analyses or other topographic data where LiDAR data are not available. Development ordinances will be adopted by municipalities and counties within affected land areas that will serve to protect public health and safety from potential hazards common to karst areas.
RMP Policies and Objectives Addressed	**Policy 1K1.** To map and make readily available to the public areas of the Highlands Region that are underlain by carbonate rocks to define a Carbonate Rock Area. **Policy 1K2.** To identify and delineate through local development review and Highlands Project Review land areas that drain surface water into the Carbonate Rock Area, as changes in the quantity, quality, and rate of discharge of surface water runoff from upslope lands can impair ground water resources in the Carbonate Rock Area. **Policy 1K3.** To establish and maintain inventories of karst features and subwatersheds that drain directly to Carbonate Rock Areas in the Highlands Region.

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RMP Policies and Objectives Addressed (continued)	**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 1K4b.* Applications for site plan or subdivision approval will include a multi-phased geotechnical site investigation (e.g., test borings, test pits) to locate any potential karst features and potential hazards to public health and safety, structures, and ground water quality. *Objective 1K4c.* Local development reviews and Highlands Project Reviews and requirements shall ensure that all potential hazards to public health and safety, structures and ground water quality, including but not limited to concentrated surface water flows that dissolve carbonate rock, are fully addressed and mitigated in the construction plans and subsequent approval process, with the maximum emphasis on nonstructural measures, including, but not limited to, avoidance of modifications to the karst features. *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. *Objective 1K4e.* Highlands Project Reviews and requirements and local development reviews (where applicable) shall prohibit new land uses and facilities that constitute unacceptable risks of discharge due to karst topography where karst features have been identified, including but not limited to: • Underground storage tanks; • Solid waste landfills; • Hazardous waste storage and disposal; and • Hazardous materials storage and handling. *Objective 1K4f.* High priority is given, and state agency coordination will be undertaken, with respect to management and remedial action regarding high risk land uses and facilities where karst features have been identified including, but not limited to: • Known contaminated sites such as Superfund sites, brownfields, and landfills; • Hazardous waste storage, handling, and disposal facilities; • Failing septic systems; and • Existing underground storage tanks.
Identification of Critical Requirements for Development Ordinances	The Highlands Council will identify critical requirements for development ordinances to be adopted by municipalities and counties that have land areas that are within or drain to the Carbonate Rock Area. Given that the best design solution to karst-related problems is dependent upon the actual subsurface conditions below a particular area, the preparation of one-design-fits-all-requirements for the Highlands Region is not appropriate. Performance standards provide flexibility regarding the specific actions to be taken to achieve local goals. Municipalities and counties will adopt development ordinances and performance standards that are consistent with the critical requirements identified by the Council.

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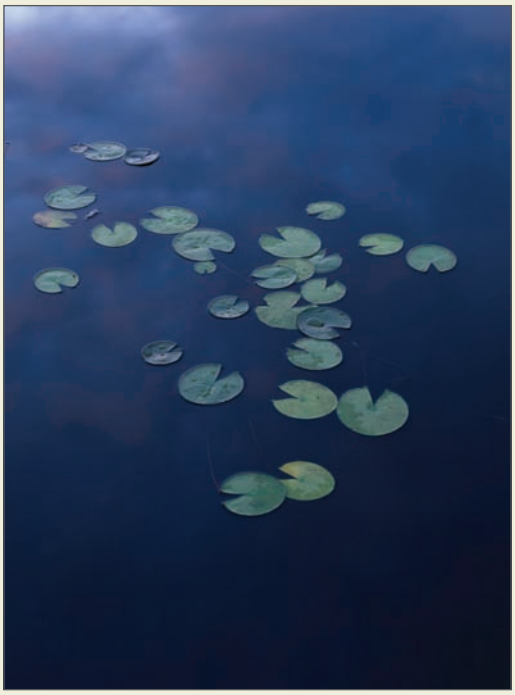
Development of Carbonate Rock Area Guidance Manual	The Highlands Council will develop a technical guidance manual for use by municipalities and counties that have land areas that are within or drain to the Carbonate Rock Area. The guidance will contain requirements for a multi-phased geotechnical study to locate any potential karst features and potential hazards to public health and safety, structures, and ground water quality. The required multi-stage investigation will allow the applicant, as well as the municipality, county and Council, to predict problems and to estimate the associated costs based upon a growing body of knowledge for the area in question. The initial phase of work will be accomplished relatively inexpensively, yet the applicant can develop preliminary costs and evaluate the feasibility of the development. An existing guidance manual, developed by the North Jersey Resource Conservation & Development Council, will be used as one basis for the Council's work. The Council will also provide guidance to municipalities and counties regarding development of strategies with respect to public works projects in lands that are within or drain to the Carbonate Rock Area.
Establishment and Maintenance of Karst Inventory	The Highlands Council, working with municipalities and counties during the site plan and subdivision approval process, will establish and maintain inventories of karst features and subwatersheds that drain directly to Carbonate Rock Areas that are found in the Highlands Region.

LAKE MANAGEMENT AREA

Issue Overview



Dwight Hiscano

The RMP provides for the protection and enhancement of Highlands Lakes and their environs, including Highlands lake communities. Overbuilt, damaged and poorly managed shoreland areas can result in the degradation of water quality, harm to the lake ecosystem, the decrease of natural aesthetic values, and the overall loss of property values for lake communities. Lakes can be harmed by pollutant sources in the watershed area draining to them. Most existing lake communities were built out prior to modern environmental requirements. Some have sewer systems, but many rely on septic systems (or even cesspools) on inadequately sized lots. Studies indicate that nearly every public lake (privately-owned lakes were not evaluated) in the Highlands is experiencing contamination, often including excessive bacteria and nutrients. Many lake communities have been experiencing intensifying land uses as the original buildings are torn down and replaced by larger structures. The Council seeks to identify redevelopment opportunities to improve community character and value, to both protect natural resources and to enhance and restore the quality of lake environments in the Region.

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Issue Overview (continued)	As discussed in Chapter 3 under the Land Use Capability Zone Map section, the Council has developed a Lake Community Sub-Zone. This sub-zone consists of patterns of community development that are within the ECZ within 1,000 feet of lakes. By definition, lakes within this sub-zone are developed or heavily developed lakes. Developed lakes face particular challenges as compared with undeveloped lake areas. They tend to be shallower in locations that receive sediment loadings, they often feature extensively hardscaped shorelines with limited natural vegetation, and they are frequently more eutrophic than undeveloped lakes. Developed lakes tend to receive higher phosphorous loads due to the fact that urban watersheds produce higher unit area phosphorous loads from stormwater, compared to lesser developed watersheds. In addition, most urban watersheds produce significant secondary phosphorous loads from a diverse range of sources including municipal wastewater discharges, failing septic systems, and sewage overflows.
Program Summary	This program seeks to protect, restore and enhance the water quality of Highlands lakes and to protect the unique character of Highlands lake communities. It facilitates land use and water resource planning on the basis of lake management tiers: • **A Shoreland Protection Tier** consisting of an area measured 300 feet or the first public road perpendicular to the shoreline of the lake • **A Water Quality Management Tier** consisting of an area measured 1,000 feet perpendicular from the shoreline of the lake, including the shoreland protection tier; • **A Scenic Resources Tier** consisting of an area measured 300 to 1,000 feet perpendicular from the shoreline of the lake, scaled based upon the view distance from the opposite shoreline, and determined through the size and layout of the lake and the topography of the land area, with wider portions of lakes and greater topographic relief having longer view distances • **A Lake Watershed Tier** consisting of the entire land area draining to the lake. In this Lakes Management program, the Council seeks to stringently protect lakes in the Protection and Conservation Zone from future development and to maintain those lakes in their natural condition. In the already developed lake areas of the Lake Community Sub-Zone, the underlying goal is to protect lake water quality and habitat from impacts resulting from the built environment and to ensure that any redevelopment maintains the character of existing Highlands lake communities. Thus, while the majority of the standards presented herein are stringent standards geared to new development in undeveloped lake areas, there are also standards that are common to both undeveloped and developed lakes (primarily in the Water Quality Management tier), and there are standards that are unique to the Lake Community Sub-Zone that solely address developed lake areas. With respect to these standards and ongoing management issues related to lakes in the Lake Community Sub-Zone, the Highlands Council will coordinate with individual lake commissions and with lake associations where they exist. The program also includes a lake and dam protection and enhancement component and a homeowner's educational brochure and awards program component.
RMP Policies and Objectives Addressed	**Policy 1L1.** To establish a Lake Management Area around all Highlands Region lakes of greater than ten acres size. **Policy 1L2.** To establish tiers of lake management appropriate to management strategies that help protect lake water quality and community value from the impacts of present and future development. ***Objective 1L2a.*** Lake management programs shall use the following management tiers around all Highlands Region lakes of greater than ten acres in size: • A Shoreland Protection Tier consisting of an area measured 300 foot or the first property line perpendicular from the shoreline of the lake; • A Water Quality Management Tier consisting of an area measured 1,000 foot perpendicular from the shoreline of the lake, including the Shoreland Protection Tier;

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RMP Policies and Objectives Addressed (continued)

- A Scenic Resources Tier consisting of an area measured 300 to 1,000 foot perpendicular from the shoreline of the lake, scaled based upon the view distance from the opposite shoreline, and determined through the size and layout of the lake, with wider portions of lakes having longer view distances; and
- A Lake Watershed Tier consisting of the entire land area draining to the lake, through the evaluation of drainage areas using LiDAR topographic analyses or other topographic data where LiDAR data are not available.

Policy 1L3. To establish unique standards (as compared to lakes within the Protection and Conservation Zones) for the Lake Community Sub-Zone within the ECZ within 1,000 feet of lakes, particularly with respect to the Shoreland Protection Tier, to prevent degradation of water quality, harm to lake ecosystems, and promote aesthetic values within the ECZ.

Policy 1L4. To establish and implement management strategies to help protect lake water quality and ecosystem values from the impacts of present and future development for all lakes.

Objective 1L4a. Implementation of standards through Plan Conformance regarding lake ecosystem and water quality in the Shoreland Protection Tier to address direct and proximate impacts upon the lake, including but not limited to shoreline modification and development (including limits to the hardscaping of shorelines using bulkheads, rip-rap, and walls), docks, piers, boathouses, dredging, vegetation removal, and increased impervious cover. Pollutant discharges shall also be addressed, including the potential for contamination from septic systems, cesspools and other wastewater management systems within the tier that are failing or are inadequately designed and constructed. As such systems fail, landowners should be required to provide upgraded treatment (whether on-site or through public or community systems) to minimize pollutant movement to the lake. Standards for the Lake Community Sub-Zone and for the Protection and Conservation Zones may be distinct to the extent necessary to recognize the existence of significant development within the Lake Community Sub-Zone.

Objective 1L4b. Implementation of standards through Plan Conformance regarding land use compatibility and water quality in the Water Quality Management Tier, to prevent or minimize continuous pollutant sources that can contribute pollutants overland or through ground water to the lake from greater distances than the Shoreland Protection Tier.

Objective 1L4c. Implementation of standards through Plan Conformance regarding the protection of visual and scenic resources in the Scenic Resources Tier, including but not limited to requirements for vegetative screening of buildings, building height limitations, and limits on tree and understory removal for reasons other than public health and safety or as the minimum necessary to make reasonable use of the designated building envelope for the parcel proposed for development. Standards for the Lake Community Sub-Zone and for the Protection and Conservation Zones may be distinct to the extent necessary to recognize the existence of significant development within the Lake Community Sub-Zone.

Objective 1L4d. Implementation of lake restoration plans to restore, protect and, where possible, enhance lake water quality through management of pollutant sources in the Lake Watershed Tier, including but not limited to the development, adoption and implementation of TMDLs by the NJDEP pursuant to the Water Quality Management Planning Rules, N.J.A.C. 7:15. Ongoing coordination will be undertaken with the Greenwood Lake and Lake Hopatcong Commissions as well as individual lake associations, as appropriate, regarding lake management issues.

Policy 1L5. To require that conforming municipalities adopt and implement for all lakes the standards applicable to the Shoreland Protection and Water Quality Management Tiers; the standards applicable to the scenic resources tier shall be adopted and implemented for all public lakes (e.g., with shorelines that are not entirely privately-held and managed through a lake association), and for privately-held lakes to the extent feasible under law, recognizing the existence of previously approved lake community development plans.

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RMP Policies and Objectives Addressed (continued)

Objective 1L5a. Shoreland Protection and Water Quality Management Tier requirements shall apply to all new development, regardless of lake ownership.

Objective 1L5b. Scenic Resource Tier requirements shall apply to all lakes with public access and to lakes with no public access that are not entirely managed by a single homeowner or lake community association. For lakes that are privately-held and managed by a single homeowner or lake community association, the scenic resource tier requirements shall be voluntary.

Policy 1L6. To require that conforming municipalities develop and adopt lake restoration plans, with sufficient input from lake community residents and landowners, for each of the municipality's developed lakes that has been identified as water quality impaired, to include watershed delineation, description of point and nonpoint sources of pollution in the watershed, lake monitoring schedules, existing and proposed in-lake management techniques, and recommended watershed best management practices. TMDLs adopted by the NJDEP to address known pollution problems may be used as lake restoration plans. For lakes that are privately-held and managed by a single homeowners or lake community association, the municipality may require that the association share in or assume the costs of developing such plans.

Objective 1L6a. Provide Lake Management Plan guidance to municipalities that includes watershed delineation mapping methodology, point and nonpoint source pollution references, example lake monitoring schedule with monitoring goals and methods, existing successful in-lake management techniques, and best management practices.

Objective 1L6b. Septic systems and cesspools on small lots in close proximity to lakes shall be replaced with upgraded individual treatment systems, communal septic systems or community-based wastewater systems wherever feasible and cost-effective, with the selection of replacement technology to ensure minimal secondary impacts, including potential reductions in net water availability, maximum environmental benefit, and financial viability. Community-based systems should not provide for additional land development capacity except for exempt lots within that existing lake community that are not environmentally constrained, or for areas that are otherwise permitted to have wastewater service under the Goals, Policies and Objectives in Part 2, Subpart D, Sustainable Development and Water Resources.

Policy 1M1. To provide guidance regarding evaluation of and standards for lake character and aesthetics that shall be adopted by municipal ordinance for application to public lakes, or that may be voluntarily adopted by privately-owned lake communities within their by-laws and regulations.

Policy 1M2. To encourage increased public access to publicly-owned lakes, within the lake's carrying capacity and while maintaining the lake character.

Policy 1M3. To discourage or control teardowns that result in altered lake community character, and the potential loss of historic and cultural values, and to encourage community-supported limitations in lot coverage and building height for new construction.

Policy 1M4. To establish and implement performance and development standards through local development review and Highlands Project Review for shoreline uses which achieve compatibility among shoreline activities and nearby neighborhoods.

Policy 1M5. To encourage municipalities to utilize recreational sites as opportunities to educate the public to the ecological value of lake environs.

Policy 1M6. To encourage municipalities to explore appropriate means to provide public recreation at the shoreline and on the water while ensuring retention of opportunities for passive recreation (e.g., natural areas, open space).

Policy 1N1. To develop innovative financing and administrative mechanisms for the maintenance and operation of public and private dams and lakes, where those dams and lakes provide a continuing public or private purpose.

Policy 1N2. To restore appropriate habitats in the lake beds and to prevent, mitigate, or restore downstream habitats from damages due to lake drainage, when dams are allowed to fail or are deliberately breached or removed.

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Shoreland Protection Tier	The Highlands Council will establish standards regarding lake ecosystem and water quality in the shoreland protection tier to address direct and proximate impacts upon the lake. Such standards include, but are not limited to, the following: 1. Alteration of the shorelines shall be limited to the minimum disturbance necessary to provide for water dependent recreational uses such as beaches, docks and boat houses, generally limited to 10% or 25 feet of the shoreline of any parcel proposed for development, but subject to modification in the Lake Community Sub-Zone, to limitations more appropriate to specific lakes. 2. Where shorelines have already been hardscaped with bulkheads, rip-rap, or walls in the Lake Community Sub-Zone, encourage the creation of a vegetated filter strip along the shoreline to attenuate stormwater flow and minimize the potential for shoreline erosion. 3. Where there is little or no wave action, reeds and other wetland species that are below the high water mark shall be preserved or restored. In the Lake Community Sub-Zone, permit and encourage the control and where necessary removal of algae and non-native invasive aquatic weeds that cause nuisance conditions for lake users. 4. Existing shoreland vegetation within 50 feet of the shoreline shall be protected and preserved except for a minimum area permitted, established through municipal development regulations, for water dependent recreational facilities. Limitations should be more stringent for the first 25 feet. Restoration of native vegetation shall be required where development is proposed on property with existing disturbed areas within 25 feet of the shoreline. 5. No new structure other than water dependent recreational facilities shall be constructed within fifty (50) feet of the shoreline. 6. In all zones, the width and length of piers and docks shall be controlled in municipal development regulations to achieve the minimum disturbance of shoreline, shoreline vegetation and wetlands vegetation possible with due consideration to safety, including provisions for piers and docks held in common to reduce the total number of new docks and piers. 7. Boat lifts, where used in any zone, shall be encouraged as a means of providing more light to the waters below and shall elevate boats a minimum of one foot above high water. Development adjacent to Highlands lakes, which are Highlands Open Waters, shall include a protection buffer of 300 feet from the edge of Highlands Open Waters feature, or a lesser buffer if allowed based on RMP policies (see GOAL 1D), and all development shall comply with buffer standards which provide for the protection of Highlands Open Waters. Structures or other land improvements existing within a protection buffer before August 10, 2004 may remain, provided that the area of disturbance is not increased other than through Highlands Act exemptions or waivers.
Water Quality Management Tier	The Highlands Council will establish standards regarding land use compatibility and water quality in the water quality management tier to prevent or reduce continuous pollutant sources that can contribute pollutants overland or through ground water to the lake from greater distances than the shoreland protection tier. Such standards include, but are not limited to, the following: 1. All parcels of land proposed for development shall be improved with landscape or garden elements which retain stormwater. 2. Require for all new development (and encourage for existing development in the Lake Community Sub-Zone), that runoff from roofs, driveways and patios shall be directed into landscape or garden elements which retain and filter stormwater, or to infiltration practices. 3. Green roofs are strongly encouraged in all zones to clean and slow the release of stormwater. 4. To the extent possible, impervious surfaces in all zones should drain away from the shoreline.

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Water Quality Management Tier (continued)

5. Stormwater should be directed to a stormwater management train that cleans and reduces the rate of runoff to the maximum extent possible in all zones.
6. To the maximum extent practicable in all zones the stormwater management train should maximize the use of swales with natural vegetation or constructed wetlands and discharge through a constructed wetland or other channel that maximizes aeration and cleaning of the water.
7. Stormwater improvements shall be designed in accordance with the NJDEP regulations at N.J.A.C. 7:8 or the municipal stormwater management ordinance or regional stormwater management plan adopted as part of an Areawide Water Quality Management Plan (WQMP) where more stringent.
8. Where sufficient land is available in all zones, natural swales, constructed wetlands, and other stormwater facilities shall be used.
9. To the extent possible in all zones, landscape or garden elements which retain stormwater shall be designed so that during larger storms, the water is released primarily through overland sheet flow across a vegetated, naturally landscaped area.
10. The discharge of stormwater shall, wherever feasible in all zones, be through sheet flow which may require the construction of an outlet that disperses the water over a substantial distance at a constant elevation so that water sheet flows over the top.
11. Septic systems for new development within the Lake Management Area must comply with the septic system density requirements, for the particular Land Use Capability Zone, with septic systems no closer to the lake than the Highlands Open Waters Buffer or 150 feet, whichever is greater; clustering shall be permitted where it results in a greater buffer between the lake and the septic systems than would be feasible without clustering.
12. In the Lake Community Sub-Zone, require that septic systems and cesspools on small lots in close proximity to lakes, be replaced with upgraded individual treatment systems, communal septic systems, or community-based wastewater systems wherever feasible and cost-effective, with the selection of replacement technology to ensure minimal secondary environmental impacts, maximum environmental benefit, and financial viability.
13. Where the existing density of septic systems within a Lake Community Sub-Zone is known or strongly suspected to be a significant contributor of lake pollutants, community wastewater treatments shall service parcels of lands within the Lake Community Sub-Zone wherever feasible in order to eliminate pollution of lakes by discharges from septic systems. Community-based systems should not provide for additional land development capacity except for exempt lots within that existing lake community that are not environmentally constrained, or for areas that are otherwise permitted to have wastewater service. The systems must be designed to minimize secondary environmental impacts, including potential reductions in net water availability.

The Highlands Council will work with other State agencies and counties to create a Highlands Storm Water Management Improvement Program comprised of:

- A grant program in support of studies of existing stormwater systems by Highlands communities with regard to existing capacity.
- A Bibliography of stormwater management literature related to retrofitting stormwater management systems to reduce runoff and improve the quality of runoff. The Bibliography shall include information with regard to the use of landscape installation and maintenance to reduce pollutants.
- A Highlands Council awards program in conjunction with Highlands municipalities to encourage land owners to participate in stormwater system remediation.

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Scenic Resources Tier	The Highlands Council will establish standards regarding the protection of visual and scenic resources in the Scenic Resources Tier from development or redevelopment (including redevelopment within the Lake Community Sub-Zone) that include, but are not limited to, the following: 1. Building heights should be limited so that the top of a building does not exceed thirty-five (35) feet except in Designated Centers where a greater height is in keeping with existing community design. 2. All buildings shall be screened from view from a lake by trees and other natural plant material, to the extent practicable. 3. The exteriors of all new or redeveloped buildings shall be finished with materials which are compatible with a natural or historical character of the Highlands Region. 4. New buildings shall be prohibited within areas which are Severely Constrained Slopes and Moderately Constrained Slopes. 5. Clearing of trees should be limited to the minimum area needed for the development of a site. 6. Outdoor lighting should be provided by cut-off fixtures directed away from the shoreline.
Implementation of Lake Restoration Plans	The Highlands Council will encourage municipalities in the Lake Management Area to implement lake restoration plans to restore, protect and, where possible, enhance lake water quality through management of pollutant sources in the lake watershed (see also the *Water Quality Restoration Program*). The plan shall be developed with sufficient input from lake community associations and individual residents. TMDLs adopted by the NJDEP to address known pollution problems may be used as lake restoration plans. The restoration plan will include, but will not be limited to the following elements: 1. Delineation of the lake's watershed; 2. Description of point and nonpoint pollution sources in the watershed; 3. Lake monitoring schedules; 4. In-lake management techniques; and 5. TMDLs adopted by the NJDEP to address known pollution problems.
Lake and Dam Management	The Highlands Council will implement measures to encourage the maintenance of public and private lakes and the restoration of lake beds and downstream areas when lakes are drained. Such measures may include, but will not be limited to the following: 1. Creation of Highlands Financing and Administrative Handbook for dam and lake maintenance and operation addressing creative public and private financing programs as appropriate for the lake or dam ownership; 2. Preparation of a Best Practices Manual for dam and lake maintenance; 3. Preparation of a Best Practices Manual for dam removal, including the protection of downstream resources from the migration of sediments and other pollutants, and the establishment of stable terrestrial or wetland ecosystems in former lake beds; and 4. Provision of grants in aid to establish demonstration model dam and lake programs for publicly owned dams.

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Education and Awards Program	The Highlands Council will develop a Lakes Landscape Handbook and awards program for waterfront restoration and environmentally friendly landscaping. In both the 300-foot and 1,000-foot tiers, landscaping and yard maintenance can make a contribution to improving lake quality. The handbook will focus on how-to material for landowners to illustrate how they can replace lawns and restore beach areas to a natural condition that is attractive and enhances the property value. Having an awards program that recognizes environmentally sensitive restoration will be an incentive for people to undertake these projects and advertise for the program. The Highlands Council will coordinate with the NJDEP, the landscape professional, hardware, and garden centers to promote the use of fertilizers for lawn usage that do not contain phosphorous. Ideally, the sellers will not carry the lawn products that contain phosphorous, thus making unwitting usage very difficult. These sellers can also promote wise waterfront landscaping and maintenance.

PART 2 Water Resources and Water Utilities

HIGHLANDS RESTORATION: WATER DEFICITS

Issue Overview	Sustaining the Highlands Region's water resources is a matter of statewide importance. Increases in human population and changes in land use threaten those water resources by contributing to over-withdrawal of ground water and surface water systems, and a reduction of recharge rates. Human demand for water, generated by growth, results in depleted aquifers, reduced base flows in streams and reduced safe yields of reservoirs. The protection of base flow is critical to maintaining viable aquatic ecosystems and protecting potable water supplies, particularly during periods of drought. Recent droughts, which resulted in historically low stream flows and rapid depletion of reservoir capacity, provide clear evidence that water resources of the Highlands, while large in scale, are also nearing or beyond their capacity. The lapse of four decades since the 1960's drought of record hampers public understanding of what would happen during another severe drought. The northern population centers of the state, and the Highlands Region itself rely on surface water reservoirs and aquifers, respectively, both of which are replenished by waters originating in the Highlands. Given these demands on Highlands water resources, there is a fundamental need to ensure adequate water supplies within the Region and outside the Region while also protecting its important ecological and riparian integrity. Because reservoirs store water from wet periods to sustain demand during dry periods, their effects differ from non-reservoir surface water withdrawals and from ground water withdrawals. The focus of RMP policies and this program is on non-reservoir withdrawals. Where water is withdrawn and then returned essentially unchanged to the same Highlands waters, water systems are not stressed. Consumptive water uses, where the water is withdrawn and then evaporates (e.g., through irrigation), and depletive water uses, where water is withdrawn and transferred to another subwatershed, are the major causes of stresses because they deplete the water resources within a subwatershed. Where water resources are stressed, management strategies are necessary to reduce and where feasible eliminate deficits, and to ensure that supplies are not depleted further. These strategies should also endeavor, wherever possible, to mitigate existing water demands and ensure that future demands are only granted upon the condition of reduction of water deficits.

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Program Summary	In order to address the requirements and goals of the Highlands Act, the Highlands Council conducted a net water availability analysis, at a HUC14 subwatershed level, to determine the amount of water required to protect aquatic ecological integrity and the amount that is "available" for consumptive and depletive uses. This analysis is at a more local scale than used by the NJDEP for its Statewide Water Supply Plan (e.g., HUC11 watersheds), as the Highlands Council is addressing a much smaller area. NJDEP intends to incorporate the Highlands Region analysis in its work to the maximum extent feasible. The RMP also uses more stringent constraints on human water uses, in furtherance of Highlands Act requirements for the protection of the Region's water resources and aquatic ecosystems. Consumptive and depletive uses represent a hydrologic "loss" to the system with a corresponding reduction in stream base flows. The analysis compared these consumptive and depletive demand patterns against water availability to see where water resources are being exceeded. Where a subwatershed's water use was determined to exceed its availability, it was deemed to be in deficit. The Goals, Policies, and Objectives of the RMP prevent increases in net consumptive and depletive uses from that subwatershed so that the deficit is not exacerbated. The RMP also mandates that municipalities, working with utilities and other interested stakeholders, develop a Water Use and Conservation Management Plan. The primary purpose of a Water Use and Conservation Management Plan is to reduce and where feasible eliminate deficits; the plan can identify appropriate management strategies that can help ameliorate such water deficits or potential impacts on water supply source areas. The Highlands restoration water deficit program consist of five discrete tasks: 1. Identify HUC14 subwatersheds that have a deficit of water availability; 2. Verify the net water availability analysis and its associated deficits. 3. Require, as a condition of conformance, development of a Water Use and Conservation Management Plan for conforming municipalities, and especially those whose water supply is located in a deficit subwatershed; 4. For complex systems or where the development of deficit reduction plans for multiple subwatersheds is more appropriate, collaborate with NJDEP and affected interests to develop Water Use and Conservation Management Plans at a larger scale. 5. Coordination with NJDEP so that water allocation permits, including transfers of water between subwatersheds where required, support the reduction and elimination of water deficits.
RMP Policies and Objectives Addressed	***Objective 2B2c.*** Estimate Net Water Availability for each HUC14 subwatershed by subtracting from Ground Water Availability an estimate of maximum monthly consumptive and depletive ground water and surface water use (other than from reservoir storage or other supply with a NJDEP approved safe yield). Adjust consumptive and depletive water use to account for the return of wastewater to the same HUC14 subwatershed from which the water originated, or as appropriate, water originating from another HUC14 subwatershed. ***Objective 2B2d.*** Designate Current Deficit Areas as those HUC14 subwatersheds where the Net Water Availability is less than zero. ***Objective 2B4c.*** Establish and implement mandatory stormwater reuse for recreational and other non-agricultural irrigation, as well as other non-potable water purposes to minimize both the volume of stormwater discharges and water withdrawals for these purposes.

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RMP Policies and Objectives Addressed (continued)

Policy 2B5. To require, through Plan Conformance (including through a Water Use and Conservation Plan developed under Objective 2B8c), local development review, and Highlands Project Review, the use of water conservation, recycling and reuse methods (where appropriate) and devices for any redevelopment or development activity, including renovations to existing residential, institutional, commercial or industrial buildings, to minimize consumptive water use tailored to meet the resource protection and other goals for each Zone and considering subwatershed-specific conditions and Net Water Availability status.

Objective 2B6a. Areawide Water Quality Management Plans (WQMPs), Wastewater Management Plans (WMPs) or their amendments shall ensure that the proposed service area will not directly or indirectly cause or contribute to a Net Water Availability deficit, and shall be in conformance with any Water Use and Conservation Plan developed under Objective 2B8c.

Objective 2B6b. NJDEP Water Allocation decisions and Highlands Project Reviews shall ensure that any new or increased water allocation permits within the Highlands Region are in conformance with the policies and objectives of the RMP and do not result in significant reductions in safe yields for any water supply facility with an existing water allocation permit and NJDEP-approved safe yield.

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

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RMP Policies and Objectives Addressed (continued)	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.
Analysis of Net Water Availability	The Highlands Council conducted a net water availability analysis in the RMP to assess the sustainability of Highlands water resources. Reservoir supplies with approved safe yields were assessed separate from ground water and other surface water supplies, as reservoirs provide storage against drought conditions and therefore are affected in a significantly different manner than other resources. The net water availability analysis was conducted using hydrologic data and annual water use and withdrawal data from the year 2003. The data were gathered primarily from NJDEP databases, with some instances of local input. However, much information regarding water supply utilities, their service areas, and zone usage rates exists as local knowledge. Enhancing the data in the availability analysis will be a critical component of the water deficit program to ensure the sustainability of water resources. The net water availability analysis is described in the RMP's *Water Resources Assessment Technical Report*. In summary, the analysis consists of the following basic steps: 1. Estimate the ground water capacity within each HUC14 subwatershed of the Highlands Region; 2. Apply the threshold percentage of the ground water capacity necessary to protect aquatic resource integrity and preserve water supply by minimizing base flow reductions. The thresholds are more stringent in the Protection Zone and least stringent in the ECZ, but even in the latter case is somewhat more stringent than the NJDEP statewide threshold. Each threshold is multiplied by the ground water capacity; the product is called ground water availability. 3. Compare existing water uses and their associated consumptive/depletive volumes against the ground water availability. The difference is called net water availability; where consumptive and depletive water exceed the available water resources, those subwatersheds are deemed in deficit. Net water availability has been calculated for all 183 HUC14 subwatersheds of the Highlands Region and 114 are in deficit based on 2003 usage data and applicable RMP thresholds.

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Verification of Net Water Availability	The Highlands Council shall routinely update and verify the data utilized in its capacity assessments. Through the conformance process with municipalities and counties, the Council will obtain local-scale information about water use and water supply from local governments and utilities, including through development of the Water Use and Conservation Management Plans. The Council will also utilize new annual demand data, as the information is reported and available from a variety of sources. As a more refined understanding of regional and local water resources is developed, the Council will be able to update and verify the net water availability analysis. This process will allow the Council to validate its analytical tools and determine whether initial estimates are correct. Utilizing this information, the Council can evaluate whether each subwatershed is correctly assessed and reevaluate its status as necessary. The Water Use and Conservation Management Plans will be a major basis for verifying and providing more detail on deficits. Following confirmation of deficit status, the Highlands Council will continue to monitor deficit areas for two purposes: • To ensure that future demand patterns are not exacerbating deficits; and • To evaluate the effectiveness of mitigation measures defined in Water Use and Conservation Management Plans.
Strategic Approaches to Mitigating Water Deficits	Where water deficits within a subwatershed are identified and validated, affected stakeholders should develop a strategic approach to addressing these shortages. These stakeholders will most often consist of municipalities, through the creation of Water Use and Conservation Management Plans, but may also include water supply utilities, wastewater systems, surrounding municipalities, and counties. Any proposed measures should be prioritized upon feasibility, effectiveness, environmental benefits, and funding issues. Municipal conformance shall include consideration of the availability and viability of water supplies for future development. They should not assume that water will be available, absent a clear demonstration within a Water Use and Conservation Management Plan. Stakeholders shall give highest priority to water use reductions and ground water recharge enhancements within the deficit subwatershed, then to the development of new water supplies within the same subwatershed, and finally to the development of water resources from subwatersheds which are not in deficit. Water use efficiency and conservation are discussed further by a related RMP program (see *The Efficient Use of Water Program*). All of these strategies must be detailed and implemented as appropriate and feasible through a Water Use and Conservation Plan.
Development of Municipal Water Use and Conservation Management Plans	Municipalities can rely upon numerous tools for planning at the local level: municipal and county master plans, the State Development and Redevelopment Plan (SDRP), and WMPs. WMPs require examination of current and future growth patterns to ensure that growth does not exceed the assimilative capacity of surface and ground waters for wastewater treatment. The intent, as with other sound planning practices, is to ensure that carrying capacity and land use are properly integrated. Similar in concept to a WMP, a Water Use and Conservation Management Plan is envisioned as a planning tool for using municipal and utility data to update and verify water availability models, deficit mitigation methods, and implementation alternatives. Municipalities shall, as a requirement of conformance, be required to implement a Water Use and Conservation Management Plan; this requirement will be especially important for municipalities supplied by, or withdrawing from deficit areas. The RMP calls for the Water Use and Conservation Management Plan to develop mitigation and restoration strategies as discussed previously.

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Development of Municipal Water Use and Conservation Management Plans (continued)	The essential components of a Water Use and Conservation Management Plan shall include: • **Identification of Water Sources and Uses** – To include a water utility profile complete with demand data, service areas, water sources, and wastewater returns. • **Analysis of Net Water Availability** – To validate or modify prior results using new data regarding consumptive and depletive water uses and the movement of water within HUC14 subwatersheds, leading to more current and defensible net water availability results. The use of more sophisticated water models can also be proposed, but must be at least as protective of the water regime (focused especially on stream base flows) as the RMP approach. • **Mitigation Approach** – To discuss mitigation strategies and a prioritized approach to reducing deficits. • **Funding Opportunities** – To address financial mechanisms that reflect the strategic approaches adopted in a Water Use and Conservation Plan. • **Operation and Monitoring** – To conduct ongoing monitoring of uses and validation of mitigation. In these cases, affected entities could include counties or multiple affected municipalities at this scale. • **Deficit Reduction and Elimination Strategy** – To describe, based on the prior analyses, the selected strategies for deficit reduction and elimination, including responsible parties, schedules, funding commitments, etc. The strategies in the Water Use and Conservation Management Plan must be implemented as a commitment of RMP Plan Conformance.
Development of HUC14 Water Management Strategies	There will be instances when a deficit subwatershed is a source to multiple municipalities – even if one or more municipality is not located in the subwatershed. There may also be instances where a larger planning entity may wish to develop the Water Use and Conservation Management Plan. These entities could include a large water purveyor, county government, or the Highlands Council itself if municipalities are unwilling or unable to develop such a plan. Therefore, the development of a HUC14 Subwatershed Water Use and Conservation Management Plan would be more appropriate. Additionally, there will be instances where the hydrologic system is sufficiently complex or HUC14 subwatersheds are sufficiently interconnected where development of a multi-subwatershed Water Use and Conservation Management Plan is appropriate. The mitigation approaches employed at a HUC14 subwatershed or multi-subwatershed level should be based upon the same priorities required of municipal Water Use and Conservation Management Plans: stakeholders shall give water use efficiency and ground water recharge enhancements highest priority, then the development of new internal water supplies, and finally to the development of water resources from areas which are not in deficit.
Coordination with NJDEP Water Allocation Program	The RMP addresses the potential for water use through a combination of land use capacity analysis and the required implementation of Water Use and Conservation Management Plans. However, NJDEP's Water Allocation Program is statutorily tasked with the actual allocation of water resources to those who wish to withdraw more than 100,000 gpd in the Planning Area and 50,000 gpd in the Preservation Area. Close coordination between the Highlands Council and NJDEP will be necessary to address water uses, and the NJDEP retains final approval authority on any water allocation permits, especially regarding any movement of waters to the Highlands Region from outside the region and any allocation of reservoir safe yields to address Highlands Region deficits. To ensure that water resource deficits in HUC14 subwatersheds are not exacerbated and over time are reduced or eliminated, the NJDEP should, to the extent feasible and authorized under law, modify water allocation permits in the following manner:

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Coordination with NJDEP Water Allocation Program (continued)	1. Prior to Plan Conformance, new water allocation permits should not be approved nor existing water allocation permits increased unless a certification of consistency by the Highlands Council indicates that the applicant demonstrates that it will not exacerbate a deficit, that the water use will be conducted at the maximum possible efficiency, and that mitigation of increased consumptive and depletive water uses is ensured in accordance with the RMP policies and objectives and the *Efficient Use of Water Program*; 2. Prior to Plan Conformance, existing water allocation permits should be reviewed upon renewal and modified as necessary to limit the allocation to reasonably anticipated future needs, including those anticipated through WMPs that are consistent with the RMP, as constrained through improved water use efficiency, so that the allocation is limited to the minimum possible consumptive and depletive uses; 3. Subsequent to Plan Conformance, existing water allocation permits should be reviewed upon renewal and modified as necessary to reflect the reasonably anticipated future needs based on conformance with the RMP and implementation of a Water Use and Conservation Management Plan, which shall demonstrate mitigation strategies if deficits exist; and 4. Subsequent to Plan Conformance, new water allocation permits should be approved only if they comply with the relevant Water Use and Conservation Management Plan.
THE EFFICIENT USE OF WATER	
Issue Overview	Water is a driving force behind many of the goals and policies of the Highlands Act, and protection of water supplies is a critical focus of the RMP. Many Highlands Region subwatersheds face shortages of water, as current demands exceed estimated water availability for human and ecological purposes and therefore stress aquatic ecosystems and put human needs in jeopardy during droughts. In addition, non-Highlands municipalities served by Highlands reservoirs and some Highlands municipalities face future constraints on their ability to serve customers as water demands increase through redevelopment and development. Therefore, it is important that New Jersey obtain the maximum benefit from its Highlands water resources through efficient use and, where feasible and appropriate, beneficial reuse and recycling of water. Water use efficiency has been increasing over the last 20 years, as State and federal requirements for water conserving plumbing fixtures, appliances and irrigation systems affect a greater proportion of total development. Farmers are also becoming more efficient in water use in response to new research and higher energy and chemical costs, moving to drip irrigation and other conserving systems instead of high-pressure broadcast spray systems. However, both the public utility customer base and irrigated farm acreage are increasing, creating more demands that offset improved water use efficiency. For this reason, while some urban areas have seen declining water sales over time (due to both water conservation and the loss of water-intensive industries), other municipalities have seen significant increases in total water use. Further progress in water use efficiency is needed. Many RMP policies and objectives address this need by encouraging general efficiency in water use, providing higher priority to agricultural water uses that employ best management practices, and calling for the use of water conservation, recycling and beneficial reuse of reclaimed water (among other techniques) to both reduce and eliminate current and future water deficits.
Program Summary	Water use efficiency has three basic emphases. First, water should be used efficiently regardless of water availability. This conservation principle, equivalent to a "good housekeeping" concept, prevents wasteful use of water even when water is plentiful, so that environmental impacts are minimized, infrastructure capacity is not strained, and the water uses do not result in a false sense that new supplies are needed. Low Impact Development (LID) practices, water conserving fixtures and appliances, and efficient irrigation practices all are appropriate techniques.

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Program Summary (continued)	Second, water should be used even more efficiently to reduce existing water deficits in subwatersheds and watersheds. These deficits indicate stresses on aquatic ecosystems, and often will indicate stresses on ground water yields and downstream water supply facilities and threats to human use during droughts. Third, water use efficiency should also be enhanced to avoid the need for additional water infrastructure. Delaying the need for new water supply facilities is highly cost-effective; water conservation measures generally cost significantly less per million gallons than new reservoirs, treatment facilities or water mains. There is a fourth component that this program does not address, regarding conservation during drought emergencies; the NJDEP already addresses this component fully. Water use efficiency can be achieved in many ways, including: • Supply-side conservation, such as leak detection and control and improved management of water storage facilities; • Demand-side conservation, such as improved plumbing fixtures, appliance selection, irrigation controls, modified landscaping that reduces water needs, and use of car washes instead of hand washing; • Utility rate schedules that encourages customers to make efficient use of water and discourages excessive use; • Beneficial reuse of reclaimed water within a single building, within a larger development using on-site wastewater treatment, or in a larger setting, where wastewater is treated off-site and then reused on-site; and • Recycling of water, such as the use of stormwater for irrigation purposes, where no special treatment of the water is required.
RMP Policies and Objectives Addressed	***Objective 2B2c.*** Estimate Net Water Availability for each HUC14 subwatershed by subtracting from Ground Water Availability an estimate of maximum monthly consumptive and depletive ground water and surface water use (other than from reservoir storage or other supply with a NJDEP approved safe yield). Adjust consumptive and depletive water use to account for the return of wastewater to the same HUC14 subwatershed from which the water originated, or as appropriate, water originating from another HUC14 subwatershed. ***Objective 2B2f.*** Modify Net Water Availability in Existing Constrained Areas to be the 2003 consumptive and depletive ground and surface water use plus 5% of the Ground Water Capacity (up to the standard thresholds assigned to each Land Use Capability Zone) to ensure continued stream flows to downstream Current Deficit Areas, emphasizing techniques including, but not limited to, water reuse, recycling, and conservation. **Policy 2B4.** To strictly limit consumptive and depletive water uses to the water availability in each HUC14 subwatershed and to establish priorities for water uses that implement the policies and objectives of the RMP. ***Objective 2B4d.*** The highest priority for agricultural water uses in the Conservation Zone shall be those Preservation Area uses that promote agricultural and horticultural uses and opportunities that are compatible with protection of the Highlands environment, and those Planning Area uses that promote the continuation and expansion of agricultural, horticultural, recreational, and cultural uses and opportunities. Compatible agricultural and horticultural uses shall minimize consumptive water uses through efficiency measures. **Policy 2B5.** To require, through Plan Conformance (including through a Water Use and Conservation Plan developed under Objective 2B8c), local development review, and Highlands Project Review, the use of water conservation, recycling and reuse methods (where appropriate) and devices for any redevelopment or development activity, including renovations to existing residential, institutional, commercial or industrial buildings, to minimize consumptive water use tailored to meet the resource protection and other goals for each Zone and considering subwatershed-specific conditions and Net Water Availability status.

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RMP Policies and Objectives Addressed (continued)	
	Policy 2B6. To require through Plan Conformance (including through a Water Use and Conservation Plan developed under Objective 2B8c), local development review, Highlands Project Review, and interagency coordination that proposed public water supply and wastewater service areas, new or increased water allocations and bulk water purchases will not directly or indirectly cause or contribute to a Net Water Availability deficit, and where feasible will help mitigate any existing deficit. *Objective 2B7a.* Establish and implement best management practices for recreational, landscape irrigation and other practices through applicable State and federal programs. **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.

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RMP Policies and Objectives Addressed (continued)	***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. ***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. ***Objective 2J7a.*** Require the maximum feasible water conservation and recycling or any redevelopment or development activity, including renovations to existing single family residences and commercial/industrial buildings. ***Objective 2J7b.*** Require consideration of and the cost-effective use of recycled or re-used water rather than potable public water for non-potable purposes such as fountains, nonessential uses such as golf courses, certain recreational, commercial, or agricultural uses. ***Objective 6N1d.*** Minimum requirements for water conservation measures in site layout and structures, including but not limited to water efficient landscaping (including use of native and drought-tolerant plant species), rain collection systems, use of gray water, and water-efficient landscape irrigation. ***Objective 7F1h.*** Ensure that Highlands Act exemption determinations are limited to the activities specifically authorized under the Act. While the construction activities of a single family dwelling may be authorized under an exemption, water conservation requirements, septic maintenance requirements, or any other activities related to the use of that dwelling are not exempt.
Analysis of Water Use Efficiency for Public Water Supplies	Analyzing the efficiency of water use for public water supplies, for all systems using Highlands water resources both within and outside the Highlands Region, requires an understanding of the customer base, affected land uses, leakage and water loss potential, and other factors. Efficient use rates for suburban areas (in gallons per capita per day, or gpcd) will be different from the rates for urban areas. The Highlands Council will collaborate with NJDEP to determine existing water use rates for all public community water supply systems using Highlands water, categorize the systems for comparison purposes, and assess the relative efficiency of water uses among common classes of public community water systems.

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Analysis of Water Use Efficiency for Agriculture and Irrigation	The efficiency of water use by agriculture and other forms of self-supplied irrigation must be assessed based on the type of water need, irrigation practices, weather impacts, etc. The Highlands Council will collaborate with the NJDEP, the NJDA and Rutgers Cooperative Extension Service to determine existing water use rates for all agricultural and other self-supplied irrigation uses using Highlands water, categorize the uses for comparison purposes, and assess the relative efficiency of water uses among common classes of purposes. As these water users will be highly affected by weather, the assessment must include an analysis of how uses vary by season, crop type, year and climate conditions. This analysis will be used, in part, to understand what types of agriculture and horticulture are compatible with Highlands Act objectives in the Preservation Area.
Identification of Water Use Efficiency Metrics and Targets	The creation of programs and standards for efficient water use requires an identification of appropriate metrics and targets. The Highlands Council will collaborate with the NJDEP for all uses, and the NJDA regarding agricultural uses, to select the most appropriate metrics for water use efficiency, and either regulatory or normative standards (as appropriate for each type of water use) that should be applied. For public community water supply systems, metrics may include per capita water use and water loss ratios by system category. Similar metrics may be applicable to public noncommunity water supply systems as well. For non-potable uses, metrics will focus more on efficiency of meeting plant needs for specific crops during specific weather conditions.
Implementation of Water Use Efficiency Measures: General	All water uses in the Highlands should be efficient, so that environmental stresses are limited and the ability of water supplies to meet public needs is extended. The following general standards apply: 1. Meet all Uniform Construction Code requirements for the use of water conservation fixtures in new or rehabilitated structures; 2. All new and replacement lawn irrigation systems shall meet State requirements for controls based on soil moisture. The Highlands Council shall investigate the need for additional requirements within the Highlands Region; 3. Non-potable irrigation water uses shall ensure that only the necessary amounts of water are uses to achieve optimum plant growth, and such uses with existing Water Allocation permits shall be required, at the time of permit renewal and within statutory authority, to increase water use efficiency over the permit life to the maximum extent practicable; 4. New commercial development shall use internal recycling or beneficial reuse of reclaimed water to the maximum extent practicable; 5. New development shall rely on stormwater for irrigation purposes to the maximum extent practicable, including but not limited to LEED-approved methods; 6. Water supply utility rates shall encourage end-user conservation; 7. Water supply utilities shall reduce water losses to the maximum extent practicable, including through application of American Water Works Association/International Water Association water loss analysis methods; and 8. Water supply utilities shall provide routine consumer education to conserve water.

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Implementation of Water Use Efficiency Measures: Deficit Areas and Deficit Utilities	The reduction and elimination of water supply deficits on a subwatershed or watershed basis is addressed by a separate RMP program (see *Highlands Restoration: Water Deficits*) that give highest priority to water use efficiency and ground water recharge enhancements within the deficit area, then to the development of new water supplies within the deficit area, and last to the transfer of water resources from another area. Transfers between and from Highlands subwatersheds are prohibited unless there is no other viable alternative and where such transfers would demonstrably not result in impairment of resources in any subwatershed, including potential effects on upstream and downstream subwatersheds. Transfers from outside of the Highlands Region are allowed, subject to NJDEP approvals. Beneficial water reuse may be used to meet these requirements, provided the reclamation of the water does not adversely affect water resources in its original discharge location. These priorities address both environmental and cost issues. In all subwatersheds, and especially where current deficit areas exist, the RMP calls for development of a municipal Water Use and Conservation Management Plan. For deficit areas, the plans must determine how the deficit can be alleviated and to the maximum extent possible, eliminated. Such plans may also be developed cooperatively for a subwatershed or multiple subwatersheds. Where a water supply utility faces constraints on its ability to supply consumers due to inadequate transmission mains, treatment facilities or supply sources, the most effective method of avoiding major capital costs is water use efficiency. The same efficiency methods are applicable to both situations. The following enhanced water use efficiency measures shall be considered, and where feasible and appropriate, included in Water Use and Conservation Management Plans or utility water supply plans to eliminate water availability or utility supply deficits, to the extent that they do not cause or exacerbate other environmental harm. Successful implementation or a firm and bonded commitment for implementation of the selected methods shall be required prior to approval of additional consumptive or depletive water uses or new water supply sources, depending upon the project, the proposed water use and the severity of the current deficit in water availability: • Incentive programs, up to and including full payment, for replacement of residential and commercial plumbing fixtures, water-using appliances and lawn irrigation systems with water conservation devices; • Incentive programs, up to and including full payment, for modification of residential landscaping to forms that require minimal if any artificial irrigation; • Incentive programs, up to and including full payment, for retrofitting of existing development with systems that allow for the beneficial reuse of water within the development; and • Incentive and cost-share programs for replacement of agricultural irrigation and other water uses with water conservation techniques; 1. Reduction of water losses within water utility systems to the maximum extent that is technologically feasible; 2. Modification of water rates to enhance financial incentives for water conservation by end users; and 3. Enhanced consumer education regarding water conservation, including the potential for direct-to-consumer approaches.
Ensuring Implementation of Water Use and Conservation Management Plans	Where a water utility or water user makes a commitment to implementation of water use efficiency in a Current Deficit Area rather than implementing the measures prior to a new consumptive or depletive use (where this approach is allowed by Objectives 2B8b and 2B8c), the following requirements shall apply:

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Ensuring Implementation of Water Use and Conservation Management Plans (continued)

1. All implementation measures shall be completed within one year of approval if the consumptive or depletive water use is less than 20,000 gpd in the Planning Area or 10,000 gpd in the Preservation Area, on average. Implementation may be allowed to occur within a longer time period for larger amounts, up to five years from approval, but may be required to occur prior to initiation of the consumptive or depletive water use under certain circumstances. The Highlands Council shall adopt procedures specifying the basis for implementation schedules, including but not limited to such considerations as the scope of the consumptive or depletive water use, the severity of the existing deficit in water availability, and whether the implementation measure will occur on-site as part of the development project or off-site as mitigation;
2. If the implementing entity is a public agency, the commitment must be in the form of a binding resolution or ordinance of the governing body, and the cost of implementation must be bonded to ensure sufficient resources; and
3. If the implementing entity is a private corporation or individual, they must provide bonding to ensure that the commitments are met. A public entity must be named as recipient of the bonds in the event of default by the implementing entity, to be used by the public entity to complete implementation.

WATER QUALITY RESTORATION

Issue Overview

Nathan McLean

Water quality affects drinking water, recreation, ecosystems, and aesthetic beauty. The most common parameters that affect surface and ground water quality are fecal coliform bacteria, phosphorus, temperature, arsenic, and nitrate-nitrogen. These contaminants can either cause health risks if ingested or harm native biota, resulting in non-attainment of designated water uses for the water body. Other pollutants also exist, including industrial contaminants.

Water quality is influenced by the type and intensity of land use adjacent to and upstream of the water body. Pollutants are contributed to the environment from a wide variety of nonpoint sources (NPS) including human development (through stormwater and residential runoff, septic systems, fertilizer applications on lawns and Brownfields or contaminated sites), domestic or captive animals, agricultural practices (crop farming, livestock, and manure applications), and wildlife (large populations). Pollutants from these sources can reach water bodies directly, through overland runoff, or through stormwater conveyance facilities. Point sources also exist, primarily wastewater treatment plants serving communities or industrial facilities. Each potential source will respond to one or more management strategies designed to eliminate or reduce that source of pollution. Each management strategy has one or more entities that can take lead responsibility to effect the strategy. Various funding sources are available to assist in accomplishing the management strategies. The Highlands Council in coordination with NJDEP will address the sources of impairment through systematic source track-down, remedial activities, matching strategies with sources, selecting responsible entities, and aligning available resources to effect implementation.

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Issue Overview (continued)	The Highlands Act calls for the protection, enhancement, and restoration of the Region's waters. Water quality in the Highlands Region, where polluted, must be restored to meet water quality standards, support designated uses, and support ecosystem needs. Where water quality is better than standards, protection is needed to ensure that antidegradation policies are met. Enhancement will be desirable at all times, through improved land management practices, and other measures. Therefore, several RMP policies and objectives focus on water quality in the Region.
Program Summary	The RMP states the requirement to protect, restore, and enhance water in the Highlands Region. One way to protect and enhance water in the Region is to restore water quality. Water quality is affected by both current and historic land uses and a consistent and reliable assessment and characterization of the water quality in the Region is imperative in order to implement management strategies in appropriate areas. This program will address these problems and provide guidance to restore degraded water quality. Assessment is followed by management planning, which then leads to the implementation of various management practices depending on the types of contaminants, their sources, and the restoration needs identified.
RMP Policies and Objectives Addressed	**Policy 2F1.** To identify surface and ground water resources currently impaired or at risk of impairment, and in need of protection, restoration, or enhancement. **Policy 2F2.** To coordinate with the NJDEP regarding a unified water quality assessment and the development and implementation of Total Maximum Daily Loads (TMDLs), where necessary, for all surface waters within the Highlands Region. **Policy 2F3.** To coordinate with the NJDEP regarding a unified ground water quality assessment, monitoring, and attainment program. **Policy 2F4.** To coordinate with the NJDEP regarding efforts to monitor areas of known contamination to ground water resources within the Highlands Region and activities to remediate and restore water quality. **Policy 2F5.** To coordinate with the NJDEP and other agencies to identify impairments and implement improved regulatory actions and management practices that will also support the water quality goals of the Highlands Act. **Policy 2F6.** To remedy the pollutant sources associated with existing or historic land uses in conjunction with redevelopment. **Policy 2G1.** To evaluate locations and densities of development which are sustainable in conjunction with the use of best management practices applicable to these various water resource needs and support the protection and management of critical lands for water quality purposes. **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. ***Objective 2G3a.*** Prohibit land uses that would increase pollutant loadings to waters for which TMDLs have been adopted by NJDEP unless in compliance with the relevant TMDL. ***Objective 2G3b.*** Ensure that new land uses draining to a stream designated as impaired but lacking a TMDL (e.g., Sublist 5) avoid increased pollutant loadings for the parameter or parameters for which a TMDL is required. ***Objective 2G3c.*** WQMPs, WMPs or amendments shall demonstrate that the proposed service area will not directly or indirectly support development that would be in violation of an adopted TMDL.

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RMP Policies and Objectives Addressed (continued)	**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 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. **Policy 2L4.** To establish methods for restoration of ground water quality for subwatersheds where existing ground water is impaired on a subwatershed by subwatershed basis. **Policy 2M1.** To monitor and assess nitrate-related impacts and other pollutants enumerated in the Private Well Testing Act to water resources within the Highlands Region. *Objective 2M1a.* To monitor well water and surface water for nitrate concentrations, as funding is available, to evaluate background nitrate changes on a HUC14 subwatershed basis and to track new sources of nitrates from Highlands development projects on a site specific basis. **Policy 2M2.** To develop appropriate and innovative resource management programs to protect, restore, and enhance subwatersheds where existing ground water quality is impaired. *Objective 2M2a.* Identify innovative technologies that may be appropriate for the design, installation, and maintenance of on-site wastewater treatment systems to minimize impairment to ground water or surface water quality due to elevated nitrate concentrations and other pollutant loads from septic systems providing the systems meet the minimum standards of N.J.A.C 7:9A.
Water Quality Assessment	Since water quality is a concern throughout the Highlands Region, a consistent and reliable assessment and characterization of the water quality is imperative in order to implement management strategies in the corresponding area. The Highlands Council will coordinate efforts with the NJDEP: • To inventory where surface water quality is impaired or at risk of impairment, and to list such waters on the NJDEP impaired water bodies (303d) list; • To inventory areas where ground quality is impaired or at risk of impairment by nitrates; • To improve water quality monitoring program areas for ground and surface water resources within the Highlands Region; • To coordinate efforts with the NJDEP and the USGS to operate and improve the Ambient Stream Monitoring Network to assess the effectiveness of management measures; • To provide lake characterization and assessment reports; • To gain a full understanding of NPS pollution in the Highlands Region; and • To inventory and track contaminated sites in the Highlands Region. These efforts will evaluate potential sources causing impairment and help track trends in water quality to see if the implementation of management strategies is working properly.

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Total Maximum Daily Loads (TMDLs)	The Highlands Council will coordinate efforts with the NJDEP regarding the development and implementation of TMDLs, where necessary, for surface waters in the Highlands Region. The adoption of TMDLs is a responsibility of NJDEP, to identify the reduction in pollutant loads to impaired surface waters necessary to meet surface water quality standards. The NJDEP is also directly responsible for modifying wastewater discharge permits for point sources as necessary to implement the TMDLs. The Highlands Council will work with NJDEP to incorporate appropriate management measures into the Regional MasterPlan for TMDL implementation, potentially including: • Restrictions on new land uses regarding pollutant loadings; • Improved stormwater management requirements for new land uses; and • Improved programs for reduction of pollutant loadings from existing land uses.
Watershed Restoration Plans	Watershed Restoration Plans are used to develop and implement improved regulatory actions and management practices that will support the water quality goals of the Highlands Act and the Water Pollution Control Act. They often are used to identify more detailed management approaches for TMDL implementation, but can address additional issues such as stream and riparian area restoration, water quality enhancement and water quality protection. The Highlands Council will identify key HUC14 subwatersheds in the Highlands Region and either directly or in cooperation with other affected interests to develop Watershed Restoration Plans for approval by NJDEP and incorporation, as appropriate, into the RMP or its programs. Approval of Watershed Restoration Plans by NJDEP makes the implementation projects eligible for State and federal funding.
Ground Water Restoration Plans	Areas of historic development on septic systems and agricultural use may have ground water contamination levels that greatly exceed the regional norm. The Highlands Council will work with NJDEP and USGS to identify these areas based on direct monitoring or models, as appropriate, and develop management approaches to address these issues. The management plans will be similar in concept to TMDLs or Watershed Restoration Plans. For areas of very dense septic systems, where the potential for well contamination is greatly elevated, primary emphasis will be on the protection of public health through the installation of public water supplies, community wastewater systems, or both. For areas of intensive agricultural use, the emphasis will be on programs described below, plus protection of the farmstead wells from health threats.
Implementation of Water Quality Restoration Projects: Agricultural Best Management Practices	Many programs are available to assist farmers in the development and implementation of resource and farm conservation management plans, including identification and management of any known nonpoint source pollution. The best means to reduce nonpoint source pollution is to implement best management practices (BMPs), including, but not limited to, such as low phosphorus fertilizer application, nutrient management systems, integrated crop management, and grazing systems, and organic farming. The Highlands Council will coordinate its efforts with existing assistance programs of farm preservation and other approaches to reduce pollutant loads from agricultural operations and prioritize for EQIP, CRP, and CREP funds to install agricultural BMPs. In addition, programs such as Farm-A-Syst will be evaluated to help farmers protect their own families from farm-related contamination problems. For more information refer to the *Agricultural Sustainability, Viability, and Stewardship Program.*

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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.
Implementation of Water Quality Restoration Projects: Streambank and Riparian Restoration	Streambank restoration and stabilization projects provide a reduction of sediment loads and nutrients entering a water body. These projects include riparian buffer restoration that reduce and filter pollutant loads before entering a water body. Projects may involve dam removals, lake maintenance, riparian buffer and forest transition zone enhancement, restoring stream channels, restoring habitat to a more natural, native vegetated environment, and restoring wetlands and floodplains. Restoration projects such as reconnecting natural drainages and improving outfall channel connection reduces sediments and stream velocity thus restoring the natural hydrology and enhancing fish and wildlife populations. For more information refer to the *Streams/Riparian Restoration Program*.
Implementation of Water Quality Restoration Projects: Wildlife	Excessive deer populations, in addition to their habitat destruction, have been identified as a potential source of pollution in impaired watersheds. The forested and low-density residential areas that provide deer habitat often can be found in close proximity to the impaired stream segments. Deer have been evaluated in TMDL reports by other states (e.g., Alabama and South Carolina) and could be a source of pollution in New Jersey. Their browsing of understory plants can change stormwater runoff potential in woodlands. Management measures to reduce pollution contributed by wildlife are not generally practicable, but could respond to measure such as improved riparian buffers, no feed ordinances, and signage. Other wildlife species, such as beavers or raccoons, have been identified as causing long-term damages if populations are excessive. Management may be necessary where the excessive populations are long-term, rather than episodic.

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Implementation of Water Quality Restoration Projects: Septic System Management	Where septic system service areas are located in close proximity to impaired water bodies, septic surveys should be undertaken to determine if there are improper effluent disposal practices that need to be corrected. Septic system management programs should be implemented in municipalities with septic system service areas to ensure proper design, installation, and maintenance of septic systems. The Highlands Council will use GIS data to identify areas with concentrations of septic systems near water bodies, and will coordinate with municipal and county Boards of Health regarding surveys and management programs. For more information refer to the *Wastewater System Maintenance Program.*
Implementation of Water Quality Restoration Projects: Contaminated Site Remediation	To protect water resources from contaminated sites, the Highlands Act requires a coordinated implementation of all remediation standards and remedial actions. The NJDEP's Technical Requirements for Site Remediation at N.J.A.C. 7:26E, et seq. are the current State standards for the cleanup of contaminated sites. The Council through interagency coordination and project review activities will evaluate and assess the need for protecting Highlands Resources through enhanced standards and practices in support of remedial actions, restoration and redevelopment. The cleanup of contaminated properties in support of Highlands resource protection needs is a long term goal for the Council. This program component supports many of the RMP polices that are designed to ensure that restoration and redevelopment of these sites complement RMP goals and initiatives.
Education/ Outreach	Educating the public, farmers, landowners and municipalities with outreach programs is important for the success of water quality improvements. Educational programs may cover: • Addressing NPS pollution and implementation of an educational outreach program that encourages municipal officials and residents to protect their water resources and participate in water management activities to reduce the amount of NPS pollution entering the surface and ground water; • Low phosphorus fertilizers and soil testing for lawn applications; • The replacement or supplementing of lawns with native vegetation; • Educating the agricultural community and working with farmers to protect water quality through the adoption of sustainable farming and grazing practices, nutrient and pest management, and supporting organic operations and a transition to organic operations, enrolling into Integrated Crop Management, and fertilizer chemical reductions (see the Agricultural Management and Sustainability Program); • Public education on the benefits of native aquatic vegetation in shallow lakes and the balance of aquatic life uses with recreational uses of a lake; and • Highlands Council guidance manual for water quality restoration for use by municipalities and homeowners, include BMPs and other land management activities that will address water quality concerns.

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WATER AND WASTEWATER UTILITIES

Issue Overview

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The RMP includes many policies and objectives regarding water supply and wastewater utility capacity, service areas, service densities, and environmental protection requirements. Utility services support more dense development than on-site wells and septic systems, and therefore can provide for more housing and job creation per square mile. They also can result in more intensive environmental impacts and a greater strain on available water resources. For this reason, the RMP's emphasis on utilities is critical to protection of Highlands Region resources.

Smart growth principles emphasize the concentration of development in centers and other compact forms, to bring jobs and housing together, reduce commutes, make efficient use of infrastructure, and protect the landscape from fragmented "sprawl" development. Provision of water supply and wastewater utilities to such areas is a prerequisite of smart growth. In more rural landscapes, the extension or creation of water supply and wastewater utility services is also important for supporting clustered development adjacent to or distinct from existing areas served, respectively. Clustered development is an important approach for preserving large areas where land preservation does not take the land out of the marketplace.

Management of water and wastewater utilities is a shared responsibility of utilities, municipalities, and State agencies such as the Highlands Council, the NJDEP and the Board of Public Utilities (BPU). The RMP provides a framework for coordination of these entities by ensuring that compact growth requiring such utilities happens only where utility capacity and resource capacity exist, the growth is at densities that ensure cost-effective service provision, and environmental resources are protected. Each component is related to the others. Municipal comprehensive planning under Plan Conformance must provide an analytical framework that will drive decisions in conformance with the RMP. The intent of RMP policies is to ensure that any development in conformance with the RMP will also be in conformance with NJDEP planning requirements under the Water Quality Planning Act, providing a basis for approval by both State agencies. Where a County Wastewater Management Plan already incorporates the necessary information, a municipality may rely on that information as appropriate. Because the resource constraints regarding water availability are linked to this process, conformance with the RMP should also address NJDEP planning requirements for water supply. The RMP does not address specific design, permitting or operational aspects of water and wastewater utilities; rather, those issues are provided for through NJDEP regulation.

Program Summary

The Water and Wastewater Utilities Program provides a step-wise approach to determining the existing and potential capacity for service provision within the Highlands Region, identification of appropriate and inappropriate areas for the provision of utility services, and how capacity will be allocated among Existing Areas Served and proposed areas for new services both adjacent to and distinct from Existing Areas Served. Provision is made for incorporation of resource constraints and the protection of sensitive environmental features.

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RMP Policies and Objectives Addressed

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.

Policy 2B4. To strictly limit consumptive and depletive water uses to the water availability in each HUC14 subwatershed and to establish priorities for water uses that implement the policies and objectives of the RMP.

Objective 2B4a. Give highest priority for the use of non-agricultural Net Water Availability or Conditional Water Availability within Protection Zone and Conservation Zone subwatersheds, through a Water Use and Conservation Plan developed under Objective 2B8c, local development review and Highlands Project review:

1. To address through a waiver under Policy 7G1 or 7G2 a documented existing or imminent threat to public health and safety from contaminated domestic and other on-site water supplies that is of sufficient scale to justify a public water supply and where no alternative is feasible that would sufficiently assure long-term protection of public health and safety. Such needs shall have highest priority for Net Water Availability;
2. To serve development permitted through a Highlands Redevelopment Area or takings waiver under Policy 7G1 or 7G2;
3. To serve a cluster development that complies with Objective 2J4b; and
4. To serve affordable housing projects where at least 10% of the units are affordable.

Objective 2B4b. The highest priority for use of Net Water Availability or Conditional Water Availability within ECZ subwatersheds, through a Water Use and Conservation Plan developed under Objective 2B9c, local development review and Highlands Project review to serve documented threats to public health and safety from contaminated water supplies, designated TDR Receiving Zones, infill development, designated Highlands Redevelopment Area., affordable housing projects where at least 10% of the units are affordable, or new areas for development that meet all other requirements of the RMP.

Policy 2B6. To require through Plan Conformance (including through a Water Use and Conservation Plan developed under Objective 2B8c), local development review, Highlands Project Review, and interagency coordination that proposed public water supply and wastewater service areas, new or increased water allocations and bulk water purchases will not directly or indirectly cause or contribute to a Net Water Availability deficit, and where feasible will help mitigate any existing deficit.

Objective 2B6a. Areawide Water Quality Management Plans (WQMPs), Wastewater Management Plans (WMPs) or their amendments shall ensure that the proposed service area will not directly or indirectly cause or contribute to a Net Water Availability deficit, and shall be in conformance with any Water Use and Conservation Plan developed under Objective 2B8c.

Objective 2B6b. NJDEP Water Allocation decisions and Highlands Project Reviews shall ensure that any new or increased water allocation permits within the Highlands Region are in conformance with the policies and objectives of the RMP and do not result in significant reductions in safe yields for any water supply facility with an existing water allocation permit and NJDEP-approved safe yield.

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.

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RMP Policies and Objectives Addressed (continued)

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.

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RMP Policies and Objectives Addressed (continued)	
	Policy 2I1. To prohibit the expansion or creation of public water supply systems, public wastewater collection and treatment systems and community on-site treatment facilities in the Preservation Area unless approved through a Highlands Applicability Determination (HAD) or a HPAA with waiver pursuant to N.J.A.C. 7:38 and Policy 7G1. *Objective 2I1a.* Designated sewer service areas in the Preservation Area shall be restricted to the Existing Area Served as of August 10, 2004, except to serve development that is approved through a HAD or a HPAA with waiver pursuant to N.J.A.C. 7:38 and Policy 7G1. *Objective 2I1b.* The expansion or creation of public water supply systems, public wastewater collection and treatment systems and community on-site treatment facilities in the Preservation Area as approved through a HPAA with waiver pursuant to N.J.A.C. 7:38 and Policy 7G1 shall maximize the protection of sensitive environmental resources including avoidance of Highlands Open Waters buffer areas, Riparian Areas, the forested portion of the Forest Resource Area, agricultural lands of Agricultural Resource Areas (ARAs), Steep Slopes, Prime Ground Water Recharge Areas, and Critical Habitat. **Policy 2I2.** To identify through Plan Conformance and Highlands Redevelopment Area designation procedures those lands of the Preservation Area that may be appropriate for the extension or creation of public water supply systems, public wastewater collection and treatment systems and community on-site treatment facilities for redevelopment that would meet the waiver requirements of N.J.A.C. 7:38 and Policy 7G1. **Policy 2J1.** To establish and maintain an inventory of Highlands Public Community Water System infrastructure, including developed parcels with current connections to existing utility service areas. *Objective 2J1a.* The development and maintenance of an inventory of Existing Areas Served. *Objective 2J1b.* The development and maintenance of an inventory of the service areas and capacity of Highlands Public Community Water Supply Systems, including a comprehensive data base of water utilities that are dependent on Current Deficit Areas or Existing Constrained Areas as a source of water, with estimates of the extent to which service area demands and water allocation permits may exceed available water. *Objective 2J1c.* The development of an estimate of available water supply capacity for each Highlands Public Community Water Supply System. *Objective 2J1d.* The identification of remaining available water supply system capacity to support regional growth opportunities within the Highlands Region. **Policy 2J2.** To ensure, through Plan Conformance and Highlands Project Review, that Highlands Public Community Water Systems conform with Policy 2B6. *Objective 2J2a.* Limit future water system demand and reduce existing demand where feasible by water systems that are dependent on Current Deficit Areas or Existing Constrained Areas as a source of water. *Objective 2J2b.* Limit future water system demands to levels that will not create a Current Deficit Area where one does not currently exist. **Policy 2J4.** To minimize, through Plan Conformance, local development review and Highlands Project Review, the creation or extension of public water supply systems within the Protection Zone, the Conservation Zone and the Environmentally-Constrained Sub-zones of the Planning Area, and to allow for the creation or extension of public water supply systems where appropriate within the ECZ.

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RMP Policies and Objectives Addressed (continued)

Objective 2J4a. Prohibit new, expanded, or extended public water systems within the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area unless they are shown to be necessary for and are approved by the Highlands Council for one or more of the purposes listed below. For approvals regarding parts 1, 2, and 3, the project must maximize the protection of sensitive environmental resources such as Highlands Open Waters buffer areas, Riparian Areas, the forested portion of the Forest Resource Area, agricultural lands of ARAs, Steep Slopes, Prime Ground Water Recharge Areas and Critical Habitat Areas. For approvals regarding part 3, the project must avoid disturbance of Highlands Open Waters buffer areas, Riparian Areas, Steep Slopes and Critical Habitat, and must minimize disturbance of the forested portion of the Forest Resource Area, agricultural lands of ARAs, and Prime Ground Water Recharge Areas. The extension or creation of systems shall follow the requirements in Objective 2J4b (parts 2 and 3). The applicable purposes are:

1. To address through a waiver under Policy 7G1 or 7G2 a documented existing or imminent threat to public health and safety from contaminated domestic and other on-site water supplies that is of sufficient scale to justify a public water supply and where no alternative is feasible that would sufficiently assure long-term protection of public health and safety. Such needs shall have highest priority for allocation of existing system capacity;
2. To address development permitted through a Highlands Redevelopment Area or takings waiver under Policy 7G1 or 7G2; or
3. To serve a cluster development that meets all requirements of Objective 2J4b.

Objective 2J4b. Clustered development served by public water supply within the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area shall be approved only if the following conditions are met:

1. The development impacts are otherwise consistent with the requirements of the RMP, including provisions for mandatory clustering in ARAs pursuant to Policy 3A5;
2. Extension of an existing public water system will occur only where the cluster development is within or immediately adjacent to an Existing Area Served with available capacity;
3. Creation of a new public water system will occur only where such development is not within or immediately adjacent to an Existing Area Served with available capacity;
4. The clustered development preserves at least 80% of the cluster project area in perpetuity for environmental protection or agricultural purposes. To the maximum extent feasible the developed portion (e.g., not including wetlands, Highlands Open Waters buffers, and recreational lands) occupies no more than 10% of the cluster project area if served by a public or community on-site wastewater system; and
5. Where the preserved land in the cluster project area is dedicated to agricultural purposes, the cluster development ordinance and an Agriculture Retention/Farmland Preservation Plan supports continued agricultural viability of the agricultural land and requires the implementation of best management practices, including development and implementation of a Farm Conservation Plan that addresses the protection of water and soil resources prepared by the USDA Natural Resources Conservation Service (NRCS), Technical Service Provider (TSP), appropriate agent or NJDA staff, and approved by the local Soil Conservation District (SCD).

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RMP Policies and Objectives Addressed (continued)

Objective 2J4c. Allow the expansion or creation of public water systems within the ECZ of the Planning Area, other than the Environmentally-Constrained Sub-zone, to serve lands which are appropriate for designated TDR Receiving Zones, infill, or redevelopment, to meet needs and protection requirements equivalent to Objective 2J4a within the ECZ, or to serve new areas for development that meet all other requirements of the RMP. TDR Receiving Zones, affordable housing projects (where the affordable units exceed 10% of the total units), infill and redevelopment shall have higher priority for capacity than expansion of public water service areas within this Zone.

Objective 2J4d. All development within the Highlands Region, in areas that are not served by public water systems, shall be at a density that can be supported by on-site wells. Where cluster development in the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area shall be served by on-site wells, and the undeveloped land is preserved for agricultural purposes in perpetuity, the cluster design in combination with the Agriculture Retention/Farmland Preservation Plan required by Objective 2J4b shall provide for Best Management Practices that protect the on-site wells from contamination resulting from agricultural practices and shall include provisions to minimize or reduce net pollutant loadings from the total project area including the preserved agricultural lands.

Policy 2J5. To prohibit, through local development review and Highlands Project Review, new or increased water resource transfers between subwatersheds unless it is demonstrated that no other option exists to meet public health, safety and welfare objectives and where such transfers do not result in impairment of resources in the subwatershed from which water is proposed to be transferred.

Policy 2J7. To require water resource management for all development in the Highlands Region, through local development review and Highlands Project Review.

Objective 2J7b. Require consideration of and the cost-effective use of recycled or re-used water rather than potable public water for non-potable purposes such as fountains, and nonessential uses such as golf courses, certain recreational, commercial, or agricultural uses.

Objective 2J7c. Require that new residential development served by public community water systems, be except where also served by septic systems, at a minimum density of 1/2 acre per dwelling unit for the developed part of the site (e.g., not including wetlands, Highlands Open Waters buffers, recreational space), to ensure cost-effective utility service.

Objective 2J7d. Require that new non-residential development served by public water systems, except where also served by septic systems, be designed to target a floor area ratio (FAR) of 0.84 for the developed part of the site (e.g., not including wetlands, Highlands Open Waters buffers, recreational lands) to the maximum extent feasible, as a means to maximize parking and employment efficiency and compact development.

Policy 2J8. To ensure continued refinement and development of the RMP.

Objective 2J8b. Coordinate with NJDEP, water purveyors and water utilities to ensure that service areas and franchise areas are supplied by and consistent with sustainable yields from their designated sources.

Policy 2K1. To establish and maintain an inventory of Highlands public wastewater management infrastructure, including developed parcels with current connections to existing utility service areas.

Objective 2K1a. The development and maintenance of an inventory of Existing Areas Served.

Objective 2K1b. The development and maintenance of an inventory of the service areas and capacity of Highlands Domestic Sewerage Facilities.

Objective 2K1c. The development of an estimated Available Wastewater Treatment Capacity for each Highlands Domestic Sewer Facility.

Objective 2K1d. The identification of remaining available wastewater treatment capacity to support regional growth opportunities within the Highlands Region.

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RMP Policies and Objectives Addressed (continued)

Policy 2K2. To base projected demand for current needs, appropriate economic revitalization and opportunities for designated TDR Receiving Zones within Existing Areas Served on existing maximum three month demands plus an estimate of redevelopment needs based on either Highlands Council regional analyses or more detailed local analyses, to assess whether there is adequate treatment capacity to encourage redevelopment.

Policy 2K3. To provide adequate, appropriate, efficient and cost-effective wastewater management to all development in the Highlands Region, through Plan Conformance, local development review and Highlands Project Review.

Objective 2K3a. Areawide WQMPs, including WMPs and project-specific amendments, shall be examined for consistency with requirements of this Plan. The Highlands Council shall prepare and transmit to NJDEP consistency determinations for these amendments prior to NJDEP decision in accordance with N.J.A.C. 7:38-1.1 and N.J.A.C. 7:15.

Objective 2K3b. Existing wastewater collection and treatments systems which are non-compliant with state water quality standards for wastewater treatment and effluent discharge shall be prohibited from collecting and treating additional wastewater until the treatment systems are fully compliant with State permit requirements.

Objective 2K3c. Prohibit new, expanded, or extended public wastewater collection and treatment systems and community on-site treatment facilities within the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area unless they are shown to be necessary for and are approved by the Highlands Council for one or more of the purposes listed below. For approvals regarding parts 1, 2, and 3, the project must maximize the protection of sensitive environmental resources such as Highlands Open Waters buffer areas, Riparian Areas, the forested portion of the Forest Resource Area, agricultural lands of ARAs, Steep Slopes, Prime Ground Water Recharge Areas and Critical Habitat. For approvals regarding part 3, the project must avoid disturbance of Highlands Open Waters buffer areas, Riparian Areas, Steep Slopes and Critical Habitat, and must minimize disturbance of the forested portion of the Forest Resource Area, agricultural lands of ARAs, and Prime Ground Water Recharge Areas. The choice of extension or creation of systems shall follow the requirements in Objective 2K3d (2 and 3). The applicable purposes are:

1. To address through a waiver under Policy 7G1 or 7G2 a documented existing or imminent threat to public health and safety from a pattern of failing septic systems (where the failing systems cannot reasonably be addressed through rehabilitation or replacement) or highly concentrated septic systems, where the threat is of sufficient scale to justify a public wastewater collection and treatment system or community on-site treatment facility and where no alternative is feasible that would sufficiently assure long-term protection of public health and safety. To address other issues of public health and safety, such needs shall have highest priority for allocation of existing system capacity;
2. To address development permitted through a Highlands Redevelopment Area or takings waiver under Policy 7G1 or 7G2; or
3. To serve a cluster development that meets all requirements of Objective 2K3d.

Objective 2K3d. Clustered development served by a public wastewater collection and treatment system or community on-site treatment facility within the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area shall be approved only if the following conditions are met:

1. The development impacts are otherwise consistent with the requirements of the RMP, including provisions for mandatory clustering in ARAs pursuant to Policy 3A5;
2. Extension of an existing public wastewater collection and treatment system will occur only where the cluster development is within or immediately adjacent to an Existing Area Served with available capacity;

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RMP Policies and Objectives Addressed (continued)

3. Creation of a community on-site treatment facility will occur only where such development is not within or immediately adjacent to an Existing Area Served with available capacity, where the proposed system is designed, permitted, and constructed at a capacity limited to the needs of the clustered development, and where the system does not create the potential for future expansion into areas that are not the subject of cluster developments immediately adjacent to the initial cluster served;
4. The cluster development preserves at least 80% of the cluster project area in perpetuity for environmental protection or agriculture purposes. To the maximum extent feasible the developed portion of the project area (e.g., not including wetlands, Highlands Open Waters buffers, and recreational lands) occupies no more than 10% of the cluster project area if served by a public or community on-site wastewater system; and
5. Where the preserved land in the cluster project area is dedicated to agricultural purposes, the cluster development ordinance and an Agriculture Retention/Farmland Preservation Plan supports continued agricultural viability of the agricultural land and requires the implementation of best management practices, including development and implementation of a Farm Conservation Plan that addresses the protection of water and soil resources prepared by the USDA NRCS, TSP, appropriate agent or NJDA staff, and approved by the local SCD.

Objective 2K3e. Allow the expansion or creation of wastewater collection systems within the ECZ of the Planning Area, other than the Environmentally-Constrained Sub-zone, to serve lands which are appropriate for designated TDR Receiving Zones, infill or redevelopment, to meet needs and protection requirements equivalent to Objective 2K3c within the ECZ, or to serve new areas for development that meet all other requirements of the RMP. The highest priority for allocation of excess or additional wastewater treatment capacity is to areas where there are clusters of failed septic systems that are located within or adjacent to Existing Areas Served. TDR Receiving Areas, where designated, affordable housing projects (where the affordable units exceed 10% of the total units), infill and redevelopment shall have higher priority for capacity than other developments requiring expansion of sewer service areas.

Policy 2K4. To ensure the efficiency and cost-effectiveness of public wastewater collection and treatment systems, through Plan Conformance, local development review, and Highlands Project Review.

Objective 2K4a. Require that new residential development served by public wastewater collection and treatment systems be at a minimum density of 1/2 acre per dwelling unit for the developed part of the site (e.g., not including wetlands, Highlands Open Waters buffers, and recreational space) to ensure cost-effective utility service.

Objective 2K4b. Require that new non-residential development served by public wastewater collection and treatment systems be designed to target a floor area ratio (FAR) of 0.84 for the developed part of the site (e.g., not including wetlands, Highlands Open Waters buffers, recreational space) to the maximum extent feasible, as a means to maximize parking and employment efficiency and compact development.

Objective 2K4c. Require the use of recycled or re-used water wherever possible including aesthetic purposes and non-potable purposes such as fountains, golf courses, and other recreational, commercial or agricultural uses.

Policy 3C1. To prohibit through Plan Conformance, local development review and Highlands Project Review the development of additional water and wastewater infrastructure in a ARA within the Conservation and Protection Zones of the Planning Area, unless they meet the requirements of Policy 2J4 with Objectives 2J4a through 2J4d, and Policy 2K3 with Objectives 2K3a through 2K3e, and will maximize the preservation of agricultural lands within the ARA.

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RMP Policies and Objectives Addressed (continued)	**Policy 6C2.** To ensure through Plan Conformance, local development review and Highlands Project Review that any future development or redevelopment which does occur in a Protection Zone is subject to standards and criteria which protect the land and water resources of the Protection Zone from any potential adverse impact to the maximum extent possible. **Policy 6D3.** To limit through Plan Conformance, local development review and Highlands Project Review the use and development of lands within the Conservation Zone to agriculture use and development, including ancillary and support uses, redevelopment of existing developed areas, and environmentally-compatible low density land uses that are to the maximum extent possible achieved in compact development patterns, to be designed and developed in a manner which is compatible with the long term use of adjacent land for agricultural purposes. **Policy 6F4.** To ensure that development and redevelopment within the ECZ are served by adequate public facilities including water, wastewater treatment, transportation, educational and community facilities. *Objective 6H1b.* Prevent the extension or creation of water and wastewater utility services in the Protection Zone, Conservation Zone, and Environmentally Constrained Sub-zones of the Planning Area, unless they meet the requirements of Policy 2J4 with Objectives 2J4a through 2J4d, and Policy 2K3 with Objectives 2K3a through 2K3e, and will maximize the protection of agricultural and environmentally sensitive resources. **Policy 6I1.** To require that conforming municipalities and counties include land and water resource planning and management programs in their master plans and development regulations. *Objective 6I1a.* Adopt municipal and county master plans and land development regulations that require that cluster developments preserve in perpetuity for environmental protection or agricultural purposes at least 80% of the cluster project area. To the maximum extent feasible the developed portion (i.e., not including wetlands, Highlands Open Waters buffers, and recreational lands) occupies no more than 10% of the cluster project area if served by a public or community on-site wastewater system. *Objective 6I1b.* Municipal and county master plans and development regulations which require appropriate and potable water, wastewater disposal, and transportation facilities. **Policy 6J2.** To encourage redevelopment in the ECZ in the Planning Area of brownfields, grayfields, and other previously developed areas that have adequate water, wastewater, transportation capacity, and are appropriate for increased land use intensity or conversion to greenfields, as approved through Plan Conformance or the Highlands Redevelopment Area Designation process. **Policy 6J3.** To encourage redevelopment in the Conservation and Protection Zones in the Planning Area of brownfields and grayfields that have adequate water, wastewater, transportation capacity, and are appropriate for increased land use intensity or conversion to greenfields, as approved through Plan Conformance or the Highlands Redevelopment Area Designation process.
Verification of Available Facility Capacity for Water Supply and Wastewater Utilities	The RMP's estimation of available utility capacity is based on a comparison of the NJDEP-approved facility capacity to the maximum monthly demand for water supply and the maximum three month flows for wastewater through the year 2004. Municipalities and utilities may provide updated or more detailed information to revise the RMP estimates, through the RMP Update process. Updated or detailed information may include, but is not limited to: • Updated or corrected information on NJDEP-approved facility capacity, such as approved WMPs, New Jersey Pollutant Discharge Elimination System (NJPDES) permits, treatment works approvals and Capacity Assurance Plans (for facilities where three month average flows exceed 80% of their facility capacity) for wastewater utilities, or water allocation permits, "safe yield" and "firm capacity" for water supply utilities; • Corrections regarding the water demands or wastewater flows during the period used in the RMP estimates, including information from Discharge Monitoring Reports, Water Allocation Permit reports, or Safe Drinking Water Permit reports;

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Verification of Available Facility Capacity for Water Supply and Wastewater Utilities (continued)	• More recent estimates of the maximum monthly water demands or rolling three month wastewater flows based on information reported to the NJDEP; • Documentation of temporary demands (especially for water supply) that should not be included in the demand analysis, such as temporary bulk sales of water to an adjacent utility to address an emergency or other temporary situation; • Documentation of the permanent conversion of a land use that will significantly change (increase or decrease) its water use or wastewater generating characteristics; • Documentation of any temporary cessation or major reduction in water demand or wastewater generation, where renewal previous levels is anticipated and should be reflected in the calculation of existing demands; • Documentation of contractual commitments for new water use or wastewater generation with all relevant regulatory approvals, which should be added to the existing demands (Note: these values must not include general contracts for service that are not directly connected to approved land uses, such as contracts between a regional utility and a municipality). • Court-ordered commitments for new water use or wastewater generation (e.g., scarce resource orders), which should be added to the existing demands; and • Estimates regarding the impact of RMP requirements for water conservation and efficiency methods on water demands and wastewater flows. The results of any reanalysis of available utility capacity must be provided to the Highlands Council with supporting documentation for consideration as an RMP Update. If approved, the updated estimates will become the basis for planning. Changes in system ownership, identification, or permit limits resulting from privatization, transfer of ownership, or utility consolidation should also be reported. These changes do not modify the estimated utility capacity, but allow the Highlands Council to track utility capacity through ownership changes.
Identification of Resource and Regulatory Constraints on Utility Capacity	Each water and wastewater utility faces unique constraints on its ability to provide services to a defined service area. In addition to facility capacity as discussed above, resource and regulatory constraints may exist and must be identified. Some of these factors are addressed under the *Land Use Capability Analysis Program*, and are briefly discussed here as well. In each case, the Highlands Council may consider RMP Updates based on the corrections or updated information provided. Constraints include but are not limited to: • Net water availability, which may constrain both water supply service and the resulting wastewater generation. Water availability may constrain growth potential in an area, regardless of water treatment facility capacity. If the areas within a sewer service area lack sufficient water supply, then wastewater generation will be constrained regardless of facility size. Where net water availability is zero or negative, no extension of service from an existing utility facility may occur unless all RMP mitigation requirements are met. No increase in utility facility capacity for an existing facility shall occur unless a Water Use and Conservation Plan has been approved that will provide sufficient water availability to support the additional capacity. In such instances the operator or municipality must agree to implement the Water Use and Conservation Plan in a timeframe that achieves continuing and routine reductions in the deficit in advance of additional water uses. Full implementation shall be mandatory in accordance with a schedule established in the Water Use and Conservation Plan; • NJDEP Preservation Area rules at N.J.A.C. 7:38-2.5 and 3.2 regarding restrictions on increased or new water allocations of 50,000 gpd, and N.J.A.C. 7:38-2.6 and 3.4, prohibiting new or expanded NJPDES-permitted wastewater treatment works except where exemptions or waivers apply; • Safe yields for reservoirs, which will limit water supply capacity regardless of water treatment facility capacity;

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Identification of Resource and Regulatory Constraints on Utility Capacity (continued)	• Source water quality, which may constrain the capacity of water supply facilities due to treatment requirements that the current facilities cannot meet; and • Areawide WQMPs, including: – WMPs, which define the maximum sewer service area and wastewater facility capacity allowable (both of which may be further constrained by the RMP), as modified to address Preservation Area restrictions; – TMDLs, which may limit additional discharges of an existing wastewater treatment facility to a water body, or may require facility upgrades; and – Other direct limits on wastewater treatment facility capacity, such as court orders or the United States Environmental Protection Agency (USEPA) limit of 12 million gpd on the Rockaway Valley Regional Sewerage Authority facility to protect safe yield in the Jersey City Reservoir System from upstream water withdrawals. Under any of these scenarios, the resource capacity, rather than the utility facility capacity, may become the limiting factor. In most cases, with the notable exception of Net Water Availability, changes to the resource limitations must first be approved by the relevant agency (usually the NJDEP or the USEPA), and then provided to the Highlands Council as an RMP Update.
Identification of Additional Constraints on Utility Capacity	In some instances, franchise agreements or other contractual tools may directly limit utility capacity. Where such constraints exist, they should be identified as part of the local planning process and incorporated into the Utility Services Element of the municipal master plan.
Protection of Environmental Resources Within Service Areas	Proposed service areas, including Existing Areas Served, must be defined and regulated to ensure that sensitive environmental resources are protected from development that relies on water and wastewater service. Contiguous areas of sensitive environmental resources using the thresholds for Land Use Capability Zone designation under the RMP must be excluded from the service areas unless proof is provided through the RMP Update process that the basis for the resource mapping is incorrect. Smaller areas may also be excluded from the service areas at the discretion of the municipality. Where the smaller areas are included in the service areas, they must be protected from proposed development through municipal ordinances and local development review that meets all relevant RMP standards, including but not limited to: • Preservation Area restrictions in accordance with N.J.A.C. 7:38; • Agricultural Resource Areas and agricultural lands of such Areas; • Forest Resource Areas and the forested portion of such Areas; • Conservation and Protection Zones of the Planning Area; • Environmentally-constrained Sub-zones of the Conservation and ECZ of the Planning Area; • Highlands Open Waters buffer areas, Riparian Areas, Steep Slopes, Karst Topography, Prime Ground Water Recharge Areas, Wellhead Protection Areas and Critical Habitat. Stringent limitations exist on utility service areas in the Preservation Area, regardless of Land Use Capability Zone, including the NJDEP Preservation Area rules at N.J.A.C. 7:38-3.3 regarding restrictions on the extension of water supply utility service, and N.J.A.C. 7:38-2.6 regarding the revocation of sewer service areas. These requirements are not applicable to exempt activities, and the requirements may be modified through a HPAA with a waiver in accordance with N.J.A.C. 7:38. Cluster development in the Preservation Area is not eligible for infrastructure waivers, and therefore will use septic systems where it occurs at all. In general, the creation or extension of water supply and wastewater infrastructure in the Preservation Area will be extremely limited.

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Protection of Environmental Resources Within Service Areas (continued)	The RMP includes exceptions to serve certain kinds of cluster development, to address a documented threat to public health and safety where no alternative is feasible, to provide for Highlands Redevelopment Areas, and to provide for minimum practical use in the absence of any alternative. Permission for these exceptions where applicable occurs by issuance of a HPAA with a waiver in the Preservation Area or by approval of the Highlands Council in the Planning Area. In all cases, the extent of the exception is limited to maximize the protection of sensitive environmental resources. Clustering, redevelopment, and known public health and safety issues may be planned for and included in Plan Conformance, but most often these exceptions will be addressed through specific RMP Plan Adjustments and Highlands Project Reviews. It should be noted that the "minimum practical use" exception will very rarely require the extension of public water or wastewater services, but this may occur in limited situations where lots are highly constrained (e.g., unable to support on-site water and wastewater systems) and adjacent to existing utility services.
Build Out Analysis for the Existing Area Served in the Highlands, and Non-Highlands Approved Service Areas	Once the available capacity of the utility facility has been verified or modified and the impacts of resource, regulatory, and other constraints have been applied, a complete picture will be available of the ability of a water supply or wastewater utility to serve additional development – the net utility capacity. Where zero or negative, no additional services should be provided until management efforts (e.g., water conservation, service line rehabilitation, facility changes) result in a positive net utility capacity. Potential development drawing upon net utility capacity may consist of infill, rehabilitation, redevelopment, cluster development, or general greenfields development. The first step is to determine how much capacity is likely to be demanded by development in the Existing Area Served in the Highlands Region (reflecting, among other issues, restrictions on service areas in the Preservation Area imposed by the Highlands Act and implemented through the NJDEP Preservation Area rules at N.J.A.C. 7:38), and by development outside the Highlands Region in approved service areas. The analyses should include: • Estimated needs within the Existing Area Served for available sewer system capacity to address documented threats to public health from failing septic systems, or for water supply capacity to address a public health threat due to water supply contamination. These have the highest priority for capacity; • Estimated needs within the Existing Area Served for available sewer system capacity and water supply capacity to address TDR Receiving Areas, which shall be the second highest priority for capacity; • Estimated needs of redevelopment within the Existing Areas Served based on either Highlands Council regional analyses or more detailed local analyses; • Estimated needs of infill development within the Existing Areas Served, providing capacity to lots that have not previously been developed or are currently vacant and would be developed at zoning capacity; • Estimated needs for existing development based on anticipated trends in per capita and commercial needs, known shifts in water use and wastewater generation patterns from industrial development, potential for increased or decreased demands based on infrastructure aging and maintenance, etc.; and • Estimated needs for portions of the service areas that are outside of the Highlands Region. The RMP analyses are based on a pro rata allocation of demands based on service area both inside and outside the Highlands Region. Corrections to this allocation may be provided as RMP Updates. The results of this analysis must then be compared to the net utility capacity. Where available capacity is insufficient, expectations for new development must be constrained or utility capacity must be enhanced to meet the identified needs. In the absence of capacity, an expansion of the service areas in the Highlands Region would not be allowed under the RMP.

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Proposed Service Areas, Infrastructure Needs and Densities in Highlands Existing Community Zones

Growth is not a mandatory aspect of the RMP. Rather, the RMP clearly specifies that growth is at the discretion of municipalities. However, where a municipality chooses growth supported by utilities, the RMP provides certain standards to ensure that the growth is well planned, protective of environmental resources, and cost-efficient.

RMP density standards (but not environmental protection standards, as discussed above) are discretionary within current Existing Areas Served. All RMP standards must be met where a municipality proposes the creation or extension of public water supply or wastewater systems for new service areas. New residential development in such areas must have a density of at least two dwelling units per acre (2 DU/acre) in developed portions of the property. Differential densities may be required where a municipality is voluntarily seeking a designated center or is seeking to be eligible for the additional incentives for Highlands TDR Receiving Zones. For commercial development, the intensity standard is a floor area ratio (FAR) of 0.84 for the developed portion of the property. It is important to note that these thresholds do not apply to existing developed areas, and that "the developed portion of the property" is defined to exclude environmentally constrained areas, agriculture, and similar open space. Where a municipality does not wish to meet these standards, development on septic systems and on-site wells must be proposed at densities appropriate for such development, as defined by the RMP.

The purpose of these standards is to ensure that development based on utilities has sufficient density to make cost-effective use of utility lines, minimizing the costs per unit development of construction, operation, maintenance and reconstruction. Part of the cost of development is driven by the efficiency of land use and utility provision. The length of utility lines per unit development is a critical metric. Higher densities (for the developed portion of a property) can both help reduce housing costs and reduce land consumption (helping to protect natural resources). The combined policies on water and wastewater infrastructure and septic system densities will result in development patterns consistent with the principles of Smart Growth, with a clear distinction in development intensities – more concentrated development where utilities are used, and low density growth where utilities are absent.

Build-out Analysis for Proposed Service Areas in Highlands Existing Community Zones

A mandatory component of municipal Plan Conformance is the analysis of build out conditions in the municipality (see *Regional Master Plan Conformance, Consistency and Coordination, Part 1, Plan Conformance*). This build out analysis must incorporate an evaluation of proposed water supply and wastewater utility services, incorporating the factors discussed above. The results of this analysis are used to estimate the anticipated utility demands, first within the Existing Areas Served (as discussed above) and then in new service areas proposed for the ECZ. These proposed ECZ demands must then be compared to the net utility capacity to determine whether sufficient capacity exists. If so, and if all resource protection policies and objectives of the RMP are met within the proposed ECZ service area, then the area may be included in the utility plan and service area. If not, then the area must be excluded from public water or wastewater service. Where the answers are different for the two utilities, a municipality may propose public sewerage with on-site water supply (if safe supplies can be assured), but may not propose public water supply with on-site septic systems as the septic system densities would be far too high. A municipality may also propose taking action to increase utility capacity, if feasible within the policies and objectives of the RMP.

In some cases, utility facility capacity from a regional system may be available to more than one municipality. In such instances, utility capacity shall be directed to potential new service areas in the following manner:

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Build-out Analysis for Proposed Service Areas in Highlands Existing Community Zones (continued)	1. If a specific contractual obligation exists between a utility and a municipality regarding remaining capacity, that municipality may allocate that capacity to new service areas that meet RMP requirements and local needs. If the resulting service areas are insufficient to use the remaining contractual obligation, even with consideration of the potential for TDR receiving zones and redevelopment within the Existing Area Served, then the municipality may negotiate with any other municipality served by the utility for the sale of the remaining contractual obligation, which may then be allocated to areas that meet RMP requirements and local needs; and 2. If no contractual obligation exists for service to individual municipalities (e.g., the utility uses "first come, first served" allocations), then the utility capacity shall be allocated to the first municipality that achieves Plan Conformance, and to each municipality that subsequently achieves Plan Conformance, until the net utility capacity is fully allocated. In each municipality, the priorities for new sewerage shall be in accordance with the RMP policies discussed above.
Proposed Service Areas, Infrastructure Needs and Densities in Highlands Protection and Conservation Zones	Nearly all new water supply and wastewater infrastructure in the Protection and Conservation Zones will address existing public health problems, the creation of clusters, or for Highlands Redevelopment Areas, all of which are constrained in terms of the allowable service areas as discussed below. In addition, RMP policies restrict the development yield of clusters as discussed in the *Cluster/Conservation Design Development Program* and summarized below. An exception to the Centers density standard (but not the 2 DU/acre threshold) applies in the Protection and Conservation Zones; utility service in such Centers shall be at densities appropriate to the Zone, the community character, and the use of public water and wastewater systems.
Potential Service Areas for Clusters, Redevelopment Areas, Exempt Parcels and Public Health Exemptions	If net utility capacity still exists after consideration of all factors previously discussed, or if on-site community systems are proposed to be built (e.g., for clustered development in areas non-adjacent to Existing Areas Served, or to adjacent areas where no utility capacity exists), the municipality may propose service areas to address the needs for clustering, exempt development, or public health and redevelopment site waivers where these needs can be identified, planned for, and incorporated in full compliance with RMP policies and objectives including consideration of net water availability and sensitive environmental land features. Cluster development must meet the requirements of the RMP regarding the extension of services from an adjacent Existing Area Served, or for the creation of new utility facilities elsewhere. Cluster development yields where wastewater utility services are provided must meet RMP requirements as discussed in the *Cluster/Conservation Design Development Program*, including the protection of 80% of the project area and limiting, to the maximum extent feasible, the developed portion to no more than 10% of the property associated with the project (as differentiated from the 80% requirement for clusters on septic systems). As discussed in that program, the RMP encourages municipalities to plan ahead for clustering, for example, to minimize the potential for scattered, uncoordinated cluster development that does not maximize the protection of environmental and agricultural resources and rural community character. Likewise, planning ahead for exempt development can reduce the need for multiple extensions, uncoordinated action, etc. Planning for redevelopment is somewhat more problematic, as some sites may be readily apparent while others may not. Municipalities should not attempt to plan for takings waivers as these cannot be anticipated and will rarely require the extension of public water or wastewater infrastructure.

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Potential Service Areas for Clusters, Redevelopment Areas, Exempt Parcels and Public Health Exemptions (continued)	The public health exemption requires that a documented health threat exist, caused by a pattern of septic system failures, where the failing systems cannot reasonably be addressed through rehabilitation or replacement. Factors to be considered include but are not limited to: 1. Documented health threat: Is the existence of failing systems widespread or spotty? Has an inventory of failing systems documented a broader issue? Note that the area need not show that a large number of systems are currently failing at any one time; rather, the area must show that a pattern of failure is longstanding, pervasive and anticipated to continue; 2. Geology and soils: Do the soils and local geology pose major constraints on septic system function, such that standard septic systems cannot be expected to function properly; 3. Lot size and environmental constraints: Are the lots so small or constrained by slopes, wetlands, floodplains, etc., that installing a replacement system would be environmentally damaging or pose a continuing threat to on-site or neighboring wells; 4. Development density: Is the overall development density such that the average nitrate loadings for the developed portion exceed the cluster development limitation of 10 mg/L? Is the density in excess of or close to the 2 DU/acre minimum density for new sewerage; 5. Development pattern: Does the pattern of existing development provide an opportunity for cost-effective sewerage, with minimal potential for secondary impacts such as sewerage for infill lots; 6. Service area constraints: Does the proposed service area align tightly with the area of documented public health threats, and include provisions to ensure that undeveloped lots proximate to the new service area or along any resulting wastewater lines cannot connect in violation of RMP requirements for the affected Zone; and 7. Treatment system constraints: Where a new community system is proposed, does the capacity match the intended service area with no provision for additional customers?
Utility Services Element	The net result of the planning and analysis discussed in this program will be the water and wastewater utility components of a Utility Services Element for a municipal master plan. The Element should include a summary of each step of the analysis, supported by a basis and background document that fully documents all aspects of the planning methodology. The Element must specifically include: • A list of RMP Updates submitted for Highlands Council validation and incorporation into the RMP; and • A list and description of proposed RMP Adjustments submitted for Highlands Council consideration. Where a County Wastewater Management Plan has been approved by the NJDEP that includes the necessary information for part or all of the municipal Plan Conformance requirement, it may be incorporated by reference.
Project Review Standards	The Highlands Council shall prepare, and municipalities shall adopt by reference through Plan Conformance, Highlands, and local project review standards regarding water and wastewater utility capacity, service areas, service densities, environmental protection requirements, and other relevant issues.

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WASTEWATER SYSTEM MAINTENANCE	
Issue Overview	All development requires some form of wastewater treatment system. All forms of wastewater treatment systems require proper operation and maintenance (O&M). Unfortunately, most septic systems are not properly maintained and many are not operated properly, leading to failures that put human health and the environment at risk. Local Health Boards have the authority to require correction of failures, but maintenance is more cost-effective. The NJDEP has proposed that all municipalities have some form of septic system maintenance program, but cannot mandate such programs where the municipality decides not to participate in WMPs. Only a few Highlands municipalities currently have such programs, and smaller municipalities will likely need assistance to implement septic system maintenance programs. Finally, in some cases, primarily in older communities, homes do not have modern septic systems but instead rely on cesspools or even less effective discharge methods. In all cases, increased septic system density and proximity to sensitive resources (e.g., wells, surface waters) increase the importance of proper O&M. Community-based systems, such as communal septic systems and small treatment wastewater systems, are regulated by NJDEP under the NJPDES program to ensure proper O&M, but not all such system owners are financially and technically capable of ensuring that their systems routinely meet NJDEP requirements through decades of use. Moreover, NJDEP is prohibited from requiring that such facilities have co-permittees to ensure long-term compliance. While NJDEP can take enforcement action regarding its permit conditions, financial failure of the system owner is not easily remedied. Wastewater systems operated by utility authorities and municipal government are generally well-financed through fee-based programs that have a sufficient user base. In addition, NJDEP permitting and enforcement can provide sufficient surety of proper O&M. Accordingly, the RMP does not address O&M for these systems, but the Council will coordinate with the NJDEP to determine where existing systems are potential water quality concerns and to address such issues through NJDEP regulation.
Program Summary	This program helps to ensure that on-site and small community wastewater treatment systems are properly maintained, using methods that complement NJDEP's regulatory programs and requirements. It is focused primarily on septic system maintenance and on small community-based systems (e.g., package plants). Regarding septic systems, the primary purposes are: (1) to ensure that their O&M minimizes the potential threat to public health and the environment, (2) to extend the functioning life-cycle of septic systems, and (3) to reduce the potential need for creation or expansion of sewer systems into non-sewered areas. In many cases, the expansion or creation of sewerage to address septic system failures or excessive density is very costly and could increase demand for other development in inappropriate areas. Regarding the community on-site systems, the primary purposes are: (1) to ensure that the systems retain their viability through proper O&M, and (2) to prevent the need for a transfer of system ownership due to fiscal collapse.
RMP Policies and Objectives Addressed	***Objective 1L6b.*** Septic systems and cesspools on small lots in close proximity to lakes shall be replaced with upgraded individual treatment systems, communal septic systems or community-based wastewater systems wherever feasible and cost-effective, with the selection of replacement technology to ensure minimal secondary impacts, including potential reductions in net water availability, maximum environmental benefit, and financial viability. Community-based systems should not provide for additional land development capacity except for exempt lots within that existing lake community that are not environmentally constrained, or for areas that are otherwise permitted to have wastewater service under the Goals, Policies, and Objectives in Part 2, Subpart D, Sustainable Development, and Water Resources.

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RMP Policies and Objectives Addressed (continued)

Objective 2K3c. Prohibit new, expanded, or extended public wastewater collection and treatment systems and community on-site treatment facilities within the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area unless they are shown to be necessary for and are approved by the Highlands Council for one or more of the purposes listed below. For approvals regarding parts 1, 2, and 3, the project must maximize the protection of sensitive environmental resources such as Highlands Open Waters buffer areas, Riparian Areas, the forested portion of the Forest Resource Area, agricultural lands of ARAs, Steep Slopes, Prime Ground Water Recharge Areas and Critical Habitat. For approvals regarding part 3, the project must avoid disturbance of Highlands Open Waters buffer areas, Riparian Areas, Steep Slopes and Critical Habitat, and must minimize disturbance of the forested portion of the Forest Resource Area, agricultural lands of ARAs, and Prime Ground Water Recharge Areas. The choice of extension or creation of systems shall follow the requirements in Objective 2K3d (2 and 3). The applicable purposes are:

1. To address through a waiver under Policy 7G1 or 7G2 a documented existing or imminent threat to public health and safety from a pattern of failing septic systems (where the failing systems cannot reasonably be addressed through rehabilitation or replacement) or highly concentrated septic systems, where the threat is of sufficient scale to justify a public wastewater collection and treatment system or community on-site treatment facility and where no alternative is feasible that would sufficiently assure long-term protection of public health and safety. To address other issues of public health and safety, such needs shall have highest priority for allocation of existing system capacity;
2. To address development permitted through a Highlands Redevelopment Area or takings waiver under Policy 7G1 or 7G2; or
3. To serve a cluster development that meets all requirements of Objective 2K3d.

Objective 2K3d. Clustered development served by a public wastewater collection and treatment system or community on-site treatment facility within the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area shall be approved only if the following conditions are met:

1. The development impacts are otherwise consistent with the requirements of the RMP, including provisions for mandatory clustering in ARAs pursuant to Policy 3A5;
2. Extension of an existing public wastewater collection and treatment system will occur only where the cluster development is within or immediately adjacent to an Existing Area Served with available capacity;
3. Creation of a community on-site treatment facility will occur only where such development is not within or immediately adjacent to an Existing Area Served with available capacity, where the proposed system is designed, permitted and constructed at a capacity limited to the needs of the clustered development, and where the system does not create the potential for future expansion into areas that are not the subject of cluster developments immediately adjacent to the initial cluster served;
4. The cluster development preserves at least 80% of the cluster project area in perpetuity for environmental protection or agriculture purposes. To the maximum extent feasible the developed portion of the project area (e.g., not including wetlands, Highlands Open Waters buffers, and recreational lands) occupies no more than 10% of the cluster project area if served by a public or community on-site wastewater system; and

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RMP Policies and Objectives Addressed (continued)	5. Where the preserved land in the cluster project area is dedicated to agricultural purposes, the cluster development ordinance and an Agriculture Retention/Farmland Preservation Plan supports continued agricultural viability of the agricultural land and requires the implementation of best management practices, including development and implementation of a Farm Conservation Plan that addresses the protection of water and soil resources prepared by the USDA NRCS, TSP, appropriate agent or NJDA staff, and approved by the local SCD. ***Objective 2K3e.*** Allow the expansion or creation of wastewater collection systems within the ECZ of the Planning Area, other than the Environmentally-Constrained Sub-zone, to serve lands which are appropriate for designated TDR Receiving Zones, infill or redevelopment, to meet needs and protection requirements equivalent to Objective 2K3c within the ECZ, or to serve new areas for development that meet all other requirements of the RMP. The highest priority for allocation of excess or additional wastewater treatment capacity is to areas where there are clusters of failed septic systems that are located within or adjacent to Existing Areas Served. TDR Receiving Areas, where designated, affordable housing projects (where the affordable units exceed 10% of the total units), infill and redevelopment shall have higher priority for capacity than other developments requiring expansion of sewer service areas. ***Objective 2K3f.*** All development within the Highlands Region, in areas which are not served by public wastewater collection and treatment system or community on-site treatment facility, shall be at a density that can be supported by septic systems under Goal 2L. Where cluster development in the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area shall be served by on-site wells, and the undeveloped land is preserved for agricultural purposes in perpetuity, the cluster design and the Agriculture Retention/Farmland Preservation Plan required by Objective 2K3d in combination shall include provisions for best management practices that protect the on-site wells from contamination resulting from agricultural practices and shall include provisions to minimize or reduce net pollutant loadings from the total project area including the preserved agricultural lands. **Policy 2L5.** To establish minimum standards for the placement, design, monitoring and maintenance of septic systems necessary to protect, restore, and enhance ground water quality. ***Objective 2M2a.*** Identify innovative technologies that may be appropriate for the design, installation, and maintenance of on-site wastewater treatment systems to minimize impairment to ground water or surface water quality due to elevated nitrate concentrations and other pollutant loads from septic systems providing the systems meet the minimum standards of N.J.A.C 7:9A.
Routine Maintenance of Residential Septic Systems	Municipalities shall, as a requirement of Plan Conformance, adopt municipal or Board of Health programs and ordinances (or participate in regional Board of Health programs) to improve the maintenance of existing and new residential septic systems. The following maintenance standards apply: 1. Municipalities shall, at a minimum, implement the programs required under the Water Quality Management Planning rules, N.J.A.C. 7:15; 2. Proper O&M shall be encouraged for all septic systems through the annual provision of information to the landowner regarding proper O&M management; and 3. Maintenance shall be ensured through a regulatory system requiring proof of proper maintenance, including but not limited to septic system pump-out, methods to prevent solids and grease migration into the distribution system, and no evidence of chemical disposal that disrupts the biological treatment of wastes, where septic systems: a. Exist at a density that exceeds an average nitrate concentration of 10 mg/L using drought ground water recharge, or b. Are within a Wellhead Protection Area, Prime Ground Water Recharge Area, or Highlands Open Waters Buffer area.

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Life-cycle Maintenance of Residential Septic Systems	Municipalities shall, as a requirement of Plan Conformance, adopt the Standards for Individual Subsurface Sewage Disposal Systems (N.J.A.C. 7:9A). Municipalities shall also adopt municipal or Board of Health ordinances (or participate in regional Board of Health programs) addressing the long-term maintenance needs of new residential development that relies on septic systems, by requiring that each developed lot include a specified and sufficient location for a replacement disposal field. All septic system disposal fields eventually fail as solids and microbial growth clog the field, and therefore require a replacement field to ensure that the system will not fail without potential for rehabilitation at great cost.
Upgrading & Replacement of Residential Cesspools and Other Inadequate Wastewater Systems	Municipalities shall, as a requirement of Plan Conformance, adopt municipal programs or Board of Health ordinances (or participated in regional Board of Health programs) addressing the upgrade of residential wastewater systems that do not perform in a manner similar to or better than standard septic systems. Specifically, at least at time of system failure or property sale, whichever comes first, residential cesspools and other inadequate systems must be upgraded to meet NJDEP Standards for Individual Subsurface Sewage Disposal Systems (N.J.A.C. 7:9A) (or other applicable NJDEP requirements for charitable, non-profit campgrounds) to the maximum extent feasible given site conditions. No home improvements that increase daily domestic wastewater flows shall be permitted unless the wastewater system can be upgraded to satisfy the N.J.A.C. 7:9A standards. Priority shall be placed on such systems that are located in dense development that is dependent on on-site systems, or are within a Wellhead Protection Area or Highlands Open Waters Buffer area.
Upgrading of Septic Systems to Address Threats to Human Health and Ground Water Quality	For ground water quality, unlike surface water quality, there is no specific State program for identifying areas of potential contamination and developing a management plan to restore ground water quality. The Highlands Council shall use its available information on residential development outside of sewer service areas to define locations where existing septic system density significantly exceeds the Land Use Capability Zone Zone or the NJDEP nitrate targets, as potential contamination areas related to septic system density. The Highlands Council will rank the areas by size, severity and threat to human health and the environment, and work with municipalities to identify and confirm ground water quality concerns and evaluate cost-effective methods, where available, to restore ground water quality. Methods may include one or more of the following, with due care to ensure that the replacement does not cause harmful secondary environmental effects such as ground water recharge losses: 1. Upgrade of existing septic systems to alternative on-site treatment systems, at times which maximize cost-effectiveness of the upgrade (e.g., when existing systems fail). Where the alternative systems require special O&M, they should only be implemented if the O&M is ensured; 2. Replacement of individual septic systems with a communal septic system or communal alternative treatment system, with ownership and management in place to ensure O&M; 3. Replacement of individual septic systems with a community-based wastewater treatment system sized to address only the project area, with ownership and management in place to ensure O&M; and 4. Extension of public sewerage where it will not have significant secondary effects such as pressures to develop other areas in Conservation and Protection Zone, which are inappropriate for sewerage.

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Alternative Management Approaches for New Septic Systems	The traditional approach to septic systems is ownership, operation, and maintenance of septic systems by the homeowner. Maintenance is usually not performed, and few homeowners are aware that septic systems have a lifespan and will require replacement, usually at a very high cost. As an optional approach, developers, municipalities, counties, and the Highlands Council should consider the establishment of alternative management systems. The following general concepts would ensure that septic systems are managed in a manner more equivalent to other utility services, with proper maintenance and methods to ensure that homeowners do not face major, unanticipated costs: 1. Ownership of the septic system may remain with the homeowner or, similar to other utility services, be placed with a public or investor-owned utility; 2. Where the septic system remains the property of the homeowner, a mandatory condition of development approval would be a requirement that each homeowner have a maintenance contract for the entire life of the septic system and any replacement; 3. The maintenance contract would provide for routine maintenance, repairs and ultimate replacement, with costs spread over the contract life; and 4. Where septic system ownership is with the utility, a fee-based system would address life-cycle costs for routine maintenance, repairs, and ultimate replacement.
Requirements for New Small-Community Wastewater Systems	Proposals for development in an ECZ, a Council-approved cluster development site, or for which a Highlands Act waiver has been approved by NJDEP or the Highlands Council may require the use of a community-based wastewater treatment system. These systems must be addressed through municipal Plan Conformance approval and must meet the following requirements: 1. The related development must meet all relevant RMP requirements regarding environmental constraints, applicable Land Use Capability Zone policies, and other goals, policies and objectives; 2. The community-based system must be sized such that it only provides capacity for the planned on-site improvements; 3. The community-based system must be owned and operated by an entity with sufficient financial capacity and operating expertise to ensure proper O&M over the life of the community. Owners may include utility authorities, municipal utilities, State agencies, and investor-owned utilities regulated by the NJBPU; and 4. The system and proposed service area must be approved by NJDEP as part of an Areawide WQMP or component WMP, and permitted by NJDEP under the NJPDES program.
Management of Existing Small-Community Wastewater Systems	Where community-based wastewater systems already exist, their continuing financial viability and proper O&M are of concern. All such facilities should already be part of an Areawide WQMP or component WMP, and permitted by NJDEP under the NJPDES program. Where the owner/operator is a utility authority, municipal utility, State agency, or investor-owned utility regulated by the NJBPU, no further action is needed. Municipalities, counties, and the Highlands Council should explore methods by which other facilities can continue to provide sufficient treatment throughout the lifespan of existing communities. Options include:

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Management of Existing Small-Community Wastewater Systems (continued)	1. Requirements for annual reports from the system owner/operator discussing revenue, expenditures, reserve funds, O&M issues, etc., to help identify potential concerns that should be addressed; 2. Allowing or encouraging homeowners associations to transfer ownership of the system to a utility authority, municipal utility, State agency, or investor-owned utility regulated by the NJBPU, with a fee-based system for future O&M; 3. Establishing a special taxation district to provide funding for system O&M in lieu of homeowner association dues, etc.; and 4. Establishing a regional utility authority to either take ownership of or provide O&M services under contract for multiple community-based systems.

PART 3 Agricultural Resources

AGRICULTURAL SUSTAINABILITY, VIABILITY, AND STEWARDSHIP

Issue Overview

Nathan McLean

Agriculture, if it is to remain viable in the New Jersey Highlands, requires a sustainable land base. The Highlands Region contains over 859,000 acres of land of which over 118,000 acres consisted of agricultural land in 2002. Since the inception of the SADC's Farmland Preservation Program approximately 33,765 acres of agricultural land in the Highlands Region have been preserved for agricultural use. Agricultural land in the Highlands Region is an important resource that provides economic benefits to New Jersey in the form of agricultural production and agri-tourism, provides a local food source to area residents using less energy than would be required to import produce from other regions, and helps maintain the Highlands rural character. In order to preserve and sustain agricultural resources and enhance the viability of the agricultural industry, preservation of farms throughout the Highlands Region must be encouraged and funded. Programs are needed that focus more on the practices farmers can use to achieve sustainable profitability, sustainable stewardship practices for agricultural and natural resources, and sustainable coexistence with non-farmers in a densely populated state.

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Issue Overview (continued)	The preservation of agricultural land and the viability of the agricultural industry in the Highlands Region are two essential objectives of the Highlands Act. The New Jersey Legislature declared that the agricultural lands in active production in the Highlands Region are important resources of the State that should be preserved, and that the agricultural industry in the Highlands Region is a vital component of the economy, welfare, and culture of the Garden State. The Legislature also declared that the maintenance of agricultural production and a positive agricultural business climate should be encouraged to the maximum extent possible wherever appropriate in the Highlands. To sustain and enhance agricultural resources and the viability of the agricultural industry, it is necessary to provide incentives and funding opportunities, to not only preserve agriculture, but to encourage land stewardship through Best Management Practices that enhance the resources of the Highlands Region. As stewards of the land, many farmers already implement BMPs. The Agricultural Resources Program seeks to reward these individuals with incentives and funding opportunities.
Program Summary	This program inventories existing and preserved agricultural lands and evaluates the resource value of agricultural lands, in order to assess agricultural resources and the agricultural industry in the Highlands Region. The resource value of agricultural lands was developed by utilizing ranking criteria from the New Jersey Department of Agriculture (NJDA) SADC Farmland Preservation Program and the County Agriculture Development Board (CADB) farmland preservation programs. In order to maximize the preservation and stewardship of agricultural land the program shall coordinate with existing federal, State, county, and non-profit farmland preservation and agricultural stewardship programs and develop alternative or innovative programs appropriate to the New Jersey Highlands Region. These programs are essential to the farmers and residents of New Jersey to sustain and enhance agricultural resources, to enhance the viability of the agricultural industry, to provide local availability of agricultural products, and maintain the Highlands rural character.
RMP Policies and Objectives Addressed	**Policy 3A1.** To create and maintain an inventory of preserved farms, farmland assessed lands, other lands in agricultural use, and undeveloped vacant lands which contain soils which are highly suitable for agricultural use in the Highlands Region. **Policy 3A4.** To promote farmland preservation and limit non-agricultural uses within the ARAs and accord priority to the preservation of agricultural lands within Agricultural Priority Areas, through fee simple acquisition, less than fee acquisition, TDR, and other agricultural land conservation techniques. ***Objective 3A4a.*** Create and maintain a confidential inventory of agricultural lands in the ARAs, in coordination with the New Jersey Department of Agriculture (NJDA) and the SADC, to prioritize the preservation of farmland. ***Objective 3A4b.*** Implement through Plan Conformance Agriculture Retention/Farmland Preservation Plan elements and development regulations promoting preservation in the ARAs and limiting non-agricultural uses within the ARA to those uses that support the preservation of farmland, avoid conflicts with agriculture, maintain and enhance the sustainability and continued viability of the agricultural industry, protect important farmland soils, and meet resource management and protection requirements of the RMP. **Policy 3A5.** Where it is not feasible to preserve agricultural lands within the ARA by such methods as fee simple acquisition, easement acquisition, or a TDR Program, require mandatory clustering through Municipal Plan Conformance, local development review and Highlands Project Review for residential development in an ARA. Cluster development within the Planning Area that incorporates public or community on-site wastewater utilities shall meet the requirements of Policy 2J4 with Objectives 2J4a through 2J4d, and Policy 2K3 with Objectives 2K3a through 2K3e, and within the Preservation area shall meet the requirements of Policy 2I1 and Objectives 2I1a and 2I1b, and where reliant on septic systems shall meet the requirements of Objective 6I1a.

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RMP Policies and Objectives Addressed (continued)	***Objective 3A5a.*** Implement regulations requiring that cluster or conservation design development proposed within an ARA support the preservation of farmland, avoid conflicts with agriculture, maintain and enhance the sustainability and continued viability of the agricultural industry, protect Important Farmland Soils and meet resource management and protection requirements of the RMP. ***Objective 3A5b.*** Implement regulations requiring that all cluster or conservation design development proposed in an ARA be buffered appropriately with existing natural resources, such as hedgerows or trees, or with new buffers to avoid conflicts between non-agricultural development and agricultural activities, and to protect existing agricultural uses and sensitive environmental resources. ***Objective 3A5c.*** Implement regulations requiring that all land preserved in perpetuity for environmental protection or agricultural purposes as a result of clustering be subject to a conservation easement enforceable by the Highlands Council and at least one of the following: the appropriate municipality, for agricultural purposes the CADB or the SADC and for environmental purposes Green Acres or a qualified land trust non-profit organization. ***Objective 3A5d.*** Where the preserved land in the cluster project area is dedicated to agricultural purposes, the cluster development ordinance and an Agriculture Retention/Farmland Preservation Plan supports continued agricultural viability of the agricultural land and requires the implementation of best management practices, including development and implementation of a Farm Conservation Plan that addresses the protection of water and soil resources prepared by the USDA NRCS, TSP, appropriate agent or NJDA staff, and approved by the local SCD. **Policy 3A6.** To permit through local development review and Highlands Project Review limited development, including family and farm labor housing in ARAs which are necessary to support the viability of the agricultural operation, in coordination with the NJDA and the SADC, and subject to compliance with the resource management and protection requirements of the RMP. **Policy 3A8.** To serve as a regional clearinghouse for information regarding agriculture preservation programs and funding sources, protection and enhancement of the agricultural industry, agriculture stewardship programs, and technical assistance for public and private organizations in order to maximize agriculture preservation efforts in the Highlands Region. ***Objective 3A8a.*** Encourage coordinated activities of appropriate federal, State, county, municipal, and non-profit representatives for agriculture preservation and stewardship funding and programs, and technical assistance in order to maximize agriculture preservation efforts in the Highlands Region. ***Objective 3A8b.*** Coordinate with the State Historic Preservation Office (SHPO) and the SADC to include historic structures in tax incentive and adaptive reuse funding programs. **Policy 3B1.** To encourage private and public owners of lands within an ARA to lease open lands to farmers and/or to manage open space lands in a manner which is compatible with adjoining agricultural uses. **Policy 3B2.** To promote research and study, and support proposals to enhance the long-term viability of the agricultural industry in the Highlands Region through innovative programs, including, but not limited to, health care, banking practices, housing, food distribution, education, energy, and labor. **Policy 3B3.** To seek additional funding from any and all state and federal funding programs to maintain and enhance sustainability and continued viability of the agricultural industry within the Highlands Region.

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RMP Policies and Objectives Addressed (continued)	**Policy 3B4.** To support incentives and funding opportunities for the control of invasive species, white-tailed deer reduction programs, and the water value of well-managed agricultural lands. **Policy 3B5.** To promote and enhance innovative agricultural practices and programs that promote long-term viability of the agricultural industry including, but not limited to, direct marketing, organic farming, agri-tourism such as farmers markets and road side stands, niche markets, and community supported agriculture. **Policy 3C1.** To prohibit through Plan Conformance, local development review and Highlands Project Review the development of additional water and wastewater infrastructure in a ARA within the Conservation and Protection Zones of the Planning Area, unless they meet the requirements of Policy 2J4 with Objectives 2J4a through 2J4d, and Policy 2K3 with Objectives 2K3a through 2K3e, and will maximize the preservation of agricultural lands within the ARA. **Policy 3D1.** To work with the SADC and the GSPT to establish incentives for any landowner in the Highlands Region seeking to preserve land under the farmland preservation program that would be provided in exchange for the landowner agreeing to permanently restrict the amount of impervious surface and agricultural impervious cover on the farm to a maximum of 5% of the total land area of the Farm Management Unit. **Policy 3D4.** To promote the use of appropriate alternative and innovative wastewater treatment systems to provide enhanced protection of surface and ground water quality in ARAs of the Conservation Zone. **Policy 3D5.** To promote efforts to increase the use of USDA NRCS and Farm Service Agency cost-share programs, Integrated Pest Management, and Integrated Crop Management programs and other innovative management techniques, in coordination with the NJDA and Rutgers Cooperative Extension, that reduce pesticide and fertilizer use and promote Best Management Practices in conjunction with agricultural activities. **Policy 3D6.** To identify subwatersheds with elevated nitrate levels and develop and implement management plans to enhance water quality in these subwatersheds while maintaining and enhancing agricultural viability. **Policy 3E3.** To require conforming municipalities and counties, with farmland preservation programs or a significant agricultural land base, to incorporate Right to Farm provisions, in accordance with N.J.S.A. 4:1C-1 et seq. and N.J.A.C. 2:76-2, in their master plans and development regulations. **Policy 3E4.** To address agricultural or horticultural development and agricultural or horticultural use through Plan Conformance in accordance with the Right to Farm Act, N.J.S.A. 4:1C-1, and in coordination with the NJDA, the SADC, and the CADB. ***Objective 3E4a.*** To cooperatively develop, in coordination with the SADC, specific Agricultural Management Practices that address air and water, quality control, noise control, pesticide control, fertilizer application, integrated pest management, labor practices, and other related activities consistent with the resource management and protection requirements of the RMP.
Inventory of Agricultural Lands	The loss of farmland over recent decades emphasizes the crucial need to promote the preservation of contiguous acres of agricultural land to sustain agricultural resources and ensure a positive agricultural business climate. In order to accomplish this goal, the Highlands Council, collaborating with the NJDA, the Highlands CADBs and the SADC, must first identify and inventory the scope of the agricultural industry in the Highlands Region, through the use of existing data. This assessment will be completed using the NRCS Soil Survey Geographic (SSURGO) Database for farmland soils, data on preserved farms, tax assessor records for farmland assessment, the NJDEP land use/land cover data, aerial photography, agricultural surveys and other data sources.

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Implementation of Strategies to Promote Preservation in the Agricultural Resource Areas and the Agricultural Priority Areas	To promote long-term sustainability of agricultural resources and the viability of the agricultural industry in the Highlands Region a healthy agricultural environment and an agricultural land base are necessary. To continue to achieve the objective of preserving farmland in the Highlands Region, the Council will identify productive agricultural lands within the ARA through an assessment of agricultural resource values in order to prioritize agricultural lands for preservation. The purpose for assigning values to agricultural resources enhances the goal to preserve a primary agricultural land base that is being used for, or offers the greatest potential for continued, commercially significant agricultural production. Municipalities and counties involved in the Plan Conformance process will be required to implement Agriculture Retention/Farmland Preservation Plan elements and development regulations promoting preservation in the ARA and limiting non-agricultural uses in the ARA to those that sustain and enhance agricultural resources. In order to determine the priority areas for farmland preservation, the Highlands Council, in coordination with the NJDA and SADC, utilized the results of the agricultural resource assessment to identify those lands within the Highlands Region which have the highest agricultural resource values. Figure 5.3 *Agricultural Priority Area* displays the relative value of these agricultural resources in order to provide a prioritization mechanism for future farmland preservation activities in the Highlands Region. Figure 5.3 *Agricultural Priority Area* also identifies lands preserved in perpetuity as farmland to show contiguity between preserved farmland and priority agricultural lands in the Region. In coordination with the NJDA and the SADC, the Council will create and maintain a confidential inventory of agricultural lands in the Agricultural Priority Area. This inventory will also be analyzed using the Highlands CADB priorities to maximize preservation efforts in the Highlands Region. The identification of the APA and of the confidential inventory of agricultural lands in the APA is described in the *Sustainable Agriculture Technical Report*. In addition to promoting preservation and limiting non-agricultural uses in the ARA, the Highlands Council will coordinate with the NJDA and SADC to encourage private and public owners of lands in the ARA to lease open lands to farmers and manage adjacent open space lands in a manner that is compatible with adjoining agricultural uses to minimize Right to Farm conflicts.
Cluster/ Conservation Design Development	Due to limited funding and program opportunities not all agricultural lands worthy of preservation can be preserved through fee simple acquisition, easement acquisition, or TDR. The NJDA SADC Farmland Preservation Program includes outright purchases of development rights to preserve farmland under the Direct Easement and the Fee Simple Acquisition Programs. In both cases the land is permanently deed-restricted for agricultural use, but when the SADC purchases a farm outright through fee simple, the farm is resold at public auction as a permanently preserved farm, deed-restricted to agricultural use. The landowner that purchases the farm at auction must adhere to the deed restrictions, which is no different than easements acquired through the CADB process. State, county, and local farmland preservation programs have funding constraints and as a result techniques such as clustering that accommodate limited growth and preserve agricultural lands are necessary. In an ARA, where other land preservation techniques are not feasible, clustering will be mandatory for residential development through Municipal Plan Conformance, local development review, and Highlands Project Review. The use of clustering must preserve at least 80% of the total cluster project area in perpetuity in agricultural use or for environmental protection. A set aside of 80% for preservation will prevent the fragmentation of agricultural land allowing for contiguous areas of agriculture to sustain and enhance agricultural resources. Preservation of up to 90% of the cluster project area will be achieved where feasible. The agricultural land set aside in the cluster project area must be preserved in perpetuity for agricultural use through a deed of easement enforceable by the Highlands Council and the municipality, the CADB, or the SADC.

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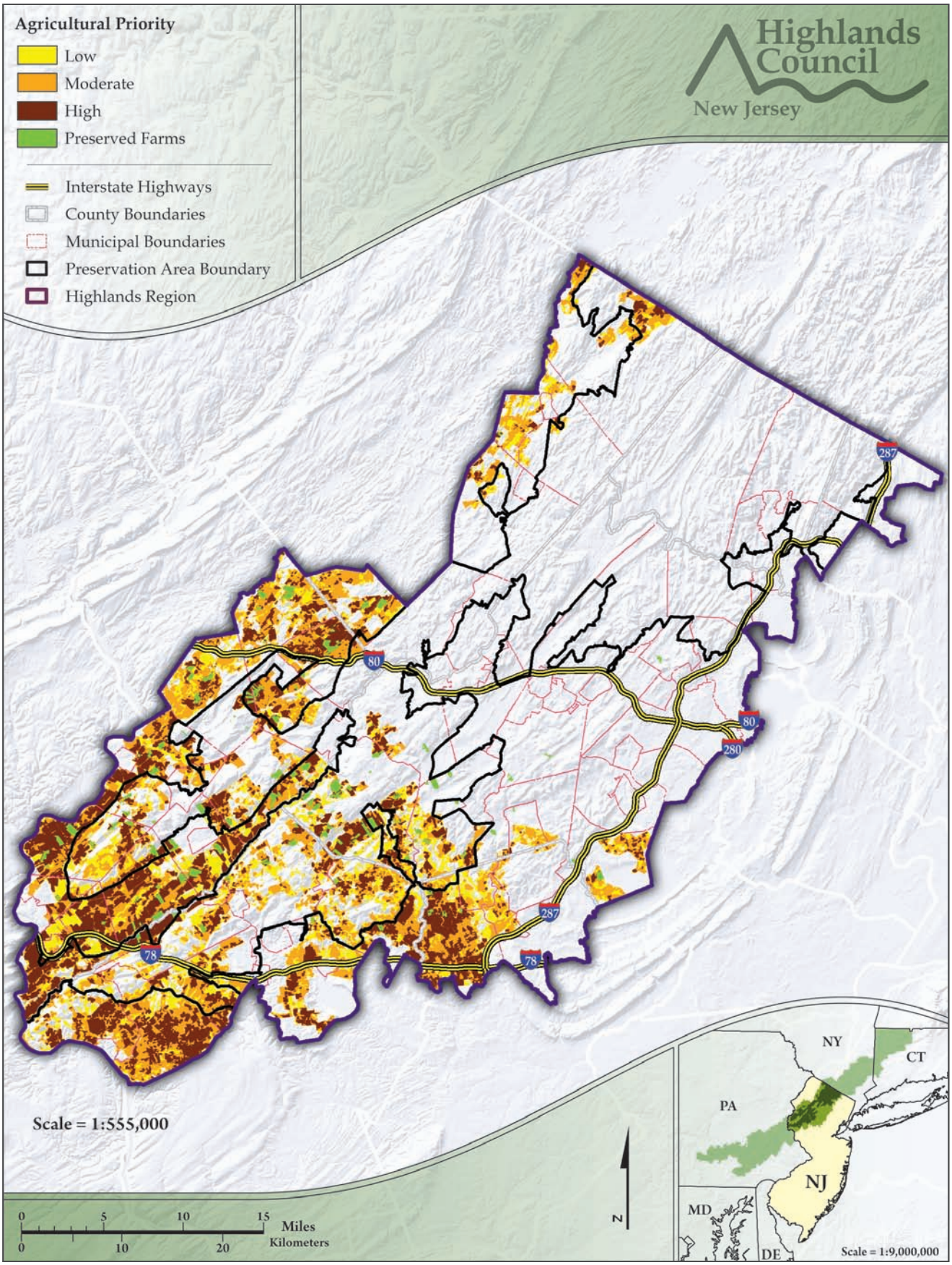
FIGURE 5.3: Agricultural Priority Area



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Cluster/ Conservation Design Development (continued)	The Highlands Council will develop Cluster/Conservation Design Development Conformance Guidelines that support the RMP and take advantage of, but are not limited to, techniques such as contiguous and non-contiguous residential clustering and lot averaging. Such programs will require the implementation of an Agriculture Retention/Farmland Preservation Plan element and a cluster ordinance that supports the continued viability of the agricultural land and requires the implementation of Best Management Practices including an NRCS FCP for the cluster project area dedicated to agricultural use. The cluster development in the Planning Area should use public water and sewer systems where feasible and appropriate (e.g., not in the Preservation Area) to maximize the amount of open space, eliminate the impact of septic systems, and reduce the need for additional water and wastewater infrastructure in the ARA. There may be instances when clustering will require new water and wastewater infrastructure. The use of alternative and innovative wastewater treatment systems will be promoted in the ARA of the Conservation Zone to provide enhanced protection of surface and ground water quality. (see the *Cluster/Conservation Design Development Program*).
Serve as a Regional Clearinghouse for Farmland Preservation, Stewardship and Technical Assistance	The Highlands Council, in cooperation with other entities, will serve as a regional clearinghouse for farmland preservation, stewardship and technical assistance. One of the fundamental elements of the Highlands Act is the emphasis on farmland preservation to ensure that public funds and other resources are focused on protection of critical Highlands resources. The *Sustainable Agriculture Technical Report* identifies nine federal, State, county, municipal, and nonprofit farmland preservation funding programs. The Highlands Council will encourage coordinated activities with agencies (in particular the NJDA and the SADC), local governments, and local organizations for agriculture preservation, funding, and stewardship programs, and for technical assistance in order to maximize agriculture preservation efforts in the Highlands Region.
Willing Sellers	The GSPT legislation requires that direct acquisitions by Green Acres and the SADC be from willing sellers. The Highlands Council will coordinate with Green Acres and the SADC to identify willing sellers and coordinate outreach and education to Highlands landowners for land preservation funding opportunities and incentives.
Funding Opportunities	Twenty-eight Highlands municipalities do not have open space and farmland trust funds to preserve farmland and open space. The municipalities and counties that have trust funds may not be maximizing their potential. In coordination with other entities, the Council shall encourage creating or amending open space and farmland trust funds. Additionally, the Highlands Council will coordinate with the SHPO and the SADC to include historic structures in tax incentive and adaptive reuse funding programs. Such programs could provide funding to farmers for restoration or rehabilitation of historic barns used for agricultural production.
Monitoring	Land acquisition by fee purchase or by easement is a major tool to protect agricultural lands. Typically the SADC, the CADB, a municipality, or a non-profit entity holds the easement on a permanently preserved farm and is responsible for monitoring the farm and ensuring the land remains in agricultural use in perpetuity. In some instances the individual retaining ownership of the land may not be a long-time farmer. Guaranteeing that these resources remain intact and viable is an overarching responsibility of the landowner and the easement holder. The Highlands Council will coordinate with the NJDA, the SADC, the CADBs, municipalities, and non-profit organizations on monitoring, landowner/user relations, and enforcement of deed-restricted agricultural easements.

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Stewardship	The *Sustainable Agriculture Technical Report* also identifies 16 federal, State, county, municipal, and nonprofit conservation and stewardship funding programs. The Highlands Council will collaborate and coordinate with the NJDA, SADC, USDA NRCS and Farm Service Agency (FSA), the North Jersey Resource Conservation and Development Council (NJRC&D), Rutgers Cooperative Extension, local SCD, local governments, and local non-profit organizations to properly manage and enhance preserved agricultural land. This effort is necessary to sustain and enhance agricultural and natural resources and enhance the viability of the agricultural industry through productive and cost-effective Best Management Practices. Also, such efforts help to ensure that agricultural and natural resources targeted for acquisition are not later compromised through inappropriate stewardship.
Establishment of Alternative/ Innovative Agriculture Preservation Programs	In addition to maximizing existing farmland preservation and stewardship programs and funding opportunities, the Highlands Council will encourage establishment of alternative and innovative programs to enhance farmland preservation and stewardship. The SADC, the CADBs and municipalities preserve farmland through the purchase or transfer of development rights by deed restricting the land in perpetuity for agricultural purposes. Where existing programs may not be a viable option for the landowner, the need will exist for alternative or innovative tools to create incentives for landowners to voluntarily keep their land in agriculture. The *Land Preservation Program* lists a broad range of options and programs, developed by other states, for the Highlands Council to examine and assess for use in the Highlands Region. Many of these tools are used specifically for agriculture, such as the Next Generation Farmland Acquisition Program, land preservation tontines, and Agricultural Conservation Pension. All of these programs are described in the *Land Preservation and Stewardship Technical Report*. One criterion for prioritizing farmland preservation is the percentage of tillable land or land in crop production. As a result, a farm that is heavily forested may not be considered a priority for preservation by the SADC. Additionally, lots that are entirely forested and farmland assessed with Woodland Management Plans are not considered priorities for State, county, and municipal farmland preservation programs. However, such lands are productive woodlands and also critical to the protection of Highlands water and natural resources. The Highlands Council will collaborate with the NJDEP Green Acres and the NJDA SADC to develop an adequate method to preserve forested lands through easements to allow them to remain in private ownership and be properly maintained through woodland management. The Highlands Region is over 50% forested and maintaining forest land is important to protecting water quality. In addition to the Highlands regional TDR Program and the Cluster/Conservation Design Development Program; a program specifically for purchasing forest land easements should be available.
Establishment of Alternative/ Innovative Agriculture Stewardship Programs	As introduced above there are numerous existing programs that promote incentives and funding opportunities for agricultural stewardship through the use of BMPs. The Highlands Council will collaborate with the NJDA, the NJDEP and all of the entities described above to develop and promote existing and alternative funding incentives and cost-share programs for BMPs that sustain and enhance agricultural and natural resources. The programs below are described in the *Sustainable Agriculture Technical Report*. For long-term sustainability of natural and agricultural resources in the Highlands Region, stewardship and implementation of BMP programs should include, but not be limited to: • White-tailed deer reduction programs, control of non-native species and enhancing the water value of well-managed agricultural lands; • Reduction in forest fragmentation and the creation of incentives for landowners to retain land in its natural or agricultural state;

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Establishment of Alternative/ Innovative Agriculture Stewardship Programs (continued)	• Innovative management techniques that reduce pesticide and fertilizer use and promote best management practices such as USDA NRCS and FSA cost-share programs, Integrated Pest Management and Integrated Crop Management; and • Other innovative programs such as the NJRC&D River Friendly Farm Certification Program, the regional Dairy of Distinction Program, and the national American Farmland Trust Steward of the Land Award that seek to reward farmers who promote land stewardship. The Highlands Council will provide and encourage technical assistance, cost-share funding opportunities, and grant funding for the use of land stewardship through BMPs. Additionally, intrinsic values for forests and agriculture including water quality protection shall be established.
Implementation of Strategies to Sustain and Enhance the Viability of the Agricultural Industry	The Highlands Council will coordinate with the NJDA, the New Jersey State Board of Agriculture, the New Jersey Farm Bureau, and the New Jersey Agricultural Society to promote existing programs that sustain and enhance the viability of the agricultural industry in the Highlands Region. In addition, the Council will promote research and study for innovative programs, including, but not limited to health care, banking practices, housing, food distribution, education, energy, and labor. Innovative programs, such as the USDA national initiative Agriculture in the Classroom, the New Jersey Farmers Against Hunger food recovery program, and the use of agricultural production for bio fuels will be addressed in the *Sustainable Agriculture Technical Report*. In order to enhance agricultural viability, agricultural operations need to evolve over time to meet ever changing market demands. The Highlands Council will promote and encourage innovative agricultural practices including, but not limited to direct marketing, organic farming, agri-tourism such as farmers markets and road side stands, niche markets and community supported agriculture businesses. Additional business opportunities should be provided to the owner/operators of farms to increase the economic potential of the farm unit. The ability of a farm family to add business opportunities to their agricultural operation such as a farmers market, a bed and breakfast, an agricultural product processing facility, or an artisan or craft business that employs several farm laborers other than family members enhances the agricultural operation. The enhancement of these operations may also require additional family and farm labor housing. In coordination with the NJDA and the SADC, and in accordance with the Right to Farm Act, the Council will ensure opportunities through local development review and Highlands Project Review for family and farm labor housing that is necessary to support the viability of the agricultural operation.
Identification of Subwatersheds with Elevated Nitrate Levels & Development of Management Plans	The Highlands Council will identify subwatersheds with elevated nitrate levels, develop management plans for restoring water quality, and implement those plans in ways that enhance agricultural viability through focused application of stewardship programs, such as those described above and in the *Sustainable Agriculture Technical Report*. (See *Water Quality Restoration Program* for more details.)

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Establish Incentives for Voluntary Impervious Cover Limitations on Agricultural Lands	The preservation of contiguous acres of farmland and Important Farmland Soils is vital to sustain and enhance agricultural resources in the Highlands Region. Incentives are necessary to maximize the utilization and preservation of agricultural soils. The creation of extensive impervious coverage on Highlands farms will result in significant environmental impacts, similar to the increase of impervious cover from residential and commercial development and infrastructure associated with this development. In addition, impervious cover that involves soil compaction and concrete pads can permanently damage soil productivity. Intensive impervious cover can harm the rural nature of agricultural areas. As a result, impervious cover limits on farmland through incentives, voluntary programs and easements that supplement SADC easement purchases should be made available. These voluntary impervious cover limits are distinct and separate from the Highlands Act and the RMP requirements for the implementation of conservation plans with increased impervious cover for farms in the Preservation Area and the Planning Area. The Council will seek to limit impervious cover on farmland through such initiatives, including but not limited to the use of federal USDA Farm Bill programs. One such program is the Farm and Ranch Lands Protection Program (FRPP), a federal program managed by the USDA NRCS that protects farm and ranch lands that contain prime, unique, or statewide and locally important soils or historic and archaeological resources from conversion to non-agricultural uses. Landowners who agree to accept federal funds are required to include deed restrictions that are specific to the federal FRPP. One of the requirements is a restriction on impervious coverage allowed on the farm. The amount of impervious cover allowed is imposed on a sliding scale and varies between 2 and 6%. The FRPP is described in detail in the *Sustainable Agriculture Technical Report*.
Right to Farm	The Right to Farm Act (N.J.S.A. 4:1C-1 et seq.) and the NJDA Right to Farm Rules (N.J.A.C. 2:76-2) are important provisions to sustain and enhance agricultural operations and maintain public health and safety in the Highlands Region. The Right to Farm Act protects responsible commercial farmers from unduly restrictive municipal regulations and public and private nuisance actions. Through the Plan Conformance process the Highlands Council will coordinate with the NJDA, SADC, and the CADBs to require municipalities and counties with farmland preservation programs or significant agricultural land bases to incorporate Right to Farm provisions in their master plans and development regulations. Municipal Right to Farm ordinances can be less restrictive of agricultural activities, but not more restrictive, than the Right to Farm Act. In addition, through the Plan Conformance process, municipalities and counties shall address agricultural or horticultural development and agricultural or horticultural use in accordance with the Right to Farm Act and in coordination with the NJDA, SADC, and CADBs. The SADC also manages a Right to Farm Program in partnership with the CADBs and has developed a model Right to Farm ordinance. Under the Right to Farm Program, the SADC helps to educate farmers, residents, and municipalities about the Right to Farm Act, the Act's formal conflict resolution process, and strategies for resolving agricultural conflicts and maintaining a positive agricultural business environment that enhances New Jersey's agricultural industry. The SADC has also adopted standards for nine Agricultural Management Practices (AMPs). The Highlands Council, in coordination with the SADC, will develop specific AMPs where appropriate and necessary to address agricultural or horticultural development or uses to be consistent with the resource management and protection requirements of the RMP.

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PART 4 Historic, Cultural, Archaeological, and Scenic Resources

HISTORIC RESOURCE PROTECTION

Issue Overview

New Jersey State Historic Preservation Office

The Highlands is home to many and varied historic, archaeological and cultural resources, and the Highlands Act requires that the RMP include measures in both the Preservation and Planning Areas to preserve these resources. With a long history dating back at least 11,000 years to the first Native American settlements, the area has figured prominently in the history of both the State and the country. Rich in valuable resources, the Region has attracted human settlement for thousands of years and been the site of changing technology and anthropology. The Highlands' character is indelibly marked by its history and benefits from vestiges of earlier days. These resources contribute to the community's character, its economic vitality, its potential for heritage tourism, and its sense of place and time. Their protection and enhancement can continue to support these important characteristics of the Highlands into the future.

The Highlands' historic, archaeological and cultural resources have been treated differently from town to town and county to county within the Region. In some communities these resources are appreciated, utilized and incorporated into the fabric of daily life. In other instances they are not identified and so opportunities to protect or rehabilitate are lost.

Although the SHPO, the New Jersey Historic Trust, and the Office of Smart Growth may offer technical and funding assistance, there is no comprehensive program in place to encourage local agencies to proactively identify, protect and enhance their historic, archaeological, and cultural resources. Many localities are not aware of all of the resources that exist within their borders and may lack access to programs geared toward protection and enhancement of these resources, as well as the methods that can turn these resources into meaningful contributors to the economic health of the community.

Program Summary

The Historic Resource Protection program is designed to identify where historic, archaeological and cultural resources exist within the Highlands Region and to provide guidance and support to local government entities in managing and protecting the resources within their borders.

RMP Policies and Objectives Addressed

Policy 4A1. To maintain and periodically update the Highlands Region Historic and Cultural Resources Inventory.

Objective 4A1a. Encourage municipalities and counties to include a historic, cultural, and archaeological survey(s) as part of the Historic Preservation Plan element of their master plans.

Policy 4A2. To provide a process whereby resources may be nominated, considered, and included in the Highlands Historic and Cultural Resources Inventory.

Objective 4A2a. Evaluate the cultural and historic significance of the concentration of abandoned mines within the Highlands Region.

Objective 4A2b. Consider the inclusion of cultural sites of regional significance due to their importance in the history of the region.

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RMP Policies and Objectives Addressed (continued)	**Policy 4A3.** To ensure through local development review, where a municipality has adopted an historic preservation ordinance under Policy 4C2, that human development does not adversely affect the character or value of resources which are listed on the Highlands Historic and Cultural Resource Inventory to the maximum extent practicable. *Objective 4A3a.* All development and redevelopment applications shall include submission of a report identifying potential historic, cultural and/or archaeological resources on the subject property or immediately adjacent properties. *Objective 4A3b.* Historic, cultural and/or archaeological resources identified through the development review process shall be evaluated for inclusion in the Highlands Region Historic and Cultural Resources Inventory and local surveys, as appropriate. **Policy 4A4.** To require that the impact of proposed human development on the historic and cultural resources of the Highlands Region be addressed during local development review and Highlands Project Review and approval. *Objective 4A4a.* All applications for site plan or subdivision approval shall include identification of any cultural, historic, or archaeological resources in the Highlands Region which are listed on the Highlands Historic and Cultural Resource Inventory and may be affected by the proposed development. *Objective 4A4b.* Where a municipality has adopted an historic preservation ordinance under Policy 4C2, all development which affects identified cultural, historic sites/districts, or archaeological resources shall comply with minimum standards for the preservation of the affected resources. **Policy 4A5.** To use the US Secretary of the Interior's Standards for the Treatment of Historic Properties as guidance for municipal historic and cultural preservation review and include, at a minimum, the preservation and re-use of historic structures. **Policy 4A6.** To coordinate the Highlands Council's activities with regard to the historic and cultural resources with the New Jersey Historic Trust and the SHPO. **Policy 4A7.** To promote historic and cultural heritage tourism in the Highlands Region. **Policy 4A8.** To encourage municipalities and counties to establish an advisory historic preservation body to review and make recommendations on applications for development or municipal permits which affect historic, cultural, and archaeological resources listed on the Highlands Historic and Cultural Resources Inventory. **Policy 4A9.** To advocate on the federal and state levels for grants and financial incentives to aid landowners in the preservation and maintenance of historic, cultural, and archaeological resources. **Policy 4C1.** To require that conforming municipalities and counties include a Historic, Cultural, and Scenic Resource Protection Element in municipal and county master plans and development regulations and update the Historic and Cultural Resources Inventory through local development reviews. **Policy 4C2.** To encourage that conforming municipalities and counties adopt a local historic preservation ordinance with minimum standards for the protection and enhancement of historic, cultural, and archaeological resources listed in the Highlands Historic and Cultural Resources Inventory in their development regulations.
Identification of Historic, Archaeological and Cultural Resources	Municipalities are encouraged to use a range of methods to identify the historic, archaeological, and cultural resources within their communities. They should require all development reviews to include identification of any relevant resources as part of their applications. Planning work sessions and checklists should include historic, archaeological, and cultural resources as a review component. Sensitive treatment of existing resources and commitment to minimal negative impacts should be the standard for decision-making.

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Identification of Historic, Archaeological and Cultural Resources (continued)	Municipalities and counties shall, as a requirement of Plan Conformance, include within their master plan a Historic Preservation Plan element that identifies the location and significance of known historic, archaeological, and cultural resources within their borders and the immediate surrounding area, using accepted State or federal definitions of such resources. They should whenever appropriate conduct historic, archaeological, and cultural survey(s) and include these as part of the Historic Preservation Plan element. Historic, archaeological, and cultural resources that are identified through surveys, preservation plans, and development plans shall be provided to the Highlands Council and reviewed and evaluated for inclusion in the Highlands Region Historic and Cultural Resources Inventory. A procedure for conducting the reviews and evaluations shall be developed in coordination with the SHPO.
Protection and Management of Historic Resources	Municipalities will be encouraged to: • Establish an advisory Historic Preservation Commission or similar entity to provide advice and recommendations on all land development applications and land planning decisions; • Adopt ordinances, zoning rules, development regulations and programs that protect the integrity of historic, archaeological and cultural resources and the integrity of their surroundings, and to address potential reuse and rehabilitation of historic structures; • Consider alternative strategies to protect historic and cultural sites, such as allowing adaptive reuse to support their protection and maintenance; • Designate historic structures and their surrounding land as historic sites and permit clustering to help protect them within preserved lands or as open space to maintain the structures within their settings; • Allow density transfers to adjoining property as an incentive to preserve historic buildings and sites; • Allow mitigation of non-conforming status for historic structures by conditional use approvals; and • Adopt guidelines and/or regulations, where appropriate, to address the issue of teardowns, particularly in older, established lake communities (see the Lake Community Program) and historic downtown areas and residential neighborhoods. In addition, both municipal and county governments will be encouraged and supported in advocating innovative methods to facilitate historic preservation within their communities, including purchase and use as public historic sites, easements, adaptive reuse, financial incentives, and heritage tourism (e.g., Heritage tourism opportunities will be developed as part of the economic vitality program). Municipal and county governments shall, as a requirement of conformance, impose a development review condition that all development proposals that may affect historic, archaeological or cultural resources shall demonstrate how such impacts will be avoided or minimized. Counties shall, as a requirement of Plan Conformance, address historic transportation infrastructure within their county master plan and encourage them to develop a program to preserve the integrity of historic bridges that are part of their transportation system. (See the *Transportation Program*.)

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Education and Outreach	The Highlands Council, in coordination with the SHPO, will develop or adapt a historic preservation manual to provide guidance, technical assistance and information on potential funding sources for use by local government, non-profit and preservation entities. The manual will include strategies for promoting historic, archaeological and cultural resources as part of the economic vitality of the Highlands. It will include design standards to assist communities, landowners and developers in rehabilitation or adaptation of buildings to preserve and enhance their historic qualities. It will offer innovative methods for advocating and publicizing historic preservation efforts, such as historic marker campaigns, local signage programs, awards programs and similar efforts to build awareness for Highlands historic, archaeological and cultural resources. Heritage tourism programs will be promoted as a component of the historic preservation program and the economic vitality of the Highlands (See heritage tourism opportunities in the *Sustainable Economic Development Program*).

SCENIC RESOURCE PROTECTION

Issue Overview

Nathan McLean

Protecting scenic resources and maintaining the visual integrity and scenic beauty of noteworthy viewsheds and natural and cultural features of significance in the Highlands Region is a goal of the Highlands Act and the RMP. The essential character of the Highlands is intrinsically tied to the physical environment and how one element relates to another. The scenic character of the Highlands will be a major contributor to the Region's success as a recreation and tourism, destination and its ability to generate economic activity in the form of agri-tourism, eco-tourism and heritage tourism. Preservation of that essential character can best be accomplished through a comprehensive approach to scenic resource protection. Other than a few scenic resource ordinances and scenic resource inventories, there have been no comprehensive attempts to address the issue of scenic resource protection in the Highlands Region.

Program Summary

The Scenic Resource Protection program establishes a procedure for identifying regionally significant scenic resources within the Highlands Region and provides methods to preserve these vistas, byways, ridgelines, rivers and streams, cultural landscapes, and natural features. The program provides for input from local government entities as well as public participation.

RMP Policies and Objectives Addressed

Policy 4B1. To maintain and periodically update the Highlands Scenic Resources Inventory.

Objective 4B1a. Encourage municipalities, or groups of municipalities and/or counties, to conduct a scenic inventory(ies) to identify locally and regionally significant scenic resources, and involve local residents.

Policy 4B2. To provide a process whereby regionally significant resources may be nominated, considered and included in the Highlands Scenic Resources Inventory.

Policy 4B3. To ensure that human development does not adversely affect the character or value of resources which are listed on the Highlands Scenic Resources Inventory.

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RMP Policies and Objectives Addressed (continued)	**Policy 4B4.** To establish minimum standards to ensure that Highlands Scenic Resources are not impaired by new human development. **Policy 4B5.** To require that the impact of proposed human development on the scenic resources of the Highlands Region be addressed during local development review and Highlands Project Review and approval. ***Objective 4B5a.*** All development applications shall include identification of any scenic resources in the Highlands Region that are listed on the Highlands Scenic Resources Inventory and may be affected by the proposed development. ***Objective 4B5b.*** All development which affects identified scenic resources shall comply with minimum standards for the preservation of the affected resources. ***Objective 4B5c.*** Any proposed action that requires federal permits, involves federal grants, or involves other federal actions that may impact the resource values of the Musconetcong National Scenic and Recreational River and the Lower Delaware National Scenic and Recreational River, pursuant to section 10(a) of the National Wild and Scenic Rivers Act, shall require review by the National Park Service, National Wild and Scenic Rivers Program. **Policy 4B6.** To advocate on the federal and state levels for grants and financial incentives to aid landowners in the maintenance and protection of scenic resources. **Policy 4C1.** To require that conforming municipalities and counties include a Historic, Cultural, and Scenic Resource Protection Element in municipal and county master plans and development regulations and update the Historic and Cultural Resources Inventory through local development reviews. **Policy 4C3.** To require that conforming municipalities and counties include minimum standards for the protection and enhancement of scenic resources listed in the Highlands Scenic Resources Inventory in their development regulations.
Inventory of Highlands Scenic Resources	• Baseline Inventory – Having identified 131 publicly-owned potential scenic resources, the Highlands Council will evaluate the initial baseline sites, refine the list and seek to add to it through additional nominations; • The Council will establish procedures for nomination, evaluation and inventory of Highlands regionally significant scenic resources; • The Council will establish guidelines for the preparation of the scenic resource inventory, including modifications to the baseline inventory of 131 potential scenic resources; • The Council will identify unique scenic vistas (big sky views) and protect them; • Encourage municipalities and counties to conduct scenic resource inventories and relate them to their recreation and open space planning; • Encourage municipalities and counties to work jointly with neighboring municipalities and counties to conduct the scenic resource inventories on a regional or sub-regional scale; and • Encourage municipalities and counties to include scenic resources in the open space and recreation plan elements of the municipal and county master plan.
Scenic Resource Protection Mechanisms	• The Council will develop strategies to protect scenic ridgelines, including the identification of key provisions for a Ridgeline Protection Ordinance. The provisions may include location of buildings, preservation of trees up slope and down slope of structures, building colors and types of glass, and other siting techniques that would blend structures with the landscape; • The Council will identify key provisions for scenic resource protection ordinances for use and adoption by municipal and county governments, either as part of Plan Conformance or through independent exercise of municipal and county authority;

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Scenic Resource Protection Mechanisms (continued)	• The Council will develop review procedures for consideration of scenic resources during Project Review; • Municipalities and counties shall be encouraged to develop a Scenic Resources Management Plan for their jurisdictions or sub-regions; • Municipalities and counties will be encouraged to pursue designation of scenic byways, where appropriate, according to the New Jersey Scenic Byways Program; • The Highlands Council will prepare a scenic resource protection model ordinance to serve as a template for use by the municipalities in drafting and adopting a local scenic resource protection ordinance; • Municipalities, counties and other agencies will be encouraged to consider alternative strategies to protect scenic features, such as allowing adaptive reuse of existing agricultural structures to support their protection and maintenance; • The Highlands Council will prepare guidelines to assist municipalities in drafting and implementation of scenic resource protection measures in the community, including scenic lake management; • Municipalities shall be encouraged to advocate cluster development within rural areas, designing developments to fit within the character of the community and the rural landscape. Where land is in agricultural use, municipalities should retain this use along roads and locate development in locations that do no damage the scenic viewshed. Hedgerows, mature trees and other rural features should be protected; • Relate scenic resource protection strategies and priorities to the open space and recreation component of the master plan and the expansion of recreation facilities; and • Establish road corridor guidelines that protect existing tree rows along scenic roads and require minimum buffer yards (e.g., 100 feet) to be left in natural vegetation, subject to safety considerations and environmental protection needs. Minimum landscape provisions of the buffer may be established for different types of roadside environments.

PART 5 Transportation

TRANSPORTATION SAFETY AND MOBILITY	
Issue Overview	The Highlands regional transportation system uses roads, highways, railways, and bridges to move people and goods through various modes of travel, including private automobile, bus, plane, truck, rail, bicycle, and walking. In the Highlands Region, numerous factors have led to an increased dependence on automobile travel, which have had adverse impacts on natural resources and overall quality of life. By promoting efficient mixed land uses and increasing access to a multimodal transportation system, better protection can be offered to environmentally sensitive areas of the Region. The Highlands Act emphasizes the preservation and enhancement of the transportation system which integrates transportation and comprehensive land use planning. It emphasizes the promotion of a balanced, efficient, and safe transportation system that is consistent with smart growth strategies and principles and which preserves mobility and maintains transportation infrastructure in the Highlands Region.

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Issue Overview (continued)

The Act also provides that the Council recognize projects that promote a sound, balanced transportation system that is consistent with smart growth strategies and principles. A preliminary evaluation of existing and planned transportation studies in the Highlands Region that are anticipated as near-term (5 years), mid-term (5 to 10 years) and long-term (greater than 10 years) projects was performed. The Council received input from State agencies, transportation planning professionals, non-profits, and county, municipal and local stakeholders in its evaluation of projects. The projects were evaluated based on input received, research and participation in project studies, the viability of both an anticipated near term project and a longer term project, projects that promote preservation of the transportation system, incorporate transit or multi-model components, serve a significant portion of the Region, reduce vehicle miles traveled, and improve mobility and accessibility for residents and visitors and support both the Highlands Act and RMP policies. The currently funded projects and ongoing studies selected by the Council to be recognized in the RMP for further evaluation include:

- The Access to the Regions Core (ARC) project, and particularly the Trans Hudson Expansion (THE) Tunnel project, which includes upgrades to the Raritan Valley, Main/Bergen/Pascack Valley and Morris & Essex Lines. This project is anticipated for completion in 2017 and has met funding matching criteria. Highlands Region stations that will benefit include but are not limited to the following: the Montclair-Boonton Line, Mt. Arlington, Dover, Mahwah, Hackettstown, and the new Andover station. The operating plan for this project provides a long term opportunity for both commuter and regional tourism activities;
- The Montclair-Boonton Line rail extension project to Andover only, along the existing right of way. The project has been approved for funding by the North Jersey Transportation Planning Authority (NJTPA) and construction is imminent. The project currently includes limited commuter travel service and is anticipated to be implemented within 5 to 10 years. Because information for the full Lackawanna Cut-off project is not available for review at this time and will require further evaluation by the Council, the extension beyond Andover is not included in the RMP at this time. When the ARC project comes onboard and is fully implemented it is anticipated that rail service to the Andover station will be enhanced and may serve to support Highlands regional tourism initiatives in bringing residents and visitors further west via mass transit and allow for additional multi-modal connections;
- The Northwest NJ Bus Study, for which 80% of the study area in the Highlands Region. It will provide in early 2009 a series of recommendations for additional follow up and study that align with the RMP Transportation Safety and Mobility policies for transit enhancement, smart growth principles and reduced vehicle miles traveled. The project provides a transit evaluation in an area that is currently underserved or not served by transit. The study recommendations and next steps will require evaluation by the Council regarding RMP policies and Plan Conformance components; and
- The Raritan Valley Line Extension Study from High Bridge to Phillipsburg. This study is anticipated to be completed in early 2009. It has been supported by the I-78 Corridor Study and the rights of ways have been obtained by NJ Transit, however further study is warranted. The study will provide recommendations for stations and park and rides to support rail and Interstate Route 78 transit connections. The project can support RMP smart growth principles; however recommendations for the stations and park and ride locations will require further evaluation by the Council regarding RMP policies and Plan Conformance components.

The Council will continue to evaluate transportation projects with its agency partners and stakeholders and support intra- and inter-regional transportation and transit through Plan Conformance and the Transportation Safety and Mobility Program.

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Issue Overview (continued)	Section 11 of the Act states: *11. a. The regional master plan shall include, but need not necessarily be limited to…* *(5) A transportation component that provides a plan for transportation system preservation, includes all federally mandated projects or programs, and recognizes smart growth strategies and principles. The transportation component shall include projects to promote a sound, balanced transportation system that is consistent with smart growth strategies and principles and which preserves mobility and maintains the transportation infrastructure of the Highlands Region. Transportation projects and programs shall be reviewed and approved by the council in consultation with the Department of Transportation prior to inclusion in the transportation component;* An assessment of roadway conditions across the Highlands indicates that many of the Region's roads are at or approaching traffic capacity. Some of the major U.S. and State highways have recurring capacity constraints during the AM and PM peak travel periods. In addition, because mobile source pollution is generated by vehicle emissions, this traffic congestion increases emissions of harmful pollutants and adversely affects air quality.
Program Summary	The Highlands Act states that a primary goal is to promote a sound and balanced transportation system that is consistent with smart growth strategies and principles and which preserves mobility. The transportation program serves multiple purposes such as identifying roadway capacity constraints, addressing safety concerns, assessing agricultural and freight needs, and promoting efficient land use patterns which look comprehensively at land use and transportation planning. The program also looks to enhance a multi-modal transportation system which facilitates the movement of people and goods without adversely affecting ecosystem integrity and community character. Each program component addresses a specific need area while providing a set of strategies through which the Highlands Council, in coordination with state agencies, local government units and stakeholders, can ensure that RMP goals are achievable.
RMP Policies and Objectives Addressed	**Policy 5A1.** To ensure that the Highlands transportation system provides safe and efficient intra-regional and inter-regional mobility and that critical safety road improvements use design and engineering controls to minimize induced demand and maximize resource protection. **Policy 5A2.** To ensure that the Highlands transportation system affords the Highlands private economic sector, including agriculture, cost-effective transportation for raw materials, products, and employees. ***Objective 5A2a.*** Encourage the movement of goods from the roadway network to the freight rail network wherever possible. ***Objective 5A2b.*** Evaluate opportunities to increase freight service through the reactivation of abandoned freight lines. ***Objective 5A2c.*** Ensure sustainability of regional airport facilities and appropriately include the role of general aviation in meeting regional transportation planning needs. **Policy 5A3.** To improve public safety through implementation of traffic calming measures in areas with high pedestrian activity. **Policy 5A4.** To provide for safe and efficient pedestrian connections including features such as sidewalks, proper lighting, signage, shelters, and green street initiatives consistent with NJDOT's Pedestrian Safety Initiative. **Policy 5A5.** To promote safe routes for children to travel to and from school in support of the NJDOT's Safe Routes to School Program. **Policy 5B1.** To promote more efficient use of existing road capacity by appropriate means, including but not limited to increased bus, van, jitney, and car pool ridership. **Policy 5B2.** To require through Plan Conformance and Highlands Project Review an evaluation of potential growth inducing effects such as substantial new land use, new residents, or new employment that could occur as a result of road improvements for increased motorized vehicle traffic capacity.

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RMP Policies and Objectives Addressed (continued)	**Policy 5B3.** To prohibit through Plan Conformance and Highlands Project Review road improvements in the Highlands Region in areas for which a Growth Inducing Study, conducted in consultation with agencies including but not limited to the NJDOT, demonstrates that proposed improvements do not support the RMP resource protection and smart growth policies and are likely to be growth-inducing for lands with limited or no capacity to support human development without a significant adverse impact on the Highlands ecosystem. **Policy 5C1.** To ensure, to the extent practicable, that proposed transportation improvements which are not consistent with the RMP be modified to be consistent or be re-evaluated in the context of state and regional planning goals. **Policy 5C2.** To coordinate with NJDOT, NJ Transit, NJTPA, counties and municipalities with regard to transportation planning and strategies within both the Highlands Region and the larger 13-county metropolitan planning region. *Objective 5C2a.* Highlands Region transportation site development activities will reflect RMP resource protection, development, and redevelopment goals. **Policy 5C3.** To limit road improvements through local development review and Highlands Project Review where roads are constrained by topography, forested lands, or the community character of land uses fronting on the road. **Policy 5C4.** To support economic development by ensuring that transportation planning and improvements support regional development, redevelopment, and tourism opportunities. *Objective 5C4a.* Increase tourism opportunities through innovative multi-modal transportation measures and accessible transit schedules. *Objective 5C4b.* Support regional tourism economy through enhanced street furnishings, directional signage and Highlands Region tourism information. *Objective 5C4c.* Support regional tourism through the recognition and protection of scenic resource view sheds along scenic byways and road corridors.
Linking Transportation and Land Use	This program component discusses the critical relationship between transportation and land use in the Highlands Region, and the necessity to incorporate smart growth principles in transportation improvements in order to protect the environment while encouraging economic viability. Many of the transportation improvements made in recent decades have been in the form of adding roadway capacity, with the intent of relieving or mitigating traffic congestion. It is widely acknowledged, however, that the strategy of adding roadway capacity is not a sustainable solution to the many problems facing the transportation system. By looking at transportation and land use planning comprehensively, a long-term strategy can be developed to better solve the Region's transportation issues. There are several integrated land use/transportation corridor studies currently underway or planned in the Highlands Region including but not limited to Interstate 78, Route 57, and Route 23. The idea of mixing land uses, combining jobs, housing, retail and other uses in a compact, efficient manner, is one approach which can lead to shorter and less frequent trips taken and fewer vehicle miles traveled. These mixed uses, when integrated as a compact, walkable community, can also create and enhance a sense of place and vitality, which may in turn lead to higher property values and lower infrastructure costs. Transit Oriented Development (TOD) is another method that integrates transportation planning specifically by promoting more compact development around existing transportation infrastructure as an alternative to sprawl. Innovative approaches to roadway design can also put greater focus on ecological systems. The NJTransit *Transit Score Program* is an approach for evaluating land use and transit supported links by defining a transit score index. The program evaluates the relationship between people, employment, and vehicle use as related to land use to improve transit options in local and regional planning.

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Linking Transportation and Land Use (continued)	Green Street Approaches seek to design a street system that protects water resources in order to prevent the adverse affects of surface runoff. A concept called "Shared Parking" is used extensively in traditional neighborhood commercial settings and downtowns. In these locations, higher densities and mixed uses often allow people to park in a single spot and then walk from one destination to another, allowing one parking space to serve multiple destinations. The Highlands Region includes seven regional airport facilities that vary in size and aircraft capacity and they serve to support the regional transportation system. This program component includes the following: 1. Municipal Plan Conformance includes the development of a circulation plan element in coordination with the land use plan element; that ensures mobility and accessibility, evaluates local Transit Scores in support of connecting land use to transit services and addresses smart growth principles consistent with the goals of the RMP; 2. A circulation plan element must show the location and types of facilities for modes of transportation required for the efficient movement of people and goods, including scenic byways and corridors and regional airports, as well as a municipal evaluation of transit and shared parking opportunities through a comprehensive parking study; 3. Conforming counties shall develop a transportation plan that supports local and regional land use planning, ensures mobility and accessibility, evaluates regional Transit Scores as a means to screen for improved and innovative transit options, promote connectivity, shared service opportunities, and long-term transportation network needs; 4. Council shall evaluate the existing and proposed RSIS in the context of the RMP and develop recommendations for amendments that would minimize environmental impacts resulting from new residential developments while maximizing utility efficiency from new residential developments in a context-specific manner that addresses community and landscape character; 5. Coordinate with NJ Transit, counties and municipalities to increase the performance of the public and private bus carrier systems, increasing transit rider-ship and the use of multi-modal transportation systems for peak hour travel including the use of shuttle service and innovative car sharing rental options; 6. Encourage development and redevelopment which provides a balance of jobs to housing in close proximity to rail and bus; and 7. Ensure sustainability of regional airport facilities and appropriately include the role of general aviation in meeting regional transportation planning needs.
Regional Transportation Safety and Pedestrian Security	The widespread usage of the Highlands roadway system does not come without certain risks for pedestrians, bicyclists, motorists, and bus passengers. Many years of vehicle safety and traffic engineering improvements have resulted in generally safer conditions for automobiles, with fewer fatalities and fewer crashes per vehicle miles traveled. Beyond automobile safety, there has been a growing awareness of the need to protect the most vulnerable road users - pedestrians and bicyclists. The Act emphasizes the importance of transportation safety and creates certain exemptions which allow for such things as the routine maintenance and reconstruction of transportation infrastructure provided that the activity is consistent with the goals of the Act, and does not result in new through-capacity travel lanes. The challenge of improving safety for all travelers in Highlands Region can best be addressed through strategic and coordinated efforts to integrate safety concerns into transportation planning with State agencies, local governments, and stakeholders. This program component emphasizes the following strategies in order to promote transportation safety: 1. Require municipalities to assess local transportation improvement needs and safety concerns as part of their circulation plan element for Plan Conformance;

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Regional Transportation Safety and Pedestrian Security (continued)	2. Coordinate with municipalities, counties, NJDOT, NJTPA and NJ Transit in order to increase safety and security of inter-modal transportation for motorized and non-motorized users, and by implementing traffic calming measures in areas with high pedestrian activity; 3. Promote safe routes for children to travel to and from school in a coordinated effort with NJDOT's Safe Routes to School Program. In addition, encourage safe routes to public transportation through NJDOT's Safe Streets to Transit Program; and 4. Provide for safe pedestrian connections including features such as sidewalks, proper lighting, shade trees, and shelters consistent with NJDOT's Pedestrian Initiative.
Mobility of Agriculture and Freight Access	Transportation mobility is a vital component to the agricultural industry in the Highlands Region, as farmers rely on a functional transportation system in order to operate farms, ultimately bring a variety of goods to market and support agri-tourism initiatives. In order to ensure the safety and viability of farming as an occupation in the Highlands Region, safe travel routes for farmers need to be coordinated with local governments and state agencies. Mobility is also critical to the needs of a growing freight industry which continues to use the Region's infrastructure to haul goods to and from the State's major ports. However, a growing number of freight trucks are having a negative impact on the Region's roads. By improving upon existing rail infrastructure and shifting from truck to rail for long-distance transport, more freight can be moved safely and efficiently. The program components include: 1. Coordinate with municipalities, counties, NJDA and NJDOT to identify and support the unique needs of the agricultural industry to move farm vehicles and goods along transportation corridors, and establish safe travel routes for farmers in order to ensure the safety and viability of farming as an occupation in the Highlands Region; 2. Require that all circulation plan elements and county plans, as part of Plan Conformance, evaluate "farm-to-market" opportunities to improve upon the movement of goods from farms and areas of supply to areas where goods are in demand and in support of agri-tourism initiatives; 3. Require that all circulation plan elements and county plan, as part of Plan Conformance, evaluate opportunities to increase freight service through the reactivation of abandoned freight lines; and 4. Coordinate with NJDOT on new Comprehensive Statewide Freight Plan. (For more information on agricultural needs see *Agricultural Sustainability, Viability, and Stewardship Program*)
Transportation and Tourism Economy	As a Region that reflects history, exhibits scenic beauty, and provides outdoor recreational activities, the Highlands offers residents and visitors a variety of recreational and tourism opportunities. A strong tourism industry in the Highlands depends upon a safe and efficient transportation system. The Region also includes scenic resource viewsheds along scenic byways and corridors that require protection. This component seeks to focus on the relationship between the Highlands transportation system and tourism resources. Are transportation services available so that tourists can travel safely and by a variety of modes? Is information about transportation to tourist attractions and activities available? What are opportunities to expand tourism through transportation-related activities such as rail, bus, hiking trails and signage? By answering these questions, Highlands communities can support enhanced regional economic vitality and contribute to overall quality of life.

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Transportation and Tourism Economy (continued)	This program component includes the following: 1. Coordinate with NJDOT, NJ Transit and New Jersey Division of Travel and Tourism to increase tourism opportunities through innovative multi-modal transportation measures and accessible transit schedules; 2. Support the regional tourism economy in cooperation with NJDOT through a road signage program which identifies significant natural and historic resources and landmarks including scenic viewsheds and byways; 3. Require that circulation plan elements evaluate opportunities to expand tourism through multi-modal transit connectivity, thus promoting the use of transit as a means to access Highlands' tourism resources; and 4. Coordinate with NJDOT and NJDA to promote agri-tourism through enhanced information sharing, education and outreach.
Overview of Transportation Project Review	The review of transportation projects by Council is a critical step to ensuring that transportation improvements are consistent with the goals and policies of the RMP. The Act states that the Council may provide comments and recommendations on any transportation project undertaken by any State entity or local government unit in the Highlands Region. In the Preservation Area, the Council must establish procedures for conducting reviews of projects that, except in certain cases, involve the disturbance of two acres or more of land, or a cumulative increase in impervious surface by one acre or more. The Act also states that in the Highlands Region the Council has the power to approve, approve with conditions, or disapprove a project, and that except in certain cases no such project can move forward without approval of the Council. Transportation project review will generally evaluate the following: 1. Consistency with the goals, policies and objectives of the RMP and smart growth planning principles; 2. Determination of net effect on through lane capacity, consistent with the requirements of Policy 5B3; 3. Impact on water quantity and quality, Highlands natural resources such as forests, habitat, Highlands Open Waters, historic, and scenic resources; 4. The relationship to surrounding land uses and near and long-term transportation plans for the Highlands Region and the larger 13-county regional transportation planning area; 5. An evaluation of growth-inducing impacts regarding new land use, new residents, and new permanent employment which could have secondary growth implications, or greatly expand transportation infrastructure capacity, especially in areas with high natural resource values and limited capacity to support human development; 6. Use of alternative modes of transportation including transit, bus, pedestrian and bicycle; 7. Safety measures such as traffic calming strategies and pedestrian, and bicycle safety features; 8. Impact on agricultural and freight mobility; and 9. Effect on eco-tourism, agri-tourism and heritage tourism in the Region. Plan Conformance guidelines and procedures will be developed in support of transportation project review detailing the specific requirements.

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Roadway Capacity Monitoring	The roadway capacity assessment included in the *Transportation System Preservation and Enhancement Technical Report* provides a detailed assessment of roadway conditions, identifying major origin and destination trips generated in the Highlands for the base year 2002. The Council worked with NJDOT, NJTPA, and counties to develop a Highlands Sub-Area model based on information developed from a larger model known as the North Jersey Regional Transportation Model (NJRTM). It is currently the primary analysis tool for transportation planning in the 13 county transportation planning region. There is a need to re-examine, refine, and monitor these roadway conditions and travel patterns, and the impact of future development and land use patterns on traffic conditions. The refined assessment will need to be conducted to a finer Traffic Analysis Zone standard and will require more local traffic count data in order to determine more accurately local roadway conditions by municipality in the Highlands Region. This more refined analysis can better reflect the impact of past land use changes in order to inform future land use decisions, and thereby shape transportation infrastructure improvements. The Council will continue to partner with NJDOT, NJTPA, and counties to refine the model for future needs. (More information on the Roadway Capacity Assessment can be found in the *Transportation System Preservation and Enhancement Technical Report* pg.11).

PART 6 Future Land Use

LAND USE CAPABILITY ANALYSIS

Issue Overview

Section 11.a(1)(a) and (6) of the Highlands Act requires that the Highlands RMP include:

"(1) A resource assessment 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…"

"(6) 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 which shall include consideration of public investment priorities, infrastructure investments, economic development, revitalization, housing, transportation, energy resources, waste management, recycling, brownfields, and design such as mixed-use, compact design, and transit villages. In preparing this component, the council shall: (a) prepare a land use capability map;"

In addition, Section 12 of the Act requires that the RMP include:

"12. In addition to the contents of the regional master plan described in section 11 of this act, the plan shall also include, with respect to the preservation area, 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 the Department of Environmental Protection pursuant to sections 33 and 34 of this act, and the resource assessment prepared pursuant to paragraph (1) of subsection a. of section 11 of this act."

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Issue Overview (continued)

Nathan McLean

The land use capability map (LUCM) is not explicitly defined by the Highlands Act, but the RMP requirements give clear guidance that the LUCM is to provide information sufficient to determine, at a regional scale, the potential for land use based on a variety of factors including existing development, agricultural uses, high quality and contiguous natural areas, utility capacity and environmental constraints. As discussed in Chapter 2 of the RMP, the result is a series of maps (the LUCM Series) that in combination provide this information at a regional scale. These maps are:

1. Land Use Capability Zone Map;
2. Land Use Capability Water Availability Map;
3. Land Use Capability Public Community Water Systems Map;
4. Land Use Capability Domestic Sewerage Facilities Map; and
5. Land Use Capability Septic System Yield Map.

Municipalities engaged in Plan Conformance will need to use the information in the Land Use Capability Map Series (LUCM Series) to determine at a local scale the land use capabilities for their municipalities. Similarly, counties will need this information in Plan Conformance to update county master plans and development regulations. State agencies, which are required by the Highlands Act to coordinate their activities using the RMP, will be able to use the LUCM Series to perform a consistency analysis. Lastly, the Highlands Council will also use this information in their petition for SDRP Endorsement, and in the process of Project Reviews and consideration of Petitions for Plan Conformance. The Highlands Council has developed a *Highlands Regional Build Out Technical Report* in support of its Plan Endorsement petition that is available for county and municipal use in their build out analyses.

Program Summary

Because the ultimate determination of land use capability requires a combination of technical and planning analyses, the Highlands Council determined that a series of maps regarding land use capability would provide more understandable information than a single LUCM that incorporates all factors of the LUCM Series. The LUCM Series and supporting data will be used by municipalities and counties during Plan Conformance to determine the local land use capability. For this process, the first analysis requires the examination of the Highlands Council's data and maps to determine whether any RMP Updates are appropriate based on more current data, factual corrections, or new information. The next analysis requires a determination of available capacity based on three separate categories of constraints: developable lands, environmental resources, and utilities. Then, a "limiting factor analysis" will be completed for each area to determine the land use capability available based on the three categories of constraints. The limiting factor analysis at the local level will utilize the Highlands Build Out method for a local build out analysis. In the final analysis at the municipal scale, the municipality will determine if proposed development yields advanced in Plan Conformance will be equal to or less than the land use capability determined in the limiting factor analysis, or whether it will seek to modify the most limiting factors in ways that comport with RMP policies but allow for more development potential.

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Program Summary (continued)	The municipality may address these factors through various approaches, such as eliminating water deficits, or creating additional net water availability through water conservation. Where the municipality proposes changes that would result in changes to the LUCM Series, a Petition for Map Adjustment would be required either as part of Plan Conformance or as a separate petition. The determination of land use capability is only the first step, though critical, in the process of municipal planning. The second step will be allocation of land use capability among the developable parcels in each Land Use Capability Zone, to minimize the potential for large-scale conflict between zoned densities and environmental constraints. The third step will be subdivision and site plan review to ensure that individual project designs meet RMP project review standards for such issues as Highlands Open Waters buffers, steep slopes, etc.
RMP Policies and Objectives Addressed	**Policy 2A1.** To identify and periodically update net water availability and water deficits as a factor in the Land Use Capability Water Availability Map. **Policy 2A2.** To ensure that increasing water demands do not exceed Net Water Availability or exacerbate existing deficits of subwatersheds. Net Water Availability is affected at a subwatershed level by location and extent of Land Use Capability Zone Map and its status as Current Deficit Area or Existing Constrained Area. **Policy 2B6.** To require through Plan Conformance (including through a Water Use and Conservation Plan developed under Objective 2B8c), local development review, Highlands Project Review, and interagency coordination that proposed public water supply and wastewater service areas, new or increased water allocations and bulk water purchases will not directly or indirectly cause or contribute to a Net Water Availability deficit, and where feasible will help mitigate any existing deficit. **Policy 2I1.** To prohibit the expansion or creation of public water supply systems, public wastewater collection and treatment systems and community on-site treatment facilities in the Preservation Area unless approved through a Highlands Applicability Determination (HAD) or a HPAA with waiver pursuant to N.J.A.C. 7:38 and Policy 7G1. **Policy 2I2.** To identify through Plan Conformance and Highlands Redevelopment Area designation procedures those lands of the Preservation Area that may be appropriate for the extension or creation of public water supply systems, public wastewater collection and treatment systems and community on-site treatment facilities for redevelopment that would meet the waiver requirements of N.J.A.C. 7:38 and Policy 7G1. ***Objective 2J1b.*** The development and maintenance of an inventory of the service areas and capacity of Highlands Public Community Water Supply Systems, including a comprehensive data base of water utilities that are dependent on Current Deficit Areas or Existing Constrained Areas as a source of water, with estimates of the extent to which service area demands and water allocation permits may exceed available water. **Policy 2J2.** To ensure, through Plan Conformance and Highlands Project Review, that Highlands Public Community Water Systems conform with Policy 2B6. ***Objective 2J4a.*** Prohibit new, expanded or extended public water systems within the Protection Zone, the Conservation Zone and the Environmentally-Constrained Sub-zones of the Planning Area unless they are shown to be necessary for and are approved by the Highlands Council for one or more of the purposes listed below. For approvals regarding parts 1, 2, and 3, the project must maximize the protection of sensitive environmental resources such as Highlands Open Waters buffer areas, Riparian Areas, the forested portion of the Forest Resource Area, agricultural lands of ARAs, Steep Slopes, Prime Ground Water Recharge Areas and Critical Habitat. For approvals regarding part 3, the project must avoid disturbance of Highlands Open Waters buffer areas, Riparian Areas, Steep Slopes and Critical Habitat, and must minimize disturbance of the forested portion of the Forest Resource Area, agricultural lands of ARAs, and Prime Ground Water Recharge Areas. The extension or creation of systems shall follow the requirements in Objective 2J4b (parts 2 and 3). The applicable purposes are:

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RMP Policies and Objectives Addressed (continued)

1. To address through a waiver under Policy 7G1 or 7G2 a documented existing or imminent threat to public health and safety from contaminated domestic and other on-site water supplies that is of sufficient scale to justify a public water supply and where no alternative is feasible that would sufficiently assure long-term protection of public health and safety. Such needs shall have highest priority for allocation of existing system capacity;
2. To address development permitted through a Highlands Redevelopment Area or takings waiver under Policy 7G1 or 7G2; or
3. To serve a cluster development that meets all requirements of Objective 2J4b.

Objective 2J4b. Clustered development served by public water supply within the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area shall be approved only if the following conditions are met:

1. The development impacts are otherwise consistent with the requirements of the RMP, including provisions for mandatory clustering in ARAs pursuant to Policy 3A5;
2. Extension of an existing public water system will occur only where the cluster development is within or immediately adjacent to an Existing Area Served with available capacity;
3. Creation of a new public water system will occur only where such development is not within or immediately adjacent to an Existing Area Served with available capacity;
4. The clustered development preserves at least 80% of the cluster project area in perpetuity for environmental protection or agricultural purposes. To the maximum extent feasible the developed portion (e.g., not including wetlands, Highlands Open Waters buffers, and recreational lands) occupies no more than 10% of the cluster project area if served by a public or community on-site wastewater system; and
5. Where the preserved land in the cluster project area is dedicated to agricultural purposes, the cluster development ordinance and an Agriculture Retention/Farmland Preservation Plan supports continued agricultural viability of the agricultural land and requires the implementation of best management practices, including development and implementation of a Farm Conservation Plan that addresses the protection of water and soil resources prepared by the USDA Natural Resources Conservation Service (NRCS), Technical Service Provider (TSP), appropriate agent or NJDA staff, and approved by the local Soil Conservation District (SCD).

Objective 2J4c. Allow the expansion or creation of public water systems within the ECZ of the Planning Area, other than the Environmentally-Constrained Sub-zone, to serve lands which are appropriate for designated TDR Receiving Zones, infill or redevelopment, to meet needs and protection requirements equivalent to Objective 2J4a within the ECZ, or to serve new areas for development that meet all other requirements of the RMP. TDR Receiving Zones, affordable housing projects (where the affordable units exceed 10% of the total units), infill and redevelopment shall have higher priority for capacity than expansion of public water service areas within this Zone.

Objective 2J4d. All development within the Highlands Region, in areas that are not served by public water systems, shall be at a density that can be supported by on-site wells. Where cluster development in the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area shall be served by on-site wells, and the undeveloped land is preserved for agricultural purposes in perpetuity, the cluster design in combination with the Agriculture Retention/Farmland Preservation Plan required by Objective 2J4b shall provide for Best Management Practices that protect the on-site wells from contamination resulting from agricultural practices and shall include provisions to minimize or reduce net pollutant loadings from the total project area including the preserved agricultural lands.

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RMP Policies and Objectives Addressed (continued)

Policy 2K2. To base projected demand for current needs, appropriate economic revitalization and opportunities for designated TDR Receiving Zones within Existing Areas Served on existing maximum three month demands plus an estimate of redevelopment needs based on either Highlands Council regional analyses or more detailed local analyses, to assess whether there is adequate treatment capacity to encourage redevelopment.

Objective 2K3c. Prohibit new, expanded or extended public wastewater collection and treatment systems and community on-site treatment facilities within the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area unless they are shown to be necessary for and are approved by the Highlands Council for one or more of the purposes listed below. For approvals regarding parts 1, 2, and 3, the project must maximize the protection of sensitive environmental resources such as Highlands Open Waters buffer areas, Riparian Areas, the forested portion of the Forest Resource Area, agricultural lands of ARAs, Steep Slopes, Prime Ground Water Recharge Areas and Critical Habitat. For approvals regarding part 3, the project must avoid disturbance of Highlands Open Waters buffer areas, Riparian Areas, Steep Slopes and Critical Habitat, and must minimize disturbance of the forested portion of the Forest Resource Area, agricultural lands of ARAs, and Prime Ground Water Recharge Areas. The choice of extension or creation of systems shall follow the requirements in Objective 2K3d (2 and 3). The applicable purposes are:

1. To address through a waiver under Policy 7G1 or 7G2 a documented existing or imminent threat to public health and safety from a pattern of failing septic systems (where the failing systems cannot reasonably be addressed through rehabilitation or replacement) or highly concentrated septic systems, where the threat is of sufficient scale to justify a public wastewater collection and treatment system or community on-site treatment facility and where no alternative is feasible that would sufficiently assure long-term protection of public health and safety. To address other issues of public health and safety, such needs shall have highest priority for allocation of existing system capacity;
2. To address development permitted through a Highlands Redevelopment Area or takings waiver under Policy 7G1 or 7G2; or
3. To serve a cluster development that meets all requirements of Objective 2K3d.

Objective 2K3d. Clustered development served by a public wastewater collection and treatment system or community on-site treatment facility within the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area shall be approved only if the following conditions are met:

1. The development impacts are otherwise consistent with the requirements of the RMP, including provisions for mandatory clustering in ARAs pursuant to Policy 3A5;
2. Extension of an existing public wastewater collection and treatment system will occur only where the cluster development is within or immediately adjacent to an Existing Area Served with available capacity;
3. Creation of a community on-site treatment facility will occur only where such development is not within or immediately adjacent to an Existing Area Served with available capacity, where the proposed system is designed, permitted, and constructed at a capacity limited to the needs of the clustered development, and where the system does not create the potential for future expansion into areas that are not the subject of cluster developments immediately adjacent to the initial cluster served;
4. The cluster development preserves at least 80% of the cluster project area in perpetuity for environmental protection or agriculture purposes. To the maximum extent feasible the developed portion of the project area (e.g., not including wetlands, Highlands Open Waters buffers, and recreational lands) occupies no more than 10% of the cluster project area if served by a public or community on-site wastewater system; and

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RMP Policies and Objectives Addressed (continued)	5. Where the preserved land in the cluster project area is dedicated to agricultural purposes, the cluster development ordinance and an Agriculture Retention/Farmland Preservation Plan supports continued agricultural viability of the agricultural land and requires the implementation of best management practices, including development and implementation of a FCP that addresses the protection of water and soil resources prepared by the USDA NRCS, TSP, appropriate agent or NJDA staff, and approved by the local SCD. ***Objective 2K3e.*** Allow the expansion or creation of wastewater collection systems within the ECZ of the Planning Area, other than the Environmentally-Constrained Sub-zone, to serve lands which are appropriate for designated TDR Receiving Zones, infill or redevelopment, to meet needs and protection requirements equivalent to Objective 2K3c within the ECZ, or to serve new areas for development that meet all other requirements of the RMP. The highest priority for allocation of excess or additional wastewater treatment capacity is to areas where there are clusters of failed septic systems that are located within or adjacent to Existing Areas Served. TDR Receiving Areas, where designated, affordable housing projects (where the affordable units exceed 10% of the total units), infill and redevelopment shall have higher priority for capacity than other developments requiring expansion of sewer service areas. ***Objective 2K3f.*** All development within the Highlands Region, in areas which are not served by public wastewater collection and treatment system or community on-site treatment facility, shall be at a density that can be supported by septic systems under Goal 2L. Where cluster development in the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area shall be served by on-site wells, and the undeveloped land is preserved for agricultural purposes in perpetuity, the cluster design and the Agriculture Retention/Farmland Preservation Plan required by Objective 2K3d in combination shall include provisions for Best Management Practices that protect the on-site wells from contamination resulting from agricultural practices and shall include provisions to minimize or reduce net pollutant loadings from the total project area including the preserved agricultural lands. **Policy 2L1.** To use nitrate concentrations in ground water as an indicator of water quality, and to use nitrate dilution modeling as the primary method for assessing the carrying capacity of lands for development that relies on septic systems for wastewater treatment. **Policy 6A1.** To use the LUCM Series as a geographic framework for land use planning and management within the Highlands Region. ***Objective 6A1a.*** A Highlands LUCM Series based on the most current, relevant and available data. ***Objective 6G4a.*** Provide a Highlands Build Out Model that evaluates RMP policies, supports State, regional and local requirements, and provides a consistent framework for water supply, wastewater, transportation and affordable housing planning and the SDRP Plan Endorsement process. ***Objective 6G4b.*** Counties shall, through Plan Conformance, use the Highlands Build Out Model or its equivalent to prepare a utilities plan element of the County Master Plan that evaluates available development capacity based on lands, resources, and utilities. ***Objective 6G4c.*** Municipalities shall, through Plan Conformance, use the Highlands Build Out Model to develop a local build out analysis that incorporates RMP policies and objectives to evaluate land use capability and capacity planning.
Technical and Planning Assistance	The Highlands Council will provide to each Highlands municipality and county the information developed for the RMP and the LUCM Series specifically, as relevant to their jurisdiction, and provide technical and planning assistance that will assist local use of the information. The Highlands Council will also provide all information used in development of the *Highlands Regional Build Out Technical Report* for use in local build out model development and analysis. Further technical and planning assistance will be made available in the form of training programs for local officials, employees, and consultants. See the *Plan Conformance Program* and the *Local Participation Program* for additional information on this component.

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RMP Updates	Subsequent to receipt of the RMP information and assistance regarding its use, municipalities and counties will assist the Council by examining the information used in the LUCM Series and other elements of the RMP and recommending RMP Updates as needed. Of specific interest will be updates on the following information: • Development or other land use changes that have occurred and development proposals that have been built subsequent to the Land Use Land Cover aerial photography used in the LUCM Series (currently 2002) or are eligible for Highlands Act exemptions under Policy 7F1; • Updates and corrections to the Existing Areas Served for both public community water supply systems and public wastewater treatment systems; • Additional lands preserved for natural resource preservation, parks and recreational open space, historic preservation, farmland preservation, etc.; • Modifications to stream and flood hazard delineation maps, including both additions and corrections to stream corridor locations; • Jurisdictional wetlands and transition areas for which NJDEP has provided an updated Letter of Interpretation (LOI); • Topographic mapping that will enable a more precise delineation of steep slopes; • Additional NJDEP certified vernal pools, and proposed modifications to vernal pool buffers based on the criteria in the Goals, Policies, and Objectives and discussed in the *Critical Habitat Conservation and Management Program*; • Modifications to critical habitat boundaries for rare, threatened and endangered wildlife species based on site-specific analyses using methods in Highlands Council guidance; • Updates regarding transportation facilities that significantly alter the opportunity for multi-modal transportation connections and use; and • Updates to water withdrawal, water use, and wastewater discharge volumes and locations that would result in a modification of the Water Availability values for HUC14 subwatersheds affecting the municipality, including information that results in recalculation of consumptive and depletive water uses for any subwatershed. In addition, information may be provided regarding specific contracts or rights to utility capacity by municipality, service area or contracted uses (e.g., committed but unconnected users) that will allow for more specific utility capacity determinations by municipality. Proposed RMP Updates will be verified for accuracy by the Highlands Council and used to determine whether changes in any of the LUCM Series are appropriate. See the RMP *Updates Program* and the *Map Adjustments Program* for additional information.
Calculation of Land Use Capability	The Highlands Council will provide updated LUCM Series and technical information, including the *Highlands Regional Build Out Technical Report*, to each Highlands municipality and county as necessary during the Plan Conformance process. Each municipality in the Plan Conformance process shall use the LUCM Series and any supporting tabular and mapped information to determine the land use capabilities within their municipalities at a local scale, as part of the local build out analysis required for Plan Conformance. Each county in the Plan Conformance process shall also use the LUCM Series and any supporting tabular and mapped information to determine the extent to which county conformance is affected by the information, such as impacts on county utility authorities, conservation elements of county master plans, etc. Land use capability has three components: • Land based capacity; • Resource based capacity; and • Utility based capacity.

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Calculation of Land Use Capability (continued)

Land based capacity is determined through an examination of vacant lots, partially developed oversized lots that could be subdivided under existing zoning, and lots that could be viable for redevelopment or intensification of development (which can include those lots identified as potential sites through use of the Highlands Council's *Redevelopment and Infill Analysis Tool*). This step provides a sense of what lands could be developed assuming no resource or utility constraints. However, it does not address the actual density of that development, which will be affected in the near term by municipal intentions as expressed in local zoning policies, RMP policies, and current resource and utility constraints, and in the longer term by decisions regarding TDR Receiving Zones, infrastructure investments, the impact of water deficit reduction programs, etc.

Resource based capacity is determined through an examination of:

- Septic Systems: The number of septic systems that can be accommodated in each municipality for each Land Use Capability Zone, as defined by the RMP, which will be determined based on developable acreage within each HUC14 subwatershed. Where municipalities coordinate their planning, septic system yield within the same HUC14 subwatershed and Zone may be reallocated based on a mutually agreed upon formula, as long as the results are in conformance with all other RMP policies and objectives;
- Water Availability: The net or conditional water availability defined by the RMP for each municipality by HUC14 subwatershed. (Agricultural net water availability for the Conservation Zone may not be combined with the non-agricultural net water availability for that Zone.) Where municipalities coordinate their planning under a joint Water Use and Conservation Management Plan, net or conditional water availability within the same HUC14 subwatershed may be reallocated based on a mutually agreed upon formula, as long as the results are in conformance with all other RMP policies and objectives. (Municipalities will plan for future water uses through municipal Water Use and Conservation Management Plans as a condition of Plan Conformance. Where a Current Deficit Area exists, the plan must achieve reduction or elimination of the deficits); and
- Local issues regarding the ability of local aquifers to sustain water demands, regardless of HUC14 subwatershed estimates. Subwatershed-based net water availability may not reflect variations in aquifer capacity within the subwatershed, nor contamination issues that may limit site-specific water availability. These local issues should be used as additional constraints on the location and density of development.

Utility based capacity is determined through an examination of public water supply and wastewater utility capacity by municipality, and where appropriate by service zones (e.g., portions of the overall service area that is served by a single transmission or collection main or is within a single pressure zone) within each municipality. Service zone analysis may be necessary where constraints in the ability of individual supply mains or collection systems to convey flows will limit development potential even where the utility treatment plant has available capacity. Because many utilities serve more than one town and service agreements differ, the capacity analysis also must address questions of capacity allocation – does a municipality have a guaranteed allocation or is capacity assigned on a "first come, first served" basis regardless of municipality? Finally, the implications of regulatory constraints such as NJPDES permits, TMDLs, water allocation permits, etc. must be addressed.

The next step, determination of land use capability, is a "limiting factor analysis" using these three categories of capacity constraints. No one part of municipality will need to address all types of constraints, because a sewered area will not address septic system yields, and vice versa. In general, however, a municipality should determine for each part of the municipality the type of capacity that is most constraining. The municipality can then directly zone or regulate for that capacity, or it may examine alternatives that create capacity as long as the alternatives are otherwise in conformance with the RMP:

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Calculation of Land Use Capability (continued)	• Where land based capacity is the most limiting factor, the municipality may consider modifying zoning to more fully utilize available resource or utility capacities, up to the second most limiting factor. The use of available capacity for TDR Receiving Zones in appropriate locations is one potential approach; • Where water availability is the most limiting factor, the municipality will determine through its Water Use and Conservation Management Plan whether the most appropriate approach is to limit land use capability to that level, or to increase net water availability by conservation, new supplies, or eliminating existing deficit to create capacity, through the methods identified in the *Water Deficits Program* and the *Efficient Use of Water Program*; • Where septic system yield is the most limiting factor, the municipality may explore extending or creating sewer service areas that provide an alternative to use of septic systems. (Note: the use of alternative design septic systems cannot be used to modify septic system yields.) New or expanded sewer service areas may only occur in the Preservation Area through a Highlands Act waiver through NJDEP. In the Planning Area, they must comply with all RMP policies and objectives protecting the Environmentally Constrained Sub-zones and Highlands resources. New or expanded sewer service areas proposed in the Conservation or Protection Zones of the Planning Area must be shown to be necessary for and are approved by the Highlands Council to address a Highlands Act waiver or cluster development, and will maximize the protection of sensitive environmental resources; and • Where utility capacity is the most limiting factor, the municipality may investigate increasing net utility capacity through water conservation (again, using methods in the *Efficient Use of Water Program* or *Water Deficit Reduction Program*) or through public water or wastewater infrastructure improvements. The results of this technical analysis and planning process will be reflected in the documentation provided by a municipality with its Petition for Plan Conformance (see *Plan Conformance Program* for more information).
Natural Resource Limitations on Land Use Capability	The process defined above provides the total land use capability for large areas of a municipality or county. Municipalities will then determine how the land use capability will be allocated among developable lands through zoning. Factors that shall be considered include the location, density, quality and relative intensity of sensitive environmental features in the developable lands, to minimize and, where required, avoid possible conflict between the allocation of land use capability and the protection of environmental resources (including but not limited to Highlands Open Waters, Critical Habitat, Riparian Areas, Steep Slopes, Prime Ground Water Recharge Areas) during the local development review process. The Goals, Policies, and Objectives of the RMP and the relevant maps, data layers and tabular data shall be included as part of this process, toward Plan Conformance. For example, the Environmentally Constrained Sub-zones in both the ECZ and the Conservation Zone trigger special provisions restricting the extension or provision of public water supply and wastewater management facilities, beyond the general provisions of the Zones themselves. For natural resource protection requirements in all Zones, the Goals, Policies, and Objectives require protection of the resources and may require responses ranging from modified layout of development at the zoned densities (where the natural resource constraints are limited relative to lot size and development density), to loss of development yield (where a high level of constrained areas exists on a specific property).

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Natural Resource Limitations on Land Use Capability (continued)	Figure 5.4 *Site Specific Constraints Analysis* shows a Planning Area example from an ECZ that has significant developed areas but also some undeveloped or underdeveloped parcels. Site specific constraints on land use primarily include the 300 foot Highlands Open Waters buffer, Steep Slopes and Tiers 1, 2, and 3 of a Wellhead Protection Area. In some cases, the developable lands are not affected by any of these constraints. In other cases, parcels are entirely or partially within one or more constraints. Tier 3 of a Wellhead Protection Area does not limit development capacity, but rather ensures that any potential discharges of hazardous materials are prevented. New development must be designed to protect the entire Highlands Open Waters buffer, but redevelopment of already disturbed lands may be allowed within the buffer to a certain extent. New development must also generally avoid steep slopes. (See *Project Review Standards Program* for more details on specific standards.) Using the example area, one potential development solution for properties affected by the Highlands Open Waters buffer and steep slopes would be clustering of zoned development yield onto the unconstrained portions of the affected properties. The result need not reduce the total development yield, but must include a significant movement of that yield away from the constrained area.
RMP Map Adjustments	Where municipal or county planning results in a proposal for changes to the LUCM Series other than RMP Updates, the municipality must submit a Petition for Map Adjustment either as part of the Petition for Plan Conformance or separately. The *Map Adjustments Program* provides additional information on the limitations and policies for map adjustments.
CLUSTER/CONSERVATION DESIGN DEVELOPMENT	
Issue Overview	Aggressive agricultural and open space preservation programs have preserved a significant amount of land in the Highlands Region. Permanent protection of open space and agricultural resources typically occurs through fee simple acquisition or easement acquisition by leveraging public tax dollars. Increases in land value and budgetary funding constraints make it nearly impossible to preserve such resources with public tax dollars alone. Municipalities need several planning tools in their toolbox to achieve their desired resource protection goals and the requirements of the RMP. Planning mechanisms that do not require public funding for compensation, such as clustering techniques, shall be made available to retain agriculture and environmental resources. The Highlands Act recognizes that development, redevelopment and economic growth in certain areas of the Region are in the best interests of the State, providing innumerable social, cultural, and economic benefits. Locally, the need exists for a certain amount of growth to meet affordable housing obligations, take advantage of infill/redevelopment opportunities, increase the local tax base, and provide for general economic health. However, communities throughout the region and New Jersey express concern about the tax implications of future growth, and the impact growth will have on existing community character. Sprawling suburban development under conventional zoning is incompatible with agricultural, environmental and historic resources; it fragments habitat, and does little to protect these resources. This type of development does not meet the requirements of the RMP or the goals of the New Jersey SDRP, which both seek to direct growth into compact, walkable, mixed-use centers and preserve significant resources in the environs. Development located in the environs is inefficient in that it requires new infrastructure, such as transportation, water, wastewater, and community facilities, which only increase traffic congestion, and ultimately the cost of government services. Planning for more appropriate future growth requires the use of innovative tools, such as clustering, to preserve critical resources and retain community character.

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Issue Overview (continued)

Some of the key objectives of the Highlands Act are to minimize the impact of human development on the Highlands ecosystem and to maintain the rural, historic and scenic character of the region. When designed appropriately cluster development furthers these objectives by guiding future growth away from lands with high resource values or limited capacity to support growth to lands which are appropriate for development and able to accommodate it. Cluster development can moreover result in the preservation, usually in perpetuity, of significant resources.

Under the New Jersey Municipal Land Use Law (MLUL) clustering can be accomplished through contiguous or non-contiguous Planned Developments pursuant to N.J.S.A. 40:55D-65. A clustering program can also be implemented under a TDR program pursuant to the 2004 State TDR Act or the Highlands TDR Program. The Highlands Act requires the Highlands Council establish a regional TDR Program, which the RMP addresses through the TDR Program (see Part 7 *Landowner Equity*).

Planned Developments are defined in N.J.S.A. 40:55D-6 to include residential clusters. Prior to 1996 only contiguous cluster developments were permitted. Contiguous clustering takes one parcel and groups new development on a small portion of that parcel, while preserving the reminder of the parcel. Non-contiguous clustering is now permitted pursuant to MLUL amendments, effective January 5, 1996 (P.L. 1995, c.364).

Clustering provisions may be adopted into a municipal zoning ordinance pursuant to N.J.S.A. 40:55D-65(c), which includes allowance for "the clustering of development between non-contiguous parcels." Such ordinances must establish standards for the type of clustering, whether contiguous or non-contiguous, as well as the permitted density and intensity of development. The zoning ordinance also sets forth the design, bulk, and location of the buildings, as well as the percentage of the lot or development area to be set aside for preservation and development purposes.

Essentially, cluster development permits smaller lots than required by the zone, as long as there is no increase in the number of lots that would be permitted under the zoning. The remaining parcel would be held in common by the lot owners for conservation or open space purposes, including agriculture, in accordance with standards set forth at N.J.S.A. 40:55D-43. These standards allow the open space set aside to be dedicated to the municipality or another government agency. If the land is not dedicated to either of these, the developer must "provide for an organization for the ownership and maintenance of any open space" (N.J.S.A. 40:55D-43), and the organization cannot be dissolved or dispose of the open space without first offering it to the municipality.

Typically the developer would create a Homeowner's Association to retain ownership and maintain the property. In this instance under §40:55D-43(b) the municipality or officer designated by ordinance to administer the cluster development can monitor the property to assure it is retained properly. If the property is deeded to the municipality, the municipality is responsible for monitoring the property's maintenance. If the open space is set aside for agricultural purposes, it can be sold "in fee" to the Homeowner's Association and then leased to a local farmer. A more viable option for the farming community is for the farmer to retain ownership and sell only the "development rights." Should the farmer retire the parcel can be sold to a younger farmer at an affordable price to keep the agricultural industry viable in the community.

Lot-averaging is also permissible under N.J.S.A. 40:55D-40, which allows for standards in a subdivision ordinance that deviate from conventional subdivision standards for lot areas, dimensions, yards and setbacks. The degree of flexibility is not specified but may include "standards encouraging and promoting flexibility, economy and environmental soundness in layout and design" (§40:55D-40(b)). A municipal lot-averaging ordinance allows for creation by subdivision of non-uniform lots which, when considered on average, must conform to the minimum lot size and dimensional requirements of the underlying zoning. This provides flexibility in land development in order to retain concentrated environmental or agricultural resources in contiguous areas on the largest of the remaining parcel(s). The resource areas remain in private ownership, but are protected by conservation easements or other forms of deed restriction.

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Issue Overview (continued)	When implemented appropriately cluster development should conserve land, reduce infrastructure costs, maintain landowner equity, reduce the cost of government services, and reduce the costs to the builder, which in turn reduces costs to the home buyer. The cluster should permanently protect a significant portion of the project area by clustering development within a small portion of the tract. If the new development is located adjacent or accessible to existing infrastructure, such as transportation, water, wastewater, and public facilities, this will reduce impervious surface and costs to construct or extend new infrastructure. The builder will save and filter the savings down to the home buyer. The municipality will save in terms of providing services to the new development. For example, added maintenance for new roads and facilities will be reduced. The limited impervious surface will also protect resources and enhance water and soil quality.
Program Summary	Preserving and enhancing undeveloped lands in the Highlands Region is one of the primary components of the Highlands Act. However, existing funding constraints to protect open space and agricultural land, coupled with the need to provide for some growth, require planning tools, such as clustering to protect significant resources and allow for limited growth. Cluster development shall balance these multiple needs, including, but not limited to maximizing the protection of environmental and agricultural resources, accommodating limited development and considering existing community character. To accomplish these objectives, when municipalities are considering the use of cluster development, they shall be encouraged to take a holistic approach to planning for the entire municipality through the Plan Conformance process. A holistic approach will include a capacity and resource analysis to determine the potential for future growth and the need for resource protection for the entire municipality. An evaluation of existing infrastructure, including but not limited to transportation, water, sewer, and community facilities will be necessary to investigate the possibility of locating future growth adjacent to existing infrastructure. This will maximize the protection of resources and reduce costs associated with development not only for the builder and subsequent homebuyers, but for the governmental jurisdiction(s) having ultimate authority for the care and maintenance of the infrastructure systems. For instance, to the maximum extent possible, a cluster development that is situated adjacent to an existing village shall be designed to use existing infrastructure and consider the existing community character of the village. Implementation of cluster development shall require municipal development plans and regulations that meet the requirements of the RMP. The Highlands Council will provide grants, technical assistance and planning assistance to municipalities for cluster development planning. Projects involving cooperative planning by neighboring municipalities will be encouraged. The Highlands Council will create Cluster Development Conformance Standards that include a model cluster ordinance and relevant master plan provisions. The Council will also create Cluster Development Design Guidelines for cluster development to guide municipalities, local development review, and Highlands Project Review. Cluster development design guidelines shall be incorporated into cluster zoning ordinances. To a certain extent the traditional rural village settlement in New Jersey resembles single-family cluster development, but conventional zoning will not produce this type of development. When designed appropriately cluster development will produce the desired effect of traditional rural settlement, which enhances the quality of life in the community, and the region as a whole.

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Program Summary (continued)

Cluster development requirements are provided below in the policies and objectives of the RMP. These policies and objectives are necessary in order to meet the resource management and protection requirements of the RMP, and to maximize the preservation of the Highlands resources. The term "cluster project area," introduced in the policies and objectives below, refers to all of the individual parcels involved in the cluster development.

Regardless of the Highlands Land Use Capability Zone, the use of clustering must preserve at least 80% of the total cluster project area in perpetuity in agricultural use or for environmental protection. A set aside of 80% for preservation will prevent the fragmentation of existing ecosystems and agricultural land. The preservation of contiguous areas of open space and agriculture will sustain and enhance these resources. Preservation of up to 90% of the cluster project area will be achieved where feasible. Clustering does not have a specific targeted lot size for the developed portion of the cluster, because each project area will require specific design parameters based on the presence of environmental or agricultural resources, and specific development layouts for existing and proposed infrastructure. Such infrastructure includes, but is not limited to, transportation (roads, transit), utilities (water and wastewater), community facilities, and communal open space.

The cluster design should incorporate a tighter lot size, as appropriate, to meet the resource management and protection requirements of the RMP, to maximize the preservation of the Highlands resources, and to minimize impervious surfaces. Cluster development yields are based on the septic system density requirement of the RMP relevant to the Land Use Capability Zone in which the cluster project area is located in, except where specifically allowed by the Highlands Council through the use of Highlands Development Credit (HDC) purchases where wastewater infrastructure is available consistent with RMP policies and objectives. Further, no additional density than allowed under municipal zoning will be permitted, such as the consideration of net density provisions, and minimum lot sizes. Higher development yields than those permitted within the requirements of the RMP, shall not be allowed in any Highlands Land Use Capability Zone.

Water and wastewater availability, expansion, or creation for cluster development shall be wholly dependent on the Highlands Land Use Capability Zone that the cluster project area is located in. The cluster design development plans and regulations shall also consider existing community character, and shall incorporate smart growth design principles, and Low Impact Development. The cluster development shall be buffered appropriately to protect resources, and minimize conflicts with existing agricultural and environmental resources and new development. Clustering is mandatory in the ARA, regardless of the Land Use Capability Zone, for residential development, and shall be designed in such a way that maximizes the preservation of the agricultural resource, and sustains or enhances the viability of the agricultural industry in the municipality and the region as a whole. While the policies and objectives for the Cluster Program that follow are extensive, they are necessary to clarify when and how cluster development shall be considered and implemented. Cluster development shall meet the resource management and protection requirements of the RMP and maximize the preservation of resources in the Highlands Region.

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RMP Policies and Objectives Addressed

Objective 1A2d. To prohibit through Plan Conformance, local development review and Highlands Project Review the expansion or creation of public water supply systems or public wastewater collection and treatment systems or community-based on-site wastewater facilities into forested areas of the Forest Resource Area within the Planning Area except as provided for in Policy 2J4 with Objectives 2J4a through 2J4d, and Policy 2K3 with Objectives 2K3a through 2k3e, and within the Preservation Area except as provided for in Policy 2I1 and Objectives 2I1a and 2I1b.

Objective 2B4a. Give highest priority for the use of non-agricultural Net Water Availability or Conditional Water Availability within Protection Zone and Conservation Zone subwatersheds, through a Water Use and Conservation Plan developed under Objective 2B8c, local development review and Highlands Project review:

1. To address through a waiver under Policy 7G1 or 7G2 a documented existing or imminent threat to public health and safety from contaminated domestic and other on-site water supplies that is of sufficient scale to justify a public water supply and where no alternative is feasible that would sufficiently assure long-term protection of public health and safety. Such needs shall have highest priority for Net Water Availability;
2. To serve development permitted through a Highlands Redevelopment Area or takings waiver under Policy 7G1 or 7G2;
3. To serve a cluster development that complies with Objective 2J4b; and
4. To serve affordable housing projects where at least 10% of the units are affordable.

Objective 2J4a. Prohibit new, expanded, or extended public water systems within the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area unless they are shown to be necessary for and are approved by the Highlands Council for one or more of the purposes listed below. For approvals regarding parts 1, 2, and 3, the project must maximize the protection of sensitive environmental resources such as Highlands Open Waters buffer areas, Riparian Areas, the forested portion of the Forest Resource Area, agricultural lands of ARAs, Steep Slopes, Prime Ground Water Recharge Areas and Critical Habitat. For approvals regarding part 3, the project must avoid disturbance of Highlands Open Waters buffer areas, Riparian Areas, Steep Slopes and Critical Habitat, and must minimize disturbance of the forested portion of the Forest Resource Area, agricultural lands of ARAs, and Prime Ground Water Recharge Areas. The extension or creation of systems shall follow the requirements in Objective 2J4b (parts 2 and 3). The applicable purposes are:

1. To address through a waiver under Policy 7G1 or 7G2 a documented existing or imminent threat to public health and safety from contaminated domestic and other on-site water supplies that is of sufficient scale to justify a public water supply and where no alternative is feasible that would sufficiently assure long-term protection of public health and safety. Such needs shall have highest priority for allocation of existing system capacity;
2. To address development permitted through a Highlands Redevelopment Area or takings waiver under Policy 7G1 or 7G2; or
3. To serve a cluster development that meets all requirements of Objective 2J4b.

Objective 2J4b. Clustered development served by public water supply within the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area shall be approved only if the following conditions are met:

1. The development impacts are otherwise consistent with the requirements of the RMP, including provisions for mandatory clustering in ARAs pursuant to Policy 3A5;

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RMP Policies and Objectives Addressed (continued)

2. Extension of an existing public water system will occur only where the cluster development is within or immediately adjacent to an Existing Area Served with available capacity;
3. Creation of a new public water system will occur only where such development is not within or immediately adjacent to an Existing Area Served with available capacity;
4. The clustered development preserves at least 80% of the cluster project area in perpetuity for environmental protection or agricultural purposes. To the maximum extent feasible the developed portion (e.g., not including wetlands, Highlands Open Waters buffers, and recreational lands) occupies no more than 10% of the cluster project area if served by a public or community on-site wastewater system; and
5. Where the preserved land in the cluster project area is dedicated to agricultural purposes, the cluster development ordinance and an Agriculture Retention/Farmland Preservation Plan supports continued agricultural viability of the agricultural land and requires the implementation of best management practices, including development and implementation of a Farm Conservation Plan that addresses the protection of water and soil resources prepared by the USDA Natural Resources Conservation Service (NRCS), Technical Service Provider (TSP), appropriate agent or NJDA staff, and approved by the local Soil Conservation District (SCD).

Objective 2J4d. All development within the Highlands Region, in areas that are not served by public water systems, shall be at a density that can be supported by on-site wells. Where cluster development in the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area will be served by on-site wells, and the undeveloped land is preserved for agricultural purposes in perpetuity, the cluster development in combination with the Agriculture Retention/Farmland Preservation Plan required by Objective 2J4b shall provide for Best Management Practices that protect the on-site wells from contamination resulting from agricultural practices and shall include provisions to minimize or reduce net pollutant loadings from the total cluster project area including the preserved agricultural lands.

Objective 2K3c. Prohibit new, expanded, or extended public wastewater collection and treatment systems and community on-site treatment facilities within the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area unless they are shown to be necessary for and are approved by the Highlands Council for one or more of the purposes listed below. For approvals regarding parts 1, 2, and 3, the project must maximize the protection of sensitive environmental resources such as Highlands Open Waters buffer areas, Riparian Areas, the forested portion of the Forest Resource Area, agricultural lands of ARAs, Steep Slopes, Prime Ground Water Recharge Areas and Critical Habitat. For approvals regarding part 3, the project must avoid disturbance of Highlands Open Waters buffer areas, Riparian Areas, Steep Slopes and Critical Habitat, and must minimize disturbance of the forested portion of the Forest Resource Area, agricultural lands of ARAs, and Prime Ground Water Recharge Areas. The choice of extension or creation of systems shall follow the requirements in Objective 2K3d (2 and 3). The applicable purposes are:

1. To address through a waiver under Policy 7G1 or 7G2 a documented existing or imminent threat to public health and safety from a pattern of failing septic systems (where the failing systems cannot reasonably be addressed through rehabilitation or replacement) or highly concentrated septic systems, where the threat is of sufficient scale to justify a public wastewater collection and treatment system or community on-site treatment facility and where no alternative is feasible that would sufficiently assure long-term protection of public health and safety. To address other issues of public health and safety, such needs shall have highest priority for allocation of existing system capacity;
2. To address development permitted through a Highlands Redevelopment Area or takings waiver under Policy 7G1 or 7G2; or
3. To serve a cluster development that meets all requirements of Objective 2K3d.

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RMP Policies and Objectives Addressed (continued)

Objective 2K3d. Clustered development served by a public wastewater collection and treatment system or community on-site treatment facility within the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area shall be approved only if the following conditions are met:

1. The development impacts are otherwise consistent with the requirements of the RMP, including provisions for mandatory clustering in ARAs pursuant to Policy 3A5;
2. Extension of an existing public wastewater collection and treatment system will occur only where the cluster development is within or immediately adjacent to an Existing Area Served with available capacity;
3. Creation of a community on-site treatment facility will occur only where such development is not within or immediately adjacent to an Existing Area Served with available capacity, where the proposed system is designed, permitted and constructed at a capacity limited to the needs of the clustered development, and where the system does not create the potential for future expansion into areas that are not the subject of cluster developments immediately adjacent to the initial cluster served;
4. The cluster development preserves at least 80% of the cluster project area in perpetuity for environmental protection or agriculture purposes. To the maximum extent feasible the developed portion of the project area (e.g., not including wetlands, Highlands Open Waters buffers, and recreational lands) occupies no more than 10% of the cluster project area if served by a public or community on-site wastewater system; and
5. Where the preserved land in the cluster project area is dedicated to agricultural purposes, the cluster development ordinance and an Agriculture Retention/Farmland Preservation Plan supports continued agricultural viability of the agricultural land and requires the implementation of best management practices, including development and implementation of a FCP that addresses the protection of water and soil resources prepared by the USDA NRCS, TSP, appropriate agent or NJDA staff, and approved by the local SCD.

Objective 2K3e. Allow the expansion or creation of wastewater collection systems within the ECZ of the Planning Area, other than the Environmentally-Constrained Sub-zone, to serve lands which are appropriate for designated TDR Receiving Zones, infill or redevelopment, to meet needs equivalent to those provided at Objective 2K3c within the ECZ, or to serve new areas for development that meet all other requirements of the RMP. The highest priority for allocation of excess or additional wastewater treatment capacity is to areas where there are clusters of failed septic systems that are located within or adjacent to Existing Areas Served. TDR Receiving Areas, where designated, affordable housing projects (where the affordable units exceed 10% of the total units), infill and redevelopment shall have higher priority for capacity than other developments requiring expansion of sewer service areas.

Objective 2K3f. All development within the Highlands Region, in areas which are not served by public wastewater collection and treatment system or community on-site treatment facility, shall be at a density that can be supported by septic systems under Goal 2L. Where cluster development in the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones of the Planning Area shall be served by on-site wells, and the undeveloped land is preserved for agricultural purposes in perpetuity, the cluster development and the Agriculture Retention/ Farmland Preservation Plan required by Objective 2K3d in combination shall include provisions for best management practices that protect the on-site wells from contamination resulting from agricultural practices and shall include provisions to minimize or reduce net pollutant loadings from the total cluster project area including the preserved agricultural lands.

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RMP Policies and Objectives Addressed (continued)

Objective 2L2e. New residential development using septic systems where clustering or conservation design techniques are employed shall have a gross density (for all parcels involved in the development proposal) based on the nitrate dilution target appropriate for the Land Use Capability Zone, but with the density for the developed portion of the site based on a nitrate dilution target not to exceed 10 mg/L or any more stringent requirement as required by N.J.A.C. 7:15.

Objective 2L2g. New residential development utilizing septic systems shall be designed in a manner that ensures that the untreated well water meets the State drinking water quality standards and minimizes the risk of well contamination due to the flow of septic system plumes within or between developed lots, addressing general ground water flow patterns, major fracture systems and other appropriate geological, geophysical, and hydrogeological issues.

Policy 3A5. Where it is not feasible to preserve agricultural lands within the ARA by such methods as fee simple acquisition, easement acquisition, or a TDR Program, require mandatory clustering through Municipal Plan Conformance, local development review and Highlands Project Review for residential development in an ARA. Cluster development within the Planning Area that incorporates public or community on-site wastewater utilities shall meet the requirements of Policy 2J4 with Objectives 2J4a through 2J4d, and Policy 2K3 with Objectives 2K3a through 2K3e, and within the Preservation area shall meet the requirements of Policy 2I1 and Objectives 2I1a and 2I1b, and where reliant on septic systems shall meet the requirements of Objective 6I1a.

Objective 3A5a. Implement regulations requiring that cluster or conservation design development proposed within an ARA support the preservation of farmland, avoid conflicts with agriculture, maintain, and enhance the sustainability and continued viability of the agricultural industry, protect Important Farmland Soils, and meet resource management and protection requirements of the RMP.

Objective 3A5b. Implement regulations requiring that all cluster or conservation design development proposed in an ARA be buffered appropriately with existing natural resources, such as hedgerows or trees, or with new buffers to avoid conflicts between non-agricultural development and agricultural activities, and to protect existing agricultural uses and sensitive environmental resources.

Objective 3A5c. Implement regulations requiring that all land preserved in perpetuity for environmental protection or agricultural purposes as a result of clustering be subject to a conservation easement enforceable by the Highlands Council and at least one of the following: the appropriate municipality, for agricultural purposes the CADB or the SADC and for environmental purposes Green Acres or a qualified land trust non-profit organization.

Objective 3A5d. Where the preserved land in the cluster project area is dedicated to agricultural purposes, the cluster development ordinance and an Agriculture Retention/Farmland Preservation Plan supports continued agricultural viability of the agricultural land and requires the implementation of best management practices, including development and implementation of a Farm Conservation Plan that addresses the protection of water and soil resources prepared by the USDA NRCS, TSP, appropriate agent or NJDA staff, and approved by the local SCD.

Policy 3C1. To prohibit through Plan Conformance, local development review and Highlands Project Review the development of additional water and wastewater infrastructure in a ARA within the Conservation and Protection Zones of the Planning Area, unless they meet the requirements of Policy 2J4 with Objectives 2J4a through 2J4d, and Policy 2K3 with Objectives 2K3a through 2K3e, and will maximize the preservation of agricultural lands with the ARA.

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RMP Policies and Objectives Addressed (continued)

Policy 6C3. To encourage owners of lands which are eligible for exemptions under the Highlands Act (see Policy 7F1) to voluntarily offer their land for acquisition, participate in the TDR program, or use cluster or conservation design development in cooperation with other exempt landowners, and comply with standards and criteria which protect the land and water resources of the Highlands Region from any adverse impacts.

Objective 6F6a Center based development initiatives shall be planned within the Existing Community Zone at densities appropriate to the Zone, the community character, and the State Development and Redevelopment Plan. Densities of five dwelling units and above are encouraged, and are required in areas designated as voluntary TDR Receiving Zones where TDR benefits are sought under the Highlands Act.

Objective 6G2b. Map Adjustments proposed to change Protection and Conservation Zones or the Environmentally-Constrained Sub-Zones may be approved by the Highlands Council where it finds that the petition does not result in deleterious impacts to the affected or adjacent Land Use Capability Zones or to RMP policies and objectives applicable to adjacent or nearby lands, and the petitioner demonstrates that the proposed adjustment:

1. Complies with the intent and purposes of the Highlands Act and the RMP and demonstrates that Highlands resource protection and smart growth planning principles have been addressed;
2. Will result in no net loss of Highlands resources or resource values (including but not limited to water availability, water quality, Critical Habitat and agriculture) within the Region or as appropriate, within any HUC 14 subwatershed, such that on the whole, the results equal or exceed the resource protections provided by the RMP;
3. Will under no circumstance result in the allocation of water or wastewater capacity in excess of that available in any HUC 14 subwatershed; and
4. Cannot appropriately or adequately be addressed via other options, such as:
   - Waivers under The Highlands Act;
   - Exemptions from the Highlands Act; and
   - RMP Updates Program.

Where a Map Adjustment creates opportunity for an increase in density, such density must be offset by an equivalent reduction in density elsewhere in the Region, or alternatively, by use of HDCs.

Where a petition seeks the creation or extension of an ECZ, it must demonstrate that the area in question can accommodate ECZ-appropriate development. The Council will look most favorably upon ECZ petitions that create a meaningful opportunity to provide affordable housing; improve the balance of housing and employment; and promote the use of alternative modes of transportation, such as transit, by for example, a location proximate to Highlands Baseline Transportation and Transit features.

Policy 6H1. To protect, restore, or enhance sensitive environmental resources of the Highlands Region, including but not limited to Forests, Critical Habitat, Highlands Open Waters and their buffers, Riparian Areas, Steep Slopes, Prime Ground Water Recharge Areas, Wellhead Protection Areas, and ARAs.

Objective 6H1b. Prevent the extension or creation of water and wastewater utility services in the Protection Zone, Conservation Zone, and Environmentally Constrained Sub-zones of the Planning Area, unless they meet the requirements of Policy 2J4 with Objectives 2J4a through 2J4d, and Policy 2K3 with Objectives 2K3a through 2K3e, and will maximize the protection of agricultural and environmentally sensitive resources.

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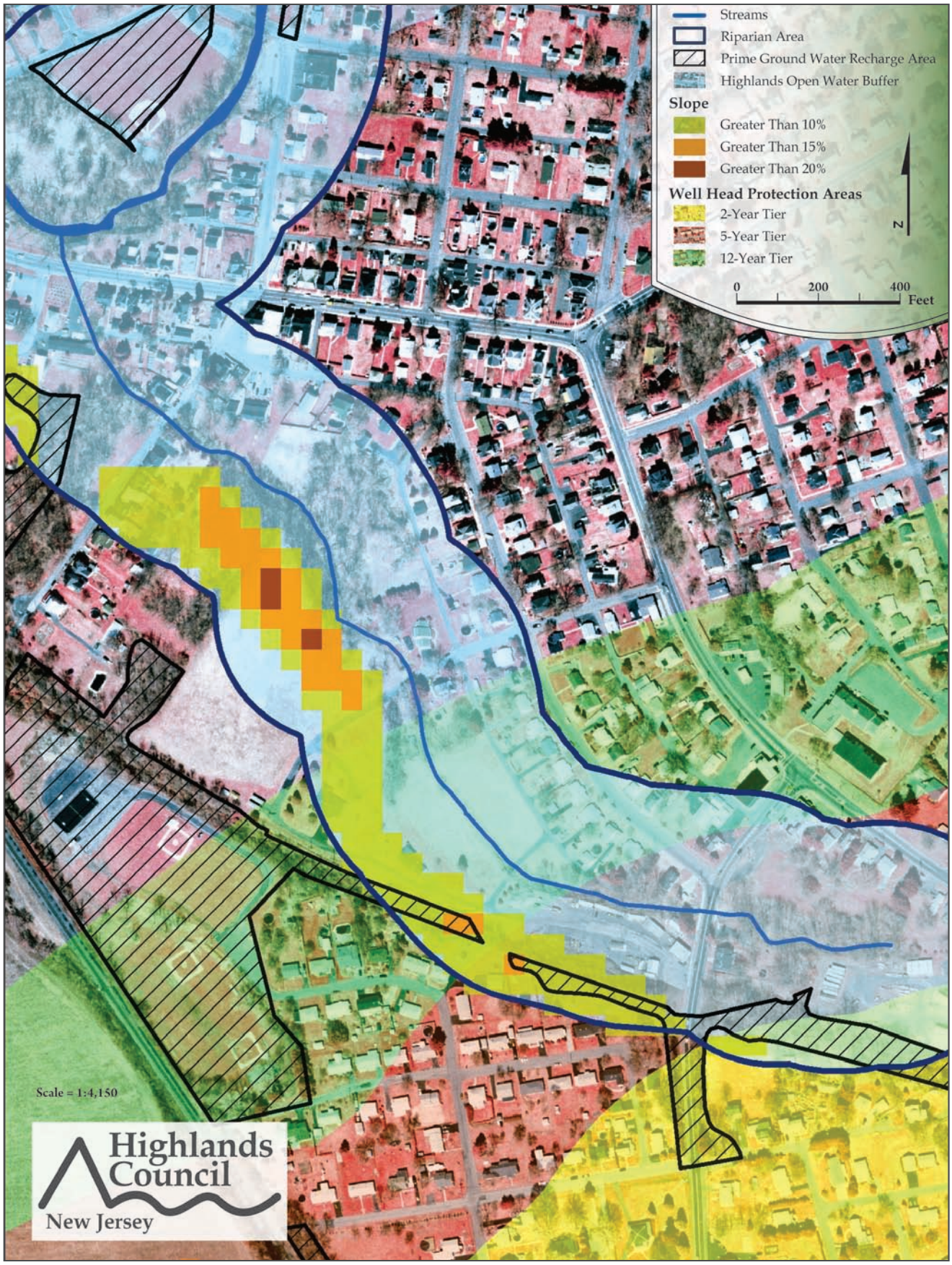
FIGURE 5.4: Site Specific Constraints Analysis



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RMP Policies and Objectives Addressed (continued)	***Objective 6H1d.*** Cluster and conservation design development plans and regulations shall consider existing community character, incorporate smart growth design principles, and require Low Impact Development including, but not limited to: locating development adjacent to existing infrastructure such as water, wastewater, transportation, and public, and permitting smaller residential lots in order to incorporate community open space and existing natural resources into the design. **Policy 6H3.** To require conforming municipalities and counties to include site development programs, such as clustering, to preserve land in perpetuity for environmental protection or agricultural purposes. ***Objective 6I1a.*** Adopt municipal and county master plans and land development regulations that require that cluster developments preserve in perpetuity for environmental protection or agricultural purposes at least 80% of the cluster project area. To the maximum extent feasible the developed portion (i.e., not including wetlands, Highlands Open Waters buffers, and recreational lands) occupies no more than 10% of the cluster project area if served by a public or community on-site wastewater system. ***Objective 6N1b.*** Implement flexible site development review programs that allow for adjustments, such as reduction of minimum setbacks, modification of uniform road frontage requirements, increase in maximum permitted height or non-contiguous clustering of development entitlements where necessary to mitigate or eliminate adverse impacts on Highlands natural resources. ***Objective 6N3b.*** Limitation of site disturbance, clearing and grading to the minimum necessary to make reasonable use of the designated building envelope for the development parcel. ***Objective 7H1b.*** Establish municipal clustering programs which allow for the clustering of development rights from willing landowners whose property is entitled to an exemption under the Highlands Act, for both contiguous and non-contiguous properties, so as to minimize the impact of such exempted development on the ecological integrity of the Highlands Region.
Cluster/ Conservation Development General Provisions	Some aspects of cluster development apply regardless of the Highlands Land Use Capability Zone. The Highlands Council will provide Cluster Development Conformance Standards including a model cluster ordinance and relevant master plan provisions. The Council will also create Cluster Development Design Guidelines to guide municipalities in local development review, and for application in Highlands Project Review. Cluster development design guidelines shall be incorporated into cluster zoning ordinances. Municipalities shall include general provisions in cluster design and development plans and regulations including, but not limited to, the following: • Cluster development shall be carefully planned and regulated in all Highlands Land Use Capability Zones. The development and use of undeveloped lands shall be limited where it is critical to protect, restore, or enhance sensitive environmental and agricultural resources of the Highlands Region, including but not limited to Forests, Critical Habitat, Highlands Open Waters and their buffers, Riparian Areas, Steep Slopes, Prime Ground Water Recharge Areas, Wellhead Protection Areas, and ARAs; • The cluster development shall preserve at least 80% of the cluster project area in perpetuity for agricultural use or for environmental protection. Where it is feasible, preservation of 90% or higher of the cluster project area will be achieved. All land preserved in perpetuity shall require a deed of easement enforceable and monitored by the Highlands Council and the corresponding municipality, appropriate agency, or non-profit land trust organization (see the sections below on Environmental Protection and Agricultural Preservation for appropriate entities);

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Cluster/ Conservation Development General Provisions (continued)

- The total cluster developed area shall not exceed 20% of the cluster project area. To the maximum extent feasible the cluster developed area shall occupy no more than 10% of the cluster project area, if the project area is served by a public or community on-site wastewater system;
- Cluster development yields shall be based on the septic system yields for the cluster project area, with no additional density than allowed under municipal zoning, unless approved by the Council for the use of HDC's where infrastructure is available consistent with RMP policies and objectives. Where a cluster is proposed as center-based development, densities in the Highlands Land Use Capability Protection and Conservation Zones shall be at densities appropriate to the Land Use Capability Zone;
- Clustering is mandatory for development within the ARA regardless of the underlying Land Use Capability Zone for residential development. However, the majority of the ARA is within the Conservation Zone and the Conservation Environmentally Constrained Subzone;
- Water and wastewater availability, expansion, or creation for cluster development is wholly dependent on the Highlands LUCM Zone in which the cluster project area is located and must meet the requirements of the policies and objectives stated above. New residential development using septic systems and water supply wells shall be designed to minimize the risk of well contamination. Technical assistance shall be provided through the Plan Conformance process, local development review, and Highlands Project Review to ensure the cluster development meets the resource management and protection requirements of the RMP;
- Non-contiguous clustering provisions shall be in accordance with the New Jersey MLUL and those MLUL provisions stated above in the Issue Overview, and meet the Goals, Policies, and Objectives of the RMP. Lot-averaging provisions shall be in accordance with the MLUL and only be permitted where demonstrated to be consistent with the resource management and protection requirements of the RMP;
- All cluster and conservation design development plans and regulations shall consider existing community character and incorporate smart growth principles, and the use of Low Impact Development (LID) techniques. The cluster development design should consider existing community character with respect to architectural style, scale, massing, and arrangement. Smart growth principles shall include compact, walkable mixed-use development that uses existing infrastructure to the maximum extent feasible, including but not limited to water, wastewater, transportation, and community facilities. Among other benefits these characteristics will limit the degree of new impervious surface, reduce the cost to provide infrastructure, and permit smaller residential lots in order to incorporate community open space and existing natural resources into the design. LID shall be implemented in resource management practices, stormwater management methods, and low impact "green" construction activities (see *Smart Growth and LID* in Part 6 *Future Land Use*);
- All buffers and setbacks shall consider and incorporate existing natural, historic, and scenic resources and community character (see the section below on Buffer Strips, Setbacks and Protection of Natural Landscape). Protection buffers on Highlands Open Waters and Riparian Areas apply regardless of the Highlands Land Use Capability Zone; and
- Site disturbance shall be restricted to clearing and grading to the minimum extent necessary to make reasonable use of the designated building envelopes for the development portion of the cluster project area.

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Cluster Design for Environmental Protection	The use of clustering in Highlands Land Use Capability Zones with a high concentration of environmentally sensitive resources will be limited. Clustering for environmental protection purposes must meet the requirements of the policies and objectives stated above, along with the resource protection policies and objectives of the RMP. Municipalities shall include provisions in cluster design and development plans and regulations to preserve sensitive environmental resources based on provisions including, but not limited to, the following: • At least 80% of the cluster project area shall be preserved in perpetuity for environmental protection. Where it is feasible, preservation of 90% or higher of the cluster project area will be achieved; • All land preserved in perpetuity for environmental protection shall be subject to a deed of easement enforceable by the Highlands Council and the appropriate municipality, or the NJDEP Green Acres, or a qualified non-profit land trust organization; • When high value natural resources are preserved the deed of easement should prohibit active recreational purposes and allow only minimal passive recreational uses dependant on the nature of the resources; and • Passive recreational trails shall be allowed provided they do not disturb habitats for Threatened and Endangered species and must be natural landscape trails constructed of native pervious surface. Where feasible such passive recreational trails shall link to existing federal and State trail systems, greenways, and parks.
Cluster Design for Agricultural Preservation	Where other preservation tools such as fee simple acquisition, easement acquisition, or a TDR Program are not feasible to preserve agricultural lands, the use of clustering is strongly encouraged and is mandatory for residential development within the ARA. Municipalities shall prepare and implement cluster and conservation design development regulations in the ARA that support farmland preservation, avoid conflicts with agriculture, maintain and enhance the sustainability and continued viability of the agricultural industry, protect Important Farmland Soils, and meet resource management and protection requirements of the RMP. Municipalities shall include provisions in development regulations and master plan elements for cluster development including, but not limited to, the following: • At least 80% of the cluster project area shall be dedicated in perpetuity for agricultural use. Where it is feasible, preservation of 90% or higher of the cluster project area will be achieved; • All land preserved in perpetuity for agricultural purposes shall be subject to a deed of easement enforceable by the Highlands Council and the appropriate municipality, or the CADB, or the SADC. The deed of easement shall use language similar to the New Jersey SADC Farmland Preservation Program easement. The deed of easement and a legally enforceable Homeowner's Agreement, where applicable, shall include Right to Farm Act provisions. This RTF language will make the buyer aware they will be residing adjacent to working farms; • The development of additional water and wastewater infrastructure in an ARA within the Conservation and Protection Zones of the Planning Area is generally prohibited, but can be approved by the Council where it meets the requirements of the Utility policies and objectives above for clustering and maximizes the preservation of agricultural lands in the ARA; • Development in the cluster project area shall be buffered appropriately to avoid Right to Farm conflicts between the non-agricultural development and the agricultural use. Buffers shall consist of existing natural resources, such as hedgerows or trees, or new buffers similar to existing natural vegetation (see Buffer Strips below); • The most productive Important Farmland Soils shall be given priority in determining the set aside agricultural parcel and shall be preserved to the maximum extent possible within the cluster project area;

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Cluster Design for Agricultural Preservation (continued)	• The cluster development ordinance and an Agriculture Retention/Farmland Preservation Plan shall be prepared, or amended as appropriate, to support continued viability of the agricultural land being preserved and the implementation of best management practices (BMPs); • The preserved parcel remaining in agricultural use shall be required to use BMPs on the Farm Management Unit to reduce nutrient and chemical loading rates by implementing a FCP that focuses on the protection of water and soil resources. The FCP shall be prepared by the USDA NRCS, TSP, appropriate agent or NJDA staff, and approved by the local SCD. The use of USDA NRCS and Farm Service Agency cost-share programs that support BMPs shall be promoted; and • Where appropriate, community supported agriculture businesses shall be encouraged to allow homeowners to take advantage of local produce and enhance the viability of the agricultural industry.
Buffer Strips, Setbacks and Protection of Natural Landscape	All development in the cluster project area shall be designed to protect the most important resources, e.g., agriculture, open space, and/or environmentally constrained resources and shall maintain the Highlands rural, scenic, and historic character. Setback requirements shall be designed to consider and harmonize the cluster development in the cluster project area with existing development. Existing natural resources and vegetation (e.g., hedgerows/trees, woodlands or forest, wetlands, and streams) shall be retained as buffers strips wherever feasible. In all Highlands Land Use Capability Zones the developed area of the cluster shall be located behind an existing hedgerow (mature trees) or screened with a new buffer, such as a thickly planted berm of native trees or shrubs, that is landscaped in such a manner to resemble existing woodlands. Use of existing resources as buffers will protect natural vegetation, minimize the areas of lawn, and reduce non-point loadings associated with lawns. Natural areas preserved close to homes will enhance the value of the property, as well as protect the environment. Other natural or manmade historic features, such as rock walls, shall also be retained. All development design within the cluster project area shall meet the requirements of the Goals, Policies, and Objectives of the RMP and shall be reviewed and approved by the Highlands Council.
REDEVELOPMENT	
Issue Overview	The RMP strives to accommodate regional growth and development needs primarily through the reuse and redevelopment of previously developed areas, including brownfields, grayfields, and underutilized sites. These areas generally have access to existing utility and transportation infrastructure and often are located in or near existing communities. As they have already been developed, these sites will have comparably fewer environmental constraints than undeveloped areas and the reuse of developed lands conserves natural resources and maximizes infrastructure investments. However, not all such sites are in locations conducive to redevelopment, especially where redevelopment could harm surrounding environmentally sensitive resources. Redevelopment is a strategy to achieve sustainable development in the Highlands. Redevelopment projects may face more hurdles than the development of greenfields (undeveloped land). Complicating factors may include project financing, ownership and title issues, the regulatory process, legal requirements, remediation, and the demolition/adaptive reuse and rebuilding of land improvements. For this reason, the Highlands Council strives to maximize opportunities for redevelopment in appropriate locations by serving as an advocate for redevelopment in the Highlands Region and by providing technical resources and tools, planning assistance, and agency coordination to municipalities, counties, land owners, and non-profit organizations who are interested in pursuing redevelopment.

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Program Summary	The Redevelopment Program helps interested parties, municipalities, counties, state, and federal agencies understand where redevelopment opportunities are targeted by the RMP, and how to achieve redevelopment within each RMP zone and in the Planning and Preservation Areas. Redevelopment is the preferred method for accommodating growth and economic development in the Highlands Region. The program also outlines incentives and technical assistance that will be provided by the Highlands Council. Redevelopment is a tool that will help achieve residential, retail, service, office, and industrial needs and achieve general economic sustainability in the Region. Redevelopment in the Highlands is a process used to rebuild, restore, or enhance a previously developed area that is appropriate for economic investment and community development in accordance with smart growth policies of the RMP. Redevelopment activities may include the removal and replacement, adaptive reuse or infill of structures within areas which are surrounded by development or substantially developed, or conversion of similar sites to open space uses where appropriate. Redevelopment activities may take place in previously developed areas, brownfields, and grayfields. Grayfield sites usually contain industrial or commercial facilities, exhibiting signs of abandonment or underutilization in areas with existing infrastructure, but without evidence or expectation of contamination. Grayfield sites may also include a residential component. These areas are often declining and underutilized strip shopping areas. In the Preservation Area, previously developed areas must have 70% or greater impervious surfaces to be considered for approval by the Highlands Council as Redevelopment Areas. Brownfield sites are defined as any former or current commercial or industrial site that is currently vacant or underutilized and on which there has been or there is suspected to have been a discharge of a contaminant. In many cases, brownfield restoration and redevelopment ends with new development. In some cases, it may be more appropriate to consider a "brownfield to greenfield" conversion, which is a project that results in the restoration of contaminated sites into open space and conservation projects, rather than residential or commercial structures. It is also important that remediation standards and practices ensure that Highlands resources are protected. In New Jersey, the phrase "area in need of redevelopment" refers to a process established through the Local Redevelopment and Housing Law (LRHL), N.J.S.A. 40A:12A-1 et seq. This law establishes the process by which municipalities commence redevelopment as a public purpose. While the Highlands Act and the RMP refer to "redevelopment" activities, the term in this context is not intended to, nor should it be interpreted to indicate the redevelopment process pursuant to the LRHL. Depending upon the nature of the project, municipalities may decide to utilize the process established by LRHL or may find that it is not necessary.
RMP Policies and Objectives Addressed	**Policy 6K1.** To promote redevelopment of brownfields, grayfields, and other previously developed areas in a manner consistent with the goals, and requirements of the Plan. ***Objective 6K1a.*** Establish interagency teams as necessary to support and expedite redevelopment and development activities that conform to the Plan. ***Objective 6K1b.*** Encourage and support the use of planning and financing tools that are available through state agencies and programs for appropriate redevelopment. **Policy 6L1.** To require that conforming municipalities identify any development, redevelopment, and brownfield opportunities in the local land use plan element of their master plans, as appropriate. ***Objective 6L1a.*** Municipal review of the Redevelopment and Infill Analysis Tool. **Policy 6L2.** To require that conforming municipalities amend development regulations and zoning to enable project implementation of redevelopment initiatives that are identified under Policy 6L1 and locally endorsed through Plan Conformance. **Policy 6M1.** Encourage and support the restoration and redevelopment or open space use of contaminated areas.

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RMP Policies and Objectives Addressed (continued)	***Objective 6M1a.*** Coordinate with NJDEP on Highlands Brownfield designations and in support of a mechanism that facilitates remedial activities within the Highlands Region. ***Objective 6M1b.*** Evaluate mechanisms for remedial activities that apply resource protection, enhancement, and restoration approaches that allow for a minimal redevelopment footprint, encourage "brownfields to greenfields" approaches, and include green energy and building concepts. ***Objective 6M1c.*** Any restoration of contaminated sites shall be conducted in accordance with the criteria required by the NJDEP's Technical Requirements for Site Remediation (N.J.A.C. 7:26E). ***Objective 6M1d.*** As needed to ensure resource protection, prepare enhanced remediation standards for application in the Highlands Region through NJDEP's Technical Requirements for Site Remediation (N.J.A.C. 7:26E).
Preservation Area Redevelopment	In the Preservation Area, land development is required to be in accordance with the enhanced environmental standards of the Highlands Rules (N.J.A.C 7:38) adopted by NJDEP. NJDEP grants waivers from the Highlands Rules on a case-by-case basis for several scenarios, including redevelopment in previously developed areas and brownfields (see N.J.A.C 7:38-6.6 and 6.7). In order to qualify for a waiver from the Highlands Rules, a proposed redevelopment site must be designated as appropriate for development by the Highlands Council. Only those projects that satisfy both Highlands Council's redevelopment criteria and NJDEP's waiver criteria may be approved. In order to initiate redevelopment activities on previously developed lands with 70% impervious surfaces in the Preservation Area, the general process is as follows: 1. The Highlands Council must approve the designation of a redevelopment site, which must have at least 70% impervious coverage and be appropriate for redevelopment. This approval process is called the Highlands Redevelopment Area Designation process and can be initiated by any county, municipality, property owner, or designated agent. The Highlands Redevelopment Area Designation process results in an approval, an approval with conditions, or the denial of an application requesting designation of a Highlands Redevelopment Area. In cases where the Highlands Council determines that a proposed Highlands Redevelopment Area is appropriate for redevelopment, the final determination may include specific conditions to restrict any activities on the site; and 2. The NJDEP must review the proposed redevelopment project and issue a HPAA with waiver if all necessary requirements are satisfied. A HPAA is a permit to conduct regulated activities in the Perseveration Area and includes a review of the project to determine that it is compliant with all provisions of the Highlands Act. Redevelopment of a brownfield site requires a three step process: 1. A site must be designated by the NJDEP as a Highlands brownfield. In accordance with N.J.A.C. 7:38-6.6, there are three tracks by which a site may be designated as a Highlands Brownfield, provided that the contamination onsite is not the result of a current or previous agricultural use: • Track One addresses sanitary landfill sites; • Track Two addresses former or current commercial or industrial sites for which: i. Prior to the issuance of a No Further Action (NFA) letter, a remedial action report was completed confirming the presence of contamination onsite, and documenting the current or previous use as a commercial or industrial site; ii. The NJDEP has issued an NFA letter for the entire site for which the brownfield designation is sought as of July 1, 1993, or later; and iii. No discharge of a contaminant has occurred on the site since the date of the NFA letter.

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Preservation Area Redevelopment (continued)	• Track Three addresses former or current commercial or industrial sites with suspected or confirmed onsite contamination that have not yet received a No Further Action letter; and • In order to receive a brownfields designation from the NJDEP, a Highlands Resource Area Determination (HRAD) must be completed. An HRAD identifies and/or verifies the location of any Highlands resource area features. The HRAD is not a permit, but rather a process intended to confirm the presence, absence, or location of a Highlands resource area on a site as well as its boundary. On-site remediation may begin, where appropriate, and it must be conducted in accordance with the NJDEP's Technical Requirements for Site Remediation (N.J.A.C. 7:26E). 2. The Highlands Council must identify a brownfield location as appropriate for redevelopment, through the Highlands Redevelopment Area Designation process; and 3. Finally, the NJDEP reviews the proposed redevelopment project and grants a HPAA with waiver if all necessary requirements are satisfied. For further program details, refer to the Procedures for Highlands Redevelopment Area Designations and N.J.A.C. 7:3 (see Figure 5.5 and 5.6 *Highlands Contaminated Site Inventory Tier 1 Sites* and *Tier 2 Sites*).
Planning Area Redevelopment	In the Planning Area, redevelopment opportunities exist in accordance with the RMP overlay zone where the proposed project is located. In the ECZ, opportunities include all previously developed lands, brownfields, and grayfields in locations with water, wastewater, and transportation capacity and are appropriate for increased land use intensity or conversion to greenfields. Redevelopment is encouraged where appropriate in the ECZ. Infringement on environmentally sensitive areas will be limited through application of RMP policies. In the ECZ, conforming municipalities initiating redevelopment activities in accordance with the RMP and their conforming plans and ordinances do not require any specific approval from the Highlands Council; however, activities may be subject to call-up project review if they do not adhere to the RMP policies. Where a conforming municipality proposes a redevelopment that is not in conformance with the RMP, the municipality must petition the Highlands Council through the Redevelopment Area Designation process. In the Conservation and Protection Zones, redevelopment of brownfields and grayfields is permitted in locations with water, wastewater, and transportation capacity and that are appropriate for increased land use intensity or conversion to greenfields. In the Conservation and Protection Zone, Highlands Council approval of a site(s) is required, and approval may be granted as part of the Conformance process or in accordance with the Highlands Redevelopment Area Designation process.
Redevelopment and Infill Analysis Tool	The Redevelopment and Infill Analysis Tool identifies parcels that are developed, vacant (adjacent to developed), economically underutilized, oversized residential lots, and sites with existing local conditions such as designated redevelopment areas, urban enterprise zones, foreign trade zones and Centers designated in accordance with the SDRP. Parcels are evaluated in relation to regional transportation and transit opportunities. The Redevelopment and Infill Analysis Tool scores identified parcels based on relative redevelopment and infill potential (see Figure 5.7 *Redevelopment and Infill Analysis Tool*) and is meant to serve as a tool to assist in long-term planning evaluations. Using local input through Plan Conformance, it will become a comprehensive source of information on parcels in the Highlands with potential for redevelopment.

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FIGURE 5.5: Highlands Contaminated Site Inventory Tier 1 Sites

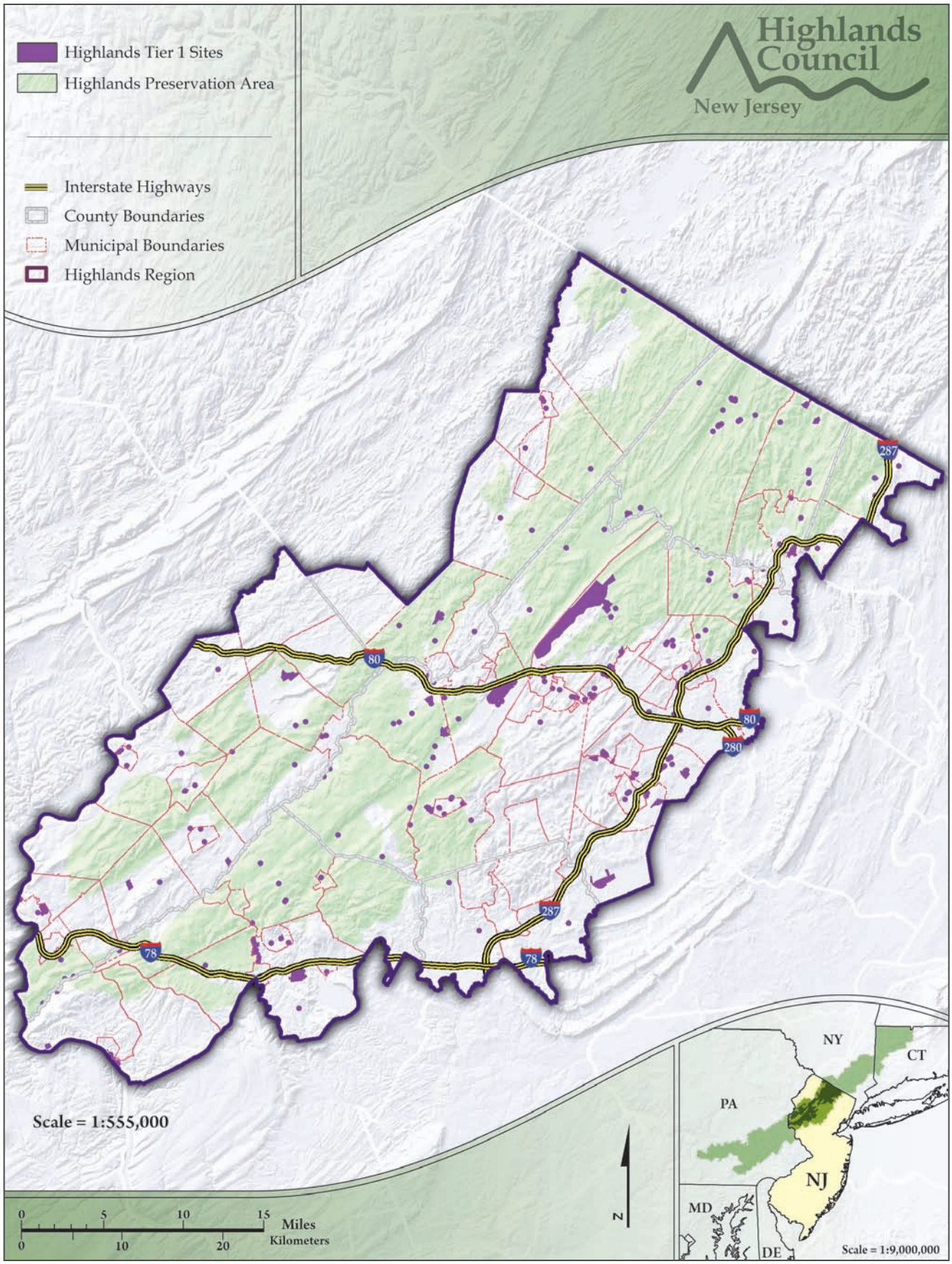

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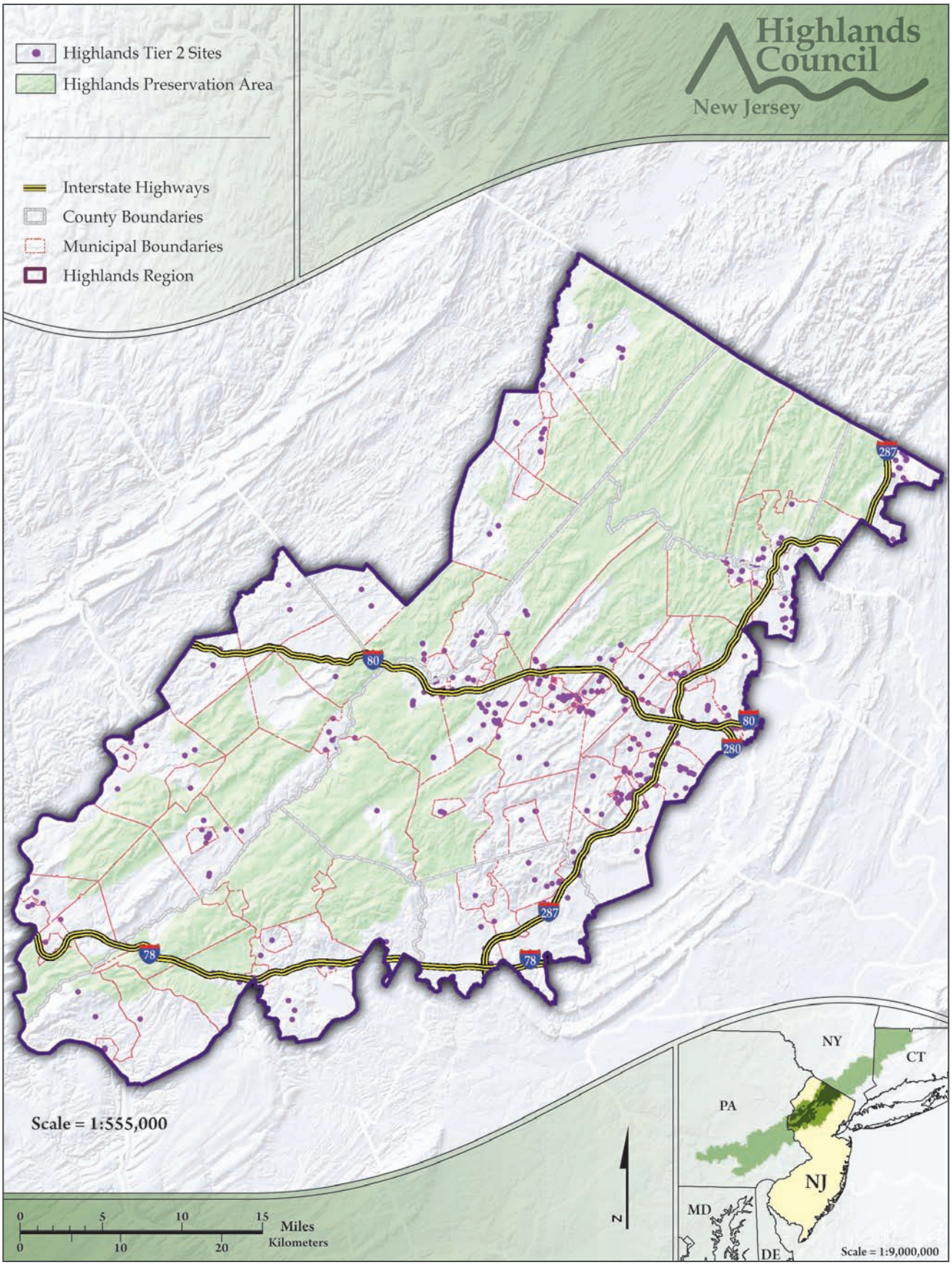
FIGURE 5.6: Highlands Contaminated Site Inventory Tier 2 Sites



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Redevelopment and Infill Analysis Tool (continued)	Conforming municipalities are required to identify any development, redevelopment, and brownfields opportunities in the local land use plan element of their master plans, as appropriate. Municipalities may have also identified opportunities through redevelopment plans. In support of this requirement, municipalities shall review and evaluate the findings of the Redevelopment and Infill Analysis Tool. The information developed by the Council represents a rough estimate of development potential, and will be greatly enhanced with local input. Not all of the identified parcels will necessarily be appropriate for redevelopment; local and regional policy constraints, environmental constraints, land character, market conditions, and water and utility capacity constraints all will affect a site's ability for redevelopment. Additional details of the Redevelopment and Infill Tool are included in the *Regional Land Use Conditions and Smart Design Guidelines Technical Report*.
Site Development Standards – Redevelopment	The Highlands Council will provide site development standards for all projects, including redevelopment projects. Site standards will guide and control development and redevelopment in the Region and are intended to provide protection of natural resources, environmentally sensitive areas, open space and agricultural lands, and to enhance and reflect community character. As outlined in this program, redevelopment opportunities in the Highlands exist depending upon location relative to the Preservation Area, the Planning Area, and RMP Zone. In situations where approval is required (either because the site is in the Preservation Area, or in the Planning Area and proposed redevelopment activities would conflict with RMP resource standards), the Highlands Council must be petitioned for approval. Approval may be granted as part of the Conformance process or in accordance with the Highlands Redevelopment Area Designation process. Approval may be sought for individual sites or larger redevelopment areas, encompassing multiple sites or portions of the municipality. In some cases, limited relief from specific standards may be provided for projects in conforming municipalities that have undergone comprehensive planning. Petitioners must be able to demonstrate a net improvement to natural resources and the built environment through implementation of a Highlands Council approved Redevelopment Area that is consistent with comprehensive planning efforts. The Highlands Council will develop site design standards that apply to redevelopment initiatives and contain provisions to create an incentive to redevelop and to use HDCs in the process. These standards will be contained in the Smart Growth Manual and Community Development Design Guidebook (as described in *Highlands Smart Growth and Community Design Handbook Program*), and Low Impact Development Standards for Site & Subdivisions will be provided.
General Assistance for Eligible Projects – Agency Coordination	The Highlands Council will seek to streamline the redevelopment process by convening interagency teams as needed to support and expedite redevelopment and development activities that are consistent with RMP policies. Interagency teams will assist municipalities, counties, and interested parties in redevelopment initiatives that restore and enhance natural features and enhance the built environment. Teams may be comprised of relevant state agencies who will informally review projects with a problem-solving approach. Agency coordination will also be required to evaluate the need for enhanced standards for remediation activities. The evaluation of site design and development for contaminated properties will require interagency coordination and will continue to be refined in support of RMP policies.
General Assistance for Eligible Projects – Technical Assistance	The Council will also provide technical assistance in the overall redevelopment process. Technical assistance and support is available for the following activities: • Technical assistance with the Highlands Redevelopment Area Designation process; • Technical assistance with economic improvement issues through the *Sustainable Economic Development Program*, which covers available programs which enhance economic health and vitality of the Highlands Region; and

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FIGURE 5.7: Redevelopment and Infill Analysis Tool

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General Assistance for Eligible Projects – Technical Assistance (continued)	• Information for those looking to acquire funding through existing resources. Currently, state and federal agency programs offer a variety of grant, loan, and technical assistance programs for the planning and implementation of development and redevelopment projects. While available programs and technical assistance may change over time, examples of programs and technical assistance that may be useful for a project in the Highlands Region include: – New Jersey Office of Smart Growth's smart future planning grant program, which offers planning grants to municipalities, counties and non-profit agencies; – New Jersey Economic Development Authority's real estate development programs and bond financing; – New Jersey Economic Development Authority and the NJDEP administer the Hazardous Discharge Site Remediation loan and grant programs, which awards funds for the investigation and remediation work on contaminated sites; – New Jersey Environmental Infrastructure Trust's low-cost financing for projects (including brownfield remediation) that protect and improve water resources; and – Natural Resource Damages Liability Protection for Developers provides liability protection for non-responsible developers against natural resource damage claims.
General Assistance for Eligible Projects – Highlands Planning Grants and Incentives	The following describes several incentive based program elements that will help to support redevelopment projects; including those that incorporate transit oriented development and TDR Programs. • Priority project review by the Highlands Council for redevelopment projects that incorporate HDCs and affordable housing. • Flexible design standards for projects that incorporate HDCs, at least 10% affordable housing, mixed use, and redevelopment. • Discretionary planning grant program: – Highlands Council discretionary planning grants are intended to support important elements of the RMP through planning studies on targeted issues. The grant program serves as a mechanism to implement the goals and policies of the RMP. Sample projects that may be eligible include: ▸ Planning for brownfield and grayfield redevelopment; ▸ Town center/transit village development; ▸ Transit oriented development; ▸ TDR; ▸ Enhancement of environmental resources through redevelopment; ▸ Community design; and ▸ Local and regional economic development strategies. *The Plan Conformance Program* contains information on Highlands Council funding opportunities relating to the implementation of the RMP.
General Assistance for Eligible Projects – Education and Outreach	The Highlands Council will support education and technical training programs for municipal officials and interested organizations for innovative/alternative development and redevelopment initiatives. These programs will support stakeholder understanding of balancing resource protection/restoration with redevelopment initiatives that contribute to making communities of place with a mix of uses. (See *Local Participation Program* for further details.)

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SMART GROWTH AND COMMUNITY DESIGN HANDBOOK	
Issue Overview	The Highlands Act notes that, "the existing land use and environmental regulation system cannot protect the water and natural resources of the New Jersey Highlands against the environmental impacts of sprawl development" (Section 2). The RMP guides new growth and development to areas of existing development and requires that community development and redevelopment be carefully tailored to ensure that new growth is compatible with the existing community character. In addition, the Plan contemplates that Highlands Development Credits will be transferred to receiving zones where appropriate. The Highlands Act requires that this Plan's smart growth component include an assessment, based upon the resource assessment, "of opportunities for appropriate development, redevelopment, and economic growth, and a TDR Program which shall include consideration of public investment priorities, infrastructure investments, economic development, revitalization, housing, transportation, energy resources, waste management, recycling, brownfields, and design such as mixed-use, compact design, and transit villages" (Section 11.a.(6)). The Highlands Act requires the RMP to promote smart growth practices in the Highlands Region, particularly with regard to development in the ECZ and in areas appropriate for redevelopment.
Program Summary	The Highlands Council will work with state and local agencies and technical and planning experts to prepare a handbook on smart growth and community design to be utilized for community development and redevelopment within the Highlands Region.
RMP Policies and Objectives Addressed	**Policy 6F1.** To promote compatible development and redevelopment within the ECZ. **Policy 6F3.** To ensure that development activities within the ECZ are subject to standards and criteria which ensure that development and redevelopment incorporate smart growth principles and do not adversely affect natural resources. **Policy 6F5.** To ensure that development and redevelopment in the ECZ are compatible with existing community character. **Policy 6F6.** To encourage new growth, where desired by the municipality, and development in the ECZ is in the form of center based and mixed use development. **Policy 6N1.** To establish smart growth programs and Low Impact Development principles for use within the Highlands Region to guide and control development and redevelopment throughout the Highlands Region.
Highlands Smart Growth and Community Design Handbook	The Highlands Council working in partnership with agencies and development partners will prepare a Highlands Smart Growth and Community Design Handbook for use by municipalities and counties in their planning, design and review processes. The handbook will address a broad range of issues potentially including but not limited to the following: • Mixed use development guidelines; • Infill development practices and standards; • Historic building and feature development practices; • Scenic resource protection design elements; • Techniques for community character analysis; • Economic development techniques (including Downtown Business Districts, home office operations, Bed and Breakfast operations, tourism, historic preservation, and recreation connections);

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Highlands Smart Growth and Community Design Handbook (continued)	• Traditional design practices for communities; • Location efficiency; • Resource efficiency; • Green building technology, including water conservation and energy efficient practices; • Innovative building practices and techniques; • Site layout and design techniques; • Cluster, lot-averaging and conservation development techniques; • Promoting a better jobs to housing balance; • Redevelopment and revitalization techniques; • Addressing affordable housing and community facilities; • Connecting transportation, transit and land use planning; and • List of state and national smart growth publications and resources.
Municipal Outreach	The Highlands Council will distribute the Highlands Smart Growth and Community Design Handbook to all Highlands Region municipalities. It will establish an outreach program to engage professional planners, landscape architects, architects and property owner/developers implementing smart growth practices in the Highlands Region. Finally, the Council will provide technical and planning assistance and planning grants to municipalities with regard to the use of the Handbook.

HOUSING AND COMMUNITY FACILITIES

Issue Overview

Housing is a major component of the land use patterns in the Highlands Region. The goals and policies of the RMP seek to address a full range of housing needs for the Region within the context of resource protection needs and sustainable development patterns. Housing costs in the Highlands, as across the State, continue to reflect the trend of increased values. Housing and community facilities issues for the Region include: addressing housing issues for all income groups including low and moderate income ranges, the relationship of employment opportunities to housing, encouraging efficient community facilities, and protecting community quality of life.

To ensure that housing is compatible with regional needs, the Region should support a variety of housing types such as rental housing, multi-family housing, age-restricted housing, and supportive and special needs housing. Agriculture is an important part of the essential character of the Highlands Region's culture, landscape, and economy. Agriculture presents unique housing requirements in order to sustain the agricultural economy, such as farm labor housing (both seasonal and long-term) and the use of clustered and center-based development (to minimize development conflicts with agriculture). The RMP seeks to provide mechanisms to address the need for a full range of variety and choice in housing opportunities in the Highlands Region consistent with the resource protection requirements of the RMP.

The RMP guides development away from environmentally sensitive and agricultural lands and promotes compact development and redevelopment in areas where adequate public facilities are available to serve new growth, provided that it is compatible with existing land uses and community character. Many of the RMP policies and objectives reflect the need for a range of housing opportunities. A regional balance of housing opportunities located in economically mixed communities with access to employment and services is encouraged in the Highlands. The long term integrity of the Highlands Region is dependent upon the sustainable economic and fiscal health of the Highlands communities as well as preservation of its natural resources. It also supports economic improvement, in the context of greater land, infrastructure and resource efficiency.

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Issue Overview (continued)	Several agencies and initiatives throughout the state play a role in supporting the RMP housing policies including the SDRP, Council on Affordable Housing (COAH), the Governor's Affordable Housing Initiative and individual municipal and non-profit efforts. In the Highlands Region, the approach to housing will require a comprehensive analysis of conditions and a variety of approaches and mechanisms will be considered.
Program Summary	The creation and maintenance of housing of all types has several important effects on communities and the Highlands Region as a whole. In particular, housing is linked to the sustainability, diversity, and quality of life for the Region. Ultimately, housing costs and community quality determine who can and will live in a particular area. Opportunities should be created for all residents through the most efficient use of the land and resources with development taking place in conformance with RMP policies to protect the environment, while maintaining low costs. In order to create and ensure a sustainable range of housing opportunities for the Highlands Region, this program addresses the following: • Variety and choice of housing. There is a need for options in the creation and maintenance of housing, including affordable and mixed use housing, as well as alternative housing schemes such as farm labor housing. Housing should be located in proximity to employment centers to minimize the social and environmental costs of longer commutes. Sufficient housing for working families is crucial to the long-term sustainability of business and commercial enterprise in the Highlands Region; • Affordable housing in the Highlands Region should be created and maintained. Municipalities in "growth areas" have a constitutional obligation to provide a realistic opportunity for the construction of a fair share of affordable housing for low and moderate income families; • Housing and community facilities should be built in appropriate locations using smart growth approaches to community building that strive to create compact, energy efficient, walkable communities, offering residents high quality of life. Housing should be targeted to areas with existing higher densities and without environmental constraints, within walking distance of schools, employment, services, transit, and community facilities with sufficient capacity; • Housing metrics for the region should be developed and tracked over time in order to identify long term regional trends and issues; and • Finally, the Highlands Council shall provide technical assistance, coordination with other state agencies, and incentives to housing initiatives that are consistent with the goals of the RMP.
RMP Policies and Objectives Addressed	**Policy 6H5.** To promote land uses which create a sense of place with attractive, walkable neighborhoods that support community connectivity of developed lands and community facilities. ***Objective 6H5a.*** Communities of place with a mix of uses which promote multi-purpose trips, through proximity of neighborhood retail, commercial, and entertainment uses to residential land uses that create communities that are largely self-sufficient regarding daily needs. ***Objective 6H5b.*** Communities of place with a pattern of development which promotes the use of transit, walking, and biking. **Policy 6H6.** To integrate public parks and green spaces into development and redevelopment projects and ensure restoration of impaired natural resources to the extent required by law, at a minimum, and where feasible to a greater extent to maximize long term value of the project. **Policy 6N5.** To require through Plan Conformance that municipalities and counties incorporate programs for community and neighborhood design that support a variety of housing options, mixed uses, redevelopment, adaptive re-use of historic sites and structures, and infill development in their master plans and development regulations.

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RMP Policies and Objectives Addressed (continued)

Policy 6O1. To establish a region-wide, comprehensive approach to addressing housing needs in the Highlands Region, serving all age groups, income levels, and mobility options.

Objective 6O1a. A comprehensive housing program addressing regional housing needs within the context of preserving the character and environmental integrity of the Highlands.

Objective 6O1b. An interagency partnership with the Council on Affordable Housing (COAH) in support of the achievement of both the resource protection requirements of the RMP and the municipal constitutional obligation, in "growth areas," to provide a realistic opportunity for the construction of a fair share of affordable housing for low and moderate income households.

Policy 6O1c. Preserve and monitor existing stocks of affordable housing.

Policy 6O2. To promote, where appropriate and permitted by Land Use Capability Zone, center-based development approaches that address a mix of housing types, support mixed uses, and implement compact development.

Policy 6O3. To promote, where appropriate and permitted by Land Use Capability Zone, affordable housing within new residential and mixed use development, redevelopment, or adaptive reuse projects.

Policy 6O4. To encourage the targeting of new housing to areas with compatible existing densities and within walking distance of schools, employment, transit, and community facilities and services.

Policy 6O5. To locate and maintain community facilities and services that support compact development patterns, shared services, and provide a high level of service.

Policy 6O6. To require that conforming municipalities identify existing and planned community facilities and encourage shared service opportunities as part of the local Community Facility Plan element.

Policy 6O7. To require that conforming municipalities implement both the resource protection requirements of the RMP along with the New Jersey Supreme Court's doctrine, in its Mount Laurel decisions, that every municipality in a "growth area" has a constitutional obligation to provide through its land use regulations, sound land use, and long range planning a realistic opportunity for a fair share of its region's present and prospective needs for housing for low and moderate income families.

Policy 6O8. To require that conforming municipalities update and adopt a housing element, fair share plan, and implementing ordinance(s) to reflect current conditions and resource protection requirements of the RMP.

Objective 608a. Conforming municipalities, through housing plans, will evaluate and provide for alternate mechanisms to address affordable housing obligations where RMP resource protection standards restrict the ability of planned but not built sites to be developed for affordable housing.

Policy 3A6. To permit through local development review and Highlands Project Review limited development, including family and farm labor housing in ARAs which are necessary to support the viability of the agricultural operation, in coordination with the NJDA and the SADC, and subject to compliance with the resource management and protection requirements of the RMP.

Objective 3A6a. Implement regulations allowing for construction of ancillary structures and family and farm labor housing that is necessary to support the viability of the agricultural operation, upon a demonstration that the proposed development is consistent with the resource management and protection requirements of the RMP.

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Housing Affordability

The New Jersey Supreme Court has determined, in its Mount Laurel decisions, that every municipality in a "growth area" has a constitutional obligation to provide through its land use regulations a realistic opportunity for a fair share of its region's present and prospective need for housing for low and moderate income families. The Supreme Court also demands that municipal land use regulations affirmatively afford a reasonable opportunity for a variety and choice of housing including low and moderate cost housing, to meet the needs of people desiring to live there. While the actual construction of that housing is not required, municipalities are encouraged but not mandated to expend their own resources to help provide low and moderate income housing. COAH has primary jurisdiction for the administration of housing obligations in accordance with regional planning considerations. The Highlands Council is coordinating with COAH to ensure that municipalities meet their housing obligations and that affordable housing is planned and sites are designed to meet the resource protection requirements of the RMP. Through sound planning, both resource protection and affordable housing goals can be achieved in the Highlands.

The Highlands Act requires that COAH take the RMP into consideration prior to making a determination regarding the allocation of the prospective fair share of the housing need for each of the eighty-eight municipalities in the Highlands Region. COAH has created a process to approve an adjustment of the present and prospective fair share based upon available vacant and developable land, infrastructure considerations or environmental or historic preservation factors. The *Land Use Capability Analysis Approach Program* outlines the Highlands Council's approach for determining conforming municipality's land use capability, combining land, resource, and utility based capacity considerations. Municipal conformance with the RMP requires that municipalities adopt a new or updated housing element, fair share plan, and implementing ordinance(s) that incorporate affordable housing obligations and local land use capability. The municipal housing element should be designed to achieve the goal of providing affordable housing to meet the fair share obligation, by demonstrating that existing zoning or planned changes in zoning provide adequate capacity to accommodate household and employment growth projections consistently with the resource protection requirements of the RMP. The fair share plan should describe the mechanisms and funding sources, if applicable, by which a municipality proposes to address its affordable housing obligation.

It should be noted that RMP resource protection standards may limit the ability of planned (unbuilt) sites to be developed for affordable housing and plans should provide alternate mechanisms to address affordable housing obligations.

In order to meet RMP housing policy requirements, conforming municipalities shall, consistent with the Fair Housing Act, either petition COAH for a substantive certification of its housing element and ordinances or institute an action for declaratory judgment granting it repose in the Superior Court. Participation in the Substantive Certification program is encouraged and provides protection from exclusionary zoning litigation (also referred to as builder's remedy lawsuits), flexible options for addressing affordable housing obligations, and priority for state funding. It allows municipalities to collect development fees to fund housing initiatives and provides a variety of mechanisms that do not necessitate new construction to address housing obligations.

The strategies for meeting affordable housing obligations in the Highlands Region will require consistency with resource protection and other goals of the Highlands Act. In the Preservation Area, where future development is limited, it is especially important to evaluate innovative options for fulfilling municipal affordable housing needs. In addition to the aforementioned requirements, the following mechanisms will be used to address regional needs:

- Support the creation and enhancement of partnerships for affordable housing between municipalities, counties, non-profits, and other housing organizations;

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Housing Affordability (continued)	• Maximize the opportunities available through State and federal programs for technical assistance and planning, and support agency coordination to ensure regional initiatives are met. Use existing State and federal programs that assist in the production of new affordable units, the preservation of existing affordable units, and the protection of units for people with special needs; • The Municipal Conformance Build out analysis will assist municipalities in determining household and employment projections consistent with RMP conformance; • Partner with COAH and municipalities to identify and inventory existing planned affordable units and to ensure that outstanding affordable housing obligations are fulfilled in a manner that is consistent with NJDEP Highlands Rules (as applicable) and RMP required resource protection standards; and • In support of long term planning and the RMP Monitoring Program, develop indicators that may serve as an assessment tool in gauging the level of success in providing a full-range of housing within the Highlands Region. (See *Plan Conformance Guidelines* for details regarding requirements related to Conformance with the RMP).
Farm Labor Housing	The objective of this program component is to support seasonal and non-seasonal farm labor housing which is accessory to and/or supportive of sustainable agriculture, subject to compliance with the RMP resource management programs. Coordination with the NJDA, the SADC, CADBs, and other interested parties will be necessary to further examine best practices and limitations that exist in support of this initiative. (See *Agricultural Management and Sustainability Program* for additional details).
Housing Approaches - Smart Growth, Housing, and Community Facilities	Inefficient land use and sprawl development patterns have created fiscal stresses and economic imbalances in the Region, highlighting the need for a smart growth approach to achieving regional housing needs. The goal of this approach is to use land more efficiently to engender economically vibrant communities, complete with jobs, houses, shopping, recreation, entertainment, and multiple modes of transportation. This program component supports a diverse mix of housing that offers a wide range of choice in terms of value, type, and location. It also seeks quality housing design that provides adequate light, air, and open space. Community facilities house the many essential services that residents of the Highlands rely upon, such as emergency fire and rescue services. They also include such facilities as government offices, libraries, schools, and community centers. The design and location of community facilities should be in keeping with the physical and demographic needs of the region, while still providing a high level of service. RMP policy encourages the use of energy efficient or green building techniques and the use of shared services or co-location; which can reduce the overall costs of services. Conforming municipalities are required to identify existing and planned community facilities and encourage shared service opportunities as part of the local Community Facilities Plan Element. This program component seeks to identify ways to form livable, walkable communities in the Highlands Region. Using the *Highlands Smart Growth and Community Design Handbook Program, Redevelopment Program, Highlands Transfer of Development Rights Program*, and *Cluster/ Conservation Design Development Program*, municipalities will be given the tools to implement smart growth planning approaches. Examples of smart growth approaches include: • Maximize the efficient use of existing infrastructure, in the form of redevelopment, infill, and adaptive reuse; • Target housing opportunities in centers and existing communities rather than in sprawling land use patterns;

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Housing Approaches - Smart Growth, Housing, and Community Facilities (continued)	• Implement compact forms of development that support center-based development, with the use of clustering, lot-averaging and conservation development techniques, especially in environmentally sensitive areas. Increase the flexibility of zoning ordinances to address the need for smaller building footprints; • Encourage integrated community facilities that enhance the community and do not duplicate services; and • Support the nexus between housing and community facilities through evaluation of jobs to housing balance, transit enhancements, education facilities, recreational programs, and opportunities for maximizing shared services and infrastructure investments as related to local government fiscal and community sustainability.
Housing Approaches - Green and Energy Efficient Facilities	This program component will support the implementation of green building and energy efficient technology in the rehabilitation, redevelopment and development of facilities including but not limited to housing throughout the Region. Recent innovations in building practices and development regulations reflect significant energy efficiency measures through building materials, energy efficient appliances, water conservation measures, innovative, and alternative technologies that support conservation practices and common sense practices such as recycling and re-use. Using the *Smart Growth Manual, Efficient Use of Water Program, Low Impact Development Program,* and Community Development and Design Guidebook Program, municipalities will be given the tools to implement green building practices, including: • Optimization of the use of land, resources, and utilities, by promoting among other things, green technology, water conservation, and energy efficient housing; • Promotion of the use of green building site design, efficient water management, energy efficient technologies, green building materials and equipment, and retrofitting inefficiencies; • Coordination with the Sustainable State Institute, BPU, the Green Building Society and alternative energy agencies and non-profit entities; and • Education and outreach to stakeholders in support of RMP initiatives.
Housing Metrics – Jobs-to-Housing Balance	The Highlands Region and the State overall have a disparity between jobs and housing opportunities, forcing increased commutes by automobile. Jobs-to-housing balance is a tool that can assist in achieving a general balance between the number of jobs and the number of housing units in a municipality or sub-region. Land development patterns and zoning regulations that permit mixed-use communities, by their nature locate housing opportunities in or near employment centers. This arrangement results in less commuter traffic, which reduces both motor vehicle miles traveled and tailpipe emissions. Mixed use development also allows for increased efficiency in the use of public infrastructure and services, and places basic retail goods and services in walking distance of residential units, all of which benefit quality of life. Through sound planning practices that support both resource protection and appropriate growth, the goal of community economic sustainability may be realized. The RMP's goal for housing is to ensure that market-rate and affordable housing is available and sufficient to meet the needs of the Highlands Region within the context of the Highlands Act goals for protection of regional character and environmental integrity. To that end, a regional balance of housing opportunities located in economically mixed communities with access to employment and services is encouraged in the Highlands. In support of these objectives, an evaluation of the jobs-to-housing balance has been performed by the Highlands Council for the Region in order to evaluate the relationship between employment and housing opportunities in the Highlands.

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Housing Metrics – Regional Development Activity Monitoring	In support of long term planning, housing indicators will serve as a tool in tracking the amount and type of construction that occurs throughout the Region. Housing metrics, including certificate of occupancy, estimated construction cost data, and the distribution of affordable housing for Highlands municipalities will continue to be collected and monitored by Highlands Council to serve as an indicator for a long term trend evaluation of development activity in the Region. Data include: • Certificates of occupancy by building type; • Estimated cost of construction, including figures for new residential and non-residential construction, additions, and alterations; • Housing metrics including market value and costs, vacancy rates, and tenure; and • Spatial data regarding the distribution of existing affordable housing units.
General Assistance for Eligible Projects – Agency Coordination	Inter-agency coordination between the Highlands Council and other key players is important, particularly COAH. This coordination will allow both the Highlands Council and outside agencies to share data and technologies, provide innovative municipal options, promote regional approaches, ensure that regional initiatives are supported by state economic and housing programs, and generally support affordable housing development in the Highlands Region.
General Assistance for Eligible Projects – Technical Assistance	The Council will provide technical assistance related to housing issues. Technical assistance and support is available for the following activities: • Technical assistance and coordination with COAH; and • Information regarding funding for housing initiatives through existing resources. Currently, State and federal agency programs offer a variety of grant, loan, and technical assistance programs. While available programs and technical assistance may change over time, examples of programs and technical assistance that may be useful for housing, community building, and neighborhood enhancement initiatives in the Highlands Region include but are not limited to the following: – Neighborhood Preservation Balanced Housing; – At Home Downtown; – Transit Village Initiative; – Urban Enterprise Zone (UEZ) Program; and – Main Street New Jersey Program.
General Assistance for Eligible Projects – Highlands Planning Grants and Incentives	The Highlands Council has funds available for the purpose of assisting municipalities in planning for their affordable housing requirements in accordance with fair share obligations. The Highlands Council also provides discretionary planning grants, which are intended to support important elements of the RMP through planning studies on targeted issues. The grant program serves as a mechanism to implement the goals and policies of the RMP and planning for innovative housing approaches may be an eligible project. The *Plan Conformance Program* contains information on Highlands Council funding opportunities relating to the implementation of the RMP.

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LOW IMPACT DEVELOPMENT	
Issue Overview	The impact of development on natural resources is often the result of regulatory standards in local codes or development practices that result in greater negative impacts than are actually necessary to accommodate the development purposes. Cluster and small lot development may be effective in reducing the total development footprint. However, a wide variety of techniques have been developed in recent decades to reduce the environmental impacts within the building site itself. The design of roads, parking lots and roofs has the ability to reduce environmental impacts. A variety of site development and landscaping techniques also have value in reducing the impacts of development. The Highlands RMP recognizes the value of such techniques, commonly referred to as Low Impact Development measures. Low impact development techniques are designed to reduce or prevent negative impacts of development and redevelopment particularly as related to resource management, stormwater management, and site design. It should be noted that under the Highlands Act, some LID techniques, such as pervious pavement and green roofs, are defined as impervious surfaces for the purpose of determining impervious surface limitations for development in the Preservation Area.
Program Summary	The Highlands Council will use Plan Conformance, Highlands Project Review, and the development and dissemination of guidance to encourage use of techniques for all types of development. Low impact development begins with a process that "reads" or analyzes the land first and allows the natural features of the land to guide site design, stormwater management, and resource protection. An assortment of Low Impact Development techniques may be utilized to achieve the goal of low impact on the land. These techniques include site design and development, open space and landscaping, water conservation, stormwater management, pervious pavements, green roofs, narrower roads, rain gardens, natural landscaping, rain barrels, re-use basins, curbless roads, swale blocks, and reverse soil compaction.
RMP Policies and Objectives Addressed	***Objective 1B2a.*** Implementation through Plan Conformance of regulations which limit permissible uses within forested lands in High and Moderate Integrity Forest Subwatersheds of the Planning Area to 1) maintenance of pre-existing uses, 2) the removal of woody vegetation from forested lands subject to an approved Forest Management Plan, 3) forest stewardship practices in accordance with a New Jersey Forest Stewardship Program's Forest Stewardship Plan, or 4) low impact residential development that utilizes Low Impact Development Best Management Practices and an approved forest mitigation plan. ***Objective 1B2b.*** Implementation of regulations through Plan Conformance which allow for redevelopment of previously developed areas and for other compatible uses that minimize losses to forested lands within Low Integrity Forest Subwatersheds in accordance with an approved forest mitigation plan or Low Impact Development Best Management Practices. ***Objective 1B3b.*** Implementation of resource management programs to avoid loss of forests such as Low Impact Development Best Management Practices and mitigation and/or restoration. ***Objective 1C2a.*** Provide technical guidelines and procedures for development and implementation of Low Impact Development Best Management Practices to protect, enhance, and restore forest resources. ***Objective 1D4f.*** In the ECZ of the Planning Area, proposed disturbances of Highlands Open Water buffers shall only occur in previously disturbed areas, unless a waiver is granted by the Highlands Council under Policy 7G2 and the proposed disturbance complies with Objective 1D4c. For purposes of this Objective when considering land for conversion to non-agricultural land uses, historic or current agricultural land uses shall not be considered "land improvements," "development," "land disturbances," or "land uses."

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RMP Policies and Objectives Addressed (continued)

Such disturbances shall employ performance standards such that all proposed disturbances of Highlands Open Waters buffers shall employ Low Impact Development Best Management Practices to mitigate all adverse modification to Highlands Open Waters buffers so that there is no net loss of the functional value of the buffer, in compliance with Objective 1D4h.

Objective 1D5e. Implement Low Impact Development Best Management Practices for any development activity proposed within a Riparian Area, which minimize both alterations of natural vegetation and increases in impervious area, in compliance with Policies 6N3 and 6N4 and provide for mitigation through restoration of impaired Riparian Areas in the same HUC14 subwatershed.

Objective 1F5b. Establish performance standards such that all development shall employ Low Impact Development Best Management Practices to, in this order: 1) avoid the disturbance of Critical Habitat, 2) minimize impacts to Critical Habitat, and 3) mitigate all adverse modification to Critical Habitat so that there is no net loss of habitat value. Habitat value is determined by quantity (e.g., acreage), quality (e.g., core forest vs. edge forest), type (e.g., scrub-shrub), and function (e.g., winter hibernacula for timber rattlesnakes). The mitigation requirement of no net loss of habitat value shall ensure that all four elements are accounted for and included in the mitigation design. Mitigation must meet the habitat and life-cycle requirements of the specific impacted species.

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 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 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 2G6a. Develop technical guidelines and procedures for low impact development and best management practices to protect 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.

Objective 6H1d. Cluster and conservation design development plans and regulations shall consider existing community character, incorporate smart growth design principles, and require Low Impact Development including but not limited to: locating development adjacent to existing infrastructure such as water, wastewater, transportation, and public facilities to limit the degree of new impervious surface, and permitting smaller residential lots in order to incorporate community open space and existing natural resources into the design.

Policy 6N1. To establish smart growth and Low Impact Development principles for use within the Highlands Region to guide and control development and redevelopment throughout the Highlands Region.

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RMP Policies and Objectives Addressed (continued)	***Objective 6N1a.*** Conservation development standards which protect natural resources, environmentally sensitive areas, open space and agricultural lands, and enhance community character. ***Objective 6N1d.*** Minimum requirements for water conservation measures in site layout and structures, including but not limited to water efficient landscaping (including use of native and drought-tolerant plant species), rain collection systems, use of gray water, and water-efficient landscape irrigation. ***Objective 6N1e.*** Minimum requirements for use of micro-climate conditions to maximize solar gain for winter heating and minimize solar gain during high temperature summer conditions. ***Objective 6N1f.*** Minimum requirements for re-use and recycling of building materials when development involves demolition. ***Objective 6N1g.*** Minimum requirements that all development include energy efficient features in site layouts and all structures. ***Objective 6N1h.*** Design roadway improvements to have minimum impacts on Highlands resources by assessing alternative designs regarding drainage, impervious cover, native vegetation, and other "green street" considerations. **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. ***Objective 6N2a.*** Implementation of on-site stormwater management features that maintain, restore and enhance the pre-existing natural drainage patterns of the site. ***Objective 6N2b.*** Limitations on the amount of impervious cover allowed on a site as a means to protect and increase stormwater infiltration and reduce stormwater runoff. ***Objective 6N2c.*** Minimum requirements for site-specific hydrologic studies during local development review and Highlands Project Review which identify the velocity, volume and pattern of water flow into, through, and off of the parcel proposed for development. ***Objective 6N2e.*** Minimum requirements for use of grass channels, dry swales, wet swales, infiltration basins, bio-swales and water gardens, green roofs, and other low impact approaches to attenuate and control stormwater and provide multiple environmental benefits. **Policy 6N3.** To require through Plan Conformance that municipalities and counties adopt Low Impact Development practices to minimize land disturbance during construction activities. ***Objective 6N3a.*** Local development review programs which require a site specific analysis of environmental features and constraints of the property proposed for development as a basis for determining compliance with sustainable design requirements. ***Objective 6N3b.*** Limitation of site disturbance, clearing and grading to the minimum necessary to make reasonable use of the designated building envelope for the development parcel. **Policy 6N4.** To require through Plan Conformance that municipalities and counties adopt Low Impact Development Best Management Practices where disturbance of Highlands resources is proposed, including but not limited to Steep Slopes, forest resources, Critical Habitat, Highlands Open Waters and Riparian Areas, and Prime Ground Water Recharge Areas. ***Objective 6N4a.*** Identification of Highlands resources as an early step in site planning in order to avoid disturbance, in conformance with the RMP. ***Objective 6N5a.*** Minimum requirements for the use of Low Impact Development and sustainable design practices to support affordable maintenance of housing, particularly affordable housing. ***Objective 8D1a.*** Municipal and county master plans and development regulations which permit the establishment of home occupations, small business incubator programs and innovative technologies that promote compact design, native species landscaping, Low Impact Development, energy efficiency and resource conservation in support of comprehensive RMP goals.

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Site Design and Development

Development and redevelopment projects must begin with an "existing features and site analysis plan" which identifies and maps all critical environmental features, all water bodies, all historic, cultural, archaeological and scenic features, all existing structures, all topographic features, and all significant physical features. The details shall be submitted as part of site plan and subdivision application packages and shall be added as elements of the relevant municipal checklists.

Development and redevelopment projects shall follow the prescribed conservation design planning process:

1. Existing features and site analysis plan;
2. Sub-regional context evaluation – identify the physical and social character of the surrounding areas (including across municipal and county borders);
3. Select open space conservation areas based on the information gathered in the first two steps, and provide connections to the surrounding areas or plan for future connections if a dedicated open space system does not currently exist in the adjacent areas;
4. Lay out building lots and incorporate green design techniques for stormwater management, site design, and resource protection;
5. Establish the development yield – residential, retail, office, commercial, community facilities – and match to water and sewer availability; and
6. Cross-reference with Highlands resource standards, lake management, Critical Habitat, wellhead protection, etc.

Site design should take advantage of the features and characteristics of the site to improve or retain development amenities through incorporation of natural and other existing features, and should also incorporate opportunities for resource efficiencies. Orienting buildings for solar gain, designing landscape plantings to control micro-climate, and employing energy and resource efficiency all aid in reducing impacts of development.

Development and redevelopment project proposals must include a solar and wind analysis to gauge microclimate conditions. Following are guidelines for managing microclimate on-site:

- Orient the majority of windows to optimize daylighting and heat gain during the winter season;
- Orient thermal mass (materials that absorb, store, and conduct heat) and insulation to take advantage of southern exposure while blocking north winds;
- Orient buildings to the south to maximize solar gain;
- Provide tree canopy cover and reduce hardscape for areas with high summer solar exposure;
- Orient open space to maximize winter solar exposure;
- Site taller buildings to minimize shadows on open spaces and other buildings;
- Provide opportunities for vegetated screening, awnings, overhangs, and adjustable shade structures on buildings with high summer solar exposure; and
- Use roof-top gardens to reduce solar gain and insulate in winter.

Development and redevelopment project proposals shall include a site preparation plan that allows clearing and grading only within the construction envelope, which includes the building and roadway footprints and a minimum area for construction equipment maneuvering. Reverse soil compaction should be considered and utilized to mitigate the effects of construction activity.

Development and redevelopment projects shall incorporate energy-efficient technology into new and rehabilitated structures and shall provide for the re-use and recycling of building materials.

- Disassemble existing buildings (deconstruction) rather than demolishing and either re-use materials or sell them into the re-use market;
- Re-use salvaged materials where possible; and
- Provide on-site bins and/or dedicated space to facilitate the sorting and re-use of scrap materials.

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Open Space and Landscaping	Conforming municipalities may adopt open space development ordinances for development and redevelopment projects. The open space requirements should be tailored to the Land Use Capability Zones and local zoning implementing these zones and, where feasible, should have at least 50% of the land area dedicated to some form of open space and otherwise as close to 50% as appropriate for the zone. Open space land may include, but is not limited to, active recreation, passive recreation, gardens, naturalized areas (including natural stormwater techniques such as naturalized swales), trail systems, and critical environmental areas such as steep slopes, habitat lands, wetlands, water bodies, riparian corridors, and forests. Development applicants may purchase adjacent or nearby lands to dedicate toward the 50% open space requirement. A landscape plan shall be submitted with each project which incorporates native, drought-tolerant, disease-resistant plant species and does not include invasive plant species. Natural landscaping shall be considered for use when feasible (see below).
Water Conservation	Water conservation is a primary goal within the Highlands Region. Efficient utilization of Highlands water resources will effectively extend the available water supply. Consuming less water overall and only using fresh water for potable uses are strategies for effective water conservation. Low flow plumbing fixtures, re-using water, and proper maintenance of water delivery systems contribute to conservation efforts. Development and redevelopment projects shall incorporate water conservation strategies wherever feasible. Potable water shall not be dedicated for non-potable uses, e.g., landscape irrigation and toilet flushing. Any new landscape irrigation system shall utilize rain gauges or moisture sensors to limit watering of lawns. The *Efficient Use of Water Program* has additional details regarding this requirement.
Stormwater Management	Stormwater management shall be designed to employ a "design with nature" approach, as defined in the New Jersey Stormwater Best Management Practices Manual, prepared by theNJDEP – Division of Watershed Management. Stormwater shall be managed in a decentralized manner and shall utilize low impact mechanisms wherever feasible. Development and redevelopment projects shall be required, to the maximum extent feasible, to meet a performance standard of 80% on-site stormwater capture for average annual precipitation.
Pervious Pavements	Most pavement surfaces are designed to be impervious, serving to block the infiltration of precipitation to the ground below. Pervious pavement is designed to maintain or increase infiltration without damage to the transportation surface or to public safety. Pervious pavements range from pervious asphalt and concrete to gravel drive surfaces with a retainer to hold the gravel in place and prevent compaction that would reduce infiltration. The use of pervious asphalt and concrete on low-volume roads and parking lots may assist in reducing the impact of development. For individual home paving, pervious pavers of various types and gravel driveways may reduce the imperviousness of buildings and parking. Pervious pavement is useful in all community character districts and all areas and zones. They work least well on high traffic volume roads. Paving systems that permit grass to grow within the paved area or require little underlying engineering are generally suitable for residential drives or infrequently used parking areas. Pervious pavement techniques have been proven to work in climates with winter freezes, such as New Jersey. Local site plan and subdivision regulations should be modified to allow and/or encourage the use of pervious paving materials and overall reduction in the amount of impervious materials.

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Green Roofs	Like most pavement, roofs are designed to be impervious. Unlike pavement, pervious roofs are not acceptable. However, a technique known as green roofs is commonly used in Europe and frequently in this country. Green roofs use a combination of live plants and soil to create a stormwater management facility on roof tops. Green roofs are designed to hold water and provide for evapotranspiration and cleaning action, reducing the need for additional detention and pollutant reduction. They are installed on generally flat roofs where the roof can hold a significant amount of water and release it slowly. While there are some additional costs in installation, there are important energy savings that should offset the costs through energy savings and increased longevity of roof materials because they would not be subjected to extreme heat or cold or intensive sunlight. Green roofs should be considered as a Low Impact Development technique for use on new non-residential development anywhere in the Highlands. Large buildings with roofs over 20,000 square feet may be the most appropriate for green roofs, but all non-residential development can implement this technique since few have a real need for sloped roofs. The rooftops of apartment buildings should also be considered as appropriate locations for green roofs. The technique can be used in both development and redevelopment. The use on steeper roofs is more difficult, and so for most residential units green roofs will not prove to be a practical technique, though building codes should allow for green roofs in low density zones. The zoning or building codes should be modified to encourage green roofs on specific classes of buildings or land uses. Projects which do not include a green roof should be required to demonstrate use of other methods whereby stormwater is captured and utilized on-site.
Narrower Roads	The Highlands has a large number of cul-de-sac roads that cannot easily be connected due to topographic and geological conditions. Often these streets serve a small number of residences and lots are large enough that parking does not occur on the street. Narrower roads may be appropriate in these types of neighborhoods. Local zoning or subdivision regulations should provide for narrower roads, where appropriate. The Highlands Council will develop recommendations for adoption into the RSIS to implement this concept, which will simultaneously reduce runoff, save land, protect environmental resources and reduce development costs.
Rain Gardens	Rain gardens are small, specifically designed, vegetated depressional areas typically used to store and recharge rain from a residential roof or driveway runoff, acting like a small retention facility. Rain gardens utilize native plants to intercept runoff from rooftops and adjacent impervious surfaces, allowing infiltration and recharge of ground water. The vegetated soil layer is underlain by gravel or small rock in a manner that ensures proper drainage so that ponding does not occur. Rain gardens can be used primarily for single-family dwellings or two- or three-family dwellings. All development and redevelopment projects should utilize rain gardens whenever feasible. Local site plan and subdivision applications should require rain gardens as part of the landscape plan submission. Where a rain garden is not feasible, the application should demonstrate an alternative method for capturing and recharging rainwater on-site. A useful publication prepared by the Native Plant Society of New Jersey, "The Rain Garden Manual for New Jersey," provides a "how to" guide for constructing a rain garden. Rain gardens may be designed for any size lot.

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Natural Landscaping	The average house or office building sits on a lot that is maintained as a lawn, and campus style office parks are situated within acres of manicured lawn. These lawn areas are compacted surfaces, limiting recharge to ground water, and for residential lawns often receive regular pesticide and nutrient applications. Natural areas of meadow or forest facilitate recharge, decrease stormwater runoff, and do not contribute chemicals to the environment. Replanting lawn areas with natural vegetation increases ground water recharge, and reduces runoff and the flow of pollutants across the landscape. Converting lawn areas to natural landscaping may help mitigate existing stormwater runoff problems as well as reducing maintenance costs. Local planning and development programs should require that new development and redevelopment incorporate natural landscaping into their landscape plans wherever feasible. The Highlands Council will develop an educational program to encourage property owners to retrofit existing lawns, potentially including an annual awards program recognizing the best new landscaping and the best restoration landscaping of existing property to enhance the program.
Rain Barrels	Rain barrels and cisterns are rainwater storage facilities which save rainwater for future lawn and garden watering and other non-potable uses. The collection of rainwater reduces the use of potable water supplies and helps control stormwater runoff. Rain barrels are generally located at grade and have no mechanical systems, while cisterns are larger, may be above or below grade and often use pumps to increase flow. Rain barrels may be used by single-family or smaller residential developments. They may also be effective for small nonresidential properties that have a lawn or planting area to maintain. Rain barrels and cisterns should be included as part of a Low Impact Development and water conservation strategy where feasible. Proper design and maintenance will prevent standing water from becoming a breeding source for mosquitoes.
Re-Use Basins	The re-use basin is a retention basin that is designed to not only serve stormwater management objectives, but also store irrigation water. It is a multipurpose stormwater management facility that is designed to reduce consumptive water use for landscaping. Re-use basins may be appropriate for use in large office parks, golf courses and campus style developments which have extensive lawn areas. Use of stormwater for irrigation and other non-potable uses would serve as a water conservation strategy. Where retention basins are proposed as part of a site plan or subdivision stormwater management plan, applicants should be required to design them for re-use purposes.
Curbless Roads	Curbs hold water on roads until it can be funneled into an engineered stormwater system. If water drains off the road into lawns or natural areas even when there is a storm sewer system, a portion of the stormwater is held on site for recharge. Time of concentration for stormwater runoff is reduced, which can reduce stormwater management costs. This technique is most useful in residential development; in commercial and many other non-residential areas, there generally is insufficient natural landscape or lawn area to handle the water. However, where there are extensive lawns in nonresidential areas, this technique may also be used. Site plan and subdivision regulations should provide for road crown and other standards that make a curbless road drain. A key part of this technique is to have reinforced shoulders, by installing base material several feet beyond the pavement. The regulations may need to identify areas where this is unsuited due to topography or require its use with other techniques. An alternative technique that may be used in more densely developed areas is the curb cut, which leads to a small sand infiltration area next to the road surface.

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Swale Blocks	Swale blocks are small check dams in ditches or swales designed to slow runoff, allowing for greater recharge and cleaning and reduced peak runoff.. Swale blocks may be used in road side ditches, swales or, where regulations permit, ephemeral streams. Local site plan and subdivision regulations should set forth areas where these should be used and the thresholds for using them. Terrain which is very flat or very steep may not be appropriate locations.
Reverse Soil Compaction	During the process of development, even open spaces are compacted, greatly reducing the soil's capability to recharge and slow runoff. Grading, equipment movement, and temporary storage all result in compaction. Tilling the land that will be planted in lawns or other landscaped areas enhances the ability to function efficiently. All lawn areas and open spaces that are being revegetated should be required to have reverse compaction. The graded areas should be tilled prior to replacing top soil and again after top soil is spread to achieve maximum results. Subdivision regulations should require this of all such areas containing more than 3,000 square feet per lot or pervious area.

PART 7 Landowner Equity

HIGHLANDS TRANSFER OF DEVELOPMENT RIGHTS	
Issue Overview	The Highlands TDR Program is a regional program that permits the transfer of development rights, termed HDCs, to further the goals of the Highlands Act. As a land use tool, TDR permits a community to utilize market forces to encourage the transfer of development potential from areas that the community wants to preserve, called Sending Zones, to areas that are more appropriate to accommodate increased growth, called Receiving Zones. Landowners in the Sending Zones receive compensation for restricting development on their property. As a market-based system, payment for this lost development potential comes from purchasers who buy credits representing the lost development potential in the Sending Zones. The credits then entitle the purchaser to build in a Receiving Zone at a density greater than that otherwise permitted in the underlying zoning. Under the Highlands Act, certain benefits accrue to Receiving Zone municipalities where the resulting development density is five dwelling units per acre or greater.
Program Summary	The TDR Program guides new growth and development away from lands with little or no capacity to accommodate human development without adversely affecting the integrity of the Highlands ecosystems. This program establishes procedures and standards by which eligible property owners may apply for an allocation of HDCs. The program provides for the designation of Receiving Zones where HDCs may be transferred and used for development purposes. The program also creates a Highlands Development Credit Bank to serve as the administrator of the Highlands TDR Program.
RMP Policies and Objectives Addressed	Part 7, Landowner Equity (all Policies and Objectives).
Highlands Development Credit Created	The RMP creates a transferable development right in the form of a HDC which can be used to increase the density or intensity of development in a designated Receiving Zone.

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Allocation of Highlands Development Credits

Sending Zones are those areas of the Highlands Region that may be eligible to receive an allocation of HDCs because reasonable future development expectations have been disproportionately limited by the provisions of the Highlands Act or implementation of programs established by the RMP. Which parcels of land within the various Land Use Capability Zones are eligible to apply for an allocation of HDCs is determined by the requirements outlined below:

1. A parcel of land in the Protection Zone or Conservation Zone in the Preservation Area, which was zoned for residential use on August 9, 2004, and which satisfies one (1) of the following criteria, is eligible to apply for an allocation of HDCs:
   - The parcel of land has an area of at least five (5) acres;
   - The area of the parcel of land is at least three (3) times the minimum lot size in effect on August 9, 2004; or
   - The parcel of land is undeveloped and the owner voluntarily chooses not to develop the parcel pursuant to one or more of the exemptions under section 28 of the Act.

A parcel of land in the Protection Zone or Conservation Zone in the Planning Area, which was zoned for residential use on the date of Highlands Council determination of Plan Conformance may be eligible to apply for an allocation of HDCs under the same criteria as listed in (1) above when the municipality in which their property is located has voluntarily conformed to the RMP and establishes one or more Sending Zones for that portion of the municipality in the Planning Area.

2. A parcel of land in the Protection Zone or Conservation Zone in the Preservation Area, which was zoned for non-residential use on August 9, 2004, is eligible to apply for an allocation of HDCs.
3. A parcel of land in the Protection Zone or Conservation Zone in the Planning Area, which was zoned for non-residential use on the date of Highlands Council determination of Plan Conformance, may be eligible to apply for an allocation of HDCs when the municipality in which their property is located has voluntarily conformed to the RMP and establishes one or more Sending Zones for that portion of the municipality in the Planning Area.
4. The owners of eligible parcels of land may apply to the Highlands Council for an allocation of HDCs by submitting an application for an HDC Allocation Determination to the Highlands Council together with the information required by the Council to make an HDC Allocation Determination. Any owners of parcels not eligible in 1 through 4 above may request from the Highlands Council a determination of eligibility on a case by case basis based upon particularized extenuating circumstances.
5. HDCs shall be allocated to a residentially zoned parcel of land on the basis of the following formula:

   $$U_{NET} \times K_{ZF \times KLF} = \text{HDC Allocation}$$

   U_{NET} = Net Yield – the number of residential lots that could have been situated on a parcel of land on August 9, 2004, taking into consideration all municipal development regulations and applicable state and federal laws and regulations.

   K_{ZF} = Zoning Factor – a regional adjustment factor to recognize that the value of the land varies according to the end use to which the property could have been developed.

   K_{LF} = Location Factor – an adjustment factor to recognize that per unit value of land varies by location within the Highlands Region.
6. In the event that a landowner voluntarily chooses not to develop an undeveloped, residentially zoned parcel pursuant to a single family home exemption under section 28 of the Act, the Net Yield shall be increased reflecting the parcel's regional resource value.

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Allocation of Highlands Development Credits (continued)	7. HDCs shall be allocated to a non-residentially zoned parcel of land on the basis of the following formula: $U_{NET} \div K_{SF/USE} = HDC\ Allocation$ **U_{NET} = Permitted Square Footage –** the amount of buildable area that could have been situated on the parcel of land on August 9, 2004, taking into consideration all municipal development regulations and applicable state and federal laws and regulations. **$K_{SF/USE}$ = Non-Residential Square Footage Conversion –** a conversion factor between various types of non-residential uses recognizing differences in underlying land value associated with various non-residential uses. 8. As soon as practicable after the Highlands Council receives a complete Application for an HDC Allocation Determination, the Council will issue a HDC Allocation Letter setting forth the number of HDCs allocated to the eligible parcel of land if appropriate. 9. An HDC Allocation Letter shall include a specific restriction on the future use of the parcel of land to which HDCs are allocated. 10. If the landowner disputes the number of HDCs allocated to his or her parcel, the owner may seek reconsideration by the Highlands Council only with respect to the parcel's lot yield in the case of residential development or permitted square footage in the case of non-residential development.
Highlands Development Credit Certificates	1. No HDC may be sold, transferred or encumbered until the landowner has obtained a HDC Certificate from the Highlands Development Credit Bank; 2. The Highlands Development Credit Bank will not issue a HDC Certificate until an easement restricting the future development of the parcel of land to which HDCs have been allocated by the Highlands Council has been recorded on the chain of title to the parcel to which the HDCs were allocated; 3. The conservation easement shall restrict the future use of the parcel of land in accordance with the provisions of the Highlands Council's HDC Allocation Letter and shall be enforceable by the Highlands Development Credit Bank, the Highlands Council, the municipality in which the parcel of land is located, and the NJDEP. Enforcement by an appropriate non-profit corporation may be included, if applicable.
Sale and Use of HDCs	1. Prior to the sale, transfer or conveyance of HDCs, the holder of an HDC Certificate shall apply to the Highlands Development Credit Bank for the re-issuance of a HDC Certificate in the name of the grantee; 2. An application for re-issuance of an HDC Certificate in conjunction with a sale, transfer or conveyance of HDCs shall include the name(s) of the grantee(s), the name(s) of the grantor(s), the number of HDCs to be sold, transferred or conveyed, the date of the proposed closing of the transaction, written documentation of the interest sold, transferred or conveyed and the consideration for the sale, transfer or conveyance; 3. Prior to the encumbrance of HDCs as collateral or other security, the holder of the HDC Certificate shall notify the Executive Director of the Highlands Development Credit Bank of the name and address of the lender and the date, amount and term of the loan or obligation; 4. In the event a government agency or non-governmental organization proposes to acquire conservation or agricultural easements which restrict the future use of land in a TDR Sending Zone and the agency requests a HDC Certificate from the Highlands Development Credit Bank, the Executive Director shall procure an HDC Allocation Letter from the Highlands Council and issue a HDC Certificate to the agency or organization when the easement(s) are recorded;

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Sale and Use of HDCs (continued)	5. When HDCs are used in conjunction with a development project within a Receiving Zone, the holder of the HDC Certificate shall, within ten (10) days of municipal development approval, notify the Highlands Development Credit Bank of the use of the HDCs and apply for a Certificate of Redemption; 6. An application for redemption of a HDC shall include the name of the holder of the HDC Certificate, the name of the developer who used the HDCs, the municipality where the development using HDCs is located, the legal description of the parcel of land on which the HDCs were used and the date of the municipal approval of the development; and 7. In the event that only a portion of the HDCs which are authorized in a HDC Certificate are redeemed, the Highlands Development Credit Bank shall issue a new HDC Certificate for the HDCs which were not used.
Receiving Zone Eligibility	1. Parcels of land located within the ECZ and any lands within a Highlands Redevelopment Area may be designated as Receiving Zones by a Highlands municipality upon approval by the Highlands Council, provided that such receiving zones are consistent with the RMP; 2. Parcels of land located in the Conservation Zone may also be designated as Receiving Zones upon approval of the Highlands Council, provided that such receiving zones are consistent with the RMP and the development does not conflict with the maintenance of viable agriculture; 3. Parcels of land, which are located within Highlands Counties but not within the boundaries of the Highlands Region, may be designated as a Receiving Zone for the use of HDCs upon approval of the Highlands Council, provided that the municipality has received plan endorsement in accordance with State Planning Commission (SPC) guidelines; 4. A Municipality within the Planning Area, which does not petition the Highlands Council for a determination of Plan Conformance, may establish a Receiving Zone for the use of HDCs upon approval of the Highlands Council, provided that the municipality has received plan endorsement in accordance with SPC guidelines; 5. Through the municipal Plan Conformance process a Highlands municipality may establish a Receiving Zone which is restricted to the transfer and use of HDCs allocated to parcels of land located within the municipality and/or county where the Receiving Zone is located; and 6. Within the Highlands Region, the Highlands Council may designate parcels of land as either a Higher Intensity Receiving Zone or Lower Intensity Receiving Zone in response to a petition from the municipality in which the Receiving Zone is to be located. A Higher Intensity Receiving Zone is one where development may require the use of appropriate public water and wastewater infrastructure with capacity to accommodate additional or new growth and which may be proximate to existing developed lands and multi-modal transportation infrastructure. An area that serves as a Higher Intensity Receiving Zones will have a minimum net residential density of five dwelling units per acre or its residential unit equivalent for non-residential development. A Lower Intensity Receiving Zone is one that has residential densities below five dwelling units per acre but which provides some amount of bonus residential density or increase in non-residential intensity which is consistent with existing community character. In many cases, a Lower Intensity Receiving Zone will be located in an area where the community character is more suburban or rural.

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Receiving Zone Designation Process	1. Any area within the Highlands Region identified by the Highlands Council as a potential voluntary HDC Receiving Zone may not be designated as such unless the municipality in which the zone is identified petitions the Highlands Council for designation; 2. Before a municipality may petition the Highlands Council for Receiving Zone designation, it shall conduct a feasibility assessment of the proposed area to accommodate the increase in residential density or non-residential use intensity contemplated by the municipality. This feasibility assessment shall be governed by requirements established by the Highlands Council; 3. Upon completing the feasibility assessment, the municipality shall complete a Petition for Receiving Zone Designation and shall include with that petition a resolution stating its desire to designate the proposed Receiving Zone setting forth the bases for the proposed Receiving Zone's inclusion in the Highlands TDR Program; 4. The Highlands Council shall consider the municipality's Petition for Receiving Zone Designation and may approve the Petition for Receiving Zone Designation, provided that designating the proposed Receiving Zone is consistent with the provisions of the Highlands TDR Program and the RMP; and 5. Upon Highlands Council approval of the Petition for Receiving Zone Designation, the municipality shall prepare a Transfer of Development Rights Ordinance to be reviewed and approved by the Highlands Council.
Highlands Council Identification of Potential Voluntary TDR Receiving Zones in the Planning Area	A crucial component to establishing the Highlands TDR Program is the identification of areas that may serve as voluntary Receiving Zones. It is within these areas that the HDCs allocated to landowners in the Sending Zones may be used to increase the density or intensity of uses permitted by underlying zoning. In turn, the ability to use the HDCs in Receiving Zones for more development than would otherwise be permitted creates demand for purchasing the credits and ultimately establishes their value. Pursuant to the Highlands Act, potential Receiving Zones identified by the Highlands Council for use in the regional TDR program are strictly voluntary. Any areas identified by the Council's analysis need not be accepted by the municipalities in which they are identified. Despite the voluntary nature of the Receiving Zones, the Highlands Council is still charged with identifying areas within the Highlands Region that are or may be appropriate to serve as Receiving Zones and recommending an appropriate density for those identified areas. (N.J.S.A. 13:20-8 and 13:20-13.c) The Highlands Act establishes a goal of identifying at least 4% of the Planning Area for potential TDR receiving areas, unless environmental constraints limit such areas to below that goal. Accordingly, the goal of the Highlands Act through the implementation of the RMP is to identify 17,776 acres of the Planning Area's 444,398 acres. The Highlands Council has conducted a preliminary, GIS-based analysis of Planning Area lands that may have potential for serving as TDR Receiving Zones. This analysis focuses on lands that are not within the Environmentally Constrained Sub-zones, not preserved, and not developed with residential housing (as of 2002), and which have or may have the water and wastewater infrastructure necessary to accommodate more development. This analysis will require refinement as the Highlands Council works with Highlands municipalities during the Plan Conformance process, including gaining a better understanding of the potential densities for these identified lands.

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Highlands Council Identification of Potential Voluntary TDR Receiving Zones (continued)

As noted above, this analysis does include lands that are not currently served by infrastructure. Simply because such lands have limited or no infrastructure currently does not mean that necessary capacity or new infrastructure may not be provided sometime in the future where the provision of that infrastructure is consistent with the goals, policies and objectives of the RMP. As Section 11.a(6)(e) of the Highlands Act notes, the Highlands Council shall identify potential voluntary receiving zones "... through the appropriate expansion of infrastructure or the modified uses of existing infrastructure." (N.J.S.A. 13:20-11.a(6)(e)) Therefore the Act does not preclude the identification of a Receiving Zone in an area that does not currently have sufficient infrastructure or capacity, but may be appropriate to support more intense residential or non-residential development in the future.

Importantly, this analysis is a tool to help foster discussion about those areas within the Planning Area that are most appropriate to serve as voluntary Receiving Zones. Further specific local analysis of these areas will be required, including an assessment of site specific environmental constraints, infrastructure capacity, and real estate market viability, before any designation may be considered. Only after this assessment is complete and the municipality and Highlands Council concur in the assessment's results, will designation be considered by the Highlands Council.

Based upon the analysis parameters outlined above, the Highlands Council has identified approximately 12,000 acres within the ECZ of the Planning Area using criteria that relate to the existence of water and wastewater infrastructure (see Figure5.8 *Potential Areas for Voluntary TDR Receiving Zones in the Existing Community Zone*). The criteria used in analyzing these areas and the acreage associated with these criteria are highlighted below.

- Greenfield Opportunities – undeveloped lands at least two acres in size located in approved sewer service areas that are not Existing Areas Served and therefore correspond to lands that municipalities likely intended for future development served by wastewater utilities. This analysis reveals approximately 980 acres that satisfy these criteria. The Highlands Council further evaluated these lands using the Highlands Regional Build-Out Model and existing municipal zoning. The purpose of this additional study was to determine which lands within these 980 acres could support development at a minimum of 5 dwelling units per acre if residentially zoned or 0.84 FAR if non-residentially zoned. The study identifies 280 acres that have sufficient remaining wastewater capacity and water availability at the HUC 14 subwatershed level to support this amount of development intensity; and
- Redevelopment and Infill Opportunities – developed and undeveloped lands at least 0.125 acres in size that are currently served with public wastewater infrastructure (Existing Areas Served) with remaining capacity. These lands total approximately 11,000 acres. Lands in this category represent potential Receiving Zones that are premised on infill and redevelopment.

It is critical to understand that other lands within the Highlands Region may also be appropriate to serve as voluntary Receiving Zones but would not be identified in this regional GIS-based analysis. For example, this analysis does not examine the potential of lands within the Conservation Zone to serve as Receiving Zones, which is allowed by the policies adopted by the Highlands Council, provided that the designation of such lands is consistent with the RMP and the development will not conflict with the maintenance of viable agriculture. Additionally, this assessment does not identify any specific potential Highlands Redevelopment Areas which may also serve as voluntary Receiving Zones per the policies of the RMP. Lastly, this analysis only examines land areas that are at least 2 or 0.125 acres in size, based on the analysis involved. There may be areas smaller than these thresholds that may be appropriately considered for Receiving Zone designation. The Highlands Council will work with conforming municipalities during Plan Conformance to identify additional lands to meet the goal of the Highlands Act.

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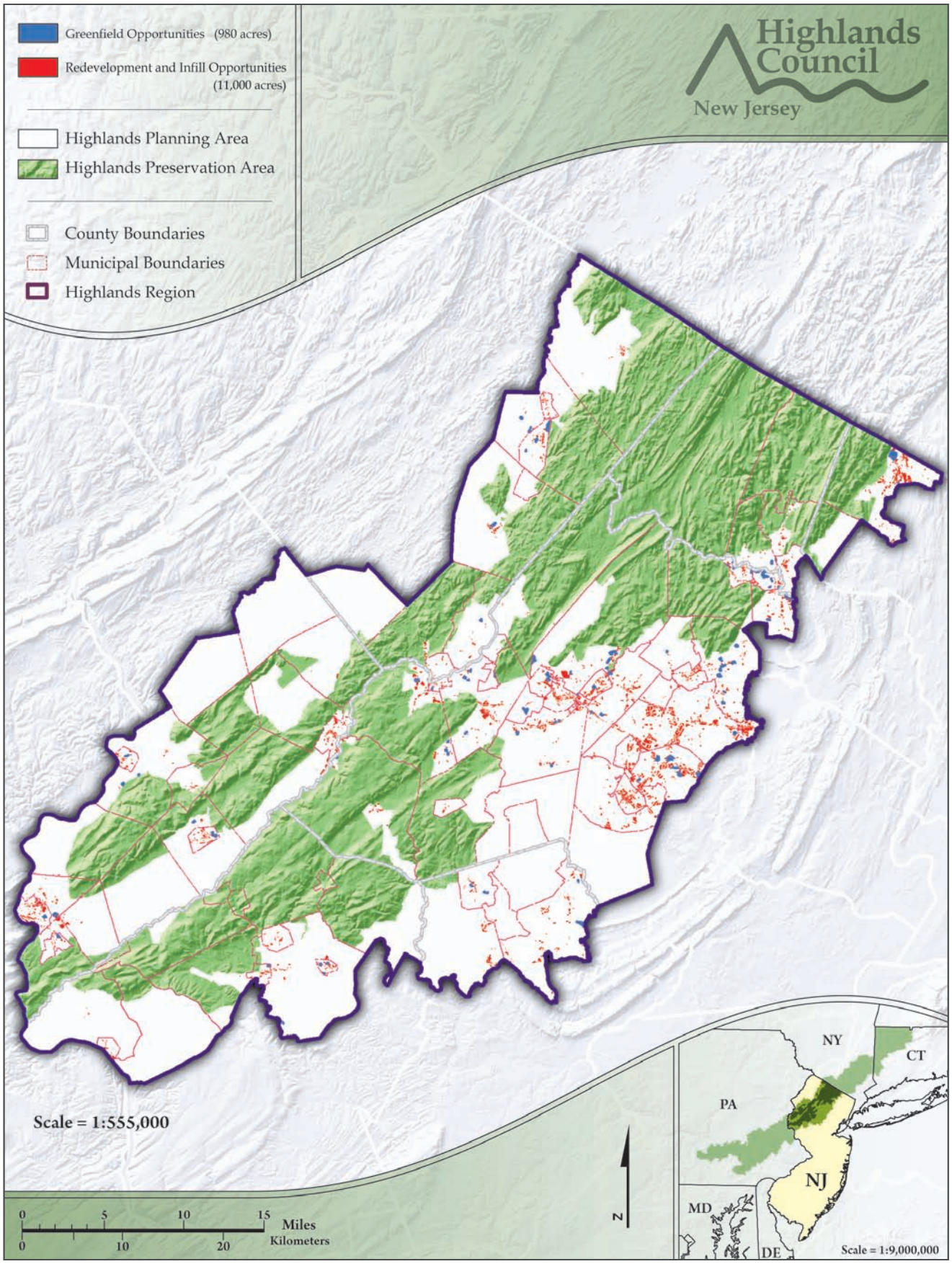
FIGURE 5.8: **Potential Areas for Voluntary TDR Receiving Zones in the Existing Community Zone**



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Highlands Development Credit Bank Created	1. The Highlands RMP provides for the creation of a Highlands Development Credit Bank; 2. The Highlands Development Credit Bank is to serve as a regional clearinghouse for information with regard to the Highlands TDR Program; 3. The Highlands Development Credit Bank is to serve as the administrator and official recording agency for the Highlands TDR Program; 4. The Highlands Development Credit Bank is authorized to buy HDCs for the following purposes: – To further the objectives of the Highlands Act and the RMP; or – To alleviate a Sending Zone parcel owner's demonstrated unique and extenuating financial circumstances such as imminent bankruptcy, extraordinary medical expenses, or loss of job and inability to secure new job within 6 months. 5. The Highlands Development Credit Bank is authorized to sell, exchange or otherwise convey HDCs, but only in a manner that does not substantially impair the private sale or transfer of HDCs.

PART 8 Sustainable Economic Development

SUSTAINABLE REGIONAL ECONOMY

Issue Overview

Kim Ball Kaiser

The Highlands Region is characterized by a dynamic economy that exhibits strength relative to the State as a whole. A challenge facing many communities in the Highlands Region is determining how best to balance resource protection requirements while maintaining and enhancing a vibrant community and a sustainable local and regional economy. The Highlands Act establishes water and natural resource protection as the fundamental goal for the Highlands Region, but also recognizes the many social, cultural, and economic benefits associated with development, redevelopment, and economic growth in appropriate locations. Agricultural viability, redevelopment, smart growth approaches, improved land use efficiency, transit oriented development, and shared services are encouraged in the Region, while piecemeal or scattered sprawl-type development is recognized as an inefficient use of land and an impediment to achieving a more sustainable regional economy.

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Issue Overview (continued)	Economic development can be broadly described as any effort or activity that improves general economic health. It may involve a range of activities aimed at increasing the local tax base and providing employment opportunities, including both land development and non-development approaches. Efforts can range in scale from local to regional, and individual economic activities will depend upon local conditions. In areas characterized by high natural resource values, economic activity may be in the form of agriculture and forestry, redevelopment of brownfield and grayfield sites and existing developed areas, and the expansion of recreation and tourism opportunities. Agricultural areas will benefit from a sustainable agricultural approach that includes agri-tourism and the reduction of the potential for conflicting land uses through clustering and redevelopment of existing developed lands. In existing developed areas with infrastructure, economic viability should stem from efficient land, infrastructure and resource use. These opportunities may include redevelopment, sharing of services, downtown revitalization, business retention and expansion, transit oriented development, and tourism. Economic growth should be focused to transit corridors and existing centers, rather than sprawling throughout the region.
Program Summary	The Sustainable Economic Development Program describes the tools, incentives, and assistance available to support sustainable economic development in the Highlands Region. The objective of the program is to ensure long-term, sustainable economic viability, not short-term economic activity. The program overall seeks to promote appropriate, sustainable, and environmentally compatible economic development throughout the Highlands Region. In support of this, conforming municipalities are required to develop or update an existing economic plan element. The program also discusses recreation and tourism based economic initiatives, which derive economic benefit from the sustainable use of natural resources of the Highlands Region. Enhancements to the Region's tourism infrastructure will encourage more visitors to come to the Region. The economic monitoring components of the program will monitor and evaluate the health of the Highlands economy using a set of regionally available economic indicators. The data will provide periodic evaluations of the performance of Highlands Region economic conditions. The information provided by the economic tracking will also support the development of the required municipal economic plan element. Finally, the RMP Funding program component will address funding and technical assistance available to conforming municipalities. It will also outline the Cash Flow Timetable (as mandated by the Highlands Act), which monitors and tracks municipal fiscal performance in support of conformance activities and regional shared service opportunities.
RMP Policies and Objectives Addressed	**Policy 8A1.** To maintain and expand the existing job and economic base by promoting appropriate, sustainable, and environmentally compatible economic development throughout the Highlands Region. ***Objective 8A1a.*** Highlands Economic Development Program to identify and promote sustainable economic development opportunities in the Highlands Region, in a manner that integrates economic, social, and environmental factors. ***Objective 8A1b.*** Serve as an advocate and technical resource for Highlands economic development initiatives in work with municipalities, counties, regional agencies, and the private sector to promote sustainable economic development in the Highlands Region. ***Objective 8A1d.*** Positive fiscal impact to local governments and the Region through appropriate economic development initiatives. **Policy 8A2.** To preserve the high quality of life in the Highlands Region through economic planning and implementation of the RMP. **Policy 8A3.** To identify and pursue state and federal programs that offer financial and/or technical assistance for sustainable economic development in the Highlands Region. **Policy 8A4.** To serve as a clearinghouse for economic development opportunities in the Highlands Region.

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RMP Policies and Objectives Addressed (continued)	*Objective 8A4b.* A long-term Economic Tracking Program as a means to continually assess the long-term economic progress of the Region through specified economic indicators in order to establish Highlands trends and to support local economic plan elements. **Policy 8A6.** To require that conforming municipalities develop an economic plan element that provides strategies for achieving sustainable and appropriate economic development consistent with local desire and identifies any development, redevelopment, and brownfield opportunities. *Objective 8A6a.* Coordinate with municipalities and counties as local and regional strategies are developed to improve the tax base and to create jobs and economic opportunities consistent with the policies and objectives of the RMP. **Policy 8B2.** To protect and enhance the agricultural economy in the Highlands Region. *Objective 8B2a.* Coordinate activities with the NJDA and other entities to ensure a sustainable agricultural industry and agricultural operations that improve farm incomes and the long-term viability of farming. **Policy 8C1.** To promote recreation and tourism based economic initiatives, which derive economic benefit from sustainable use of the natural resources of the Highlands Region. **Policy 8C2.** To enhance the Region's tourism infrastructure in order to increase visitors to the Highlands Region. **Policy 8C3.** To promote public and private tourism attractions in the Highlands Region through the marketing of natural resources, the arts, cultural, historic, scenic, agricultural, and recreational resources, urban amenities, and accommodations. **Policy 8C4.** To support local, state, and federal eco-, agri- and heritage tourism programs. **Policy 8C5.** To advocate for state and federal funding of recreation and tourism initiatives in the Highlands Region. **Policy 8D1.** To ensure opportunities for home office, entrepreneurial, and other small business activities in the Highlands Region. *Objective 8D1a.* Municipal and county development regulations which permit the establishment of home occupations, participation in small business incubator programs, and the use of innovative technologies that promote compact design, native species landscaping, Low Impact Development, energy efficiency and resource conservation in support of comprehensive RMP goals. **Policy 8E1.** The Cash Flow Timetable shall track the revenues and costs associated with the Highlands Protection Fund, with the exception of the Pinelands Property Tax Stabilization Aid category. Four components that shall be tracked in the Cash Flow Timetable include: • Planning Grants Program (including Incentive Planning Aid and RMP Compliance Aid); • Highlands Property Tax Stabilization Aid; • State Aid for Local Government Units (Watershed Moratorium Offset Aid and other State Aid funding); and • Land Acquisition Tracking
Economic Planning	Sound land use planning is important to ensure economic vitality in the Region. Conforming municipalities are required where appropriate to develop (or update) an economic plan element that provides strategies for achieving sustainable economic development appropriate for the municipality and consistent with the policies and objectives of the RMP. The economic plan should also include a discussion of fiscal sustainability. These plans will vary considerably in scope, depending on the size and composition of a municipality, its current economic conditions and whether it chooses to grow or not. Any development, redevelopment, and brownfield opportunities should be identified in the economic plan. Economic plans should strive to maximize potential economic effects when locating future homes, commercial, and industrial facilities through development and redevelopment, and public facilities.

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Economic Planning (continued)	Existing land uses and the transportation system provide a foundation for sustainable economic growth. Economic activity that involves land development should be concentrated around transportation corridors and in local and regional centers, which in turn protects sensitive natural and farming areas from conflicting uses. In sensitive natural and farming areas, zoning can permit agri- and eco-tourism uses while implementing RMP resource standards to prevent the degradation of natural resources. Throughout the Region, municipalities should consider development regulations that permit the establishment of home occupations, entrepreneurial, and other small business activities to increase economic viability while reducing transportation costs. The Council will provide general assistance related to sustainable economic development planning, including the following: • Information regarding state and federal programs that offer financial and/or technical assistance for sustainable economic development; • Discretionary planning grants, which are intended to support important elements of the RMP through planning studies on targeted issues, including sustainable economic initiatives; • Coordination between the Highlands Council and other key economic players, including state and federal agencies, as well as public entities; and • Maintain information regarding economic development opportunities and initiatives in the Region, as identified through local economic plan elements.
Tourism Opportunities	Tourism is a major component of New Jersey's economy. It is the second largest industry in the State and continues to be a significant revenue source for the State in terms of billions of dollars annually and provides approximately 500,000 tourism-related jobs statewide. The Region's historic, cultural, recreational and scenic locations should be recognized not just as tourism resources, but as economic assets which can be managed and enhanced in a sustainable manner adding much benefit to local economies. Tourism initiatives should focus on increasing visitors to the Region by linking attractions to restaurants and accommodations. Transit-oriented recreation and tourism connections should be encouraged, where possible. From an economic perspective, the terms agri-, eco, and heritage tourism refer to the business opportunities related to farm operations (other than the traditional sale of agricultural goods), natural, and heritage resources that do not involve the modification or consumption of the resource. The program component includes coordination with the New Jersey Division of Travel and Tourism to promote agri- and eco-tourism activities to support the farm economy by allowing farmers to benefit from additional sources of income; coordination with historic preservation, open space, and recreation efforts as a means to link agricultural preservation/retention efforts; and the development of economic development incentives that include flexible land use regulations to support the expansion of food and farm-related businesses. (See *Historic Resource Protection Program, Scenic Resource Protection Programs and Agricultural Management and Sustainability Program* for addition details) Additional RMP tourism strategies include: • Support for existing eco-, agri- and heritage tourism program by partnering with appropriate agencies, municipalities, counties, and non-profit entities. The Cooperative Marketing Grant Program, a collaboration between the New Jersey Department of State, Division of Travel & Tourism and the New Jersey travel industry, is an example of an existing tourism grant program. • Coordinate with NJDEP, New Jersey Commerce, Economic Growth and Tourism Commission, and New Jersey Division of Travel and Tourism on innovative ways to market and expand opportunities relating to the Region's natural resources, the arts, cultural, historic, scenic, agricultural, and recreational resources, and urban amenities. • Advocate for state and federal funding of tourism initiatives in the Highlands.

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Economic Monitoring – Agricultural Vitality	In support of the protection and enhancement of the agricultural economy, agricultural economic metrics for the Highlands Region will be monitored and evaluated. This will be done in coordination with the USDA, NJDA, CADBs, and additional sources as appropriate. Data from national, state, county and local resources will be utilized to evaluate regional conditions and performance. (See *Sustainability, Viability, and Stewardship Program* for additional discussion relating to agriculture). The program component will evaluate data from the New Jersey Farmland Assessment and USDA Census of Agriculture, including but not limited to the following: 1. Agricultural land use types, agriculture crop types and yields, specialty crops, and livestock types; 2. Value of farm land and buildings; 3. Net cash farm income; 4. Market value of agricultural products sold; and 5. Benefits of additional business opportunities within the agricultural operation.
Economic Monitoring – Economic Tracking	In support of long term planning, economic indicators will help determine economic trends of the Region. Indicators will be used to evaluate economic segments over time so that Highlands-related trends can be distinguished from general trends. They will provide perspective on the economic impacts of certain land use restrictions relating to RMP implementation and measure the overall economic and fiscal health of the Region. The *Financial Analysis Technical Report* contains baseline data, and conforming municipalities will track data through local economic plan elements. The RMP Monitoring Review Report will present the periodic region-wide fiscal impact assessment, as well as Highlands Milestones. (See the *RMP Monitoring Program* for additional information). This program component will initially track the following and is subject to enhancement and refinement as required: 1. Population (distribution and age demographics); 2. Employment (industries and levels); 3. Housing units; 4. Income (median household and per capita income); 5. Property tax (average property tax); 6. Equalized property values and per acre calculations (vacant land, residential, commercial, industrial property, and farmland); 7. Property Transactions (number of transactions and sales data); and 8. Building Permits.
Regional Master Plan Funding	In recognition of the costs associated with municipalities and counties conforming to the RMP, the Highlands Act provides funding, planning and technical assistance to avoid placing undue financial burdens on these entities. It is recognized, however, that the current funding available to Council for the purposes of RMP implementation will not cover all associated costs. The Highlands Act also prescribes the tracking of certain fiscal information through the development of a Cash Flow Timetable, which tracks the revenues and costs associated with the Highlands Protection Fund, with the exception of the Pinelands Property Tax Stabilization Aid category.

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Regional Master Plan Funding (continued)	This program component tracks and assesses data, provides technical assistance and funding and includes but is not limited to the following: 1. Track and update revenues and costs associated with the Cash Flow Timetable including: Highlands Planning Grants Program (including Incentive Planning Aid, RMP Compliance Aid), Highlands Property Tax Stabilization Aid, State Aid for Local Government Units, and in support of Land Acquisition; 2. Provide funding and technical assistance to eligible municipal and county governments for the purposes of revisions to their master plans, development regulations, and other regulations through RMP Compliance and Incentive Planning Aid; and 3. Provide planning grants and technical assistance to be used by municipalities for special projects including the preparation of case studies relevant to Plan Conformance. For additional information on the Cash Flow Timetable, see the *Financial Analysis Technical Report.*

PART 9 Air Quality

AIR QUALITY

Issue Overview

Nathan McLean

Clean air is a defining element of the unique character of the Highlands Region. While air quality is affected by activities in areas beyond the borders of the Highlands Region and the State, it is important that municipalities and counties address local air quality concerns in order to ensure that National Ambient Air Quality Standards (NAAQS) are met.

Program Summary

The program should focus on meeting the NAAQS which require not only the review of new development, but the monitoring of general air quality and stationary source pollution within the Highlands Region. This program also supports the State Energy Master Plan as a means to plan and evaluate for energy efficiency and greenhouse gas reductions at all levels of government. There are both development and redevelopment strategies which can indirectly enhance air quality by reducing vehicle miles traveled, as well as the review of pollution from stationary sources throughout the Highlands to ensure standards are met. Air quality monitoring is also an effective way to evaluate progress in the Highlands Region and determine if current efforts are achieving the desired results.

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RMP Policies and Objectives Addressed	**Policy 9A1.** To encourage capital facility development and redevelopment that leads to attainment of the National Ambient Air Quality Standards (NAAQS). **Policy 9A2.** To support continued, consistent and thorough air quality monitoring and assessment programs as a means of evaluating and managing major air toxic point sources that affect the Region. **Policy 9A3.** To encourage land use development and redevelopment practices that promote center-based growth and mixed-use development and offer alternative modes of transportation as a means to reduce automobile dependency, vehicle miles traveled, vehicle trip length, and duration, for the reduction of local and regional air pollutants and of carbon dioxide emissions linked to global warming. **Policy 9A5.** To encourage energy efficient design and green building practices in support of regional resource protection and smart growth planning policies. ***Objective 9A5a.*** Encourage development design, as appropriate, to include measures to avoid, limit or mitigate the creation of air pollutants, including but not limited to reduced vehicle emissions, ambient air toxic substances, and hazardous air pollutants as related to development practices and end use activities. **Policy 9A6.** To support State and federal initiatives that will reduce air pollution emanating from power plants, incinerators and landfills within and affecting the Highlands Region and particularly in Warren County due to out-of-State power plant air pollution.
Encourage Capital Facilities That Meet Standards	The Highlands Council should encourage the development of governmental or utility investments in the Highlands Region that contribute to the meeting of the NAAQS and State Energy Master Plan goals. It shall review private sector investments in stationary sources to ensure that those investments meet the NAAQS goals. The Council shall also encourage and support development of air quality plans that seek to reduce levels of ozone, sulfur dioxide and fine particulate matter pollutants in the Highlands Region.
Monitoring	The Highlands Council shall coordinate with NJDEP and counties to ensure operation of a monitoring program for the Highlands Region that provides a regional and sub-regional analysis of air quality conditions based on monitoring sites. Recommendations will be made for additional monitoring sites if needed. Where monitoring or modeling determines pollutant levels which need to be reduced, the Council shall coordinate with NJDEP to reduce relevant sources of pollution.
Land Use Planning	Sound land use planning based on smart growth principles can have very positive implications for air quality in the Highlands Region. By targeting a balance of jobs and housing, and concentrating development around multi-modal transit hubs, both vehicle trip lengths and vehicle miles traveled can be significantly reduced. As automobiles contribute 40% of the airborne pollutants and 80% of the airborne carcinogens in the region, these reductions can improve overall regional air quality. (For more information on land use and transportation planning, see *Transportation Safety and Mobility Program – Linking Transportation and Land Use*)
Resource Protection and Site Design Standards	The use of clustering, energy efficient design, green building technology, resource protection standards and landscape regulations shall be used to promote air quality. The following represent some of the tools available: • Maintaining forested area by acquisition, sale of Highlands Development Credits, and clustering, will assist in maximizing the retention of forested areas which mitigate pollutants; • Landscaping requirements that increase tree canopy cover on streets and lots can offset pollutant loads and cut energy use through a reduction in demand for heating and cooling; • Guidelines or regulations that encourage the use of renewable energies, promote energy conservation and reduce demand for energy from high emission power plants; and • Encourage the adoption of LEED-based building codes to reduce energy consumption.

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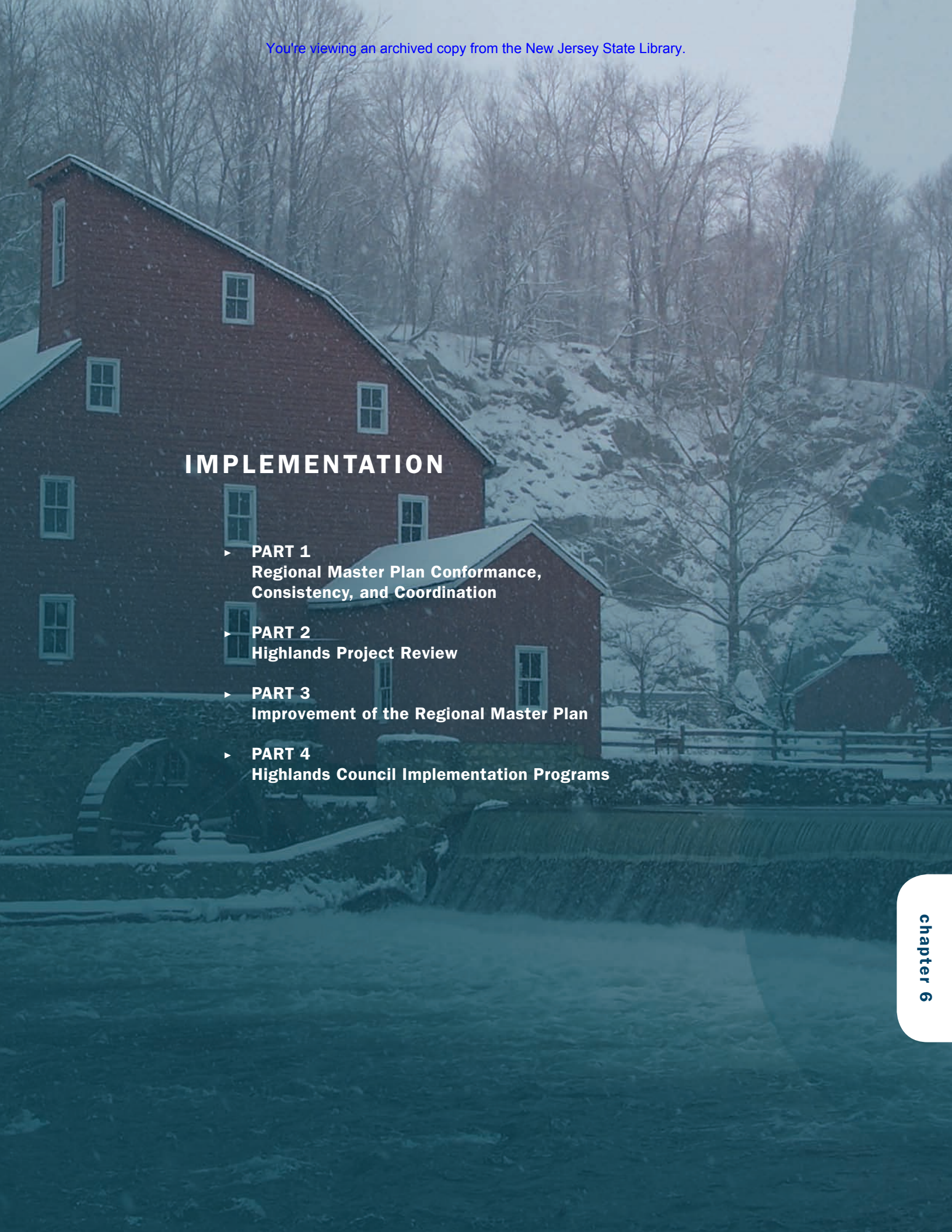

IMPLEMENTATION

- **PART 1**
  Regional Master Plan Conformance, Consistency, and Coordination
- **PART 2**
  Highlands Project Review
- **PART 3**
  Improvement of the Regional Master Plan
- **PART 4**
  Highlands Council Implementation Programs

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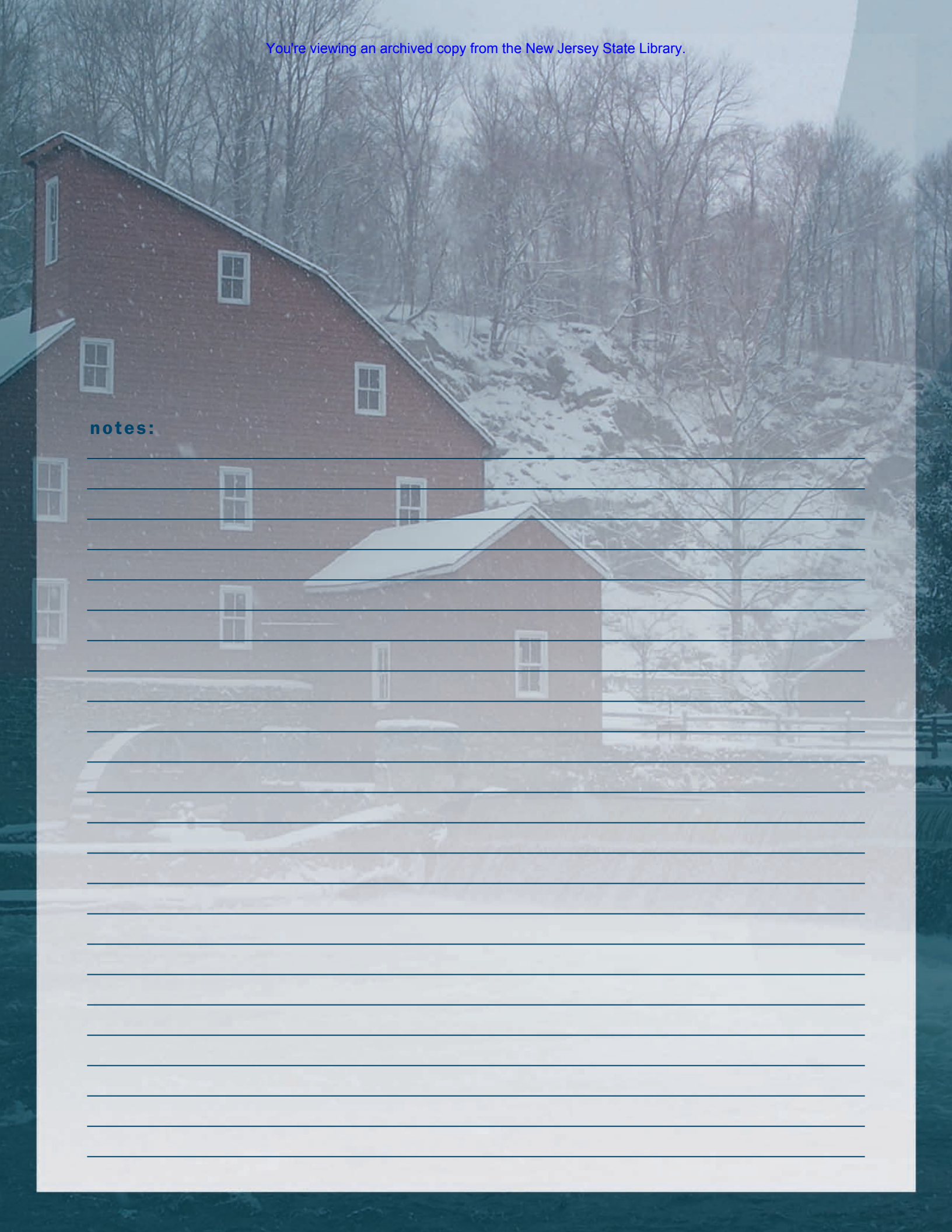

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The Highlands Regional Master Plan (RMP) establishes a resources planning and management framework for the Highlands Region. The Highlands RMP, however, is not self-executing and will require the concerted effort of agencies at all levels of government, the general public, property owners, and private industry.

The Highlands Council is the lead agency responsible for the implementation of the Highlands RMP. The Council has several critical implementation responsibilities including:

- Preparation of implementation documents including model ordinances, handbooks, technical guides, and bibliographies of substantive literature;
- Administration of local government conformance proceedings including review and approval of revised master plans and development regulations;
- Project review;
- Public education;
- Provision of financial and technical assistance to local governments;
- Creation and administration of the Highlands TDR Program;
- Advocacy at the State and federal level for funding of RMP implementation, including land acquisition; and
- Monitoring and updating of the RMP.

These functions are addressed below in the following categories and programs:

- Regional Master Plan Conformance, Consistency, and Coordination
  - Plan Conformance – including the administrative, grants, and technical assistance aspects
  - RMP Updates
  - Map Adjustments
  - Federal, State, and Regional Agency Coordination
  - Local Participation
- Highlands Project Review
  - Project Review Process
  - Project Review Standards
- Improvement of the Regional Master Plan
  - Water Resources and Ecosystem Science Agenda
  - Regional Master Plan Monitoring

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These categories and programs focus on the procedural and programmatic methods for implementing and improving the RMP over time. Plan Conformance is the process by which Highlands Region counties and municipalities implement relevant aspects of the RMP and gain the benefits of Plan Conformance, such as grants, technical, and planning assistance, and a legal shield for local ordinances and development review decisions that are based on Plan Conformance. RMP Updates provide a method for updating the RMP to address factual issues, while Map Adjustments address RMP modifications that relate to local planning initiatives. Map Adjustments will conform to the RMP policies and objectives and achieve no net harm to Highlands Region resources. Agency coordination and local participation are both critical aspects of RMP implementation.

- The Highlands Council gains regulatory and advisory review authority and responsibilities upon adoption of the RMP, and the Highlands Project Review programs discuss the general approach that will be used for these reviews. The Highlands Council will adopt detailed procedures for implementation of the Highlands Project Review process.
- Finally, the RMP will be the focus of continuing improvement and assessment through the final two programs; 1) the science agenda will emphasize improved and alternative methods for determining the capability of the Highlands Region to sustain various types, intensities and locations of land uses and 2) the RMP Monitoring Program will allow the Highlands Council to identify significant successes and continuing issues related to RMP policies, objectives, and programs, so that periodically the RMP may be improved through amendments, including the required six-year updates.

PART 1 Regional Master Plan Conformance, Consistency, and Coordination

SUBPART A PLAN CONFORMANCE

Issue Overview

Dwight Hiscano

Municipal and county conformance with the RMP (Plan Conformance) is the overall goal for implementation of the various elements of the RMP. The Highlands Act establishes the requirement that all municipalities and counties for land in the Preservation Area bring their local plans and development regulations into conformance with the "goals, requirements, and provisions of the regional master plan." For land in the Planning Area, voluntary conformance for municipalities and counties is also provided for in the Act, which outlines the benefits that shall accrue to those municipalities and counties that conform.

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Program Summary	Plan Conformance is intended to align municipal and county plans, regulations, and programs with the goals, requirements, and provisions of the RMP. The process to achieve Conformance will be logical, time efficient and comprehensive, and the Highlands Council will provide grant funding to assist local jurisdictions in completing it. The Conformance process will begin with the development of detailed guidance for municipalities and counties, which will be provided along with planning and technical assistance from the Highlands Council. Each municipality and county going through the Conformance process will follow a general approach that includes an assessment of current plans and regulations, an evaluation of future planning needs and conditions, modification of plans and regulations as necessary, and a public involvement process. The Highlands Council will review Petitions for Plan Conformance and decide to approve with conditions or reject the petitions. Conformance approval will in most cases be with conditions, where a finding is made that the municipality or county has conformed with all immediate mandatory Conformance requirements, and will conform with all other mandatory Conformance requirements within an agreed upon implementation schedule. The Highlands Council will then track the progress of the municipality or county in meeting that schedule, and will monitor development reviews and capital projects for compliance with the Conformance approval.
RMP Policies and Objectives Addressed	This program addresses RMP provisions regarding the modification of municipal master plans, zoning ordinances and development review ordinances; and of county master plans and development review requirements, as needed to achieve Plan Conformance.
Plan Conformance Guidelines	The Highlands Council will prepare and distribute to all Highlands municipalities and counties *Plan Conformance Guidelines* outlining the procedures for Plan Conformance. *The Plan Conformance Guidelines* will include a matrix outlining all of the immediate mandatory elements, the long term mandatory elements, and the discretionary elements. The Guidelines will provide additional detail on Conformance elements. The Guidelines will also provide descriptions and criteria for all of the associated grant programs that will be available to municipalities and/or counties in support of Plan Conformance.
Planning and Technical Assistance	The Highlands Council has assembled a significant amount of data and analyses relative to the Region and will make this information available to municipal and county representatives prior to commencement of Plan Conformance. The application of the Land Use Capability Map (LUCM) Series to individual municipalities will involve translating the boundaries in the LUCM Series to a more refined scale and to reflect local conditions. In order to ensure that the LUCM Series is accurate and up to date, municipalities and counties may request RMP Updates, which will be considered and processed throughout the process of Plan Conformance. Map Adjustments may also be requested as a component of a Petition for Plan Conformance. This process is defined in more detail in the Land Use Capability Analysis Program in Chapter 5 and the RMP Update Program and Map Adjustment Program. The Highlands Council website will continue to serve as a means for sharing current technical data and Plan Conformance information. The Council will provide information in support of Plan Conformance to each municipality and county. The information will include but not be limited to: the *Highlands Regional Build Out Technical Report* and background information, Highlands Resource data layers, the LUCM Series and supporting data layers, and various discretionary Plan Conformance tools. This information will support local knowledge and planning during Plan Conformance.

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Planning and Technical Assistance (continued)	The Highlands Council will make grant funds and other financial and technical assistance available to Highlands municipalities and counties to support any revision of their master plans, development regulations, or other regulations which are designed to bring those plans or regulations into conformance with the RMP or the implementation of a TDR Program (see Grant Programs, below). The Highlands Council staff will be available to offer planning and technical assistance throughout Plan Conformance and during municipal and county implementation of the elements of the RMP. Additionally, funding will be available in the form of grants to municipalities and counties to further assist them in implementing the elements of the RMP.
Procedures for Municipal and County Plan Conformance	**Preservation Areas –** All jurisdictions having lands in the Preservation Area must petition the Highlands Council for conformance with respect to that area within 9 to 15 months of adoption of the RMP. To initiate the Plan Conformance process, the Highlands Council will schedule and provide notice of submission deadlines to all Preservation Area jurisdictions upon the adoption of the RMP. Such notice will be followed by an information packet, which will include the *Plan Conformance Guidelines* as well as maps and technical information developed by the Highlands Council for, and specific to, each governmental unit. **Planning Areas –** Municipalities and counties may choose whether or not to conform to the RMP with respect to lands located in the Planning Area, and may file petitions relative to such areas at any time. Planning Area petitions may be filed independently or in conjunction with mandatory filings for the Preservation Area. For municipalities located fully within the Planning Area, information packets including the above-listed items will be provided after the adoption of the RMP. **Notice of Intent –** Information packets will include a model "Notice of Intent" to pursue Plan Conformance, which the applicable governing body must adopt by resolution at a duly-noticed public meeting prior to commencing the petition process. For jurisdictions having lands in both the Preservation Area and the Planning Area, the resolution must indicate whether the petition will seek conformance with respect to the Preservation Area alone, or for both the Preservation and Planning Areas. **Petitions for Plan Conformance –** Petitions for Plan Conformance must include (among other things) the proposed revisions to the municipal or county planning documents that are necessary to conform to the RMP. In recognition of the limited timeframe for submission of Preservation Area petitions, the Highlands Council will provide model supplements for master plans and development regulations, which petitioners may use to develop petitions for Plan Conformance within the governed timeframe. A detailed list of submission requirements will be provided in the *Plan Conformance Guidelines* document. **Basic Plan Conformance –** Petitions for Plan Conformance may be designed to accomplish immediate mandatory conformance requirements at the outset of the process, with more complex, long-term conformance tasks to be completed under a Council-approved Implementation Plan. Under this scenario, the Council will grant what is known as "Basic" Plan Conformance (e.g., Plan Conformance with a schedule for compliance with the long-term tasks) once the petitioner has satisfactorily completed all immediate mandatory conformance requirements. Basic Plan Conformance will entitle the petitioner to all of the rights and benefits of Plan Conformance, provided that the Implementation Plan and scheduling requirements included therein are rigorously adhered to. This approach will require that Highlands Resources be given immediate protection via adoption of specific regulations applicable to municipal and county review of land development applications. Highlands model master plan and development regulation supplements will address each of these areas.

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Procedures for Municipal and County Plan Conformance (continued)	**Overview Meetings –** After the effective date of the final RMP, the Highlands Council will host a series of overview meetings throughout the Highlands Region to explain the elements of the RMP and the Plan Conformance process. The Highlands Council encourages County Planning Departments to assist their constituent municipalities in the Plan Conformance process if the municipalities officially request that the County Planning Departments do so.
Municipal Plan Conformance	**Municipal Process –** The municipal Plan Conformance process will commence with municipal review of Highlands LUCM Series, charts and technical data to identify any need for RMP Updates. RMP Updates should be addressed as early as possible in the Plan Conformance process, but will be processed on a continuing basis, as needed. The municipality will then undertake a thorough review of its planning program, including master plan, zoning ordinances, development regulations, maps, and supporting documents, for consistency with the RMP. Foremost among RMP consistency requirements is the need for municipal regulations that protect Highlands resources and designated Highlands Resource Areas. Equally important is that municipal planning programs limit growth, development and/or redevelopment in Highlands communities to areas having the physical capacity to support it. To determine the extent of the physical capacity, the municipality will conduct a Land Use Capability Analysis, involving a review and assessment of its land-, resource- and utility-based capacities. This will be followed by a "Limiting Factor" Analysis, to determine and map out the most significant constraints to community development. These analyses will reveal the municipality's capacity to support existing development and any intended future growth, development and/or redevelopment. In conducting these analyses, the municipality may choose to work jointly with neighboring municipalities, such as those sharing the same sub-watershed(s) on issues of common interest or where economies of scale may be achieved through joint analysis. See the Land Use Capability Analysis Program in Chapter 5 for more details on this process. In cases where the results of these analyses indicate a need for substantial changes in the municipal planning program, the municipality is encouraged to conduct a community visioning session(s) to involve the local public and to develop or confirm a representative vision of the community for the future. The results of community visioning shall be included as part of the Petition for Plan Conformance. Whether or not the municipality engages in community visioning, it will be required to hold public hearings during the process of conformance and prior to filing of a petition for conformance to the Highlands Council. Minutes from all public hearings shall be submitted to the Highlands Council as part of the municipality's Petition for Plan Conformance. The Petition for Plan Conformance shall be the formal submittal to the Highlands Council from a municipality for consideration of Plan Conformance. The Petition shall include the proposed master plan amendments, zoning ordinance revisions, and resource protection ordinances, as well as the community vision (if applicable), all supporting documentation, and a Municipal Self-Assessment Report. **Municipal Self-Assessment Report –** The Municipal Self-Assessment (MSA) Report will describe the municipality's progress toward achieving full Plan Conformance as of the date of filing its Petition. It will discuss and outline the steps remaining to fully align the municipal planning program with the RMP and thus achieve Plan Conformance. The MSA Report must in addition, include a proposed Implementation Schedule for completion of each outstanding task leading to full Plan Conformance.

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Municipal Plan Conformance (continued)	In order to meet the requirements of Plan Conformance for immediate mandatory items (i.e., "Basic" Plan Conformance), the municipality must adopt the elements of the Highlands Regional Master Plan related to critical natural resources. Where a municipality can demonstrate to the satisfaction of the Highlands Council that existing provisions of its master plan and land development regulations cover these areas in an equivalent or more restrictive manner than the RMP, the existing provisions shall be sufficient to satisfy the conformance requirement. The *Plan Conformance Guidelines* will include a table specifying the policies and objectives which are immediate mandatory items and must be adopted (or demonstrated to already exist) by the municipality in order to be eligible to receive Plan Conformance approval. As noted previously, a series of long-term mandatory items may be made a condition of approval which must be accomplished according to an established schedule, unless the municipality has addressed them prior to submitting a petition for Plan Conformance. The municipality may also pursue Plan Conformance regarding discretionary items which may be included in the approved Implementation Schedule. Municipalities may seek the designation of centers, cores, and nodes through Plan Conformance by proposing such a designation in a Petition for Plan Conformance that is both consistent with the State Development and Redevelopment Plan's (State Plan) criteria for center, core, and node designation and is in conformance with the Regional Master Plan. Designated centers, cores, and nodes in the Highlands Region may include the full range of types afforded by the State Plan. The Highlands Region includes 20 previously designated centers (see Figure 6.1 *State Planning Commission Designated Centers*). The figure includes the expiration dates of these designated centers in order to identify the timeframe within which the Highlands Council and the State Planning Commission may examine the potential reestablishment of any expiring center designations through the Plan Conformance or Plan Endorsement process. The figure additionally provides an overview of the intersection of the boundaries of the existing designated centers and the Highlands Land Use Capability Zone Map. This information and the additional information in the RMP will allow municipalities, the Highlands Council and the State Planning Commission to reassess the designated center boundaries to ensure protection of Highlands resources and identification of appropriate areas for potential growth.
County Plan Conformance	**County Process –** The county Plan Conformance process will commence with county review of Highlands LUCM Series, charts and technical data to identify any need for RMP Updates. RMP Updates should be addressed as early as possible in the Plan Conformance process, but will be processed on a continuing basis, as needed throughout. The county will then review its planning and development documents and regulations for consistency with the RMP. In addition to adoption of policies and practices for application to county properties and facilities, counties will specifically be responsible for plans and regulations governing wastewater management, farmland preservation, recreation and open space, and transportation/circulation. Counties may choose to work in coordination with their constituent municipalities. The county is encouraged to participate in the community visioning events of its constituent municipalities and/or may choose to hold a county-wide visioning session. In order to meet the requirements of Plan Conformance for immediate mandatory items, the county must adopt the elements of the RMP related to water availability and conservation measures. The long-term mandatory items which will be accomplished according to

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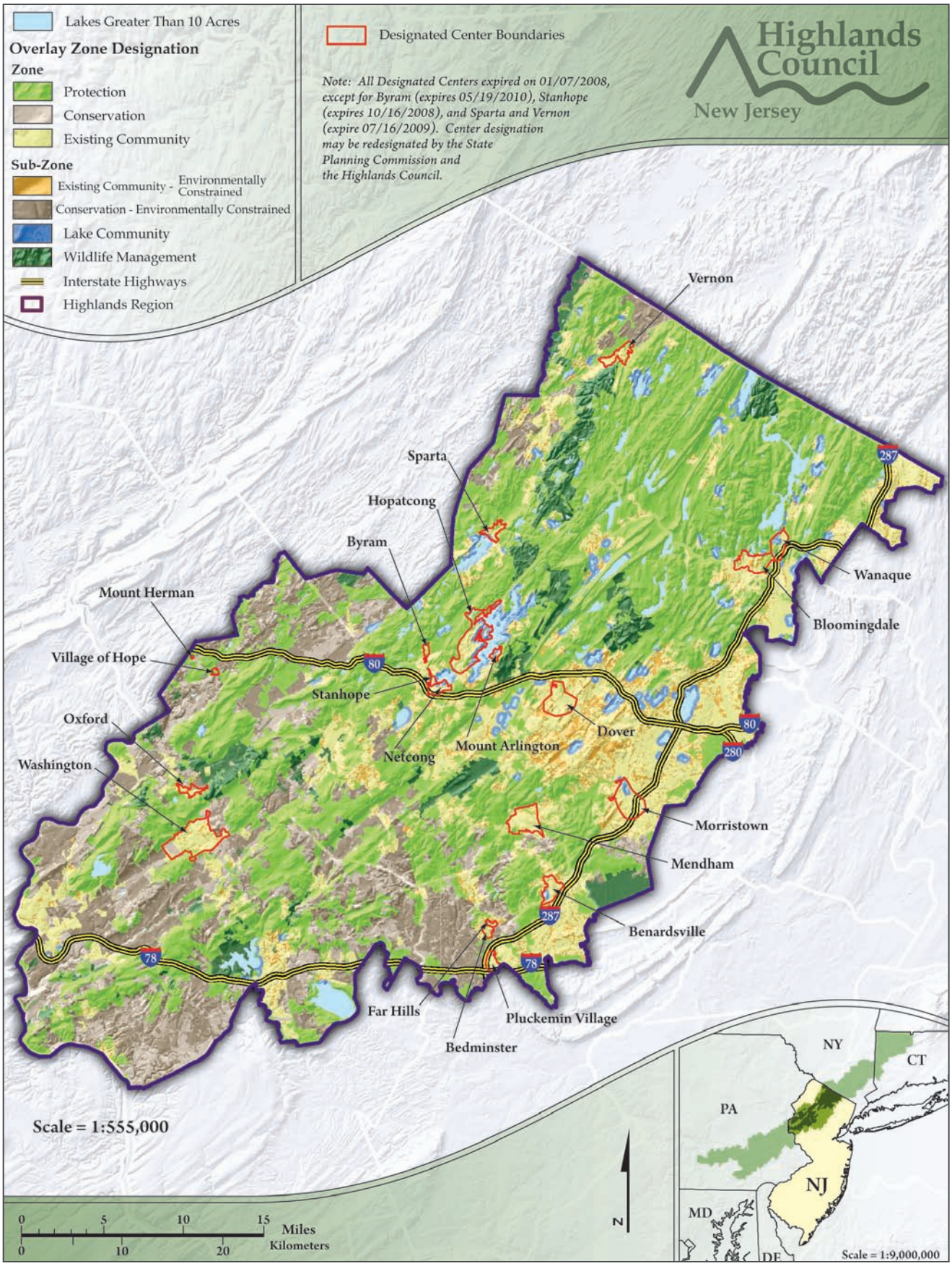
FIGURE 6.1: State Planning Commission Designated Centers



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County Plan Conformance (continued)	an established schedule include Wastewater Management Plans, Comprehensive Farmland Preservation Plans, Recreation and Open Space Plans, County Transportation Plans, and Stormwater Management Plans. Where a county can demonstrate to the satisfaction of the Highlands Council that existing planning and regulatory programs address these topics in an equivalent or more restrictive manner than called for by the RMP, the existing programming shall be sufficient to satisfy the conformance requirement. The *Plan Conformance Guidelines* will include a table specifying the policies and objectives which are immediate mandatory items and must be adopted (or demonstrated to already exist) by the county in order to be eligible to receive Plan Conformance approval. Counties will be required to hold one or more public hearings during the process of conformance and prior to filing of a petition for conformance to the Highlands Council. Minutes from all public hearings shall be submitted to the Highlands Council as part of the county's Petition for Plan Conformance. The Petition for Plan Conformance shall be the formal submittal to the Highlands Council from a county for consideration of Plan Conformance. The Petition shall include the proposed master plan amendments, regulatory revisions, the county vision (if applicable), all supporting documentation, and a County Self-Assessment Report. **County Self-Assessment Report –** The County Self-Assessment (CSA) Report will describe the county's progress toward achieving full Plan Conformance as of the date of filing its Petition. It will discuss and outline the steps remaining to fully align the county planning program with the RMP and thus achieve Plan Conformance. The CSA Report must in addition, include a proposed Implementation Schedule for completion of each outstanding task leading to full Plan Conformance.
Highlands Council Review, Evaluation, and Decision Process	The Highlands Council may convene a committee to review municipal and county Petitions for Plan Conformance. The membership of the Committee may change based on the municipality or county being reviewed in order to avoid a conflict of interest for any Council member. The Committee shall review the Municipal and County Assessment Reports, community visioning results, and all supporting documentation and make recommendations to the Highlands Council for each Petition to be approved, rejected or approved with conditions. It is anticipated that all Plan Conformance approvals will have conditions attached, at a minimum outlining all of the long-term mandatory items of Conformance. If a Petition is rejected or approved with conditions relative to the immediate mandatory elements of Plan Conformance, the notification will be accompanied by a specific listing of the actions the municipality or county must take in order to receive a Plan Conformance approval. Approval of Plan Conformance shall last for a period of six years or, for municipalities, until the next municipal reexamination of the municipal master plan if less than six years. Upon notification of approval, the municipality or county shall be eligible for all of the benefits of Plan Conformance including: 1. Strong Presumption of Validity, Extraordinary Deference, and Burden of Proof – As set forth in the Highlands Act, a strong presumption of validity applies to master plans, land use ordinances, and local decisions of municipalities and counties that are in conformance with the RMP. If a conforming municipality or county is challenged in court, the actions they have taken to conform to the RMP shall be given extraordinary deference and the burden of proof shall be on the plaintiff to prove that the municipality or county acted in an arbitrary, capricious or unreasonable manner, or in a patent abuse of discretion.

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Highlands Council Review, Evaluation, and Decision Process (continued)

2. Legal Representation – The Council shall, where appropriate in accordance with the Highlands Act, provide legal representation to any requesting local government unit located in the Highlands Region in any cause of action filed against the local government unit and contesting an act or decision of the local government unit taken or made under authority granted pursuant to the Municipal Land Use Law, the State Uniform Construction Code Act, or the Highlands Act.
3. Planning Grants – The Highlands Council is authorized to provide grants for the reasonable expenses associated with modifying master plans, land use ordinances, development regulations, and other relevant components of municipal and county planning programs to make them conform to the Regional Master Plan.
4. Approval of Plan Conformance is equivalent to Plan Endorsement by State Planning Commission and brings with it the benefits of Plan Endorsement, such as State aid, planning assistance, technical assistance, and other benefits awarded by the State.

Compliance Component

Once a municipality or county has received Plan Conformance approval, it has an obligation to maintain the plans, ordinances and regulations that brought it into conformance. The Highlands Act specifies that "the council may revoke a conformance approval granted ... after conducting a hearing, if the council finds that the local government unit has taken action inconsistent with the regional master plan." Jurisdictions seeking to amend ordinances or regulations relating to the Highlands RMP must provide them to the Highlands Council for review and approval prior to adoption at the local level.

Municipal and county Plan Conformance will be periodically verified through submission of periodic status reports. If the council revokes a Plan Conformance approval for a municipality or county that has received grants or funding based on its conformance status, it may be required to return those funds to the Council.

Grants Programs

Highlands Regional Master Plan Compliance Aid Grants

The Highlands Regional Master Plan Compliance Aid Grants are intended to fund planning and science projects which are necessitated by the mandatory requirements of the RMP and the associated Plan Conformance and implementation process.

Washington Borough Downtown Plan

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Grants Programs (continued)

Initial Assessment Grant Program

The purpose of the Initial Assessment Grant is to enable municipalities and counties to conduct an initial review of the policies and requirements of the RMP to determine the level of effort anticipated for the municipality or county to conform to the RMP. The Initial Municipal Assessment Grants will support an early and preliminary assessment on the part of the municipality and county and will not obligate them in any way to commit to Plan Conformance for the Planning Area in the future.

The funding assistance is to be used to review existing land use planning, development and regulatory documents, and mechanisms against the policies, strategies and implementation techniques contained in the RMP.

The Initial Assessment Grant Program will accept applications from municipalities and counties located within the Highlands Region.

Plan Analysis and Conformance Grant Program

Municipalities and counties within the Preservation Area are required to participate in Plan Conformance to bring their local planning and zoning into conformance with the RMP. Those within the Planning Area may, after completing the Initial Assessment, choose to participate in Plan Conformance for the Planning Area. Any municipality or county that submits a duly-adopted Notice of Intent to Petition for Plan Conformance will be eligible for grant funding to help offset the costs associated with the process.

The Plan Analysis and Conformance grants will fund municipal and county work that builds on the initial assessment. Funds may be used to analyze local plans, regulations, and programs and evaluate how well they support the Goals, Policies, and Objectives of the RMP. Funds may also be used to perform capacity and constraints analyses, conduct community vision sessions, develop action plans that will align local planning with the RMP, conduct public outreach to involve and inform the community, and to prepare the Municipal or County Self-Assessment Report.

Immediate Mandatory Elements of Conformance Approval

As part of a municipality's or county's Petition for Plan Conformance, certain elements of the RMP must be adopted and enacted to receive Highlands Council conformance approval. The Plan Analysis and Conformance Grants are intended to also assist local governments in implementing these requirements. The immediate mandatory requirements will be summarized in the Plan Conformance Guidelines, during the overview meetings and during conformance discussions.

Highlands Implementation Grant Program

Long-term Mandatory Elements of Conformance Approval

As a condition of Plan Conformance approval, additional elements will be required of each conforming municipality and county unless they already conform to these elements as part of their initial Petition for Plan Conformance. An Implementation Schedule will be established to outline each element and the timeframe within which they must be achieved. The Highlands Implementation Grants will be made available to assist municipalities and counties in actions to complete these requirements. They may include development of such items as additional resource protection standards, resource management plans, fiscal sustainability measures, certain development standards, or historic and scenic resource protection plans.

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Grants Programs (continued)	**Highlands Incentive Planning Aid Grants** The Highlands Incentive Planning Aid Grants are intended to fund planning and science projects which advance the goals, policies and objectives of the RMP, but are not mandatory requirements of Plan Conformance. **Discretionary Elements of Conformance Approval** The RMP contains policies, objectives, and associated elements that the Highlands Council is committed to as part of the future vision of the Highlands, but that have been deemed discretionary. Highlands Incentive Planning Aid Grant monies will be available to initiate important elements of the RMP through planning studies on targeted issues. Sample projects that may be eligible include planning for brownfield and grayfield redevelopment, transfer of development rights receiving areas, town center/transit village development, and local and regional economic development strategies. **Transfer of Development Rights (TDR) Grants** The Highlands Council has established a $1 million Voluntary Receiving Zone Feasibility Grant Program. This Incentive Planning Aid Grant Program is designed to assist municipalities in assessing the potential for locating a receiving zone within the community. Eligible municipalities will receive both financial support and technical assistance from the Council. Participation in the grant program requires a commitment by the municipality to fully evaluate the feasibility and desirability of designating a receiving zone. Additional grant funding will be made available to offset the costs of implementation of a TDR Program.

SUBPART B RMP UPDATES

Issue Overview	The RMP addresses the requirements of the Highlands Act to provide guidance to municipalities and counties for the implementation of the resource protection and smart growth policies during Plan Conformance. The Highlands Council recognizes that the RMP was created at a regional scale and that new, updated, or additional information available at the federal, State, county, municipal, or public level may become available. The RMP Updates Program outlines the processes for making RMP Updates to the numerous components of the RMP including the LUCM Series, other RMP maps, and supporting base data layers, and the tracking of these changes.
Program Summary	The RMP Updates Program is designed to facilitate and coordinate the exchange and verification of updated, relevant factual information. As a result the RMP will reflect the most current data for use during Plan Conformance. The RMP Updates Program is an iterative process with the exchange, verification, and administration of factual information between the Council and local government units. It is intended to enhance existing data necessary for local planning which results in up to date, reliable information to be used in municipal and county master plan elements and the RMP. The Council has developed numerous spatial data layers in support of the RMP. Some were used directly to develop the LUCM Series, while others will be used primarily for Plan Conformance or Project Review. The Historic and Cultural Sites data layer is an example of a base data layer that was not used in the development of the LUCM Series, but will be used during Plan Conformance and Highlands Project Review. Some of the base data layers are updated regionally or statewide on a periodic basis by State or Federal agencies or updated by the Council. Where a base layer is updated on a regional or statewide scale, such as NJDEP Land Use Land Cover, the Council will periodically evaluate the extent to which RMP Updates are appropriate using the new information.

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RMP Policies and Objectives Addressed	**Policy 6A1.** To use the LUCM Series as a geographic framework for land use planning and management within the Highlands Region. ***Objective 6A1a.*** A Highlands LUCM Series based on the most current, relevant and available data. **Policy 6A2.** To develop a program for RMP Updates for all substantive components of the RMP based upon the receipt of new, corrected or updated factual information and verification by the Highlands Council, when and where necessary to improve the accuracy of the RMP. ***Objective 6A2a.*** The facilitation and coordination of the exchange of factual information for the purpose of updating municipal and county planning elements and the RMP. ***Objective 6A2b.*** An ongoing update process to accept factual updates, verify the information and use it, when and where necessary, to improve the accuracy of the RMP. ***Objective 6A2c.*** A centralized repository for verified and approved factual updates which can be administered locally and shared regionally. **Policy 6G1.** To develop a program for RMP Updates for all substantive components of the RMP, based upon the receipt of new, corrected or updated factual information and verification by the Highlands Council, when and where necessary to improve the accuracy of the RMP.
RMP Updates – Highlands Council Base Layers	The RMP Update Program will begin immediately upon Plan Adoption and will provide conforming municipalities and counties with an opportunity to review and confirm factual information and data. Much like an inventory, the existing land, resource, and infrastructure conditions serve as the basis for municipal and county planning elements and the RMP. With guidance from the Council, municipalities and counties are encouraged to evaluate and update the factual information used in the development of the RMP with local and site-specific data. This program has been developed to ensure that RMP Updates are delivered with consistent standards, supported with appropriate documentation, is coordinated and verified with administrative agencies, to support existing land and resource conditions. Since land use and resources conditions change over time, the RMP Updates Program is an ongoing and iterative process. The Council supports the review and confirmation of existing land and resource conditions during Plan Conformance until such time that a municipality or county has successfully conformed to the RMP. For conforming municipalities and counties, the RMP Update Program serves to encourage future updates so that changing land conditions and resources are tracked over time in an efficient and transparent manner through Highlands Project Review or as part of scheduled RMP Updates performed by the Council. Non-conforming municipalities are equally encouraged to submit RMP Updates; however, processing priority will be given to those municipalities and counties who have achieved Plan Conformance or who have filed a letter of intent to pursue Plan Conformance. The Council will also develop RMP Update procedures that will provide additional details such as the use of web-based RMP Update applications, a list of base layers, administrative agencies, and digital submission standards. There are numerous Council data layers that may be improved with input from municipal and county information. These base layers are important to municipal and county master plans, local initiatives, and the RMP. The Council will facilitate updates and the RMP Updates procedures will identify the format in which updates may be processed and, where appropriate, will identify an appropriate administrator for an update to Council base layers.

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RMP Updates – Digital Submission Standards	For all RMP Updates, the digital submission standard will assist the Highlands Council and its participating entities in receiving, processing, utilizing, maintaining, and disseminating digital data. All digital submissions shall meet the NJDEP Geographic Information System Mapping and Digital Data Standards (N.J.A.C. 7:1D Appendix A) and the following minimum requirements: 1. All digital geospatial data must meet or reference published standards such as those defined by the Federal Geographic Data Committee or a defined survey standard, regardless of scale. Testing against base maps or photography of known accuracy determines the accuracy of data. This will ensure appropriate positional accuracy of the geographic data, and therefore, compatibility of digital information. 2. All digital geospatial data must be provided to or produced for the Council as GIS geodatabase or Shape Files (.SHP) and are required to be in North American Datum 1983 (NAD83) horizontal geodetic datum, and in the New Jersey State Plane Coordinate System (SPC) or the most current SPC and in an ARCGIS compatible format. 3. All digital geospatial data must be documented using the Federal Geographic Data Committee (FGDC) Metadata Standard or be compliant with the FGDC metadata standard. Any submissions to the Highlands Council that do not satisfy the requirements shall be deemed incomplete and no further action shall be taken. See the NJDEP Geographic Information System Mapping and Digital Data Standards (N.J.A.C. 7:1D Appendix A) for the complete submission standards.
RMP Updates Tracking	All Council approved RMP Updates will be documented and publicly available. To provide an accurate picture of the progression that the RMP and LUCM Series takes over time, RMP Updates that are made shall be maintained in a database and as GIS spatial data in accordance with Highlands data management and data sharing protocols.

SUBPART C MAP ADJUSTMENTS

Issue Overview	The RMP addresses the requirements of the Highlands Act to provide guidance to municipalities and counties for the implementation of resource protection and smart growth policies during Plan Conformance. The Highlands Council recognizes that the RMP was created at a regional scale and that additional planning information may be available at the federal, State, county, municipal or public level which has not been considered by the Council. The Map Adjustments Program outlines the protocols for processing and tracking Land Use Capability Zone Map Adjustments which may affect numerous components of the RMP. This process may only be undertaken when all other means, such as RMP Updates and the use of Highlands Act exemptions or waivers are inadequate to address the planning considerations underlying the petition.
Map Adjustment Program Summary	The Map Adjustment Program allows for the exchange of planning information between the Council and local government units in order to ensure a sound basis for local planning and development review in support of the overall Goals, Policies, and Objectives of the RMP and the Highlands Act. A Map Adjustment is a Council approved adjustment of the Land Use Capability Zone Map designations based upon a petitioning local government's request. If the Council processes a Map Adjustment other than one resulting from re-evaluations of the RMP, it will also follow the standards in the Map Adjustments Program.

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Map Adjustment Program Summary (continued)	The Map Adjustment Program outlines a process for proposing adjustments to the Highlands Land Use Capability Zone Map. Joint petitions amongst municipalities and counties are permitted and priority for review will be given to conforming jurisdictions. All Council approved Map Adjustments will be documented and made publicly available. The Council has developed numerous spatial layers in support of the RMP. Fact-based updates to these layers are addressed in the RMP Update Program. The Map Adjustment Program is designed to allow for additional planning information beyond the existing spatial layers to be considered in support of sound regional planning. An example of a Map Adjustment might include modification of a Conservation Zone immediately adjacent to an Existing Community Zone (ECZ) where utilities and water availability could support extension of the ECZ to accommodate a fully-conforming TDR Receiving Zone.
RMP Policies and Objectives Addressed	**Policy 6A1.** To use the LUCM Series as a geographic framework for land use planning and management within the Highlands Region. ***Objective 6A1a.*** A Highlands LUCM Series based on the most current, relevant and available data. **Policy 6G2.** To develop a program allowing for petitions by municipalities and counties (with accompanying mu nicipal support by resolution) for a Map Adjustments to the Land Use Capability Zone Map in the Highlands Region. ***Objective 6G2a.*** A Council review process to assess local initiatives where Map Adjustments may be approved to the Land Use Capability Zone Map's designations of Protection and Conservation Zones or the Environmentally-Constrained Sub-Zones. ***Objective 6G2b.*** Map Adjustments proposed to change Protection and Conservation Zones or the Environmentally-Constrained Sub-Zones may be approved by the Highlands Council where it finds that the petition does not result in deleterious impacts to the affected or adjacent Land Use Capability Zones or to RMP policies and objectives applicable to adjacent or nearby lands, and the petitioner demonstrates that the proposed adjustment: 1. Complies with the intent and purposes of the Highlands Act and the RMP and demonstrates that Highlands resource protection and smart growth planning principles have been addressed; 2. Will result in no net loss of Highlands resources or resource values (including but not limited to water availability, water quality, Critical Habitat, and agriculture) within the Region or as appropriate, within any HUC 14 subwatershed, such that on the whole, the results equal or exceed the resource protections provided by the RMP; 3. Will under no circumstance result in the allocation of water or waste water capacity in excess of that available in any HUC 14 subwatershed; and 4. Cannot appropriately or adequately be addressed via other options, such as: • Waivers under the Highlands Act; • Exemptions from the Highlands Act; and • RMP Updates Program. Where a Map Adjustment creates opportunity for an increase in density, such density must be offset by an equivalent reduction in density elsewhere in the Region, or alternatively, by use of HDCs.

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RMP Policies and Objectives Addressed (continued)	Where a petition seeks the creation or extension of an ECZ, it must demonstrate that the area in question can accommodate ECZ appropriate development. The Council will look most favorably upon ECZ petitions that create a meaningful opportunity to provide affordable housing; improve the balance of housing and employment; and promote the use of alternative modes of transportation, such as transit, by for example, a location proximate to Highlands Baseline Transportation and Transit features. ***Objective 6G2c.*** Map adjustments that will change an Existing Community Zone to another Land Use Capability Zone or Sub-Zone may be approved by the Highlands Council where it finds that the affected area: 1. Is not currently developed at a density and scale that prevents the area from providing the agricultural or environmental protection benefits of the Conservation or Protection Zones, or the Environmentally-Constrained Sub-Zones; 2. Is not currently served by public waste water infrastructure; 3. Includes ecological or agricultural attributes that are associated with the Conservation or Protection Zones; and 4. Does not include a designated Redevelopment Site or TDR Receiving Zone.
Map Adjustment Process	Requests for a Map Adjustment must be submitted by a Highlands Region municipality or county in a petition or as part of Plan Conformance. Joint petitions among municipalities and counties are permitted. Any county petition must be accompanied by a resolution(s) of support adopted by the governing body/bodies of the affected municipality/municipalities. Review priority will be given to conforming municipalities and counties. All petitions for Map Adjustment will be evaluated for consistency with the RMP and must meet Objective 6A2b.
Map Adjustment Standards	All petitions for a Map Adjustment will be evaluated for consistency with the RMP. The Map Adjustment Process evaluates areas where policies as prescribed by the most current Land Use Capability Zone may differ from local planning initiatives. This process allows for flexibility while at the same time ensures sound planning principles and conformance with the RMP policies and objectives, and must be undertaken once all other administrative remedies have been exhausted or are determined to be inappropriate or inapplicable. The Council will evaluate Map Adjustments petitions for resource protection measures seeking results that meet or exceed the protections provided by the RMP. By requesting a demonstration of no net resource loss, the Council allows for local flexibility while at the same time ensuring that resources are protected regionally and as appropriate, at the subwatershed level. A showing of no net loss might be in the form of resource protection or mitigation planning and would identify the physical location, extent, and value of protected resources. Water availability is particularly important and reductions in water deficits must be equal to or exceed those required by the RMP. In addition, any Map Adjustment resulting in an increase in density must either incorporate HDCs or provide for an equivalent reduction in development yield elsewhere in the Region, so as to result in no net increase.

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Map Adjustment Standards (continued)	Petitions seeking to change the Protection and Conservation Zones or Environmentally-Constrained Sub-Zones should minimize the impact to areas with environmental constraints. Petitions seeking to change any Land Use Capability Zone to an ECZ should involve areas that have ready access to infrastructure. The intent is to ensure that any ECZ will further the intents and purposes of the RMP for the Zone, which include but are not limited to: allowing compact development; creating a meaningful opportunity to provide affordable housing; improving the balance of housing and employment; and promoting the use of alternative modes of transportation, including transit, by, for example, being located in proximity of Highlands Baseline Transportation and Transit features. These provisions will ensure that such Map Adjustments are consistent with existing infrastructure, compatible with historic and efficient land use development patterns, and discourage scattered piecemeal development patterns. Map Adjustment petitions will be evaluated in the context of regional Land Use Capability Zones to identify and address potential unintended changes or deleterious impacts to areas adjacent to the proposed Map Adjustment area. This is to ensure that adjustments in one area do not unintentionally reduce protections to surrounding areas. All petitions for Map Adjustments must be prepared by a qualified New Jersey Licensed Professional and must be submitted with an authorizing municipal resolution.
Map Adjustment – Requirements for Digital Submission Standards	All petitions for Map Adjustments shall include digital submissions that meet the NJDEP Geographic Information System Mapping and Digital Data Standards (N.J.A.C. 7:1D Appendix A) and the following minimum requirements: 1. All digital geospatial data must meet or reference published standards such as those defined by the Federal Geographic Data Committee or a defined survey standard, regardless of scale. Testing against base maps or photography of known accuracy determines the accuracy of data. This will ensure appropriate positional accuracy of the geographic data, and therefore, compatibility of digital information. 2. All digital geospatial data must be provided to or produced for the Council as GIS geodatabase or Shape Files (.SHP) and are required to be in North American Datum 1983 (NAD83) horizontal geodetic datum, and in the New Jersey State Plane Coordinate System (SPC) or the most current SPC and in an ARCGIS compatible format. 3. All digital geospatial data must be documented using the Federal Geographic Data Committee (FGDC) Metadata Standard or be compliant with the FGDC metadata standard. See the NJDEP Geographic Information System Mapping and Digital Data Standards (N.J.A.C. 7:1D Appendix A) for the complete submission standards.

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SUBPART D FEDERAL, STATE, AND REGIONAL AGENCY COORDINATION

Issue Overview	The Highlands Act requires 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 RMP, 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 RMP. The Act, in Sections 38 through 82 (See Act provisions in Supporting Information), also amends numerous statutes of State agencies to specifically require coordinated action to implement the RMP. In these sections, the Act requires consultation between the Council and State agencies to ensure that the RMP is considered prior to State agency action. For plans and other decisions proposed in the Highlands Region, the Council will deliver consistency determinations based on the RMP to appropriate State agencies which will use the Council's information and recommendations to reach resolution in a manner consistent with their respective enabling legislation or regulatory mandate. The Highlands Act stipulates that Highlands municipalities and counties are under no obligation to revise local master plans and development ordinances applicable to any parts of the Planning Area to bring them into conformance with the RMP. The Act is also clear that the Council is required to consult with State agencies and, in certain cases, to issue RMP consistency determinations for actions and plans proposed in any part of the Highlands Region. These requirements for interaction and coordination between the Highlands Council and other State agencies for actions proposed in the Planning as well as the Preservation Area do not negate Sections 14 and 15 of the Act which specify that conformance with the RMP is voluntary for the Planning Area portions of Highlands municipalities and counties. State level coordination between the Council and the NJDEP will be particularly important due to the requirements of the Act that establish stringent regulatory standards for development in the Preservation Area administered by the NJDEP and the provisions in NJDEP regulations at N.J.A.C. 7:38-1.1(g) though (l), which require that consideration and weight be given to the RMP. The Highlands Act provides that any municipality or county located entirely or in part in the Preservation Area shall be exempt from the State Planning Commission's Plan Endorsement process and provides that the Council must consult with the State Planning Commission before approving, rejecting, or approving with conditions the revised plans and associated regulations of Planning Area municipalities and counties for lands in the Planning Area. Further, the Act provides that upon the State Planning Commission's endorsement of the RMP, any municipal master plan and development regulations or county master plan and associated regulations that are found by the Council to be in conformance with the RMP shall be considered the equivalent of having those plans endorsed by the State Planning Commission. Finally, regional coordination between the federally-delineated Highlands states (Connecticut, New York, and Pennsylvania) is necessary in order to address and implement comprehensive conservation measures, since regionally significant resources do not follow political boundaries.
Program Summary	The purpose of this program is to establish a process based on the consistent treatment of factors at all levels of government to ensure the success of RMP policies and initiatives. Toward this end, a fundamental goal of this program is to establish or enhance interagency coordination to address critical issues such as environmental review procedures, land use regulation, affordable housing, land acquisition, agriculture, TDR, and Smart Design practices.

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Program Summary (continued)	Additionally, through this program, the Highlands Council will establish regular lines of communication and exchange technical information with representatives of the broader Highlands Region in Connecticut, New York, and Pennsylvania. Through proactive coordination with federal, State, and county agencies the Council will promote the use of the RMP policies and standards to ensure the consistent protection of resources in the Highlands Region. Consistency is particularly important with those federal or State programs related to water supply availability, water quality, biodiversity conservation, and infrastructure capacity needed to handle growth.
RMP Policies and Objectives Addressed	**Policy 1H4.** To advocate for the establishment of dedicated sources of funding for the preservation and stewardship of open space lands in the Highlands Region including, but not limited to: 1. Dedicated sources of State revenue to be used for open space preservation in the Highlands Region, such as coordination with the NJDEP Green Acres Program for re-authorization of the Garden State Preservation Trust (GSPT) Fund, including a dedicated fund for the anticipated land acquisition needs of the Highlands Region, and enactment of a water user fee. 2. Dedicated sources of State revenue for a reserve fund to capitalize the Highlands Development Credit Bank. 3. An ongoing program to secure significant federal funding in support of land acquisition and stewardship efforts in the Highlands Region including, but not limited to, additional appropriations under the Federal Highlands Conservation Act (HCA). 4. An ongoing program to seek funding for land acquisition and stewardship from unique sources such as gifts, endowments and donations, and federal and state court-imposed fines for natural resource damages. 5. A dedicated source of revenue for the preservation and stewardship of open space through a surcharge on public water supply system rates for any system that directly or indirectly relies on Highlands water resources for more than 5% of their annual needs. 6. A Highlands Conservation Trust to secure monies from alternate sources of funding to assist in land acquisition and stewardship. **Policy 1H6.** To support legislation to extend the dual appraisal methodology used by the Garden State Preservation Trust for lands in the Highlands Region beyond the June 30, 2009 expiration date to a minimum of five years beyond adoption of the RMP. **Policy 1J1.** To promote the creation of a Forest Preservation Easement Program for the Highlands Region, eligible for use through the SADC or the Green Acres Program. **Policy 1N1.** To develop innovative financing and administrative mechanisms for the maintenance and operation of public and private dams and lakes, where those dams and lakes provide a continuing public or private purpose. ***Objective 2B5a.*** Coordinate with NJDEP to encourage water conservation, reuse, recycling, and other related measures and mitigation for water distribution system losses both in Highlands municipalities and in municipalities supplied with Highlands water. ***Objective 2B6b.*** NJDEP Water Allocation decisions and Highlands Project Reviews shall ensure that any new or increased water allocation permits within the Highlands Region are in conformance with the policies and objectives of the RMP and do not result in significant reductions in safe yields for any water supply facility with an existing water allocation permit and the NJDEP-approved safe yield.

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RMP Policies and Objectives Addressed (continued)	**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. **Policy 2F2.** To coordinate with NJDEP regarding a unified water quality assessment and the development and implementation of Total Maximum Daily Loads (TMDLs), where necessary, for all surface waters within the Highlands Region. **Policy 2F3.** To coordinate with NJDEP regarding a unified ground water quality assessment, monitoring, and attainment program. **Policy 2F4.** To coordinate with NJDEP regarding efforts to monitor areas of known contamination to ground water resources within the Highlands Region and activities to remediate and restore water quality. **Policy 2F5.** To coordinate with NJDEP and other agencies to identify impairments and implement improved regulatory actions and management practices that will also support the water quality goals of the Highlands Act. ***Objective 2H1a.*** Coordinate with NJDEP to establish and maintain an inventory of Wellhead Protection Areas in or affecting the Highlands Region. ***Objective 2J8b.*** Coordinate with NJDEP, water purveyors, and water utilities to ensure that service areas and franchise areas are supplied by and consistent with sustainable yields from their designated sources. ***Objective 2K3a.*** Areawide WQMPs, including WMPs and project-specific amendments, shall be examined for consistency with requirements of this Plan. The Highlands Council shall prepare and transmit to NJDEP consistency determinations for these amendments prior to the NJDEP decision in accordance with N.J.A.C. 7:38-1.1 and N.J.A.C. 7:15. ***Objective 3A7a.*** Coordinate with the NJDEP State Forester and conservation experts to provide guidance for the development of Forest Management Plans that improve the maintenance of ecosystem and water resource values of the Highlands Region. **Policy 3B4.** To support incentives and funding opportunities for the control of invasive species, white-tailed deer reduction programs, and the water value of well-managed agricultural lands. **Policy 3D1.** To work with the SADC and the GSPT to establish incentives for any landowner in the Highlands Region seeking to preserve land under the farmland preservation program that would be provided in exchange for the landowner agreeing to permanently restrict the amount of impervious surface and agricultural impervious cover on the farm to a maximum of 5% of the total land area of the Farm Management Unit. **Policy 4A6.** To coordinate the Highlands Council's activities with regard to the historic sites/districts and cultural resources with the New Jersey Historic Trust and the SHPO. **Policy 5C8.** To evaluate the existing and proposed Residential Site Improvement Standards (RSIS) in the context of the RMP and develop recommendations for amendments that would minimize detrimental environmental impacts resulting from new residential developments while maximizing utility efficiency in a manner that addresses community and landscape character.

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RMP Policies and Objectives Addressed (continued)	***Objective 6K1a.*** Establish interagency teams as necessary to support and expedite redevelopment and development activities that conform to the Plan. ***Objective 6K1b.*** Encourage and support the use of planning and financing tools that are available through state agencies and programs for appropriate redevelopment. ***Objective 6M1a.*** Coordinate with NJDEP on Highlands Brownfield designations and in support of a mechanism that facilitates remedial activities within the Highlands Region. ***Objective 6O1b.*** An interagency partnership with the COAH in support of the achievement of both the resource protection requirements of the RMP and the municipal constitutional obligation, in "growth areas," to provide a realistic opportunity for the construction of a fair share of affordable housing for low and moderate income households. **Policy 7E4.** The Highlands Council shall seek and support priority allocation of available State and federal funding for Highlands municipalities which have established TDR Receiving Zones for HDCs. **Policy 8A3.** To identify and pursue state and federal programs that offer financial and/or technical assistance for sustainable economic development in the Highlands Region. ***Objective 8B1a.*** Coordinate activities with the NJDA and other entities to maximize the potential benefits of existing programs that sustain agriculture. ***Objective 8B2a.*** Coordinate activities with the NJDA and other entities to ensure a sustainable agricultural industry and agricultural operations that improve farm incomes and the long-term viability of farming. **Policy 8C5.** To advocate for state and federal funding of recreation and tourism initiatives in the Highlands Region. **Policy 9A4.** To encourage and support state and federal air quality monitoring for the Highlands Region and regulatory action to reduce levels of air pollutants including but not limited to: ozone, carbon dioxide, sulfur compounds, volatile organic compounds, methane, and fine particulate matter pollutants in the Highlands Region. **Policy 9A6.** To support State and federal initiatives that will reduce air pollution emanating from power plants, incinerators, and landfills within and affecting the Highlands Region and particularly in Warren County due to out-of-State power plant air pollution. **Policy 10A1.** To ensure that programs and policies are effectively coordinated to promote the purpose and provisions of the RMP, through efforts with all levels of government, including local, county, regional, State, and federal agencies.
Creation of Interagency Committees	The Highlands Council will work with State and federal agencies as needed to develop Interagency Teams to assist in implementation of the RMP. The Interagency Teams will reflect the multiple modes of coordination that are required and will change as needed, based on the nature of the issues at hand. The Interagency Teams may address critical coordination measures such as environmental review procedures, land use regulation, affordable housing, land acquisition, agriculture, Brownfields, TDR, historic and scenic resources, transportation, and Smart Design practices. The Teams will serve in support of RMP policies, Plan Conformance reviews, and Project Reviews and will act as technical and planning partners in the implementation of RMP policies. The role of Interagency Teams is to provide local and regional support to all stakeholders on issues and concerns of the Highlands Region.

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Coordination with Regional Agencies	The Highlands Council will establish or enhance regular lines of communication and exchange technical information with representatives of the Federal Highlands Region in Connecticut, New York, and Pennsylvania. The Council will also ensure consistent coordination with relevant federal departments and agencies including the United States Departments of Agriculture (including the Natural Resources Conservation Service [NRCS]), Interior, Commerce, Transportation, and Defense and the Environmental Protection Agency, as well as any federal departments and agencies that engage in activities that affect the Highlands Region. The Council will maintain a liaison with each federal department or agency that administers or funds programs that affect the use of lands or protection of resources in the Highlands. These coordination efforts will encourage each federal entity to rely upon the RMP when their actions or decisions about programs, projects, or funding have the potential to affect the Highlands Region.
Coordination with State Agencies	The Highlands Council will ensure consistent ongoing coordination with State agencies and between the Council and NJDEP. The Council will work with NJDEP to actively encourage use of the RMP as the basis for establishing regulatory thresholds and standards. The Council will also work with NJDEP to develop a coordinated land use permitting strategy for lands subject to the NJDEP's Highlands Rules and the RMP's Preservation Area requirements. In addition, the Council will develop a process to ensure consistent coordination with the New Jersey Departments of Agriculture, Law & Public Safety, Community Affairs (including the Office of Smart Growth and the Council on Affordable Housing), Education, Health and Senior Services, Treasury and Transportation, and the New Jersey Commerce, Economic Growth and Tourism Commission on issues appropriate to each of their jurisdictions. In order to aid municipalities where they seek appropriate opportunities for development, redevelopment and preservation within the Highlands Region, the Council will coordinate with the Economic Development Authority, New Jersey Redevelopment Authority, the Housing and Mortgage Finance Agency, the New Jersey Environmental Infrastructure Trust, the New Jersey Historic Trust, and the Garden State Preservation Trust to facilitate funding and to institute policies that help to implement the RMP. To help ensure that new infrastructure and State funded public development is guided to appropriate locations in the Highlands Region, the Council will work with the Board of Public Utilities, New Jersey Transit, the New Jersey School Construction Corporation, Department of the Treasury, New Jersey Building Authority, and the North Jersey Transportation Planning Authority.
Specific Coordination with State Planning Commission	The Highlands Council will take the following steps related to the State Development and Redevelopment Plan, consistent with its Memorandum of Understanding with the Office of Smart Growth and the State Planning Commission: • Within 60 days of adoption of the RMP, the Council will, as required by the Highlands Act, submit the RMP to the State Planning Commission for Plan Endorsement for the Planning Area of the Highlands Region; • Coordinate with the State Planning Commission to clarify the policies and use of the State Development and Redevelopment Plan and Map and the Highlands RMP and Land Use Capability Map; • Maintain a cooperative planning process with the State Planning Commission to reconcile conflicting land use policies that municipalities may encounter when seeking Plan Endorsement by the State Planning Commission or Plan Conformance by the Highlands Council;

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Specific Coordination with State Planning Commission (continued)	• Coordinate with the State Planning Commission to ensure the sharing of all reports, petitions, recommendations and/or reviews generated for the State Plan Cross Acceptance and Plan Endorsement processes by Highlands municipalities and counties as well as those prepared as part of the Highlands RMP and Plan Conformance process with local Highlands governments; • Streamline the State Plan and Highlands processes for municipalities and counties by providing for simultaneous agency reviews as well as joint meetings, whenever possible; • Coordinate with the State Planning Commission to ensure consideration of any written comments provided by the Council concerning petitions before the Commission prior to any action approving, rejecting, or approving with conditions the petition for Plan Endorsement; and • Coordinate with the Department of Community Affairs' Office of Smart Growth to ensure the sharing of all relevant documents and data concerning the review and coordination of State infrastructure capital investment, community development, and financial assistance for local governments with lands in the Planning Area.
Specific Coordination with Regional, County, and Municipal Planning Agencies	The Highlands Council will ensure consistent, ongoing coordination with regional, county, and municipal planning agencies in support of Plan Conformance and State agency coordination. The Council will work with these agencies to allow for coordination and consistency in support of county and municipal planning, project reviews, and long term planning and funding programs. With particular reference to agriculture, these will include County Agriculture Development Boards, County Soil Conservation Districts, and Rutgers Cooperative Extension Service. The regional and county planning agencies serve as a critical interface between State, regional, and local knowledge to ensure that RMP policies and initiatives are coordinated throughout the Region. The data sharing and management practices with regional, county, and municipal planning agencies will continue to be refined and enhanced to ensure that timely updates are achievable, quality assurance measures are in place, and innovative approaches may be realized.

SUBPART E LOCAL PARTICIPATION

Issue Overview	The local participation requirements in the Highlands Act call 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)). This includes the establishment of opportunities for public input in the regional planning process, including coordination with county and local governments, stakeholders and the general public. Section 6 of the Highlands Act additionally authorizes the Council: *j. To appoint advisory boards, commissions, councils, or panels to assist in its activities, including but not limited to a municipal advisory council consisting of mayors, municipal council members, or other representatives of municipalities located in the Highlands Region; and* *k. To solicit and consider public input and comment on the council's activities, the Regional Master Plan, and other issues and matters of importance in the Highlands Region by periodically holding public hearings or conferences and providing other opportunities for such input and comment by interested parties.*

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Issue Overview (continued)	Local participation is a critical aspect of any planning process and has been a priority for the Highlands Council in the development of the RMP. This type of public participation is frequently used in land-use planning in order to involve citizens in the decision-making process, enhance outcomes, and establish a better sense of stewardship. Moreover, citizen participation may add knowledge to the planning process regarding local conditions, needs, and concerns that might otherwise go unaddressed. To be successful, specific public participation strategies should be tailored to the needs of the individual planning effort and the relevant stakeholder groups. The Highlands Council has used a multi-faceted approach to involve stakeholders and interest groups in the development of the RMP. The Council will continue to encourage and enhance local participation in the implementation and refinement of the RMP, which in turn will enhance and maintain the natural, cultural, and economic resources of the Highlands Region for years to come.
Program Summary	The Local Participation Component provides for a variety of approaches to meet the requirements of the Highlands Act. Various outreach and communication efforts have taken place since the adoption of the Highlands Act. Since its inception, the Highlands Council has coordinated outreach programs and events for a variety of audiences. The overall effort can be categorized into three separate programs: the Partnership, the Technical Advisory Committees (TACs), and the Network. The approaches that the Highlands Council uses to deliver information to the public and addresses constituent matters include: regular public meetings, public presentations, and the provision of individual outreach and constituent services. The Highlands Council website will continue to serve as a communication tool one that reduces the need for physical production, distribution, and packaging of Highlands Council documents. The Highlands Council has taken advantage of a variety of outreach approaches in order to provide details regarding the RMP, disseminate technical information, address individual comments and concerns, and meet the constituents of the Highlands Region. The Council operates in a transparent environment and will continue to promote and maximize public participation and stakeholder involvement. The existing outreach components will continue to be utilized to encourage local participation. Additional strategies will include the development of training and educational programs on various subjects, resources and technical support on specific issues, and assistance in coordinating with other government entities in promoting regional goals. To promote understanding and support for the various RMP policies and objectives at the local level, and in support of Plan Conformance, the Highlands Council shall take actions that include the following: **Resource Protection** • Develop or utilize existing educational programs on water conservation measures to reduce consumptive and depletive uses of water supplies; • Develop or utilize existing training and educational programs on methods for incorporating water capacity thresholds into land use decision-making; • Provide educational and technical training programs to promote understanding and implementation of consistent standards for the protection, restoration, and enhancement of Prime Ground Water Recharge Areas; • Provide educational and technical training programs on Prime Ground Water Recharge Area protection measures applicable through municipal planning, zoning, and land use regulation;

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Program Summary (continued)

- Provide training and educational programs on ground water and surface water quality protection and restoration methods;
- Develop a training and educational program on concepts, approaches, and methods to achieve wellhead protection;
- Develop training and educational programs on septic system design and maintenance and the protection of water quality;
- Review information with counties and municipalities regarding areas of ground water quality impairment known to exist, or that are suspected to exist (e.g., lake communities with failing septic systems, public community water systems) and determine how best to protect or restore these resources;
- Develop educational and technical training programs to promote consistent standards for the protection, restoration, and acquisition of important waters and riparian areas of the Highlands Region;
- Develop educational and technical training programs on resource protection standards, restoration and mitigation practices, and Low Impact Development Best Management Practices to minimize impacts from land development activities on Highland Open Waters and Riparian Areas;
- Coordinate with municipal Environmental Commissioners and watershed organizations to encourage a comprehensive stream monitoring and riparian area assessment program within the Highlands Region;
- Develop an educational program on methods to identify and protect steep slopes;
- Develop an educational program on methods to develop a forest stewardship plan;
- Establish an educational program on sustainable forest management practices;
- Educate the public on the ecological, economic, cultural and recreational value of maintaining healthy forests in the Highlands Region; and
- Develop educational program on methods to develop Critical Habitat Conservation and Management Plans.

Land Preservation

- Educate the public on the economic, cultural, and resource value of preserved open space in their communities;
- Assist municipalities and counties in gathering open space information in order to update and track existing data; and
- Develop educational and technical assistance on funding opportunities for land preservation, restoration and enhancement, and stewardship activities within the Highlands Region.

Agricultural Sustainability

- Develop educational and technical training programs to promote a viable and environmentally sustainable agricultural and horticultural industry in Highlands communities and in the Region overall;
- Educate the public on the economic, cultural, and resource value of maintaining a viable and environmentally sustainable agricultural and horticultural industry in the Highlands; and
- Promote, establish, and use a Municipal Agricultural Advisory Committee as a resource to meet the goals of the RMP.

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Program Summary (continued)

Historic, Cultural and Scenic Resources

- Provide educational and technical assistance to municipal and county officials regarding methods to identify and preserve the historic, cultural, and scenic resources of their communities; and
- Provide assistance to counties and municipalities interested in developing a heritage tourism program, to complement historic preservation and/or recreation planning efforts.

Future Land Use

- Develop educational and technical training programs for innovative/alternative development and redevelopment initiatives in support of the RMP's policies for development, infill development, and redevelopment;
- Support stakeholder understanding of the need to incorporate smart growth principles in development and redevelopment planning efforts in order to protect and restore resources and create parks and green spaces, while at the same time providing opportunities for housing, employment, and maximum use of high-efficiency modes of transportation;
- Support economic improvement of the Highlands Region through development and redevelopment initiatives that balance housing, employment, and quality of life;
- Provide programs and materials to educate stakeholders regarding the vast array of affordable housing options;
- Provide educational programs regarding residential green building features and rebates available for utilizing energy efficient construction elements for new development and home renovations; and
- Provide educational opportunities for Highlands Region stakeholders to learn about innovative design concepts related to natural resource protection, smart growth principles, green building practices, and other strategies to enhance quality of life in the Highlands.

Water Resources and Utilities

- Develop educational programs on water conservation, Low Impact Development, recycling, and re-use measures and methods to reduce demand on existing water supplies;
- Develop training and educational programs for municipal utilities and public works departments to identify the adequacy or limitations of infrastructure for existing and future demands;
- Develop educational programs on water conservation, recycling, and re-use measures and methods to control infiltration and inflow to maximize available wastewater treatment capacity; and
- Develop a training and educational program for municipal and county planning boards and environmental commissioners on methods for using the RMP to revise and develop Wastewater Management Plans and in support of wastewater system maintenance.

Transportation System

- Provide resources, technical support, education, and outreach in order to implement the RMP transportation, transit, and related air quality protection policies.

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Program Summary (continued)	**Recreation and Tourism** • Assist with tourism inventories to identify both public and private tourist attractions, such as historic, cultural, scenic, and recreation opportunities, as well as facilities to support tourism, such as bed and breakfasts, inns, restaurants, bicycle rentals, and provisioners of outdoor equipment; and • Assist municipalities in working cooperatively with counties and neighboring towns to approach tourism from a regional perspective. **Land Owner Equity** • Provide detailed guidance on Highlands Exemptions and Waivers; • Provide public outreach and education for the Highlands TDR Program; • Establish a process for designating voluntary receiving zones within the Highlands Region and the seven Highlands counties, which process shall allow for significant public input; and • Develop and implement a Voluntary TDR Receiving Zone Feasibility Grant Program to encourage and support municipalities interested in identifying and evaluating opportunities to create TDR Receiving Zones. **Regional Economic Sustainability** • Provide a summary of the Cash Flow Timetable to the public on a periodic basis informing constituents regarding progress and expenditures related to implementation of the RMP • Assist municipalities in maximizing the efficiency of land development practices and opportunities for economic development and redevelopment in support of a sustainable regional economy. **Conformance and Implementation** • Assist municipalities, counties, and stakeholders in understanding the nature and extent of Plan Conformance and Project Review requirements.
RMP Policies and Objectives Addressed	**Policy 10A1.** To ensure that programs and policies are effectively coordinated to promote the purpose and provisions of the RMP, through efforts with all levels of government, including local, county, regional, State, and federal agencies. **Policy 10A2.** To ensure sufficient local participation in the development of the RMP and ongoing work of the Highlands Council. ***Objective 10A2a.*** Engage stakeholder groups and individuals in public participation opportunities that provide meaningful input in the Highlands Council planning process. **Policy 10A3.** To ensure maximum RMP Conformance by municipalities and counties to achieve the highest level of protection for all important natural systems and resources of the Highlands. ***Objective 10A3a.*** Provide benefits and incentives to municipalities and counties that conform to the RMP.

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Partnership Program	The Partnership is a consortium of government representatives of the 88 municipalities and seven counties of the Highlands Region. It was formed to provide a forum for disseminating information on the RMP and implementation process, as well as to create a direct line of communication between the Highlands Council and its constituent governments. This program was created to make certain that local and county representatives and officials continue to have an active role in shaping the future of their communities. Representatives of the constituent towns and counties provided information on local issues and planning efforts that related to elements of the RMP. Subjects of importance were identified and prioritized based on feedback from local and regional officials, including environmental protection, open space and land preservation, agriculture and forestry, economic development, tax ratables, affordable housing, infrastructure capacity, transfer of development rights, developing model ordinances, and potential legal issues and challenges. Partnership meetings also took place with Highlands municipalities on an individual basis. Workshops, luncheons, and other meetings were also held with municipal representatives. The Council adopted data-sharing agreements with all seven Highlands Region counties in order to facilitate the production of the RMP. These agreements allow the Council to collect and share data, such as parcel data, which will be helpful to other agencies and the individual municipalities. These agreements facilitate contact between the Council and the seven counties and assist the Council and staff in creating a sound, data-rich plan. The data sharing agreements will provide updated information and resources on a continual basis. This process will benefit the participating entities as well as the Council. The Council will conduct constituent forums in support of the RMP and stakeholder understanding. In addition, it will provide education and training sessions covering a variety of topics integral to RMP implementation, including natural resources, housing, economic development, land stewardship, innovative technologies, and waivers and exemptions.
Technical Advisory Committees	The Technical Advisory Committees (TACs), consisting of technical experts and practitioners from a variety of relevant fields, including but not limited to planning, science, engineering, agriculture, transportation, real estate appraisal, and business, were convened to serve as resources to the Council and Highlands Council staff on specific subject matters. This outreach program was developed by the Highlands Council in order to gain a range of expertise in areas related to the development of the RMP. The 18 committees focused on subject matters that the Highlands Act mandated the Council to address as part of the RMP. Topics included water resources; land use planning; ecosystem management; land preservation; green construction; sustainable agriculture and forestry; eco-tourism; recreation; housing; community investment; regional development; brownfields; redevelopment; transportation; cultural, historic, and scenic resources; utility capacity; and transfer of development rights. The TACs, acting in the capacity of "volunteer consultants," met to discuss and provide input on individual issues pertinent to development of the RMP. Where information pertaining to the scientific and technical basis for sections of the RMP was at issue, TAC members exchanged expert opinions with Highlands staff and offered a course of action for each topic. A two-day workshop forum (or charrette) was held by the Highlands Council to allow Highlands Council staff and TAC participants to freely discuss and consider a spectrum of approaches and strategies for addressing the goals of the RMP.

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Technical Advisory Committees (continued)	The Highlands Council plans to continue outreach with specific TACs, particularly in the development of the TDR Program and economic development and redevelopment initiatives. This process will allow the Highlands Council to gain different perspectives and will keep the TAC members informed of the Highlands Council's program approaches. In some cases, multiple TACs will be combined to improve the effectiveness and efficiency of the process. The number, focus, membership, and meeting schedule for TACs will vary over time based on Council information needs.
The Network	The Network was created in order to open the door to stakeholders, including the general public, to share information about progress on the RMP, gain local insight and comments on significant issues, address individual questions of concern, host special stakeholder events, conduct public information sessions, and provide web access. To address stakeholder concerns, the Council has provided programs to inform citizens and business interests about the process surrounding the RMP and accept comments on any issues that arise. The Council has participated in constituent meetings and responded to inquiries, whether made in person, or by telephone, e-mail, or letter. Highlands Council staff members have also made numerous presentations to municipal boards, commissions, and committees, to interest groups, and at various conferences on planning and the environment. Several times throughout the planning process, the Council proactively reached out to the Network in order to provide notice of the availability of new and updated information in the form of draft RMP data releases. Repositories containing hardcopies of the RMP are be located at county libraries, several local libraries, and community colleges in order for the public to have enhanced public access to the documents for review. Currently, a repository for all hardcopy data released exists at the Highlands Council Headquarters in Chester, New Jersey and is available for public viewing upon request. The Highlands Council will continue outreach to the general public in order to inform the conformance process and implementation of the plan as well as to benefit stakeholders.
Regular Public Meetings and Presentations	The Highlands Council meets on a regularly scheduled basis at the Highlands Council Office in Chester, New Jersey. Committees of the Council meet on an as-needed basis. These meeting forums are open to the public and include opportunities for public comment. In fulfillment of the requirements of the Highlands Act, the Council held numerous hearings regarding the draft RMP to receive public comments, and also held Council meetings in each of the seven constituent counties to inform the public about the goals of the Highlands Council. The Council also provides information to the public about a variety of topics related to the RMP at public meetings of its constituent municipalities and counties. Local concerns and comments are received at these meetings and will continue to be addressed on an individual basis.

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Individual Outreach and Constituent Services	Outreach is also provided by the Highlands Council on a case-by-case basis. Beyond the larger meeting forum, citizens may have general concerns, questions, or request a follow-up after Highlands Council meetings by either visiting, writing to, or calling the Council offices. Depending on the subject matter and availability of information, Highlands Council staff will offer an immediate response or acknowledge the request and provide a reply within a reasonable timeframe. Additionally, the Council is bound by the Open Public Records Act (OPRA) and has an established procedure for responding to requests submitted via this procedure. The Highlands Council staff is also available to meet with representatives of constituent municipalities and counties regarding aspects of the Highlands Act, the RMP and Plan Conformance process, and any local concerns or information that these entities may wish to bring forward. There have been numerous meetings organized and/or attended by Highlands staff to interact and engage with property owners to provide specific information related to individual properties. Meeting handouts and other written documents have been prepared and distributed in an effort to educate the general public about the Highlands Region, the role of the Council, the RMP, and NJDEP's Highlands Preservation Area Rules. Highlands Staff will continue to provide this important outreach component to individuals and organizations in need of such assistance.
Special Stakeholder Events	Open meetings and special events geared toward addressing individual topics and/or stakeholder groups are another avenue for disseminating information to groups of constituents. This format was employed to inform Highlands landowners, particularly those in the Preservation Area, about the Highlands Act in order for them to make educated decisions regarding the future of their land. The "Landowner Forum" convened early in the RMP development process, provided this special stakeholder group important information about landowner rights and available options. More than 100 participants attended the forum which included presentations by Highlands Council staff, the SADC, and NJDEP's Green Acres Program. The public was afforded the opportunity to meet with the various state, county and non-profit land preservation entities, including Morris Land Conservancy, Trust for Public Land, New Jersey Conservation Foundation, Association of New Jersey Environmental Commissions, Passaic River Coalition, Hunterdon Land Trust Alliance, as well as representatives from Morris, Passaic, and Warren Counties to discuss preservation opportunities. Another special stakeholder event was a bus tour for Highlands Council members and staff to view a variety of farms in the region with members of the New Jersey Farm Bureau and Highlands farmers to learn about local farmers needs. Educational programs and technical training which will be developed as part of the plan implementation will be presented at the Highlands Office. The dates for these meetings are available at the Council's website.
Web Access and data sharing	The Highlands Council has maintained a website since shortly after adoption of the Highlands Act (http://www.highlands.state.nj.us/). The site contains document releases, maps, Frequently Asked Questions, legal requirements of the Act, and other information for stakeholders including the Council's calendar, agendas, meeting minutes, public comments, and press releases. Summary reports from the initial TAC meetings as well as the TAC Charrette Workbooks are available at the Highlands Council website. The Highlands Council website is a rich source of information, as many of the public releases and all relevant documents provided by the Council have been posted there, including the RMP.

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Web Access and data sharing (continued)	The "Stakeholder" page on the website provides specific information for many groups including homeowners, landowners, municipalities, counties, grassroots organizations, and farmers. A "hot topics" section contains timely issues and recent public information. There are also links to other State websites that deal with Highlands issues or that might affect the stakeholders in the Highlands Region. An important tool for stakeholders is the interactive mapping application which allows the public to determine if their property, by street address or specific block and lot designation, is in the Highlands Preservation or Planning Areas. The property search tool has been enhanced with Land Use Capability Zone Map data and Highlands resource data. It will continue to be improved as more information becomes available and as software capabilities expand.
Training and Education for Municipal and County Officials and Staff	The RMP includes requirements and recommendations for municipal and county implementation through the Plan Conformance process, many of which require specialized knowledge regarding technical, scientific and planning fields. The Highlands Council will prepare and provide technical training and education for elected and appointed officials and their staff to ensure that Plan Conformance activities are implemented with the greatest possible understanding of the issues, thus ensuring effectiveness and efficiency. In most cases, these training and education opportunities will be provided at the regional level, and may be provided in cooperation with professional and municipal organizations. See the *Local Participation Technical Report* for further details.

PART 2 Highlands Project Review

SUBPART A PROJECT REVIEW PROCESS

Issue Overview

Mike Anderson

The Highlands Council is legislatively charged with reviewing proposed projects throughout the Highlands Region, including both the Preservation Area and the Planning Area, for consistency with the goals, requirements, and provisions of the Highlands RMP. The Project Review responsibilities identified in the Highlands Act and specified through State agency coordination include the following:

1. Development applications submitted to Local Government Units;
2. Call-up of Local Government Unit approvals;
3. Capital, State and Local Government Unit projects;
4. Highlands Preservation Area Approvals (HPAA); and
5. Approvals, authorizations or permits issued by NJDEP.

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Issue Overview (continued)

Development Applications. Section 6.r of the Highlands Act identifies the specific responsibility to "comment upon any application for development before a local government unit, on the adoption of any master plan, development regulation, or other regulation by a local government unit, or on the enforcement by a local government unit of any development regulation or other regulation, which power shall be in addition to any other review, oversight, or intervention powers of the council prescribed by this act."

Call-up of Local Government Unit approvals. Section 17.a.(1) of the Act states that "[s]ubsequent to adoption of the regional master plan, the council may review, within 15 days after any final local government unit approval, rejection, or approval with conditions thereof, any application for development in the preservation area" with the ability to override the local decision of certain projects meeting the statutory criteria if inconsistent with the RMP. Within the Planning Area, the Council shall include as a condition of Plan Conformance, procedures for the Highland Council call-up of Local Government Unit approvals.

Capital, State, and Local Unit Projects. Section 16 of the Act states that, for certain types and sizes of projects, "the council may provide comments and recommendations on any capital or other project proposed to be undertaken by any State entity or local government unit in the Highlands Region."

Highlands Preservation Area Approvals (HPAA). The Highlands Act, in Sections 9 and 11, authorizes the Highlands Council to "identify areas in which redevelopment shall be encouraged" in the Preservation Area and "any areas identified for possible redevelopment pursuant to this subsection shall be either a brownfield site designated by the Department of Environmental Protection or a site at which at least 70% of the area thereof is covered with impervious surface." These Redevelopment Site Approvals would be reviewed and approved by the Highlands Council and then reviewed for consistency with NJDEP's waiver provisions in accordance with N.J.A.C. 7:38-6.

Approvals, authorizations, or permits issued by NJDEP. The NJDEP's Highlands rules (N.J.A.C. 7:38) also empower the Council to review and comment on proposed projects in the Region. The rules state that "for the planning area, when consistent with its statutory and regulatory authority, the Department shall not issue any approval, authorization or permit that the Department determines, in consultation with the Highlands Council, to be incompatible with the resource protection goals in the RMP…"(N.J.A.C. 7:38-1.1(h)). N.J.A.C. 7:38-1.1(i) states "In its review of permits or approvals under this chapter in the preservation area, the Department shall apply the standards of this chapter and those in the RMP, to be incorporated by reference in (l) below, when adopted by the Highlands Council. Where the Department, in consultation with the Highlands Council, determines there is an inconsistency in the standards, the Department shall apply the Regional Master Plan." As per N.J.A.C. 7:38-1.1(j), the NJDEP shall give great consideration and weight to the RMP, to be incorporated by reference in making permit decisions that: 1) provide relief from strict compliance with the standards of the applicable permit programs, such as making a determination of public benefit or hardship waiver from certain NJDEP permits; or 2) provide relief through the issuance of a HPAA with waiver.

Specifically, the rules at N.J.A.C. 7:38-1.1(k) require that NJDEP only approve a Water Quality Management Plan (WQMP) amendment after receiving from the Highlands Council a determination of consistency with the RMP, for both the Preservation and Planning Areas.

It is imperative to develop a comprehensive, coordinated system of project reviews to ensure that there is consistency and sufficient detail in review approach among different types of projects. Implementation of a detailed and comprehensive process will result in maximum efficiency, cost-effectiveness, and transparency and will serve as a mechanism to coordinate State agency reviews on projects requiring multiple permits.

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Program Summary	The purpose of this program is to establish administrative and procedural standards to facilitate accurate, comprehensive, and timely reviews of applications submitted to the Highlands Council. The procedures will be designed to provide accurate and complete information as a basis for Council determinations. The program will establish a process that is clear, transparent, and understandable to applicants, the Council, State agencies, and the public. The program has three principal components: • Administrative Review procedures to ensure that applications are processed and tracked and that the review process is efficient and transparent; • Technical Review procedures to ensure that technical reviews are accurate and consistent; and • Council Review procedures leading to a reasoned and transparent Council determination.
RMP Policies and Objectives Addressed	This program relates to most components of the RMP and their associated policies and objectives regarding technical standards and criteria for development and redevelopment project reviews in support of Highlands Act requirements.
Administrative Procedures	The Highlands Council will establish standard operating procedures regarding all project applications received. The Council will implement its filing system by project category (e.g., WQMP, Redevelopment, etc.), county and municipality. Following are the general elements that will comprise the administrative procedures process: • A system regarding the logging, tracking and filing of all applications; • A process of notifying the public regarding all pending reviews; • Procedures regarding pre-application meetings; • A process for determining if an application is administratively complete; • Appropriate permit fee schedules; • Review timeframes/schedules; • Procedures for public access to, and review of, applications; and • Procedures for establishing a service list for each application.
Technical Review Procedures	The Highlands Council will establish detailed technical review procedures for all project categories. Following are the general elements that will comprise the technical review procedures: • All applications must be submitted with sufficient information to allow a complete project review, including a GIS or AutoCAD site layout. Submittal of written and graphical information in electronic format will be required where the application was prepared in an electronic format; • All project reviews will utilize the standard RMP resource GIS layers; • All project reviews will utilize the standardized project review checklist; the checklist for a particular project category will be tailored as necessary to accommodate specific requirements (e.g., the 70% impervious surface determination for proposed redevelopment areas); • All WQMP reviews will be based upon information provided by the NJDEP or applicant on behalf of NJDEP, in addition to the Council's RMP resource GIS layers; • Based upon the GIS-layer review and the completion of the project review checklist, staff reviews will be summarized in a draft staff recommendation report; and • Applicants will be provided with the draft staff recommendation report and given an opportunity to provide comments.

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Council Review Determinations	Highlands Council staff will present a final staff report with recommendations to the Highlands Council to approve, deny, or approve with conditions. Approval of a proposed project is dependent on the demonstration that it is consistent with the goals, requirements, and provisions of the Highlands Act and the RMP. The Highlands Council shall provide an opportunity for public comment and then approve with conditions, or deny the application. Where a project is approved with conditions, the conditions shall be specified. Where a project is denied, the specific justification for denial shall be specified. The Highlands Council's final determination shall include written findings of fact and conclusions based thereon.

SUBPART B PROJECT REVIEW STANDARDS

Issue Overview	The purpose of this Project Review Standards Program is to summarize the technical standards for project reviews of applications submitted to or reviewed by the Council to ensure consistency with the goals, policies, objectives, program requirements, and other provisions of the RMP.
Program Summary	This program establishes the substantive standards for Highlands Council reviews of all applications submitted to, or reviewed by, the Council to ensure consistency with the RMP. The Highlands Council shall review projects against the RMP Goals, Policies, Objectives and standards. All project reviews will use the standardized Highlands Council project review checklist and the RMP resource GIS layers as follows: • Agricultural Resources; • Carbonate Rock; • Critical Habitat; • Forests; • Highlands Open Waters and Riparian Areas; • Historic, Cultural, Archaeological and Scenic Resources; • Prime Ground Water Recharge Areas; • Steep Slopes; and • Wellhead Protection Areas. In addition to the resource-based standards, this program also includes smart growth standards for requiring or encouraging development patterns in the Region that are consistent with existing infrastructure and land uses that discourage scattered piecemeal development patterns. The smart growth standards for project review will use a series of GIS data layers to support the evaluation. The data will be complemented by local and regional planning documents and land use policies to further inform the review. Where appropriate, standards for review have been developed to clarify the review process. The RMP smart growth data layers that support this analysis will be project specific based on the nature of the project and may include but are not limited to the following:

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Program Summary (continued)	• LUCM Series, including:
	  – Zone Map;
	  – Water Availability by HUC14 Subwatershed;
	  – Public Water Supply System Capacity and Existing Area Served;
	  – Public Wastewater System Capacity and Existing Area Served;
	  – Septic System Yield by HUC14 Subwatershed, Zone and Municipality;
	• Contaminated Sites data layer;
	• Developed Lands data layer;
	• Highlands Composite and Municipal Zoning;
	• Impervious Surface data layer;
	• Local Conditions Indicator data layers;
	• State Development and Redevelopment Plan Designated Centers;
	• Transportation and Transit data layer.

Project Review: Standard for Approval	The RMP and the Highlands Act include a number of project review policies and objectives that are mandatory for all, or for certain, classes of projects. They also encourage consideration of other concepts for improved land development. Each project reviewed by the Highlands Council will be judged against all mandatory requirements of the RMP and the Highlands Act. Each project reviewed by the Highlands Council will also be evaluated regarding non-mandatory components of the RMP and the Highlands Act to determine if the proposed project could be designed in a manner that better fulfills RMP goals and policies. The Council may approve a project that does not fully reflect the non-mandatory components if it meets the mandatory requirements, but may include with its approval any recommendations for consideration by local government units, the State, or other decision-making bodies for their consideration.
Forest Review Standards	The Highlands Act exempts forestry activities conducted in accordance with a Forest Management Plan (or an approved woodland management plan) approved by the State Forester. For non-exempt land uses, the RMP protects forests through standards applicable to the Region's most important forested areas (i.e., within the Forest Resource Area) and highest quality forests, and NJDEP standards that apply to forests in the Preservation Area. NJDEP review standards for proposed major Highlands developments in upland forested areas in the Preservation Area are in the Highlands Preservation Act Rules at N.J.A.C. 7:38-3.9. Applicants are required to identify all forest areas in existence on a lot as of August 10, 2004 as well as those forest areas that have been subsequently developed. Activities are prohibited that would result in disturbance to an upland forest located on a slope greater than 10%, except for certain linear development. An applicant must demonstrate that there is no alternative that would have less adverse impact on the upland forest or could be located outside the upland forest. Specific limits are applied to the protection of forest quality and extent, and also tree health where they may be affected by development activities. Through the RMP, human development in the Forest Resource Area in the Preservation Area is limited in order to protect and enhance forest resources, forest ecosystem integrity, Critical Habitat, and the quantity and quality of water resources. Permissible uses within the Forest Resource Area are limited to maintenance of pre-existing uses and restoration of impaired forest areas, where relief from strict adherence to these standards shall be permitted only upon approval of a forest mitigation plan.

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Forest Review Standards (continued)	The deforestation of lands within the Forest Resource Area of the Preservation Area for human development is prohibited except where exempted by the Highlands Act. The expansion or creation of public infrastructure into forested areas of the Forest Resource Area is prohibited except as shown to be necessary for, and is approved by, the Highlands Council through issuance of a waiver, and will maximize the protection of forest resources. Forest clear-cutting within the Forest Resource Area is prohibited except in accordance with a Forest Management Plan approved by the State Forester. Within the Protection and Conservation Zones in the Planning Area, human development of forests is limited to low impact residential development. Permissible uses within forested lands in High and Moderate Integrity Forest Subwatersheds are limited to: 1) maintenance of pre-existing uses; 2) removal of woody vegetation from forested lands, subject to an approved Forest Management Plan; or 3) development that utilizes Low Impact Development Best Management Practices and an approved forest mitigation plan. Redevelopment of previously developed areas (and other compatible uses) is permitted in forest lands within Low Integrity Forest Subwatersheds that minimize losses to forested lands and that are conducted in accordance with an approved forest mitigation plan or Low Impact Development Best Management Practices. Deforestation in the Forest Resource Area and forested lands within High Integrity Forest Subwatersheds within the Existing Community Zone is limited to the maximum extent practicable. The clearing of trees in conjunction with human development is limited to circumstances where the clearing will not diminish the integrity of forest resources. Applications for local development review and Highlands Project Review require identification of any forest area on and adjacent to a site in accordance with the Highlands Council's *Alternate Method for Identifying Upland Forest Areas in the Highlands Region*. Forestry activities within a Forest Resource Area or forested lands within a High Integrity Forest Subwatershed are allowed only when in compliance with an approved Forest Management Plan. Clear-cutting of forest lands is prohibited (except pursuant to an approved Forest Management Plan) to the extent necessary to promote native forest regeneration, early successional wildlife habitat, or to remove invasive species. Refer to the Forest Resource Management and Sustainability Program for additional project standards and criteria.
Highlands Open Waters and Riparian Areas Review Standards	All applications for approval through local development review and Highlands Project Review are required to include the identification and mapping of Highlands Open Waters. Preservation Area buffers for Highlands Open Waters shall comply with the Highlands Preservation Area rules at N.J.A.C. 7:38, which provide that all major Highlands developments are prohibited within Highlands Open Waters and its adjacent 300-foot buffer in the Preservation Area except for linear development, which may be permitted provided that there is no feasible alternative for the linear development outside the Highlands Open Waters or its buffer. Structures or other land improvements existing within a Highlands Open Waters buffer in the Preservation Area on August 10, 2004 may remain, provided that the area of disturbance is not increased other than through a Highlands Preservation Area Approval (HPAA). With respect to the Planning Area, the RMP provides a protection buffer of 300 feet from the edge of the discernable bank of the Highlands Open Waters feature, or from the centerline where no discernable bank exists.

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Highlands Open Waters and Riparian Areas Review Standards (continued)	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. 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 the Highlands Open Waters and resources of the buffer area. In the Protection and Conservation Zones of the Planning Area, proposed disturbances of Highlands Open Waters buffers shall only occur in disturbed areas, unless a waiver is granted by the Highlands Council. Such proposed disturbances must demonstrate full utilization of the following performance standards in the listed order, to demonstrate the necessity of an encroachment into Highlands Open Waters buffers: 1) avoid the disturbance of Highlands Open Waters buffers; 2) minimize impacts to Highlands Open Waters buffers; and 3) mitigate all adverse impacts to Highlands Open Waters buffers so that there is no net loss of the functional value of the buffer, in compliance with Objective 1D4h. Minimization and mitigation opportunities shall be considered only upon a clear and convincing demonstration by the applicant that the protection buffer cannot be avoided and in no case shall the remaining buffer be reduced to less than 150 feet from the edge of the Highlands Open Waters, unless a waiver is granted by the Highlands Council and the proposed disturbance complies with Objective 1D4c. In the Existing Community Zone of the Planning Area, proposed disturbances of Highlands Open Waters buffers shall only occur in previously disturbed areas, unless a waiver is granted by the Highlands Council and the proposed disturbance complies with Objective 1D4c. Such disturbances shall employ performance standards such that all proposed disturbances of Highlands Open Waters buffers shall employ Low Impact Development Best Management Practices to mitigate all adverse modification to Highlands Open Waters buffers so that there is no net loss of the functional value of the buffer, in compliance with Objective 1D4h. The Highlands Council may require, on a case-by-case basis, an expansion of the 300-foot buffer to protect the habitat of a water or wetlands-dependant rare, threatened or endangered species, to the minimum expansion necessary to achieve protection of that species. All applications for approval through local development review and Highlands Project Review are required to include the identification and mapping of Highlands Riparian Areas, including those identified by the Highlands Council and by site-specific analysis. Within High and Moderate Integrity Riparian Areas in any Land Use Capability Zone, beyond the Highlands Open Waters buffer, disturbance of existing natural vegetation or increases in impervious area will be limited to the minimum alteration feasible. In such cases, Low Impact Development Best Management Practices will be required.
Steep Slopes Review Standards	The RMP includes protection of steep slopes in each Land Use Capability Zone in both the Preservation and Planning Areas. Both local development review and Highlands Project Review will examine any Steep Slope Protection Areas located on the parcel proposed for development, forested lands, areas which are highly susceptible to erosion, depth to bedrock, and Soil Capability Classes. Disturbance of Severely Constrained Slopes (undeveloped areas with slope exceeding 20%, or slopes >10% within a Riparian Area) and Moderately Severe Constrained Slopes (forested slopes 15%-20% that is not within a Riparian Area) is prohibited. For other Steep Slopes, the use of Low Impact Development Best Management Practices is required for any land disturbance or human development.

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Steep Slopes Review Standards (continued)	For major Highlands development within the Preservation Area, the Preservation Area rules at N.J.A.C. 7:38-3.8 mandate that "a prohibition on development, except linear development for infrastructure, utilities, and the right-of-way thereof, provided that no other feasible alternative, as determined by the department, exists for the linear development, on steep slopes in the preservation area with a grade of 20% or greater, and standards for development on slopes in the preservation area exhibiting a grade between 10 and 20%" (N.J.S.A. 13:20-32j). NJDEP standards at N.J.A.C. 7:38-3.8 address development on slopes with a grade greater than 10% but less than 20% in the Preservation Area as follows: 1. If the steep slope is a forest, linear development shall be permitted if there is no feasible alternative for the linear development outside the steep slope; 2. If the steep slope is not a forest and the appropriate Soil Survey for the on-site soil series and percent slope states that the soil capability class of the soil is III or higher, or IIe or IIs, linear development shall be permitted provided that there is no feasible alternative for the linear development outside the steep slope; or 3. If the steep slope is not addressed by (1) or (2), major Highlands development shall be permitted provided the proposed development meets all other standards, and the applicant demonstrates that there is no other location, design and/or configuration for the proposed development that would reduce or eliminate the disturbance to steep slopes and still fulfill the basic purpose of the proposed development.
Critical Habitat Review Standards	In both the Preservation and Planning Areas, the RMP prohibits the direct impact of new human development or expansion or increased intensity of existing development within Critical Habitat. The indirect impact from any activity that is off-site, adjacent to, or within Critical Habitat that will jeopardize the continued existence of, or result in the likelihood of the destruction or adverse modification of Critical Habitat is prohibited except as permitted through the issuance of a waiver. Proposed disturbances shall employ Low Impact Development Best Management Practices to, in this order, 1) avoid the disturbance of Critical Habitat, 2) minimize impacts to Critical Habitat, and 3) mitigate all adverse modification to Critical Habitat so that there is no net loss of habitat value. Proposed disturbances must demonstrate compliance with performance standards that include a requirement and criteria for mitigation of disturbed Critical Habitat. For major Highlands development within the Preservation Area, the Highlands Preservation Act Rules at N.J.A.C. 7:38-3.11 state that the NJDEP shall not issue an approval unless it determines that the proposed activity will not jeopardize the continued existence of, or result in the likelihood of the destruction or adverse modification of habitat for, any rare, threatened or endangered species of animal or plant. Further the NJDEP shall not issue an approval unless the proposed activity would result in the minimum practicable degradation to a unique or irreplaceable land type (which includes vernal pools) on the site or within the immediate area of the proposed project. Refer to the Critical Habitat Conservation and Management Program for additional project standards and criteria.

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Carbonate Rock Review Standards	The RMP implements a Carbonate Rock (Karst) Topography Program in the Preservation and Planning Area to address the potential problems that are common to karst areas, such as sinkholes. Projects will be reviewed to determine if the sites are in, or drain to the Carbonate Rock Area. Project sites located within the Carbonate Rock Area must ensure that public health and safety is protected through site design and layout controls to avoid or mitigate hazards from karst topography, and ground water quality is protected from contamination that may penetrate the ground surface through karst features. Refer to the Carbonate Rock (Karst) Topography Program for additional project standards and criteria.
Prime Ground Water Recharge Review Standards	The RMP restricts 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. The RMP restricts development in Prime Ground Water Recharge Area unless the entire site is in such areas, or if necessary to prevent disturbance of Critical Habitat, Highlands Open Waters Buffers and Moderately and Severely Constrained Steep Slopes. 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 disrupted portion of the Prime Ground Water Recharge Area of the site as defined in Objective 2D3c, 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. The disruption of Prime Ground Water Recharge Area shall be minimized through the implementation of Low Impact Development Best Management Practices meeting the requirements of Objective 2D3a. The disruption of Prime Ground Water Recharge Area, after conformance with Objectives 2D4a, 2D4b and 2D4c is achieved, shall be limited to no greater than 15% of the Prime Ground Water Recharge Area on the site and shall be preferentially be sited on that portion of the Prime Ground Water Recharge Area that has the lowest ground water recharge rates and the lowest potential for aquifer recharge.
Agricultural Review Standards	The RMP requires that agricultural or horticultural development in the Preservation Area and the Planning Area which involves new agricultural impervious cover, since enactment of the Highlands Act, to the total land area of a Farm Management Unit (either individually or cumulatively) of greater than 3% but less than 9%, to develop and implement a Farm Conservation Plan. Further, the RMP requires that any agricultural or horticultural development in the Preservation Area and the Planning Area which involves new agricultural impervious cover (since enactment of the Highlands Act), to the total land area of a Farm Management Unit (either individually or cumulatively) of 9% or greater to develop and implement a Resource Management System Plan. Both the Farm Conservation Plan and the Resource Management System Plan shall be prepared by the USDA NRCS, TSP, appropriate agent, or NJDA staff, and approved by the local SCD. The NJDA has adopted rules at N.J.A.C. 2:92 "Agricultural Development in the Highlands," which provide details of these provisions. The RMP limits non-agricultural uses within the Agricultural Resource Area to those uses that support the preservation of farmland, avoid conflicts with agriculture, maintain, and enhance the sustainability and continued viability of the agricultural industry, protect Important Farmland Soils, and meet resource management and protection requirements of the RMP. The RMP requires that cluster or conservation design development proposed within an Agricultural Resource Area support the preservation of farmland, avoid conflicts with agriculture, maintain and enhance the sustainability and continued viability of the agricultural industry, protect Important Farmland Soils, and meet resource management and protection requirements of the RMP.

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Agricultural Review Standards (continued)	The RMP permits limited development, including family and farm labor housing, in Agricultural Resource Areas which are necessary to support the viability of the agricultural operation, in coordination with the NJDA and the SADC, and subject to compliance with the resource management and protection requirements of the RMP. The RMP requires that agricultural or horticultural development and agricultural or horticultural use be addressed, through Plan Conformance, in accordance with the Right to Farm Act, N.J.S.A. 4:1C-1, and in coordination with the NJDA, the SADC, and the County Agriculture Development Boards. The RMP also requires the provision of municipal and county development regulations through Plan Conformance that are consistent with the Right to Farm Act and necessary to address agricultural practices that pose a direct threat to public health and safety. Refer to the Agricultural Sustainability, Viability and Stewardship and Cluster Development/Conservation Design Development Programs for additional project standards and criteria.
Historic, Archaeological, and Scenic Resources Review Standards	Projects will be reviewed for a presence or absence determination regarding historic, archaeological and scenic resources. The project shall include the identification of any historic, archaeological or scenic resources in the Highlands Region which are listed on the Highlands Historic and Cultural Resource Inventory or the Highlands Scenic Resource Inventory that may be affected by the proposed development. In the Preservation Area, the project shall address the requirements of N.J.A.C. 7:38-3.10 for Historic or Archeological areas and N.J.A.C. 7:38-3.12 for Existing Public Scenic Attributes. If these identified historic, archaeological, and scenic resources are affected the project shall comply with minimum standards for the preservation of the affected resources including but not limited to the following: • To use the Secretary of the Interior's Standards for the Treatment of Historic Properties as the standard for municipal historic and cultural preservation review and include, at a minimum, the preservation, and re-use of historic structures; • To ensure that human development does not adversely affect the character or value of resources which are listed on the Highlands Scenic Resources Inventory; and • Require that development proposals identify measures considered and used to protect the integrity of historic, archaeological, and scenic resources and the integrity of their surroundings, and where appropriate, to address potential reuse and rehabilitation of historic structures. Refer to the Historic Preservation Program and Scenic Resource Program for additional project standards and criteria.
Smart Growth Review Standards	Smart Growth is a strategic approach that utilizes comprehensive planning to guide design, development, and revitalization of communities. Smart growth principles support sound land use decisions and serve as an advocate for informing future land management decisions that consider environmental protection needs in the context of efficient land development. In order to accommodate local and regional economic development of the Highlands Region, the RMP encourages growth to occur in locations that have limited environmental constraints, represent existing developed areas that have access to infrastructure, apply compact development concepts, and are in accordance with community character. The Highlands Act refers to the prohibition and limitation of construction and development within the Preservation Area and the revocation of water and sewer service areas that are not constructed, in support of this preservation goal.

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Smart Growth Review Standards (continued)

The Highlands Act recognizes the State Development and Redevelopment Plan goal to encourage development patterns that are consistent with existing infrastructure and compatible with historic and efficient land use development patterns, and discourage scattered piecemeal development patterns. Therefore infrastructure investments in the Highlands serve to support public health and safety, environmental resource protection and efficient land development in the context of local and regional conditions.

The Highlands Council will review proposed projects regarding the extent to which each addresses the following Smart Growth principles drawn from the Goals, Policies, and Objectives, some of which are further detailed in this document or additional RMP program documents.

- Project is designed in compliance with Land Use Capability Zone Map and other LUCM Series components regarding development yield, water availability, public water supply and wastewater system capacity, and general Zone standards (see Land Use Capability Analysis Program);
- Project is designed such that it would not increase pollutant loadings to waters for which TMDLs have been adopted by the NJDEP or for waters designated as impaired but lacking a TMDL. Project is in compliance with Lake Community Area standards for shoreline management, scenic features and water quality (see Lake Management Area Program);
- Project reflects developed land features, and the design and layout of the project complements surrounding land uses and community character and includes consideration of energy efficient features in site layouts and all structures;
- Project maximizes land use efficiency while protecting environmental resources and community character;
- Project has evaluated the non-developable portions of a parcel proposed for development for the purpose of satisfying on-site passive open space requirements and stewardship needs;
- Project complements local socio-economic needs and conditions for employment, quality of life and housing;
- Project supports the use of the HDCs (see Transfer of Development Rights Program);
- Project complies with existing municipal zoning where more stringent than the Land Use Capability Zone standards and RMP policies and objectives;
- Project demonstrates that public water and wastewater capacity is available where proposed for use, and that all required water use efficiency measures are included in the development design (see Water Use Efficiency Program);
- Project reflects septic system yield limitations at the subwatershed, Zone, and municipal level where septic systems are to be used;
- Project demonstrates that sufficient water availability exists for project needs, including HUC14 subwatershed, municipal, and other limitations (see Highlands Restoration: Water Deficits Program);
- Project complies with wellhead protection standards for all Tiers (see discussion below);
- Project meets required impervious surface standards as applicable for the Preservation Area in accordance with N.J.A.C. 7:38-3.5 Impervious Surfaces, Agricultural Resource Area, Conservation Zone, stormwater rules and Low Impact Development standards;

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Smart Growth Review Standards (continued)	• Project has addressed the minimum requirements for water conservation measures in site layout and structures, including but not limited to water efficient landscaping (including use of native and drought-tolerant plant species), rain collection systems, use of grey water, and water-efficient landscape irrigation (see Water Use Efficiency Program); • Project has addressed the minimum requirements for site-specific hydrologic studies including the identification of the velocity, volume and pattern of water flow into, through, and off of the parcel proposed for development; • Project supports transportation system preservation and promotes transit, multi-modal connections and pedestrian safety, and where appropriate reduces vehicle miles traveled (see Air Quality Program and Transportation Safety and Mobility Program); • The project has addressed the resource protection standards to provide for the protection of mobile and stationary air quality concerns as appropriate (see Air Quality Program); • Project supports local land use initiatives such as designated redevelopment area, urban enterprise zone or foreign trade zone or is within a Main Street Program, Special or Business Improvement District or Transit Village (see Redevelopment Program); • Project supports RMP policies for redevelopment and incorporates Highlands resource protection, utilities, transportation and local community character into redevelopment planning (see Redevelopment Program); and • Project supports local land use conditions such as developed areas of a Designated Center that is anticipated for growth due to local planning and infrastructure investments. Refer to the Smart Growth Manual, Transportation Program, Housing and Community Facilities Program, Redevelopment Program, Transfer of Development Rights Program, Sustainable Regional Economy Program, Air Quality Program, and the Land Use Capability Analysis Program for additional information regarding the smart growth project review standards and criteria.
Lake Management Areas	This program component seeks to protect, restore ,and enhance the water quality of Highlands lakes and to protect the unique character of Highlands lake communities. It facilitates land use and water resource planning on the basis of lake management tiers: • A Shoreland Protection Tier consisting of an area measured 300 foot perpendicular to the shoreline of the lake, or the first public road, whichever is closer to the shoreline; • A Water Quality Management Tier consisting of an area measured 1,000 foot perpendicular from the shoreline of the lake, including the Shoreland Protection Tier; • A Scenic Resources Tier consisting of an area measured 300 to 1,000 foot perpendicular from the shoreline of the lake, scaled based upon the view distance from the opposite shoreline, and determined through the size and layout of the lake, and the topography of the land area, with wider portions of lakes and greater topographic relief having longer view distances; and • A Lake Watershed Tier consisting of the entire land area draining to the lake. Projects must comply with all mandatory provisions of the Lake Management Area for each tier in which the project would be located. Project review standards for each lake tier are listed in the Lake Management Area Program.

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Wellhead Protection	The purpose of this program component is to establish resource protection measures to protect and enhance ground water and water supply resources within Wellhead Protection Areas consistent with the source water assessments for each water supply source and the RMP policies. New land uses are prohibited that have a significant potential to result in the discharge of pathogens (including but not limited to septic systems and engineered stormwater infiltration from surfaces with significant potential for contact with pathogenic contaminants) to ground water or to the land surface within a designated Tier 1 Wellhead Protection Area, such that they may degrade or contribute to the degradation of ground water quality. New land uses are prohibited that have a significant potential to result in the discharge of persistent organic chemicals (including but not limited to discharges of industrial or other non-sanitary wastewater effluent) to ground water or to the land surface within a designated Tier 2 Wellhead Protection Area, such that they may degrade or contribute to the degradation of ground water quality. New land uses in a Tier 3 Wellhead Protection Area must ensure that pollutant discharges to ground water are either regulated pursuant to a NJPDES permit or meet the Land Use Capability Zone requirement for septic system yields without clustering. Where a new land use in Tier 3 includes the storage or use of persistent organic chemicals and other toxic substances but does not propose a discharge of such substances, the land use must include measures to minimize the potential for discharge, and to respond to any discharge that does occur.
Public Water Supply Systems	The purpose of this program component is to ensure that the service areas of Highlands Public Community Water Systems shall be limited such that the maximum monthly demand shall not exceed or contribute to an exceedance of the water availability of its source waters (see Land Use Capability Analysis Program and Highlands Restoration: Water Deficits Program). New, expanded, or extended public water systems in the Preservation Area are prohibited unless approved through a Highlands Applicability Determination or a Highlands Preservation Area Approval with waiver pursuant to N.J.A.C. 7:38. For the Planning Area, new, expanded, or extended public water systems in the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones are prohibited unless they are shown to be necessary for and are approved though a waiver or cluster development by the Highlands Council. In the Existing Community Zone of the Planning Area (other than the Environmentally-Constrained Sub-zone), the expansion or creation of public water systems is allowed, to serve lands which are appropriate for designated TDR Receiving Zones, infill or redevelopment, to meet needs and protection requirements equivalent to Objective 2J4a within the Existing Community Zone, or to serve new areas for development that meet all other requirements of the RMP. New residential development served by new extensions of public community water systems shall have a minimum density of 1/2 acre per dwelling unit for the developed part of the site (i.e., not including wetlands, open water buffers, recreational or other preserved open space), and be at a minimum intensity of a floor area ratio (FAR) of 0.84 for the developed part of the site (i.e., not including wetlands, open water buffers, recreational or other preserved space) to ensure cost-effective utility service. Refer to the Water and Wastewater Utilities Program for additional project standards and criteria.

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Wastewater Management Infrastructure	New, expanded, or extended public wastewater collection and treatment systems and community on-site treatment facilities in the Preservation Area are prohibited unless approved through a Highlands Applicability Determination or a Highlands Preservation Area Approval with waiver pursuant to N.J.A.C. 7:38. For the Planning Area, new, expanded, or extended public wastewater collection and treatment systems and community on-site treatment facilities in the Protection Zone, the Conservation Zone, and the Environmentally-Constrained Sub-zones are prohibited unless they are shown to be necessary for and are approved through a waiver or cluster development by the Highlands Council. In the Existing Community Zone of the Planning Area (other than the Environmentally-Constrained Sub-zone), the expansion or creation of public water systems is allowed, to serve lands which are appropriate for designated TDR Receiving Zones, infill or redevelopment, to meet needs and protection requirements equivalent to Objective 2J4a within the Existing Community Zone, or to serve new areas for development that meet all other requirements of the RMP. The RMP requires that new residential development served by new extensions of public wastewater collection and treatment systems be at a minimum density of 1/2 acre per dwelling unit for the developed part of the site (i.e., not including wetlands, open water buffers, and recreational or other preserved space). Further, it is required that new non-residential development served by public wastewater collection and treatment systems be at a minimum intensity of a floor area ratio (FAR) of 0.84 for the developed part of the site (i.e., not including wetlands, open water buffers, recreational or other preserved space) to ensure cost-effective utility service. Refer to the Water and Wastewater Utilities Program for additional project standards and criteria.
Septic System Densities	Development proposals in conforming municipalities shall comply with municipal requirements for septic system yield where septic systems are proposed (see Land Use Capability Analysis Program). For development proposals in non-conforming municipalities, the project shall demonstrate compliance with the appropriate nitrate target for the Land Use Capability Zone in which the project occurs, using the project site area as the land basis, and drought ground water recharge for the HUC14 subwatershed as dilution: 1. Preservation Area: NJDEP requirements at N.J.A.C. 7:38; 2. Planning Area, Existing Community Zone: 2 mg/L; 3. Planning Area, Conservation Zone: 1.87 mg/L; and 4. Planning Area, Protection Zone: 0.72 mg/L. New residential development using septic systems where lot-size averaging, clustering, or open space subdivision design techniques are employed shall have a gross density (for all parcels involved in the development proposal) based on the nitrate dilution target appropriate for the Land Use Capability Zone, provided that the density for the developed portion of the site is based on a nitrate dilution target not to exceed 10 mg/L. All new residential development using septic systems, and especially clustered development with septic systems, shall be designed in a manner that minimizes the risk of well contamination due to the flow of septic system plumes within or between developed lots, addressing general ground water flow patterns, major fracture systems and other appropriate geological, geophysical and hydrogeological issues, and well construction.

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Highlands Redevelopment Area Reviews	The Highlands Council may designate one or more properties or portions of properties as a Highlands Redevelopment Area providing that the site satisfies the requirements of the Highlands Act and RMP. Proposed Highlands Redevelopment Areas will be reviewed to ensure that for the Preservation Area the site is a either a Redevelopment Site with at least 70% of the area covered with impervious surface as that term is defined in N.J.A.C. 7:38-1.4 or is a Designated Highlands Brownfield Sites pursuant to N.J.A.C. 7:38-6.6. For the Planning Area in the Protection and Conservation Zones, the Council will review proposed Highlands Redevelopment Areas to ensure that the site is a Redevelopment, Brownfield or Grayfield site. For the Existing Community Zone in the Planning Area, the Council will similarly review and approve proposed Highlands Redevelopment Areas for proposed redevelopments that are not in full conformance with the RMP; for conforming redevelopment, no designation is required. For all proposed Highlands Redevelopment Areas (all zones in both Preservation and Planning Areas), the project must be substantially consistent with the resource protection and smart growth standards of the RMP and there must be sufficient water supply and wastewater capacity to serve the proposed Highlands Redevelopment Area. Infill development may be included within Highlands Redevelopment Areas to the extent that the full area meets the applicable designation requirements. In general the Highlands Redevelopment Area must comply with the following: 1. Will not impair any Highlands Resource Area located on or adjacent to the Highlands Redevelopment Area; 2. Is consistent with the standards of the RMP and will advance the intent and purpose of the Highlands Act; 3. Has sufficient water supply and wastewater treatment capacity to serve the proposed Highlands Redevelopment Area. There are two documents that may be referred to for further detail regarding redevelopment area reviews – Procedures for Highlands Redevelopment Site Approval and the Redevelopment Program – both of which provide further details regarding the specifics of redevelopment review protocols and will be used by the Highlands Council when conducting redevelopment area project reviews.
Water Quality Management Plan Reviews	The NJDEP's Highlands rules at N.J.A.C. 7:38-1.1(k) require that NJDEP only approve a Water Quality Management Plan (WQMP) amendment after receiving from the Highlands Council a determination of consistency with the RMP, for both the Preservation and Planning Areas. Delineation of Wastewater Service Areas represents a critical component of WQMPs. Designation of appropriate wastewater service areas promotes sound development and redevelopment and protection of important Highlands Region resources. The RMP designates areas currently served by "in the ground" public wastewater collection or treatment systems as Existing Areas Served. Any area proposed for sewer service that is not an Existing Area Served would be a Future Sewer Service Area. Other areas are designated for service by septic systems at densities prescribed by the RMP. The Highlands Council shall consider an area appropriate for inclusion in a Proposed Sewer Service Area if the area is previously developed, not connected to public wastewater collection or treatment systems, and represents an area with a documented threat to public health and safety that cannot reasonably be addressed through on-site alternatives. The Highlands Council shall also consider Highlands Redevelopment Areas and the Existing Community Zone as appropriate for inclusion in a Future Sewer Service Area, subject to the environmental constraints above in this program.

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Water Quality Management Plan Reviews (continued)

Finally, the Highlands Council shall also consider areas identified as appropriate for clustered development as Future Sewer Service Areas when the cluster development will have densities that prohibit the use of septic systems. In each case the proposed Future Sewer Service Area must be consistent with the Resource Protection and Smart Growth standards and policies of the RMP. The Highlands Council review will include the following specific elements:

Water Availability. A WQMP amendment must include demonstration of sufficient water supply to accommodate current and future development. Wherever a new or expanded sewer service area is proposed that meets resource protection standards, the applicant must identify water sources with sufficient capacity to supply current and expanded demands for the proposed sewer service areas. However, this requirement does not mean that sewer service areas must be served by public community water systems.

The RMP establishes sustainable thresholds for development based on Net Water Availability which limit future consumptive and depletive water uses. Consumptive water use reduces water returned to the system by evaporation and other losses. Depletive uses can include, but are not limited to, an export of water out of the subwatershed, such as through a transfer of water via a wastewater collection system. The Net Water Availability Analysis provides information to determine if sufficient water supply is available to serve water supply needs associated with current and future demand (see Land Use Capability Analysis Program).

To determine if adequate water supply exists for a proposed sewer service area, the WQMP amendment must provide information about water supply needs within public water supply service areas and areas served by domestic wells.

The appropriate demand assignments should be compared with the net water availability calculated to each HUC14 subwatershed. Where the source HUC14 subwatershed is in, or anticipated to be in, a deficit of net water availability, then the applicant must address the following conservation or management practices:

1. Identify appropriate conservation methods or other means to reduce water demand or use;
2. Reduce the sewer service area creating the excess demand;
3. Reduce the future demand for consumptive and depletive water use; or
4. Submit a Water Management Plan that addresses the water deficit (see the Highlands Restoration: Water Deficits Program for more information).

Wastewater Capacity. Where proposed sewer service areas are identified that meet the water availability criterion, an applicant must demonstrate that wastewater treatment facilities have or will have sufficient capacity to accommodate projected flows of existing and proposed development. Where proposed sewer service areas encompass more than one municipality and a municipal contract or allocation exists, the potential wastewater generated in each municipality must not exceed capacity allocated to that municipality. Otherwise capacity shall be assessed for the full service area of the facility.

The LUCM Series and RMP standards should be referenced to determine total existing and projected wastewater flows. The RMP prohibits new, expanded or extended sewer service areas beyond Existing Areas Served in the Protection Zone and Conservation Zone except for limited circumstances as discussed in Wastewater Management Infrastructure above. The RMP allows proposed sewer service areas in the Existing Community Zone provided resource protection standards are met.

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Water Quality Management Plan Reviews (continued)

The Highlands Council requires that wastewater generation potential of sewer service areas match or be less than the allowable capacity of the associated treatment facility. Additionally, new or expanded wastewater infrastructure can be approved only if the proposed discharge will not impair water quality. The RMP specifically requires demonstration that the proposed discharge will not directly or indirectly be in violation of an adopted TMDL.

Water Quality. The patterns and types of land use within the existing areas served and proposed sewer service areas have the potential to affect water quality from the discharges of point source and nonpoint sources. To ensure the protection, restoration and enhancement of water quality within the Highlands, proposed sewer service areas shall demonstrate that they will not directly or indirectly degrade the water quality of Highlands waters.

Water quality requirements are addressed by four types of NJDEP documents: 1) Surface Water Quality Standards at N.J.A.C 7:9B; 2) Ground Water Quality Standards at N.J.A.C. 7:9C; 3) TMDLs and associated implementation plans adopted under N.J.A.C. 7:15; and 4) identified water body impairments from the NJDEP Integrated List adopted under N.J.A.C. 7:15. Each WQMP amendment must include information on a receiving water body's designated use(s) or classification and how they will be protected; and provide associated water quality criteria and demonstration of how those criteria will be met, including information on all wasteload allocations that are relevant.

1. Nonpoint Source and Stormwater Pollution. The WMP must demonstrate that, utilizing best management practices and Low Impact Development approaches, potential degradation of uses or water quality will be eliminated or otherwise meet NJDEP requirements;
2. Point Sources and Antidegradation. Where the projected wastewater generated from a proposed sewer service area requires an increase in the permitted capacity of the wastewater treatment facility or a new wastewater facility, the WQMP amendment must demonstrate that any new or expanded treatment facility will meet all relevant nondegradation or antidegradation requirements for the water quality in the receiving surface water or ground water resource.

Wellhead Protection Areas. The WQMP amendment must demonstrate compliance with the RMP requirements for wellhead protection.

Nitrate Dilution. The RMP establishes nitrate concentrations that must be met to ensure that development densities served by on-site septic systems will not impair water quality. Developments based on septic systems that do not comply with the septic system density requirements of the RMP are prohibited.

See *Procedures for Highlands Review of Water Quality Management Plan Amendments* for further details on the process used by the Highlands Council when conducting these project reviews.

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PART 3 Improvement of the Regional Master Plan

SUBPART A WATER RESOURCES AND ECOSYSTEM SCIENCE AGENDA

Issue Overview	 *Nathan McLean* The Analysis of the Highlands Region chapter of the RMP includes resource assessments for a multitude of natural resources, particularly water resources, based on a significant research effort by the Highlands Council. Much of that information represents one-of-a-kind data products using innovative methods and techniques. For example, water utility service areas maps developed by the Highlands Council remain a unique product in the State. Implementing the Goals, Policies, and Objectives of the RMP will require programs to guide the ongoing research agenda after its adoption. A major focus will be continued refinement, updating, and research into new methods to improve the Council's understanding of the Highlands Region's resources.
Program Summary	The following components represent items for inclusion into a long-term science agenda for the Highlands Council, particularly as they related to water supply, water quality, and watershed integrity. They represent a variety of research topics. Some of the research efforts began during drafting of the RMP. Therefore, many of these components have already been started. Others will require a long-term effort and their initial development will begin after RMP adoption and, in some cases, after Plan Conformance.
RMP Policies And Objectives Addressed	**Policy 1C1.** To require that conforming municipalities and counties address the protection of forested portions of Forest Resource Areas and High Integrity Forest Subwatersheds in their master plans and development regulations. **Policy 1D1.** To establish and maintain an inventory of Highlands Open Waters and their integrity. Highlands Open Waters are all springs, streams including intermittent streams, wetlands, 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. **Policy 1D2.** To establish and maintain an inventory of Highlands Riparian Areas and their integrity. **Policy 1D3.** To periodically review and update, as necessary, the Watershed Resource Value and Riparian Area Integrity Values. **Policy 1E1.** To develop, maintain, and improve a mapped inventory of steep slope areas in the Highlands Region.

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RMP Policies And Objectives Addressed (continued)	**Policy 2C1.** To improve estimates of Net Water Availability over time, including testing, development, and adoption of ecologically-based assessment techniques to evaluate the high and low flow needs of streams necessary to maintain the health of aquatic ecosystems, and the relationship between ground water recharge, ecological flow needs, consumptive water uses, and estimates of water availability for both ground and surface water resources. **Policy 2C2.** To evaluate potable water supply reservoir safe yield and passing flow requirements and examine the effects of upstream consumptive and depletive water uses on safe yields and of passing flows on Highlands Open Waters and recommend regulatory changes to NJDEP as appropriate. **Policy 2C3.** To develop a more refined Hydrologic Unit Map using LiDAR technology and high resolution digital elevation modeling to support more detailed geographic estimates of water availability. **Policy 2C4.** To develop more refined estimates of the effects on Net Water Availability regarding the exportation and importation of water and wastewater. **Policy 2J8.** To ensure continued refinement and development of the RMP. ***Objective 2J8a.*** Implement a coordinated program with NJDEP to track ground water and surface water withdrawals and water allocations within the Highlands Region to maintain current estimates of net utility capacity and to fill critical missing data gaps. **Policy 2M1.** To monitor and assess nitrate-related impacts and other pollutant enumerated in the Private Well Testing Act to water resources within the Highlands Region. ***Objective 2M1a.*** To monitor well water and surface water for nitrate concentrations as funding is available, to evaluate background nitrate changes on a HUC14 subwatershed basis and to track new sources of nitrates from Highlands development projects on a site specific basis. **Policy 2M2.** To develop appropriate and innovative resource management programs to protect, restore, and enhance subwatersheds where existing ground water quality is impaired. ***Objective 2M2a.*** Identify innovative technologies that may be appropriate for the design, installation, and maintenance of on-site wastewater treatment systems to minimize impairment to ground water or surface water quality due to elevated nitrate concentrations and other pollutant loads from septic systems providing the systems meet the minimum standards of N.J.A.C 7:9A.
Ground Water Capacity Estimates And Ground Water Availability Thresholds	The estimates of ground water capacity are critical in the RMP's water resource assessments. They serve as the measure of natural sustainability of the Highlands waters and quantify stream base flows that are critical for aquatic ecological integrity and water quality. The Highlands Council investigated several methods to calculate ground water capacity. However, no accepted method provided a direct relationship between aquatic ecosystem integrity and stream flows. Therefore, the Highlands Council focused on the severity and duration of base flows as a reasonable surrogate for ecosystem and water supply impacts. Ultimately, the Highlands Council utilized the Low Flow Margin of Safety method, which is also being used by the NJDEP for the upcoming New Jersey Water Supply Plan.

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Ground Water Capacity Estimates And Ground Water Availability Thresholds (continued)	Several other methods, which were not initially selected because of the limited schedule and lack of regional data available, may yet show promise for additional research in estimating the availability of water resources for human and ecological needs. Additional research may be warranted for the following methods: New Jersey Hydrologic Assessment Tool (Eco-flow goals), Range of Variability, R2Cross, or Wetted Perimeter method. To facilitate the research, the potential for a regional flow monitoring network consisting of observation wells and stream gauges will be explored. The network would augment existing ground water level and surface water flow datasets, respectively, in strategically selected areas. A critical determinant in the net water availability analysis is determining the amount of ground water capacity that is available for human uses without adversely affecting aquatic ecological integrity. This parameter, known as ground water availability, is computed as a fraction (or threshold) of ground water capacity. The aforementioned models can aid in improving estimates of appropriate thresholds. As a long-term objective, the Highlands Council will develop a program for improving estimates of ground water capacity and availability. This effort will consist of development, testing, and adoption of ecologically-based models or techniques that characterize varying flow regimes in streams necessary to maintain the health of aquatic ecosystems. The Highlands Council has already contracted with the USGS for additional support under this program. After RMP adoption in 2008, the Highlands Council and USGS will develop a specific scope of work for additional research under these water resource programs. Development and implementation of this program is anticipated to be an ongoing, multi-year task.
Protection Of Downstream Water Source/ Safe Yields	NJDEP is currently updating its guidance for evaluating the safe yield and passing flow requirements for surface water systems with reservoirs. NJDEP is also revaluating those safe yield values to reflect operational and infrastructure modifications in those systems while incorporating the new methodology. The Highlands Council will coordinate with NJDEP as appropriate as surface water supply systems examine the effects of upstream consumptive and depletive water uses on safe yields and of passing flows under the new procedure. The Highlands Council will recommend regulatory changes as part of the ongoing process. Of specific interest will be methods to better ensure that passing flows from reservoirs are sufficient to maintain ecological integrity.
Water and Wastewater Tracking	The RMP calls for refined estimates on Net Water Availability. Of particular importance in the analysis regards the transfer of water and wastewater between subwatersheds (depletive uses). The import and export of these utilities have a significant effect on the estimate of consumptive and depletive water demands. Understanding consumptive and depletive uses is a complex task, but is crucial to estimating Net Water Availability. Using its unique compilation of water and sewer service areas, and their associated demand/discharge data, the Highlands Council now has the ability to track water from its withdrawal point to its ultimate discharge. The tracking model will be conducted largely using GIS techniques, as have been utilized in the past the New Jersey Geological Survey (NJGS) and the New Jersey Water Supply Authority (NJWSA).

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Water and Wastewater Use Data	The Highlands Council utilized several forms of water and wastewater data from NJDEP and utility sources. These data sets include permitted water allocation withdrawals, reported wastewater discharges, and public community water system demand data. The data were incorporated into both the Utility Capacity and Net Water Availability analyses. The information is typically collected and reported on an annual basis. However, the data must often be checked and validated before their use in regional capacity analyses. The most recent complete data set used by the Highlands Council was from the year 2003. Having the most up-to-date data is important for both capacity assessments. The Council will implement an ongoing effort to update water and wastewater data as they become available on an annual basis. The data will be incorporated into resource assessments to provide the most accurate capacity analyses possible. The Highland Council has already contracted with the USGS for continued technical support and intends to develop a defined scope of work for this program component. This program is anticipated to be an ongoing program.
Highlands Open Waters and Riparian Areas Inventory	The Highlands Council will develop methods for continued development and refinement of Highlands Open Waters and Riparian Areas inventory with an emphasis on identification of headwater streams and headwater seeps and springs.
Regional Stream Integrity Model	A Regional Stream Integrity Model will aid in the evaluation of the protection, restoration, and enhancement of streams within the Highlands Region. Regional integrity scores will be derived using a comprehensive stream and riparian functional assessment. The scores will be assigned to streams within a specific sub-watershed based upon measurement of the physical, biological, and chemical integrity of a stream. The stream integrity model will serve as an aid in resource protection decision making and will provide a tool to set measureable management objectives for restoration and enhancement of impaired Highlands Open Waters and Riparian Areas. The model will function to classify Highlands Region streams, which will aid in qualifying regional protection measures and restoration targets for water quality, aquatic community structure, and in-stream and riparian habitat enhancement. The data used to classify streams will also aid in evaluating existing Surface Water Quality Standards for stream classification, including identifying streams appropriate for petitioning NJDEP to upgrade streams to C1 status.
Water Quality	The Highlands Council will determine where water quality improvements are necessary or beneficial for the improvement of water quality, develop watershed-based plans to achieve such improvements, develop mechanisms, and identify funding sources to implement these plans. As part of this effort, the Council will determine in coordination with NJDEP and USGS the extent to which additional water quality monitoring stations are needed in the Highlands Region to better assess water quality in key watersheds. For more detail on this program, see the Water Quality Restoration Program.

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Ground Water Quality Management	Nitrate has been selected as a surrogate for non-point source impacts to ground water quality, particularly for monitoring potential water quality degradation from on-site wastewater treatment systems, which can pose threats to human health and the environment. The Highlands Council proposes to improve existing monitoring networks and use additional data sources, in coordination with the NJGS and USGS, for monitoring and evaluating both natural conditions and anthropogenic factors in ground water quality. Particular emphasis will be placed on contaminants of interest, such as nitrates associated with septic systems in high density residential areas and agricultural areas, to more accurately characterize existing water quality conditions, land use impacts, and the efficacy of land planning and management practices. If possible, sampling should include potable wells in near proximity to different types of land uses so that a more representative characterization of potential health risks and their relation to land use can be achieved. Use of the Private Well Testing Act data, in a manner that fully complies with privacy provisions of that Act, will be explored. The Highlands Council has already contracted with the USGS for additional support under this program. After RMP adoption, the Highlands Council, NJGS, and USGS can develop a specific scope of work for defining an improved ambient ground water quality monitoring network.
Models for Establishing Septic Density	Existing USGS logistical regression models for estimating septic densities based on median nitrate concentrations can be further tested and refined with additional data collected and modeling. Additionally, logistical regression models could be developed to assess the impacts of specific land use types, such as agricultural, residential, and undeveloped areas, and different hydrogeologic setting, such as limestone and unconsolidated material. These models could not only better quantify septic densities for areas characteristic of varying land use types and settings, but increase an understanding of various land use factors and other conditions that influence water quality, which can lead to improve land planning and wastewater management practices. Development of this program is anticipated to be performed in conjunction with NJGS and USGS during design of the improved ambient ground water quality modeling network.
Expand Ambient Biological Monitoring Network In Highlands Region	The Ambient Biological Monitoring Network (AMNET) program, initiated by NJDEP in 1992, established sampling stations in every subwatershed of the state to evaluate the health of instream benthic macroinvertebrate communities. There are approximately 200 AMNET stations within the Highlands Region. The Highlands Council (in cooperation with Rutgers-Center for Remote Sensing and Spatial Analysis and the New Jersey Water Supply Authority) performed statistical analyses to assess correlations between key watershed characteristics and AMNET scores for the Region's streams. The analysis did not yield sufficiently strong statistical correlations for assigning scores to non-assessed watersheds. The intent of this program component is to coordinate with NJDEP to expand and establish a consistent AMNET to include additional stations in the Highlands Region. The Highlands Council will use the data as input into the continued development of a Regional Stream Integrity model to further refine protection requirements of Highlands Open Waters based on biological and water quality indicators.

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Forest Sustainability	The Highlands Council will implement a long term forest sustainability program that will entail proactive management of deer populations and non-native invasive species and reductions in the rate of forest fragmentation. Criteria and indicators will be developed to measure the sustainability of the forest resource. Data will be collected to assess long term sustainability. Valuation methods will be developed for carbon sequestration, invasive species control, and management activities tied to forest health improvement and the intrinsic societal values of forests including water quality protection. See the Forest Resource Management and Sustainability Program for further detail.
Digital Terrain Modeling And Determination of Hydrologic Units and Steep Slopes	Many of the resource assessments in the RMP, including all hydrologic and many ecological assessments, are performed using the HUC14 subwatershed as the standard areal unit. HUC14s are the smallest standardized hydrologic drainage unit commonly used in water resource analysis. Delineation of HUC14 boundaries is only as accurate as the topographic mapping, typically developed using aerial photographs. The Highlands Council has contracted for the use of LiDAR technology to generate high-resolution digital elevation modeling. This will enable the Council to develop more accurate topographic information that is necessary to refine HUC14 mapping. In addition, the LiDAR data could be used to map drainage areas at a smaller scale (HUC17) than the current subwatershed, if its utility warrants that effort. The Highlands Council also will establish and maintain an inventory of steep slope areas in the Highlands Region showing slopes that are a minimum of 5,000 square feet and: a) 10% or greater, but less than 15%, b) 15% or greater , but less than 20%, and c) 20% and greater. The Highlands Council will apply (LiDAR) to develop a 2-foot interval contour topographic map as a basis for refining the identification of Steep Slope Protection Areas. Development of this program is already underway.

SUBPART B REGIONAL MASTER PLAN MONITORING

Issue Overview	Monitoring and research are vital to understanding the impact and effectiveness of the RMP over time. Monitoring will ensure that the RMP continues to provide effective polices and programmatic approaches in an ever changing landscape. In order to evaluate regional conditions, identify new or emerging issues, and develop future RMP priorities, indicators will be identified and tracked by the Highlands Council. Indicators may relate to natural resources, water resources, agricultural resources, historic, cultural, archaeological and scenic resources, transportation, community character and smart growth, land owner equity, air quality, government finances, and economic development. Conclusions drawn from the findings of the monitoring program may result in updates or amendments to policies and programs of the RMP. The monitoring program is necessary to ensure the RMP's goal of long-term sustainability in the Highlands Region.
Program Summary	The RMP Monitoring Program and associated Monitoring Review Report will evaluate the progress in achieving the goals of the RMP through implementation of policies and programs. The approach is similar to that of a municipal master plan re-examination report. The implementation of a monitoring program will ensure that the RMP remain effective and current.

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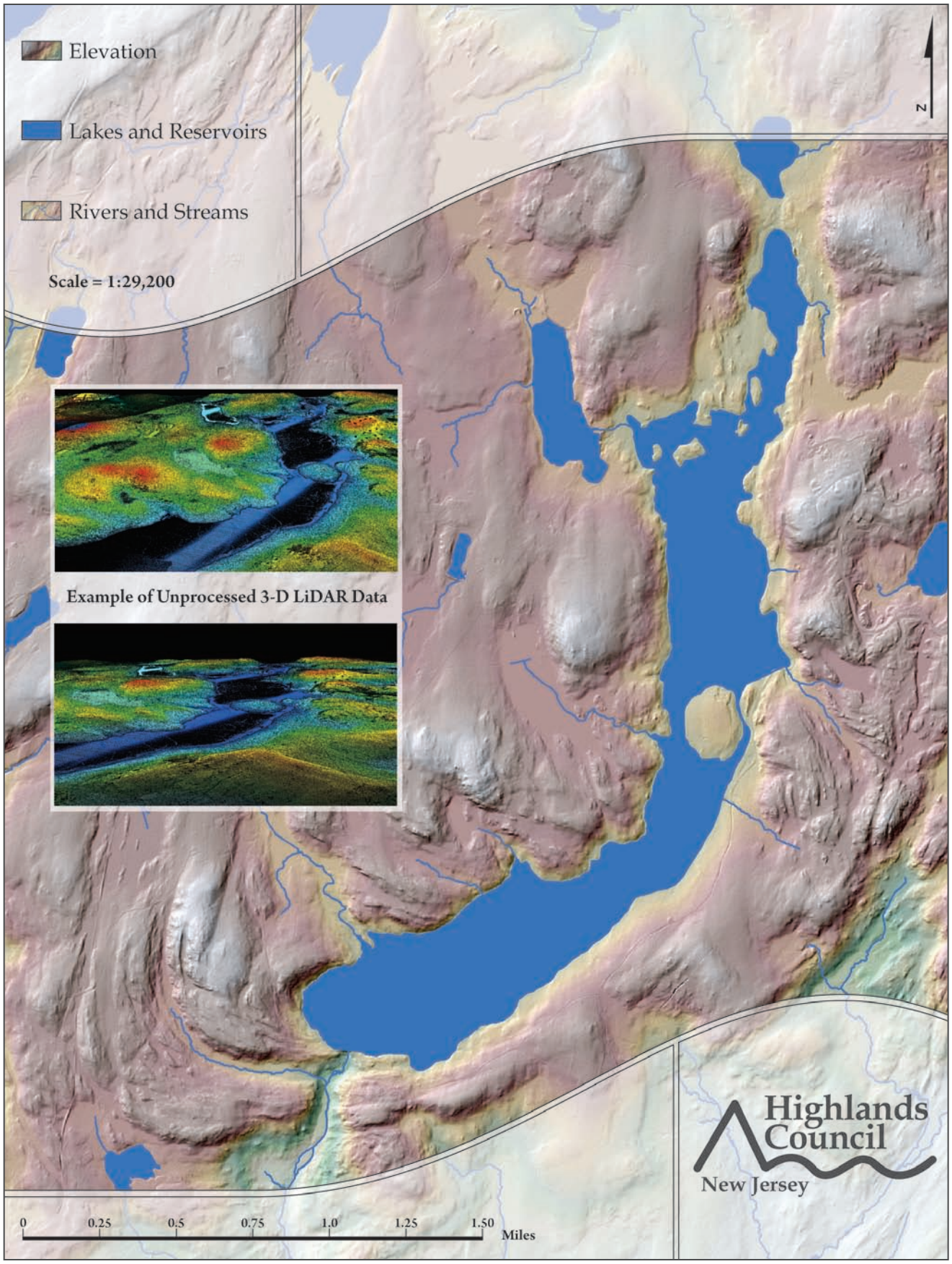
FIGURE 6.2: Digital Elevation Model Example Using LiDAR



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RMP Policies and Objectives Addressed	**Policy 10A1.** To ensure that programs and policies are effectively coordinated to promote the purpose and provisions of the RMP through efforts involving all levels of government, including local, county, regional, State, and federal agencies. **Policy 10A5.** To ensure the long term success of the RMP, evaluate regional conditions, identify new or emerging issues, and develop future RMP priorities through the tracking and monitoring of regional indicators. ***Objective 10A5a.*** Prepare a Highlands RMP Monitoring Review Report at least every six years to ensure that the RMP is meeting its goals. ***Objective 10A5b.*** Prepare a fiscal impact assessment that measures the overall economic health of the Region as compared to the rest of the State, to be included in the Highlands RMP Monitoring Review Report.
RMP Monitoring	The RMP Monitoring Program will consist of ongoing monitoring of indicators and a periodic Monitoring Review Report which documents the regional indicators and milestones. It will evaluate the progress in achieving the goals of the RMP as it is implemented locally. Data will be gathered for conforming municipalities and counties, as well as for non-conforming municipalities and counties (to the degree that information is available). Environmental, social, and economic health indicators will be used to document changes in the Highlands Region. Indicators will be chosen based upon the usefulness of information and data availability and may be either quantitative or qualitative depending on the parameter measured. Should an indicator be found to be ineffective or another is found to better measure a parameter of the RMP, the indicator may be revised. The values may reflect a Highlands baseline data standard or a governmental standard. Monitoring will also identify gaps in available data and develop data-gathering mechanisms to fill such gaps or include recommendations for additional or alternative data. Monitoring activities by the Highlands Council will guide potential amendments to the current or to future iterations of the RMP. Indicators will help to identify where RMP policy is most effective, and where amendments to policy or programs may be useful. The monitoring of indicators will be an ongoing process, although the Monitoring Review Report will be prepared periodically, as described below.
RMP Monitoring Review Report	The RMP Monitoring Review Report will be used to communicate with state, federal, county, and local planning partners and the general public the successes of the RMP, as well as the remaining challenges to the Region. Initially, the RMP Monitoring Review Report will be a baseline assessment of the Highlands Region, based upon the RMP monitoring indicators. The initial assessment will inform the development of "Highlands Milestones." Milestones will be chosen for each indicator and are intended to reflect progress toward long-term RMP goals. For example, an RMP indicator that would be measured yearly may be "acres of Conservation Priority Areas that are preserved as open space." The milestone would be an "increase in preserved Conservation Priority Areas from the previous year." Another associated milestone would be an "increase in conservation easements from the previous year." The Monitoring Review Report will track changes to the indicators and report on Highlands Milestones achieved and not achieved. The Monitoring Review Report will also present a fiscal impact assessment, in which economic and fiscal indicators are used to assess the overall economic health of the Region, as compared to the rest of the state.

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RMP Monitoring Review Report (continued)	Examples of Highlands Milestones that may be used include: • Increase in the acreage of new parks and preserved open space and farmland that preserve high priority lands; • Increase in the number of redevelopment and brownfields properties that are redeveloped in conformance with RMP policies; • Reduction or elimination of Water Deficits in HUC14 subwatersheds; • Increase in the percentage of new development within areas served by public water and sewerage; • Compliance of new development with RMP septic system densities, where public sewerage is not used; • Increase in the number of zoning amendments and/or new/updated ordinances reflecting RMP policy; • Increase in the percentage of new construction projects that include mixed use or green building approaches; • Increase in the number of new/updated resource management plans or protection measures reflecting RMP policy; • Increase in the number of opportunities for public participation in the Highlands planning process, including education and outreach programs; and • Increase in the number of municipalities or portions of municipalities participating in Plan Conformance. The monitoring of indicators is an ongoing process, and the RMP Monitoring Review Report will be produced at least every six years, or additionally, if necessary. RMP Monitoring Review Reports will be used to inform the development of future iterations of the RMP.

PART 4 Highlands Council Implementation Programs

SUBPART A HIGHLANDS COUNCIL

Implementation Program Priorities	Implementation program priorities are presented in three categories: 1. Immediate Priority – As soon as possible after adoption of the RMP in order to support local government preparation of modified master plans and development regulations for conformance review. 2. Intermediate Priority – As soon as possible without delaying completion of Immediate Priority implementation actions. Many of these actions are no less valuable than the immediate priorities, but either will take longer or are somewhat less time sensitive. 3. Ongoing Priority – As soon as possible without delaying completion of Immediate or Intermediate Priority implementation actions. Many of these actions are no less valuable than the immediate and intermediate priorities, but either will take longer or are somewhat less time sensitive.

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Immediate Priorities	1. Grant Programs for Plan Conformance. The RMP requires the Council to establish and administer grant programs to cover the reasonable costs of local government Plan Conformance activities. These programs are a matter of immediate priority to encourage and support plan conformance, particularly in the case of Preservation Area jurisdictions required to submit revisions to local government master plans and development regulations within 9 to 15 months of the effective date of the RMP. 2. Minimum Requirements for RMP Substantive Programs. The RMP calls for the preparation of minimum substantive requirements for RMP programs (e.g., the minimum requirements for a Community Forestry Plan). The minimum requirements are of the highest priority in order to guide local government efforts with regard to Plan Conformance. 3. Technical Assistance, Model Ordinances and Guidance Manuals Related to the Jurisdiction of Local Government Master Plans and Development Regulations. The RMP programs call for the preparation and distribution of various technical assistance documents, guidance manuals, and model ordinances which will be essential to modifying local government master plans and development regulations for Plan Conformance. These documents are anticipated to incorporate by reference existing resource materials from the literature and other agencies of government, supplemented with specific guidance for their use in the Highlands. Preparation of these documents is a matter of very high priority because these documents must be available for local governments during their preparation of amendments to local government master plans and development regulations. 4. Highlands TDR Program. The RMP anticipates that the Highlands TDR Program will be initiated immediately upon adoption of the RMP. Implementation of the TDR Program requires the creation of the Highlands Credit Bank, formal adoption of governing documents and rules of procedure and early capitalization of the Highlands Credit Bank. The Council should immediately and actively seek funding from the State of New Jersey and any other appropriate sources to facilitate the operations of the Highlands Credit Bank. 5. Highlands Council Petition for Plan Endorsement from the State Planning Commission. The Highlands Act requires that the Council submit the RMP to the State Planning Commission (SPC) within sixty days of its adoption, for Plan Endorsement with respect to the Planning Area. The Act further provides that upon SPC endorsement of the RMP, any Highlands Council grant of Plan Conformance to a local government entity shall be deemed equivalent to receipt of Plan Endorsement from the SPC. It is in the best interests of the Council and its constituent counties and municipalities that a petition be prepared and filed with the SPC as quickly as possible after adoption of the RMP.
Intermediate Priorities	1. Highlands State and Federal Agency Coordination. The Council shall continue to work with State and federal agencies to ensure coordinated agency action and establish interagency teams, where necessary, to provide cooperation with regard to implementation of the RMP. 2. Coordination with State Agencies. The RMP recognizes that the activities of State agencies directly affect implementation of the RMP. The RMP provides that the Council will actively seek to coordinate with State agencies with regard to matters which affect resources in the Highlands and to promote implementation of the RMP. Where appropriate, the RMP provides that the Council should seek the formation of interagency working groups or other forms of multi-agency action in support of implementation of the RMP.

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Intermediate Priorities (continued)	3. Coordination with State Agencies. The RMP recognizes that the activities of State agencies directly affect implementation of the RMP. The RMP provides that the Council will actively seek to coordinate with State agencies with regard to matters which affect resources in the Highlands and to promote implementation of the RMP. Where appropriate, the RMP provides that the Council should seek the formation of interagency working groups or other forms of multi-agency action in support of implementation of the RMP. 4. Educational Programs. The RMP requires the Council to develop and implement educational programs for public officials, other stakeholders, interested persons and the general public with regard to a variety of subjects. Education is critical to the success of the RMP in terms of local government plan conformance and long term implementation of the RMP. 5. Research Initiatives. The RMP identifies a number of research initiatives which would enhance implementation of the RMP. The RMP requires the Council to develop work programs for such research and encourages the Council to coordinate with other agencies with regard to the conduct and funding of the research.
On-going Priorities	1. Funding for Ongoing Highlands Programs. The success of the RMP will be defined to a considerable degree, by funding which is available for implementation, both in the short term and the long term. The RMP contemplates that the Council will actively and aggressively pursue funding for implementation of Highlands programs from any and all potential sources, including adoption of new State and federal legislation. 2. Establishment of a Highlands Water User Fee. The equitable distribution of the benefits and burdens of the implementation of the RMP requires that all beneficiaries, including water users should share in the cost of implementation. The RMP identifies the establishment of a Highlands Water user fee which would be used for RMP implementation, as an equitable and vital means by which to ensure long term implementation of the RMP. 3. Technical Assistance Documents and Guidance Manuals. The RMP provides for the preparation of technical assistance documents and guidance manuals for resource management programs, like stream restoration (e.g., design guidelines for restoration of channel profiles, floor and sediment control, bank stabilization and restoration of aquatic habitat and ecological function) which involve programs in addition to local government development regulations. The RMP provides that the Council coordinate the preparation of technical assistance documents and guidance manuals with other agencies of government. 4. Resource Planning and Management Initiatives. The RMP calls for the Council to promote various long-term substantive resource planning and management programs (e.g., the development and implementation of Forest Stewardship Plans for all preserved lands within the Region or the restoration of open waters including streams and riparian areas in conjunction with development and redevelopment). The Council should develop these programs and over time, promote their implementation by appropriate public and private agencies. In addition, the Council should actively seek funding from public and private sources for the development and implementation of long-term resource planning and management programs.

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On-going Priorities (continued)	5. Monitoring Programs. The RMP provides for the establishment of a variety of monitoring programs in order to improve the quality of data available for resource planning and management decisions and to better understand Highlands resources. The RMP contemplates that many monitoring programs will be conducted in cooperation and coordination with other agencies of government at the local, regional, state, and federal levels. 6. Award Programs. The RMP provides for the establishment of award programs to recognize exemplary examples of RMP implementation programs.

SUBPART B LOCAL GOVERNMENTS

Local Government Responsibilities	The local governments within the Highlands Region are responsible for land and water resource planning and management at the local level and will be responsible for regulating the land and water resources within each community under the Highlands RMP. 1. Initiate Amendments to Local Government Master Plans and Development Regulations. Local government entities seeking Plan Conformance must review existing planning programs and submit any amendments to master plans and development regulations necessary to achieve conformance with the RMP. 2. Petition Highlands Council for Plan Conformance. Local governments within the Preservation Area shall submit revisions to local government master plans and development regulations to the Council for Plan Conformance review and determination within 9 to 15 months of the adoption of the RMP. With respect to Planning Areas, local governments may choose whether or not to align planning programs in conformance with the RMP and may submit petitions relating thereto, at any time.

SUBPART C STATE GOVERNMENT

State Agency Coordination	Implementation of the RMP will require the active assistance and support of numerous State agencies including the NJDEP, NJDA, Department of Community Affairs, and the DOT. 1. Coordination with State Planning Commission. The Council shall submit the RMP to the State Planning Commission, for the Planning Area, and coordinate with the Commission to implement both the RMP and the State Development and Redevelopment Plan. 2. Coordination with State Agencies with Regard to RMP Implementation. The Council shall work with State agencies to coordinate implementation of the RMP. 3. State and Federal Agency Coordination. State agencies shall continue to work with the Highlands Council and relevant State and federal agencies to ensure coordination and cooperation with regard to implementation of the RMP. 4. Funding of RMP Implementation Programs. The RMP anticipates that RMP implementation will require significant funding through existing State programs as well as new funding initiatives (e.g., a Highlands water use fee).

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SUBPART D FEDERAL GOVERNMENT

Federal Agency Coordination	Implementation of the RMP will be enhanced through coordination and cooperation with federal agencies and financial assistance and support from existing and new programs. 1. State and Federal Agency Coordination. Federal agencies shall continue to work with the Highlands Council and relevant State and federal agencies to ensure coordination and cooperation with regard to implementation of the RMP. 2. Funding of RMP Implementation. The RMP anticipates that RMP implementation will require significant funding through existing federal programs and, if necessary, through adoption of new legislation. Grants-in-aid in support of implementation of the RMP, for example, would be consistent with historical federal funding of other water resources bills.

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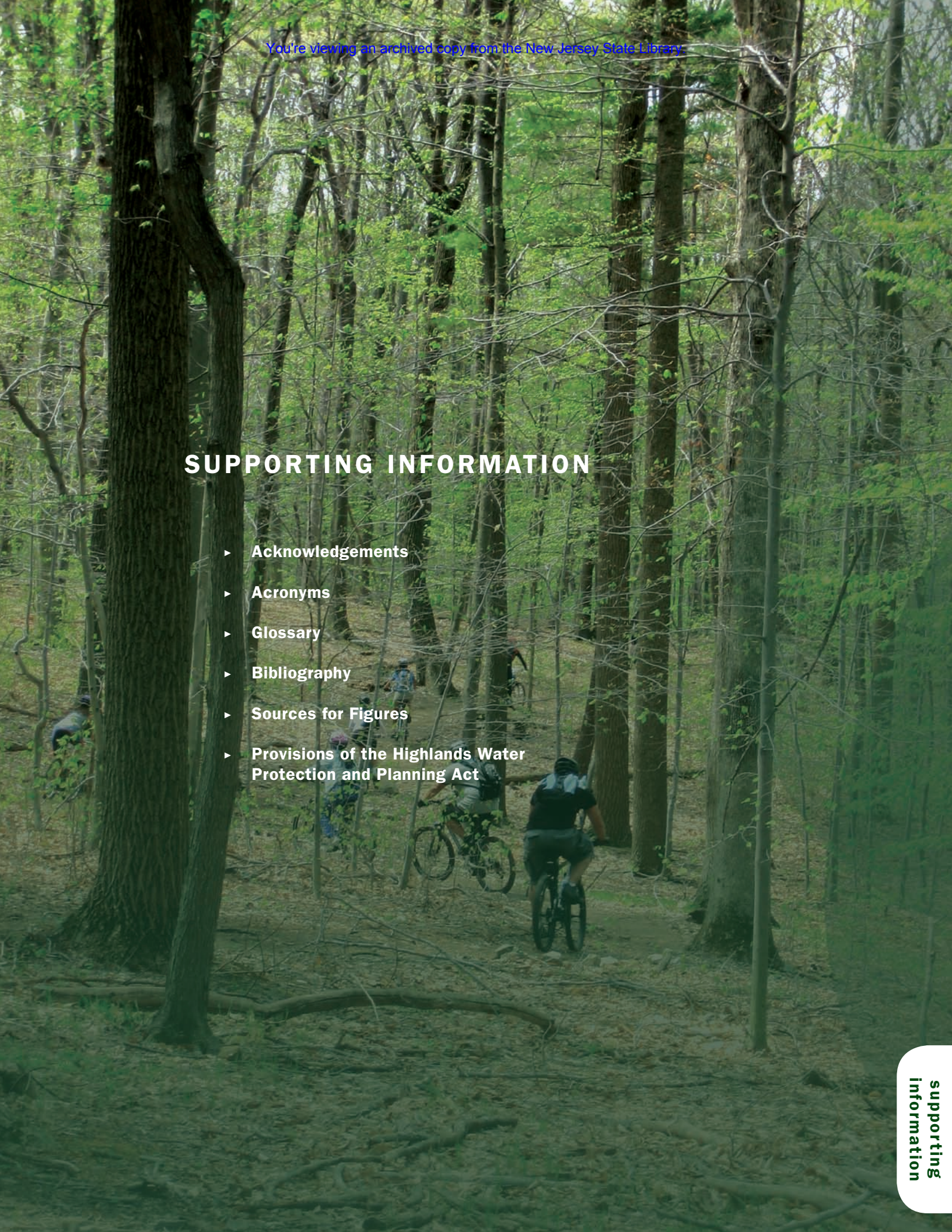

SUPPORTING INFORMATION

- Acknowledgements
- Acronyms
- Glossary
- Bibliography
- Sources for Figures
- Provisions of the Highlands Water Protection and Planning Act

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notes:

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New Jersey Department of Transportation
New Jersey Department of the Treasury
New Jersey Economic Development Authority
New Jersey Environmental Infrastructure Trust
New Jersey Meadowlands Commission
New Jersey Pinelands Commission
New Jersey Redevelopment Authority
New Jersey State Agriculture Development Committee
New Jersey Transit
New Jersey Water Supply Authority
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United States Department of Agriculture, Natural Resources Conservation Service

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Green Construction
Housing
Land Preservation
Land Use Planning
Regional Development and Design
Sustainable Agriculture
Sustainable Forestry
Transfer of Development Rights
Transportation
Utility Capacity
Water Resource Management

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THE FOLLOWING ARE FREQUENTLY USED ACRONYMS IN THE REGIONAL MASTER PLAN:

AMNET	Ambient Biological Monitoring Network
AMPs	Agricultural Management Practices
APA	Agricultural Priority Area
ARA	Agricultural Resource Area
BMPs	Best Management Practices
BPU	Board of Public Utilities
CADB	County Agriculture Development Board
COAH	Council on Affordable Housing
DU	Dwelling Unit
ECZ	Existing Community Zone
FAR	Floor Area Ratio
FCP	Farm Conservation Plan
FRPP	Farm and Ranch Lands Protection Program
FY	Fiscal Year
GIS	Geographic Information System
GPD	Gallons Per Day
GPOs	Goals, Policies, and Objectives
GSPT	Garden State Preservation Trust
HCA	Highlands Conservation Act
HDC	Highlands Development Credits
HPAA	Highlands Preservation Area Approval
HRAD	Highlands Resource Area Determination
HUC	Hydrologic Unit Code (subwatershed)
LID	Low Impact Development
LiDAR	Light Detection And Ranging
LOI	Letter of Interpretation
LUCM	Land Use Capability Map
LRHL	Local Redevelopment and Housing Law
LWCF	National Park Service Land, Water & Conservation Fund
MA7CD10	Minimum Average Seven Day Low Flow with a Return Period of Ten Years (also known as the 7Q10)
mg/L	Milligrams per Liter
MGD	Million Gallons per Day
MLUL	Municipal Land Use Law
NAAQS	National Ambient Air Quality Standards
N.J.A.C.	New Jersey Administrative Code
NJDA	New Jersey Department of Agriculture
NJDOT	New Jersey Department of Transportation
NJDEP	New Jersey Department of Environmental Protection
NJGS	New Jersey Geological Survey
NJPDES	New Jersey Pollutant Discharge Elimination System
NJRC&D	North Jersey Resource Conservation and Development Council
NJTPA	North Jersey Transportation Planning Authority
N.J.S.A.	New Jersey Statutes Annotated
NJWSA	New Jersey Water Supply Authority
NRCS	Natural Resources Conservation Service
OPRA	Open Public Records Act

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RMP	Regional Master Plan
ROSI	Recreation and Open Space Inventory
RSIS	Residential Site Improvement Standards
RTF	Right to Farm
SADC	State Agriculture Development Committee
SCD	Soil Conservation District
SDRP	State Development and Redevelopment Plan
SHPO	State Historic Preservation Office
SPC	State Planning Commission
SSURGO	Soil Survey Geographic Database
SWQS	Surface Water Quality Standards
TAC	Technical Advisory Committee
TDR	Transfer of Development Rights
TMDLs	Total Maximum Daily Loads
TSP	Technical Service Provider
USEPA	United States Environmental Protection Agency
UEZ	Urban Enterprise Zone
USGS	United States Geological Survey
WHPA	Wellhead Protection Area
WMP	Wastewater Management Plans
WQMP	Water Quality Management Plan

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AGRICULTURAL IMPERVIOUS COVER

Means agricultural or horticultural buildings, structures, or facilities with or without flooring, residential buildings, and paved areas, but shall not mean temporary coverings (Section 3 of the Highlands Act, hereinafter referred to as Section 3).

AGRICULTURAL OR HORTICULTURAL DEVELOPMENT

Means construction for the purposes of supporting common farm site activities, including but not limited to, the production, harvesting, storage, grading, packaging, processing, and the wholesale and retail marketing of crops, plants, animals, and other related commodities and the use and application of techniques and methods of soil preparation and management, fertilization, weed, disease, and pest control, disposal of farm waste, irrigation, drainage and water management, and grazing (Section 3).

AGRICULTURAL OR HORTICULTURAL USE

Means the use of land for common farm site activities, including but not limited to, the production, harvesting, storage, grading, packaging, processing, and the wholesale and retail marketing of crops, plants, animals, and other related commodities and the use and application of techniques and methods of soil preparation and management, fertilization, weed, disease, and pest control, disposal of farm waste, irrigation, drainage and water management, and grazing (Section 3).

AGRICULTURAL RESOURCE AREA

Means agricultural landscapes that include areas with 250 acres or more of contiguous farmland; farms that include Important Farmland Soils; lands adjoining a farm that are in agricultural use; and concentrations of preserved farmland.

APPLICATION FOR DEVELOPMENT

Means the application form and all accompanying documents required for approval of a subdivision plat, site plan, planned development, conditional use, zoning variance, or direction of the issuance of a permit pursuant to the Municipal Land Use Law (MLUL), P.L.1975, c. 291 (C.40:55D-1 et. seq.) or R.S.40:27-1 et seq., for any use, development, or construction (Section 3).

CONDITIONAL WATER AVAILABILITY

Means the amount of additional water availability allowed in a deficit HUC14 subwatershed, subject to certain mitigation requirements.

CONSERVATION ZONE

Means those areas identified on the Land Use Capability Zone Map consisting of significant agricultural lands and limited low-density development interspersed with environmental features that should be preserved whenever possible.

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CONSERVATION ZONE – ENVIRONMENTALLY CONSTRAINED SUB-ZONE

Means those areas identified on the Land Use Capability Zone Map within the Conservation Zone that have significant environmental features that should be preserved and protected from non-agricultural development.

CONSUMPTIVE WATER USE

Means water that is evaporated, transpired, incorporated into products or crops, consumed by humans or animals or otherwise removed from a watershed or subwatershed other than by conveyances as potable water or wastewater.

CRITICAL HABITAT AREAS

Means land areas that are Critical Wildlife Habitats, Significant Natural Areas, or Vernal Pool Buffers.

CRITICAL HABITAT CONSERVATION AND MANAGEMENT PLAN

Means written guidance, approved by the Highlands Council, that conforming municipalities and counties must include in master plans and development regulations that may include, but not be limited to, performance and design standards for development within or adjacent to Critical Habitat, restoration of the ecological functions and processes of impaired or disturbed Critical Habitat, procedures for modifications to Critical Habitat areas, prevention of habitat fragmentation through open space preservation, and corporate, non-profit and community involvement in creating, protecting and restoring habitat.

CRITICAL WILDLIFE HABITATS

Means habitats for rare, threatened or endangered wildlife species as identified through the Landscape Project of the New Jersey Department of Environmental Protection (NJDEP).

CURRENT DEFICIT AREAS

Means a HUC14 subwatershed where Net Water Availability is less than zero.

DEPLETIVE WATER USE

Means water which is withdrawn from a HUC14 subwatershed and transported outside of the subwatershed (through utility conveyances as potable water or wastewater), resulting in a net loss of water to the subwatershed from which the water originated.

DEVELOPMENT

Means the division of a parcel of land into two or more parcels, the construction, reconstruction, conversion, structural alteration, relocation or enlargement of any building or other structure, or of any mining excavation or landfill, and any use or change in the use of any building or other structure, or land or extension of use of land, for which permission may be required pursuant to the MLUL (Section 3 and MLUL (C.40:55D-4)).

EXISTING AREAS SERVED

Means areas connected to either an existing public wastewater collection system or public water distribution system where such infrastructure is already constructed. It does not include areas of designated sewer service areas or water service franchise areas where collection, transmission, or distribution systems do not currently exist.

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EXISTING COMMUNITY ZONE

Means those areas identified on the Land Use Capability Zone Map consisting of extensive and intensive existing development which may have capacity to support additional human development without adversely affecting the ecological value of the Highlands Region.

EXISTING COMMUNITY ZONE – ENVIRONMENTALLY CONSTRAINED SUB-ZONE

Means those areas identified on the Land Use Capability Zone Map within the Existing Community Zone that have high resource value and limited or no capacity for on-site human development without adversely affecting the ecological value of the Highlands Region.

EXISTING CONSTRAINED AREAS

Means HUC14 subwatersheds which contribute water flows to a Current Deficit Area.

FARM CONSERVATION PLAN

Means a site specific plan that prescribes needed land treatment and related conservation and natural resource management measures, including forest management practices, that are determined to be practical and reasonable for the conservation, protection, and development of natural resources, the maintenance and enhancement of agricultural or horticultural productivity, and the control and prevention of non-point source pollution (Section 3).

FARM MANAGEMENT UNIT

Means a parcel or parcels of land, whether contiguous or noncontiguous, together with agricultural or horticultural buildings, structures and facilities, producing agricultural or horticultural products, and operated as a single enterprise (Section 3).

FOREST MANAGEMENT PLAN

Means a tool which evaluates a forest land's current state and provides a management process with which, over time, meets the landowner's management objectives, while maintaining health and vigor of the resource. This written guidance document describes the forest resources present on the property, the landowner's management goals and objectives, and the recommended practices or activities to be carried out over time on the land. Forest Management plans are typically written for a ten year period.

FOREST RESOURCE AREA

Means areas that include high ecological value forest areas including those forested areas that exhibit the least fragmentation and are vital for the maintenance of ecological processes.

FOREST STEWARDSHIP PLAN

Means a guidance document which a property owner can follow to meet long-term conservation objectives for forest land. A Forest Stewardship Plan considers all aspects of forest resource management, including soils and water quality, wildlife and fish habitat, outdoor recreation, aesthetics, timber and other wood products. A search for the presence of Threatened and Endangered Species through the Natural Heritage Database is a requirement for a Forest Stewardship Plan.

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GEOGRAPHIC INFORMATION SYSTEMS (GIS)

Means a computer system capable of capturing, storing, analyzing, and displaying geographically referenced information. GIS also includes the procedures, operating personnel, and spatial data that go into the system.

GROUND WATER AVAILABILITY

Means the rate of ground water use that can occur in an area without contravening the goals and objectives of the Highlands Act. It is that portion of the ground water capacity of a HUC14 subwatershed that can be provided for human use without harm to other ground water users, aquatic ecosystems or downstream users.

GROUND WATER CAPACITY

Means the natural ability of a subwatershed to support stream flow over time during dry weather conditions based on the Low Flow Margin component of the Low Flow Margin of Safety Method.

HIGHLANDS DEVELOPMENT CREDIT

Means an entitlement in the form of transferable interest allocated to land with limited capacity for development without adversely affecting ecological integrity, which can be used to increase the density or intensity of development in a designated Receiving Zone.

HIGHLANDS DEVELOPMENT CREDIT BANK

Means a development transfer bank established by the Highlands Council to assist the Highlands Council in implementing the Highlands TDR Program.

HIGHLANDS DOMESTIC SEWERAGE FACILITIES

Means wastewater treatment works that provide wastewater treatment primarily of sanitary sewage rather than industrial wastewater as a public utility and may include service areas and treatment capacities sufficient to support redevelopment and regional growth opportunities.

HIGHLANDS HISTORIC AND CULTURAL RESOURCE INVENTORY

Means the listing of historic, archaeological and cultural resources within the Highlands Region, including but not limited to: 1) all properties listed on the New Jersey or National Register of Historic Places; 2) all properties which have been deemed eligible for listing on the New Jersey or National Register of Historic Places; and 3) all properties for which a formal opinion of the State Historic Preservation Office (SHPO) has been issued.

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 (Section 3).

HIGHLANDS PUBLIC COMMUNITY WATER SUPPLY SYSTEMS

Means public water supply systems in the Highlands Region that pipe water for human consumption to at least either 15 service connections or one that regularly serves at least 25 year-round residents.

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HIGHLANDS REDEVELOPMENT AREAS

Means land areas designated as such by the Highlands Council that are brownfields, grayfields, and/or other previously developed areas within the Highlands Region.

HIGHLANDS SCENIC RESOURCE INVENTORY

Means the inventory of regionally significant lands within the Highlands Region that encompasses elements of high scenic quality worthy of protection, which is developed in coordination with local governments and maintained by the Highlands Council.

HUC14 SUBWATERSHED

Means a delineated area within which water drains to a particular receiving surface water body (e.g., a watershed), which is identified by a 14 digit number, or Hydrologic Unit Code (HUC). The HUCs were developed by the USGS. In the Regional Master Plan (RMP), the term HUC14 correlates to a subwatershed. A subwatershed is a subdrainage area within a watershed. The only difference between watershed and subwatershed is scale.

HYDROLOGIC UNIT MAP

Means a map that shows hydrologic boundaries of water resources regions, river basins, watersheds, and subwatersheds.

IMPERVIOUS SURFACE

Means 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). To be considered an impervious surface, the structure, surface or improvement must have the effect of reducing or preventing stormwater absorption.

LAKE COMMUNITY SUB-ZONE

Means those areas identified on the Land Use Capability Zone Map within the Existing Community Zone that are within 1,000 feet of lakes that are ten acres or greater in size. This sub-zone has unique policies to prevent degradation of water quality, harm to lake ecosystems, and natural aesthetic values.

LAND USE CAPABILITY MAP SERIES

Means the series of official maps of the Highlands RMP, which divides the Region into three primary overlay zones and three Sub-Zones based upon natural resource protection, preservation of agricultural landscapes, existing development patterns, and economic growth opportunities. The series includes the Land Use Capability Zone Map, the Land Use Capability Water Availability Map, the Land Use Capability Public Community Water Systems Map, the Land Use Capability Domestic Sewerage Facilities Map, and the Land Use Capability Septic System Yield Map, and serves as the land use capability map as provided for in the Highlands Act.

LIGHT DETECTION AND RANGING (LIDAR)

Means technology that uses an active sensor, similar to radar that transmits laser pulses to a target and records the time it takes for the pulse to return to the sensor receiver. This technology is used for high-resolution topographic mapping.

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LOCAL GOVERNMENT UNIT

Means a municipality, county, or other political subdivision of the State, or any agency, board, commission, utilities authority or other authority, or other entity thereof (Section 3).

LOW FLOW MARGIN OF SAFETY METHOD

Means the method developed by the NJDEP that is an ecologically-oriented approach for the purpose of defining ground water capacity based on a percentage of the margin between two stream low flow statistics, September median flow, and the seven day-ten year low flow (7Q10).

MAJOR HIGHLANDS DEVELOPMENT

Means except as otherwise provided pursuant to subsection a. of section 30 of the Highlands Act, (1) any non-residential development in the preservation area; (2) any residential development in the preservation area that requires an environmental land use or water permit or that results in the ultimate disturbance of one acre or more of land or a cumulative increase in impervious surface by one-quarter acre or more; (3) any activity undertaken or engaged in the preservation area that is not a development but results in the ultimate disturbance of one-quarter acre or more of forested area or that results in a cumulative increase in impervious surface by one-quarter acre or more on a lot; or (4) any capital or other project of a State entity or local government unit in the Preservation Area that requires an environmental land use or water permit or that results in the ultimate disturbance of one acre or more of land or a cumulative increase in impervious surface by one-quarter acre or more. Major Highlands development shall not mean an agricultural or horticultural development or agricultural or horticultural use in the preservation area (Section 3).

MASTER PLAN

Means for a municipality, a composite of one or more written or graphic proposals for the development of the municipality as set forth in and adopted pursuant to Section 19 of the MLUL (N.J.S.A. 40:55D-28); and means for a county, a composite of the master plan for the physical development of the county, with the accompanying maps, plats, charts and descriptive and explanatory matter adopted by the county planning board pursuant to N.J.S.A. 40:27-2.

NET WATER AVAILABILITY

Means the value resulting from subtracting the impacts of consumptive and depletive surface and ground water uses from ground water availability.

NJDEP HIGHLANDS PRESERVATION AREA RULES

Means the regulations established to implement requirements of the Highlands Act codified at N.J.A.C. 7:38-1.1 et. seq.

NONPOINT SOURCE POLLUTION

Means pollution which cannot be traced back to a single origin or source, including such sources as stormwater runoff, water runoff from urban areas, and failed septic systems. Nonpoint source pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters, and underground sources of drinking water.

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PLANNING AREA

Means lands within the Highlands Region which are not within the Preservation Area (Section 3).

PRESERVATION AREA

Means those lands within the Highlands Region which are designated as the Preservation Area by N.J.S.A. 13:20-7b (Section 3).

PRIME GROUND WATER RECHARGE AREAS

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.

PROTECTION ZONE

Means those areas identified on the Land Use Capability Zone Map consisting primarily of high resource value lands in terms of forest resources, Critical Habitat, water quality and quantity, and ecological function, and having limited or no capacity to support human development without adversely affecting overall ecological function of the Highlands Region.

RECEIVING ZONE

Means land designated by a local government and approved by the Highlands Council as suitable for TDR Density, provided Highland Development Credits are used for that development.

RESOURCE MANAGEMENT SYSTEM PLAN

Means a site specific conservation system plan that (1) prescribes needed land treatment and related conservation and natural resource management measures, including forest management practices, for the conservation, protection, and development of natural resources, the maintenance and enhancement of agricultural or horticultural productivity, and the control and prevention of non-point source pollution, and (2) establishes criteria for resources sustainability of soil, water, air, plants, and animals (Section 3).

SAFE YIELD

Means the amount of water that can be provided from a water supply system over a repeat of the drought of record, reflecting passing flows requirements, demand patterns, watershed conditions and precipitation patterns, as determined by the NJDEP.

SENDING ZONE

Means an area or areas designated in a master plan and zoning ordinance, for purposes of participating in the Highlands TDR Program, within which development is restricted in light of the requirements of the Highlands Act.

SPECIAL ENVIRONMENTAL ZONE

Means an area in the Highlands Region which should not be developed in order to protect water resources and environmentally sensitive lands based upon RMP Conservation Priority Area rank, and the potential to a) protect water supply reservoirs and other critical water features, b) create large contiguous areas of environmentally sensitive lands, c) create habitat corridors, and d) connect existing preserved open space. Existing land use patterns shall be considered to minimize conflicts between the designation of a Special Environmental Zone and ongoing land uses.

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STATE ENTITY

Means any State department, agency, board, commission, or other entity, district water supply commission, independent State authority or commission, or bi-state entity (Section 3).

SUSTAINABLE AGRICULTURE

Means, "An integrated system of plant and animal production practices having site-specific application that will over the long-term (a) satisfy human food and fiber needs; (b) enhance environmental quality and the natural resource base upon which the agricultural economy depends; (c) make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles, and controls; (d) sustain the economic viability of farm operations; and (e) enhance the quality of life for farmers and society as a whole" (1990 Farm Bill).

TOTAL MAXIMUM DAILY LOAD (TMDL)

Means the pollutant loading that a surface water body may assimilate without violating the Surface Water Quality Standards and a determination of the extent to which pollutant loads to a water body must be reduced to restore that water body to a water quality that complies with the Surface Water Quality Standards. A TMDL includes an allocation of allowable pollutant loads to specific point sources (Wasteload Allocations) and categories of non-point sources (Load Allocations), after subtraction of a Margin of Safety and, where appropriate, a Reserve Capacity (for future pollutant loads).

WILDLIFE MANAGEMENT SUB-ZONE

Means the Sub-Zone consists of both areas managed by the United States Fish and Wildlife Service as part of the National Wildlife Refuge System and Wildlife Management Area System administered by the NJDEP Division of Fish & Wildlife's Bureau of Land Management. These areas are part of a network of lands and waters for conservation, management, and where appropriate, restoration of fish, wildlife, and plant resources and their habitats and permit compatible wildlife-dependent recreational uses such as hunting, fishing, wildlife observation and photography, and environmental education and interpretation. There is no minimum mapping threshold for the delineation of the Wildlife Management Sub-Zone.

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This appendix lists data sources and dates for all figures included in the Regional Master Plan and includes a disclaimer which applies to all figures.

The data for the figures included in the Regional Master Plan were primarily derived by the New Jersey Highlands Council (NJHC). In addition, supplemental data was obtained from the following partnering entities:

United States Census Bureau (USCB)
United States Forest Service (USFS)
United States Fish and Wildlife Service (USFWS)
United States Geological Survey (USGS)
United States Natural Resources Conservation Service (NRCS)
New Jersey Department of Environmental Protection (NJDEP)
New Jersey Department of Transportation (NJDOT)
New Jersey Office of Smart Growth (NJOSG)
New Jersey State Agriculture Development Committee (SADC)
New Jersey State Historic Preservation Office (SHPO)
New Jersey Transit (NJT)
New Jersey Water Supply Authority (NJWSA)
County of Somerset GIS (SCGIS)
County of Sussex Office of GIS Management (SCOGM)
County of Warren Department of Planning (WCDP)
The Nature Conservancy (NC)

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PROVISIONS OF THE HIGHLANDS WATER PROTECTION AND PLANNING ACT (P.L. 2004, C. 120)

SECTION	DESCRIPTION	MAJOR PROVISIONS	WHERE ADDRESSED IN RMP
Section 1 N.J.S.A. 13:20-1	Title of the Act	This act shall be known, and may be cited, as the "Highlands Water Protection and Planning Act."	Chapter 1, Part 3
Section 2 N.J.S.A. 13:20-2	Legislative Findings and Declarations	Enacts legislation setting forth a comprehensive approach to protection of the water and other natural resources of the Highlands Region.	Chapter 1, Part 3
Section 3 N.J.S.A. 13:20-3	Definitions	Provides definitions for terms used throughout the Highlands Act.	Glossary
Section 4 N.J.S.A. 13:20-4	Establishment of Highlands Water Protection and Planning Council	Establishes the Council and allocates that it is in NJDEP, but shall be independent of any supervision or control by NJDEP.	Chapter 1, Part 4
Section 5 N.J.S.A. 13:20-5	Council members appointment and qualifications; service	Establishes the number of Council members; the means of appointment; Council member terms; and rules regarding Council meetings.	Chapter 1, Part 4
Section 6 N.J.S.A. 13:20-6	Establishes the powers, duties and responsibilities of the Highlands Water Protection and Planning Council	Prepare a Regional Master Plan (RMP).	Chapter 1, Part 4
		Identify lands in need of acquisition.	Chapter 3
		Review of development applications.	Chapter 6, Part 2
		Promote conservation of water resources.	Chapter 4
Section 7 N.J.S.A. 13:20-7	Boundaries of Highlands Region	Establishes the geographic boundaries of the Highlands Region, including Preservation Area boundary.	Chapter 1, Part 3
Section 8 N.J.S.A. 13:20-8	Regional Master Plan	Mandates preparation of the RMP with the requirement that it be updated at least once every six years and identification of receiving zones and capacities therefore.	Chapter 1, Part 3

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SECTION	DESCRIPTION	MAJOR PROVISIONS	WHERE ADDRESSED IN RMP
Section 9 N.J.S.A. 13:20-9	Preparation or revision of RMP; consultation with advisory groups	Mandates that the Council coordinate with agencies and scientific organizations during preparation of or revisions to RMP.	Chapters 5 and 6
		Mandates that redevelopment sites in the Preservation Area shall be either a brownfield site designated by the NJDEP or a site in which at least 70% of the area features impervious surface.	Chapter 3, Part 6, Subpart C Chapter 4, Part 6, Subpart e Chapter 5, Part 6
		Mandates that rules or regulations adopted do not compromise provisions under "Right to Farm Act."	Chapter 4, Part 3 Chapter 5, Part 3
Section 10 N.J.S.A. 13:20-10	Goals of RMP	Protect, restore, and enhance the quality and quantity of surface and ground waters.	Chapter 3, Part 1, Subpart B Chapter 3, Part 1, Subpart B Chapter 6, Part 1
		Preserve extensive contiguous areas of land in its natural state.	Chapter 3, Part 1 Chapter 4, Part 1 Chapter 5, Part 1
		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.	Chapter 3 Chapter 4 Chapter 5
		Preserve farmland and historic sites.	Chapter 3, Parts 3 and 4 Chapter 4, Parts 3 and 4 Chapter 5, Parts 3 and 4
		Promote conservation of water resources.	Chapter 3, Part 2 Chapter 4, Part 2 Chapter 5, Part 2
		Promote brownfield remediation and redevelopment.	Chapter 3, Part 6, Subpart C Chapter 4, Part 6, Subpart E Chapter 5, Part 6
		Promote compatible agricultural, horticultural, recreational, and cultural uses and opportunities within the framework of protecting the Highlands environment.	Chapter 3, Parts 3 and 4 Chapter 4, Parts 3 and 4 Chapter 5, Parts 3 and 4
		Prohibit or limit development which is incompatible with protection of Preservation Area.	Chapter 3 Chapter 4 Chapter 5

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SECTION	DESCRIPTION	MAJOR PROVISIONS	WHERE ADDRESSED IN RMP
Section 10 N.J.S.A. 13:20-10 (continued)	Goals of RMP (continued)	For Planning Area, encourage, consistency with the State Development and Redevelopment Plan (SDRP) and smart growth strategies and principles, appropriate patterns of compatible residential, commercial, and industrial development, redevelopment, and economic growth.	Chapter 3 Chapter 4 Chapter 5
		For Planning Area, promote a sound, balanced transportation system that is consistent with smart growth strategies and principles and which preserves mobility in the Highlands Region.	Chapter 3, Part 5 Chapter 3, Part 5 Chapter 5, Part 5
		A Resource Assessment that 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.	Chapter 3
		A Resource Assessment that includes an assessment of scenic, aesthetic, cultural, historic, open space, farmland, and outdoor recreation resources.	Chapter 3
		A financial component, together with a cash flow timetable.	Chapter 3, Part 8 Chapter 4, Part 8 Chapter 5, Part 8
		A component to provide for the maximum feasible local government and public input into the Council's operations.	Chapter 6, Part 1
		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 RMP.	Chapter 6
		A transportation component that provides a plan for transportation system preservation.	Chapter 3, Part 5 Chapter 4, Part 5 Chapter 5, Part 5
		A smart growth component and a land use capability map.	Chapter 3, Part 6, Subpart D Chapter 4, Part 6, Subpart D Chapter 5, Part 6

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SECTION	DESCRIPTION	MAJOR PROVISIONS	WHERE ADDRESSED IN RMP
Section 12 N.J.S.A. 13:20-12	Additional Contents of RMP	Mandates 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.	Chapter 3 Chapter 4
Section 13 N.J.S.A. 13:20-13	Transfer of Development Rights (TDR) Program	The Council shall use the RMP elements prepared pursuant to Sections 11 and 12 of this Act, to establish a transfer of development rights program for the Highlands Region that furthers the goals of the RMP.	Chapter 3, Part 7, Subpart A Chapter 4, Part 7 Chapter 5, Part 7
Section 14 N.J.S.A. 13:20-14	Revisions of municipal/ county master plan and development regulations by Preservation Area municipalities and counties	Each municipality located wholly or partially in the Preservation Area shall submit to the Council such revisions of its municipal master plan as may be necessary to conform to the goals, requirements, and provisions of the RMP.	Chapter 6, Part 1, Subpart A
		Each county located wholly or partially in the Preservation Area shall submit to the Council such revisions of the county master plan and associated regulations as may be necessary to conform to the goals, requirements, and provisions of the RMP.	Chapter 6, Part 1, Subpart A
Section 15 N.J.S.A. 13:20-15	Revisions of municipal/ county master plan and development regulations by Planning Area municipalities and counties	Any municipality or county located in the Planning Area may, by ordinance, petition the Council of its intention to revise its master plan and development regulations to conform to the goals, requirements, and provisions of the RMP.	Chapter 6, Part 1, Subpart A
Section 16 N.J.S.A. 13:20-16	State or local government projects involving disturbance of two or more acres of land; review by Council	Within the Preservation Area, any capital or other project of a State entity or local government unit that involves the ultimate disturbance of two acres or more of land or a cumulative increase in impervious surface by one acre or more shall be submitted to the Council for review.	Chapter 6, Part 2
Section 17 N.J.S.A. 13:20-17	Review by Council of application for development	Subsequent to adoption of the RMP, the Council may review any application for development in the Preservation Area where certain thresholds are exceeded.	Chapter 6, Part 2

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SECTION	DESCRIPTION	MAJOR PROVISIONS	WHERE ADDRESSED IN RMP
Section 18 N.J.S.A. 13:20-18	State aid for smart growth projects; other financial and technical assistance for revisions to master plans	Any municipality or county in the Highlands Region whose master plan and development regulations have been approved by the Council to be in conformance with the RMP shall qualify for State aid, planning assistance, technical assistance, and other benefits and incentives.	Chapter 3, Part 8, Subpart D Chapter 4, Part 8 Chapter 5, Part 8 Chapter 6, Part 4
Section 19 N.J.S.A. 54:1-85	Highlands Municipal Property Tax Stabilization Board	There is established in the Department of the Treasury the "Highlands Municipal Property Tax Stabilization Board," which shall establish procedures for determining the valuation base of a qualified municipality, whether fiscal stress has been caused by the implementation of the Act in a qualified municipality, and the amount due a qualified municipality to compensate for a decline in the aggregate true value of vacant land directly attributable to the implementation of the Act.	Chapter 3, Part 8 Chapter 4, Part 8 Chapter 5, Part 8
Section 20 N.J.S.A. 54:1-84	Pinelands Property Tax Assistance Fund	The State Treasurer shall annually credit, in each of the first five years after enactment of the Act, to the "Pinelands Property Tax Assistance Fund" from the "Highlands Protection Fund."	Chapter 3, Part 8
Section 21 N.J.S.A. 13:20-19	Highlands Protection Fund	There is created in the Department of the Treasury a special non-lapsing fund to be known as the "Highlands Protection Fund."	Chapter 3, Part 8 Chapter 4, Part 8 Chapter 5, Part 8
Section 22 N.J.S.A. 13:20-20	Legal representation	The Council shall provide legal representation to any requesting local government unit located in the Highlands Region in any cause of action filed against the local government unit and contesting an act or decision of the local government unit taken or made under authority granted pursuant to the "Municipal Land Use Law."	Chapter 6, Part 1, Subpart A
Section 23 N.J.S.A. 13:20-21	Guidelines to municipalities regarding applications for development submitted after the date of Act enactment and before adoption of RMP	Within 10 days after the date of enactment of this act, the Department of Community Affairs, in consultation with NJDEP, shall provide guidelines and instructions to all local government units located wholly or partially within the Preservation Area with respect to the processing, review, and enforcement of applications for development after the date of enactment of this act and before adoption of the RMP.	

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SECTION	DESCRIPTION	MAJOR PROVISIONS	WHERE ADDRESSED IN RMP
Section 24 N.J.S.A. 13:20-22	Municipal and county master plans and regulations presumption of validity	The municipal master plan and development regulations of any municipality, and the county master plan and associated regulations of any county, located in the Highlands Region which have been approved by the Council to be in conformance with the RMP in accordance with Section 14 or 15 of this Act shall be entitled to a strong presumption of validity.	Chapter 6, Part 1 , Subpart A
Section 25 N.J.S.A. 13:20-23	Allocation of prospective fair share of housing need; consideration of RMP	The Council on Affordable Housing shall take into consideration the RMP prior to making any determination regarding the allocation of the prospective fair share of the housing need in any municipality in the Highlands Region under the "Fair Housing Act."	Chapter 3, Part 6 Chapter 4, Part 6, Subpart F Chapter 5, Part 6 Chapter 6, Part 1
Section 26 N.J.S.A. 13:20-24	Modification of site improvement standards for residential development	Analysis and modification, by the Site Improvement Advisory Board and the Commissioner of Community Affairs, of the site improvement standards for residential development to determine if they are appropriate and sufficiently protective for the Highlands Region.	Chapter 3, Part 6 Subpart D Chapter 4, Part 6 Chapter 5, Part 6
Section 27 N.J.S.A. 13:20-25	Action or proceeding for injunctive relief by Council for violation of Highlands Act	The Council may institute an action or proceeding in Superior Court for injunctive relief for any violation of this Act, or any rule or regulation adopted pursuant thereto, or, in the Preservation Area for any violation of, or nonconformance with, the RMP.	
Section 28 N.J.S.A. 13:20-25	Final agency action; judicial review; relief	Any decision rendered or action taken by the Council pursuant to this Act shall be a final agency action subject to judicial review in the Appellate Division of the Superior Court of New Jersey in accordance with the Rules of Court.	
Section 29 N.J.S.A. 13:20-27	Annual report	On or before March 31 in each year, the Council shall make an annual report of its activities for the preceding calendar year to the Governor, the Legislature, and the governing body and the chief executive officer of each municipality and county in the Highlands Region.	

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SECTION	DESCRIPTION	MAJOR PROVISIONS	WHERE ADDRESSED IN RMP
Section 30 N.J.S.A. 13:20-28	Exemptions from the Highlands Act	Provides a list of 17 exemptions from the Highlands Act, the RMP, any rules or regulations adopted by NJDEP pursuant to the Act, or any amendments to a master plan, development regulations, or other regulations adopted by a local government unit to specifically conform them to the RMP.	Chapter 3, Part 7, Subpart B
Section 31 N.J.S.A. 13:20-29	Increases in impervious surface of an agricultural area trigger requirement of farm conservation plan	Any agricultural or horticultural development in the Preservation Area that would result in the increase, after the date of enactment of this Act of agricultural impervious cover by three percent or more of the total land area of a farm management unit in the Preservation Area shall require the review and approval by the local soil conservation district of a farm conservation plan.	Chapter 3, Part 3 Chapter 4, Part 3 Chapter 5, Part 3
		Any agricultural or horticultural development in the preservation area that would result in the increase, after the date of enactment of this Act, of agricultural impervious cover by nine percent or more of the total land area of a farm management unit in the Preservation Area shall require the review and approval by the local soil conservation district of a resource management systems plan.	Chapter 3, Part 3 Chapter 4, Part 3 Chapter 5, Part 3
Section 32 N.J.S.A. 13:20-30	Development standards for Preservation Area prior to effective date of the rules and regulations adopted by NJDEP	The Highlands Preservation Area Approval from NJDEP shall consist of the related aspects of other regulatory programs.	
		A prohibition on major Highlands development within 300 feet of any Highlands Open Waters in the Preservation Area.	Chapter 3, Part 1, Subpart B
		The quality of all Highlands Open Waters within the Preservation Area shall be maintained, restored, or enhanced.	Chapter 3, Part 1, Subpart B
		Any diversion of more than 50,000 gallons per day shall require a permit pursuant to the "Water Supply Management Act." Any new or increased diversion for nonpotable purposes that is more than 50% consumptive shall require an equivalent reduction in water demand within the same subdrainage area through such means as ground water recharge of stormwater or reuse.	Chapter 3, Part 2

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SECTION	DESCRIPTION	MAJOR PROVISIONS	WHERE ADDRESSED IN RMP
Section 32 N.J.S.A. 13:20-30 (continued)	Development standards for Preservation Area prior to effective date of the rules and regulations adopted by NJDEP (continued)	A zero net fill requirement for flood hazard areas pursuant to the "Flood Hazard Area Control Act."	Chapter 3, Part 1, Subpart B
		The antidegradation provisions of the surface water quality standards and the stormwater regulations applicable to C1 waters shall be applied to Highlands Open Waters.	Chapter 3, Part 1, Subpart B
		A prohibition on impervious surfaces of greater than three percent of the land area of a lot existing on the date of enactment of this Act.	
		A prohibition on major development on steep slopes with a grade of 20% or greater.	Chapter 3, Part 1, Subpart C
		A prohibition on development that disturbs upland forested areas.	Chapter 3, Part 1, Subpart A
Section 33 N.J.S.A. 13:20-31	NJDEP adoption of Highlands Preservation Area rules	Within 270 days after the date of enactment of the Act, the NJDEP Commissioner shall immediately adopt the rules and regulations prepared by the department pursuant to Section 34 of the Act and any other rules and regulations necessary to establish the Highlands permitting review program.	
Section 34 N.J.S.A. 13:20-32	NJDEP shall prepare rules and regulations establishing environmental standards for the Preservation Area upon which the RMP and the Highlands permitting review program shall be based *(Note that the standards for NJDEP's Preservation Area rules are the same as listed in Section 32 (above) with additions/ distinctions noted in the column to the right)*	For activities eligible for the use of a general permit for any portion of an activity located within a freshwater wetland or freshwater wetland transition area located in the Preservation Area, establish criteria that are at least as protective as those provided in existing State freshwater wetland rules.	Chapter 3, Part 1, Subpart B
		A septic system density standard shall be established at a level 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.	Chapter 3, Part 2
		A limitation or prohibition on the construction of new public water systems or the extension of existing public water systems to serve development in the Preservation Area, except in the case of a demonstrated need to protect public health and safety.	Chapter 3, Part 2

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SECTION	DESCRIPTION	MAJOR PROVISIONS	WHERE ADDRESSED IN RMP
Section 34 N.J.S.A. 13:20-32 (continued)	(continued)	A prohibition on major Highlands development on steep slopes with a grade of 20% or greater and establishment of standards for slopes exhibiting a grade of between 10% and 20%.	Chapter 3, Part 1, Subpart C
		The DEP shall establish a Highlands permitting review program to provide for the coordinated review of any major Highlands development in the Preservation Area	
Section 35 N.J.S.A. 13:20-33	DEP shall establish a Highlands permitting review program for major Highlands development in the Preservation Area	The Commissioner of NJDEP shall review filed applications for Highlands permitting reviews, including any information presented at public hearings or during a comment period, or submitted during the application review period. A Highlands permitting review approval may be issued only upon a finding that the proposed major Highlands development would meet the standards set forth in NJDEP's Preservation Area rules.	
Section 36 N.J.S.A. 13:20-34	NJDEP shall review filed applications for Highlands permitting reviews	When reviewing applications for various Highlands permits, NJDEP must review applications in light of a set of narrative criteria, including, but not limited to, whether the proposed major Highlands development would: have a de minimis impact on water resources; cause minimal feasible interference with the natural functioning of animal, plant and other natural resources at the site; and result in minimum feasible alteration or impairment of aquatic ecosystems.	
Section 37 N.J.S.A. 13:20-35	Violations of rules, regulations of the Act	Whenever NJDEP finds that a person has violated any rule or regulation of the Highlands Act, the NJDEP Commissioner may issue an order requiring compliance or bring civil action against the offending party.	
Section 38 N.J.S.A. 13:9B-5.1	Major development that includes activities in a freshwater wetland area in the Preservation Area	Notwithstanding State freshwater wetlands regulations, major Highlands development that includes a regulated activity in a freshwater wetland or freshwater wetland transition area located in the Highlands Preservation Area shall also be regulated pursuant to Sections 32 through 37 of the Act.	

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SECTION	DESCRIPTION	MAJOR PROVISIONS	WHERE ADDRESSED IN RMP
Section 39 N.J.S.A. 58:1A-5.1	NJDEP permit system for allocations or reallocations of Highlands Waters in the Preservation Area	NJDEP shall establish a permit system to provide for review of allocations or reallocations, for other than agricultural or horticultural purposes, of waters of the Highlands, to provide for the issuance of permits for diversions either individually or cumulatively of more than 50,000 gallons per day of waters of the Highlands Preservation Area.	Chapter 3, Part 2
Section 40 N.J.S.A. 58:11-24.1	NJDEP shall establish a septic density standard for the Preservation Area	NJDEP shall establish a septic system density standard at a level to prevent the degradation of water quality or to require the restoration of water quality to protect ecological uses from individual, secondary, and cumulative impacts, in consideration of deep aquifer recharge available for dilution.	Chapter 3, Part 2, Subpart F
Section 41 N.J.S.A. 58:12A-4.1	NJDEP shall limit or prohibit the construction of new public water systems or the extension of existing public water systems in the Preservation Area	In the Preservation Area, NJDEP shall limit or prohibit the construction of new public water systems or the extension of existing public water systems, except in the case of a demonstrated need to protect public health and safety, and except to serve development in the Highlands Preservation Area that is exempt from the provisions of the Act.	Chapter 3, Part 2
Section 42 N.J.S.A. 58:11A-7.1	Designated sewer service areas for which wastewater collection systems have not been installed on the date of enactment of the Act, are revoked	Designated sewer service areas for which wastewater collection systems have not been installed on the date of enactment of the Act are revoked, and any associated treatment works approvals in the impacted areas shall expire on the date of enactment of the Act. Any designated sewer service area shall not be revoked and any associated treatment works approvals shall not expire if necessary to serve development in the Highlands Preservation Area that is exempt from the provisions of the Act.	Chapter 3, Part 2
Section 43 N.J.S.A. 58:16A-60.1	Zero net fill requirement	NJDEP shall establish a zero net fill requirement within any flood hazard area located in the Preservation Area.	

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SECTION	DESCRIPTION	MAJOR PROVISIONS	WHERE ADDRESSED IN RMP
Section 44 N.J.S.A. 4:1C-31	Landowner applying to sell a development easement at a price that represents fair value of the development potential	This section amends the process for determining the easement value of development potential such that a county agriculture development board may look to the municipal average of the value of the development potential of property in a TDR sending zone in determining the value of the development easement.	Chapter 3, Part 1, Subpart F Chapter 3, Part 3
Section 45 N.J.S.A. 4:1C-36	Act does not prohibit municipally approved farmland programs	Nothing in the Act shall be construed to prohibit the creation of a municipally approved program or other farmland preservation program.	Chapter 3, Part 3
Section 46 N.J.S.A. 4:1C-52	State Transfer of Development Rights Bank	This section amends the State TDR Bank Act to permit the bank to provide funds for a Highlands development transfer bank.	Chapter 4, Part 7 Chapter 5, Part 7
Section 47 N.J.S.A. 13:1B-15.143	Appointing an officer or employee	The NJDEP Commissioner may appoint any officer or employee to the department necessary to carry out the provisions of the Act.	
Section 48 N.J.S.A. 13:1B-15.159	NJDEP shall establish a natural resource inventory using the Geographic Information System	The NJDEP, in consultation with the Pinelands Commission and the Highlands Council, shall establish a natural resources inventory, using the Geographic Information System, for the purpose of encouraging ecologically based tourism and recreation in New Jersey. This inventory shall contain information on New Jersey's natural, historic, and recreational resources.	
Section 49 N.J.S.A. 13:1D-58	Conveyances of lands to the federal government or any agency for recreation and conservation purposes	The provisions of P.L.1993 shall not apply in the case of conveyances by the State or NJDEP involving an exchange of lands within the Pinelands Area, or within the Hackensack Meadowlands District or within the Highlands Region to the federal government or any agency, provided the lands to be conveyed are used for recreation or conservation purposes and it has been determined that the proposed recreation and conservation purposes for the lands do not significantly alter the ecological and environmental value of the lands being exchanged.	

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SECTION	DESCRIPTION	MAJOR PROVISIONS	WHERE ADDRESSED IN RMP
Section 50 N.J.S.A. 13:1M-18	Act does not supersede municipal adoption of any ordinance regulating or prohibiting the exploration of oil and natural gas or uranium	Nothing in the Highlands Act shall be construed to supersede or prohibit the adoption, by the governing body of any county or municipality, of any ordinance regulating or prohibiting the exploration beyond the reconnaissance phase, drilling for, and the extraction of oil and natural gas or uranium.	Chapter 6, Part 2
		NJDEP shall not approve any ordinance or regulation submitted pursuant this section which governs activities within the Highlands Preservation Area, unless the Council has approved the ordinance or regulation. The department shall not disapprove an ordinance or regulation which has been certified by the Council as consistent with the requirements of the Highlands RMP.	Chapter 6, Part 2
Section 51 N.J.S.A. 13:8C-25	Garden State Preservation Trust biennial report	Within one year after the date of enactment of this Act, and biennially thereafter until and including 2008, the Garden State Preservation Trust, after consultation with NJDEP, the State Agriculture Development Committee, the New Jersey Historic Trust, the Pinelands Commission, the Highlands Council, and the Office of State Planning shall prepare and submit to the Governor and the Legislature a written progress report.	
Section 52 N.J.S.A. 13:8C-25.1	NJDEP Open Space Plan	NJDEP, in consultation with the Office of State Planning, the Pinelands Commission, and the Highlands Council, shall prepare and submit to the Governor and the Legislature an Open Space Master Plan, which shall indicate those areas of the State where the acquisition and development of lands by the State for recreation and conservation purposes is planned or is most likely to occur, and those areas of the State where there is a need to protect water resources.	

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SECTION	DESCRIPTION	MAJOR PROVISIONS	WHERE ADDRESSED IN RMP
Section 53 N.J.S.A. 13:8C-26	Moneys appropriated from the Garden State Green Acres Preservation Trust Fund to NJDEP	Moneys appropriated from the Garden State Green Acres Preservation Trust Fund to NJDEP shall be used by the department to: 1) pay the cost of acquisition and development of lands by the State for recreation and conservation purposes; 2) provide grants and loans to assist local government units to pay the cost of acquisition and development of lands for recreation and conservation purposes; and 3) provide grants to assist qualifying tax exempt nonprofit organizations to pay the cost of acquisition and development of lands for recreation and conservation purposes.	
Section 54 N.J.S.A. 13:8C-38	Expenditure and allocation of constitutionally dedicated moneys for farmland preservation purposes	All acquisitions or grants made pursuant to Section 37 of the Act shall be made with respect to farmland devoted to farmland preservation under programs established by law. This section states the provisions for expenditure and allocation of constitutionally dedicated moneys for farmland preservation purposes, including required appraisal methods.	Chapter 3, Part 3 Chapter 4, Part 3 Chapter 5, Part 3
Section 55 N.J.S.A. 13:13A-13	Delaware and Raritan Canal Park Master Plan – consultation with Highlands Council on any provision of the park master plan that may impact the Highlands Region	The Delaware and Raritan Canal Commission shall consult with the Highlands Council on any provision of the Delaware and Raritan Canal Park master plan that may impact upon or otherwise affect the Highlands Region or the Highlands RMP, and any such provision shall be consistent with the Highlands RMP adopted by the Council pursuant to the Highlands Act.	Chapter 3, Part 1, Subpart B Chapter 6, Part 1, Subpart C
Section 56 N.J.S.A. 13:13A-14	Review zone for the Delaware and Raritan Canal Park and consultation with Highlands Council on any provision of the park master plan that may impact the Highlands Region	The Delaware and Raritan Canal Commission shall determine the extent and limits of the review zone to be designated for the Delaware and Raritan Canal Park. To the extent that any action the commission takes pursuant to this section may impact upon or otherwise affect the Highlands Region, the commission shall consult with the Highlands Council.	Chapter 3, Part 1, Subpart B Chapter 6, Part 1, Subpart D
Section 57 N.J.S.A. 27:5-9.1	Licensed and permitted billboard and outdoor advertising subject to Highlands Council review	Any licensed and permitted billboard or outdoor advertising sign proposed to be erected on or above any State lands shall be subject to the provisions of the Highlands Act, any rules and regulations adopted pursuant thereto, and the Highlands RMP adopted by the Highlands Council.	Chapter 6, Part 1

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SECTION	DESCRIPTION	MAJOR PROVISIONS	WHERE ADDRESSED IN RMP
Section 58 R.S. 32:14-5	Palisades Interstate Park Commission establishing lands to be preserved as parkland	The Palisades Interstate Park Commission, in consultation with NJDEP and the Highlands Council, shall, from time to time, select and locate lands lying within the Highlands areas of Bergen, Hunterdon, Morris, Passaic, Somerset or Warren counties as necessary to be reserved for the purpose of establishing a park.	Chapter 3 Chapter 6, Part 1, Subpart D
Section 59 N.J.S.A. 32:20A-5	Greenwood Lake Commission to consult with Highlands Council in carrying out its duties	With respect to Greenwood Lake, the Greenwood Lake Commission shall consult with the Highlands Council in carrying out its duties. Any action taken by the commission that may impact the Highlands Preservation Area shall be consistent with the Highlands RMP.	Chapter 3, Part 1, Subpart D
Section 60 N.J.S.A. 40:55D-28	Municipal master plans shall include a specific policy statement indicating the relationship of proposed development to the Highlands RMP	In the case of a municipality situated within the Highlands Region, the municipality's master plan shall include a specific policy statement indicating the relationship of any proposed development, as defined in the master plan, to the Highlands RMP.	Chapter 6, Part 1
Section 61 N.J.S.A. 46:15-8	Highlands Protection Fund	This section stipulates the monies generated from the State realty transfer tax that shall be credited to the Highlands Protection Fund on an annual basis.	Chapter 3, Part 8 Chapter 4, Part 8 Chapter 5, Part 8
Section 62 N.J.S.A. 46:15-10.2	Highlands Protection Fund	This section dictates provisions regarding monies that shall be credited to the Highlands Protection Fund.	Chapter 3, Part 8 Chapter 4, Part 8 Chapter 5, Part 8
Section 63 N.J.S.A. 52:18A-196	Need for SDRP	This section describes the need for the SDRP.	
Section 64 N.J.S.A. 52:18A-199	Goals and duties of State Planning Commission (SPC)	This section outlines the goals and duties of the SPC.	
Section 65 N.J.S.A. 52:18A-200	Goals for SDRP	This section outlines the objectives of the SDRP, including considering input from State, regional, county and municipal entities concerning their land use, environmental, capital and economic development plans.	
Section 66 N.J.S.A. 52:18A-201	Goals and duties of the Office of State Planning	This section outlines the goals and duties of the Office of State Planning.	Chapter 6, Part 1

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SECTION	DESCRIPTION	MAJOR PROVISIONS	WHERE ADDRESSED IN RMP
Section 67 N.J.S.A. 2:18A-202	SDRP – SPC to coordinate with Highlands Council	In preparing, maintaining and revising the SDRP, the SPC shall solicit and give due consideration to the plans, comments and advice of the Highlands Council.	Chapter 6, Part 3
Section 68 N.J.S.A. 52:18A-202.2	Office of State Planning and Office of Economic Policy	This section discusses the coordination necessary between the Office of State Planning and the Office of Economic Policy, and necessary coordination with regional entities.	
Section 69 N.J.S.A. 52:18A-203	Municipal and county master plans approved by Highlands Council shall be deemed the equivalent of having those plans endorsed by the SPC	Any municipality or county or portion thereof located in the Highlands Preservation Area shall be exempt from the SDRP endorsement process. Upon the SPC endorsing the RMP adopted by the Highlands Council, any municipal master plan and development regulations or county master plan and associated regulations that have been approved by the Highlands Council shall be deemed the equivalent of having those plans endorsed by the SPC.	Chapter 6, Part 1
Section 70 N.J.S.A. 52:18A-204	SPC entitled to solicit assistance	The SPC shall be entitled to call to its assistance any personnel of any State agency, regional entity, or county, municipality or political subdivision thereof as it may require in order to perform its duties.	Chapter 6, Part 1, Subpart D
Section 71 N.J.S.A. 52:18A-205	SPC need to access data/studies from other agencies	Each State agency, regional entity, or county, municipality or political subdivision shall make available to the commission any studies, surveys, plans, data and other materials.	Chapter 6, Part 1, Subpart D
Section 72 N.J.S.A. 52:18A-206	SPC shall rely on the adopted plans of regional entities	The SPC shall rely on the adopted plans and regulations of regional entities (including the Highlands Council) in developing the SDRP.	Chapter 6, Part 4
Section 73 N.J.S.A. 58:1A-13	New Jersey Statewide Water Supply Plan – NJDEP to consult with the Highlands Council	NJDEP shall prepare and adopt the New Jersey Statewide Water Supply Plan. Prior to the adoption of any revision to the New Jersey Statewide Water Supply Plan, NJDEP shall consult with the Highlands Council concerning the possible effects and impact of the plan upon the Highlands RMP.	Chapter 6, Part 1, Subpart D

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SECTION	DESCRIPTION	MAJOR PROVISIONS	WHERE ADDRESSED IN RMP
Section 74 N.J.S.A. 58:1A-15.1	NJDEP actions pursuant to the provisions of P.L.1981, c. 262 (C.58:1A-1 et al.) or P.L.1993, c. 202 (C.58:1A-7.3 et al.) must be consistent with Act.	No action taken by NJDEP pursuant to the provisions of P.L.1981, c. 262 (C.58:1A-1 et al.) or P.L.1993, c. 202 (C.58:1A-7.3 et al.) shall be inconsistent with the provisions of the Highlands Act or the Highlands RMP.	Chapter 6, Part 1, Subpart D
Section 75 N.J.S.A. 58:1B-6	New Jersey Water Supply Authority shall consult with the Highlands Council	The New Jersey Water Supply Authority shall consult with the Highlands Council prior to final action on any project or undertaking in the Highlands Region.	Chapter 6, Part 1, Subpart D
Section 76 N.J.S.A. 58:4B-7	Lake Hopatcong Commission shall consult with the Highlands Council	The Lake Hopatcong Commission shall consult with the Highlands Council in developing stormwater and nonpoint source pollution management plans. Any plan developed that may impact upon or otherwise affect the Highlands Preservation Area shall be consistent with the Highlands RMP.	Chapter 6, Part 1, Subpart D
Section 77 N.J.S.A. 58:4B-9	Lake Hopatcong Commission – municipal master plan amendments and consistency with the Highlands Plan	The Lake Hopatcong Commission shall consider the consistency of any amendment or revision to a municipality's master plan or zoning with the Highlands RMP. If it may impact upon or otherwise affect the Highlands Preservation Area, the Commission shall consult with the Highlands Council.	Chapter 6, Part 1, Subpart D
Section 78 R.S. 58:5-12	North Jersey District Water Supply Commission to consult with Highlands Council when obtaining any water from Highlands Region	If the plans to be formulated pursuant to this section involve obtaining water from the Highlands Region, the North Jersey District Water Supply Commission shall consult with the Highlands Council prior to moving forward with any plans or entering into any contracts.	Chapter 6, Part 1, Subpart D
Section 79 N.J.S.A. 58:10A-7.2	NJDEP permit applications to discharge ground water to surface water involving a ground water remedial action in the Preservation Area	In the Preservation Area, an application for a permit issued by NJDEP for the discharge of ground water to surface water involving a ground water remedial action (necessitated by a discharge from an underground storage tank containing petroleum products or a ground water remedial action involving petroleum products), must include documentation from the Highlands Council that the application is consistent with the requirements of the Highlands Act.	Chapter 6, Part 1, Subpart D

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SECTION	DESCRIPTION	MAJOR PROVISIONS	WHERE ADDRESSED IN RMP
Section 80 N.J.S.A. 58:10B-2	Remedial actions within the Preservation Area	All remediation standards and remedial actions that involve real property located in the Highlands Preservation Area shall be consistent with the provisions of the Highlands Act.	Chapter 4, Part 6, Subpart D and E
Section 81 N.J.S.A. 58:10B-12	Remedial actions within the Preservation Area	Same summary as that of Section 80 – all remediation standards and remedial actions that involve real property located in the Highlands Preservation Area shall be consistent with the provisions of the Highlands Act.	Chapter 4, Part 6, Subpart D and E
Section 82 N.J.S.A. 58:29-8	Monies appropriated from Highlands Protection Fund to municipalities	Monies shall be appropriated from the "Highlands Protection Fund" each year to each municipality which has lands subject to the moratorium on the conveyance of watershed lands. An amount of $47 per acre for such lands shall be appropriated.	Chapter 3, Part 8 Chapter 4, Part 8 Chapter 5, Part 8
Section 83	Effective date of the Highlands Act	The Highlands Act is effective August 10, 2004.	Chapter 1, Part 3

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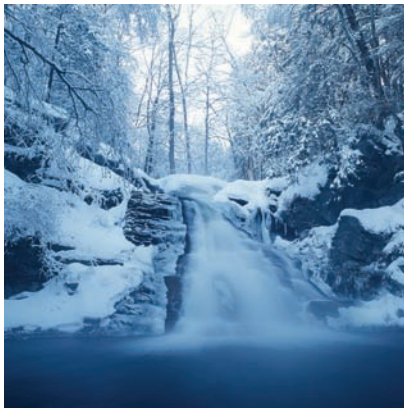
MASTER PLAN



State of New Jersey
Highlands Water Protection
and Planning Council

100 North Road (Route 513)
Chester, New Jersey 07930-2322

(T) 908.879.6737
(F) 908.879.4205

www.highlands.state.nj.us

Highlands Council
New Jersey