

TOWN OF PHILLIPSBURG  
Warren County, NJ

# Highlands Environmental Resource Inventory

Adopted by the Phillipsburg Planning Board

March 22, 2012

**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

This Environmental Resource Inventory is based on a format and background data provided by the Highlands Water Protection and Planning Council for the purposes of fulfilling the mandatory requirements for conformance with the Regional Master Plan.

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**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

**Table of Contents**

Purpose and Scope .....	1
Highlands Region .....	1
Land Use Capability Map Series .....	1
Highlands Subwatersheds.....	2
Forest Resources .....	3
Highlands Open Waters and Riparian Areas.....	4
Steep Slopes Protection Areas .....	7
Critical Habitat.....	8
Land Preservation and Stewardship .....	10
Carbonate Rock Areas .....	11
Water Resources Availability .....	12
Prime Ground Water Recharge Areas .....	14
Water Quality.....	16
Wellhead Protection .....	18
Agricultural Resources .....	19
Historic, Cultural, and Archaeological Resources.....	21
Scenic Resources .....	23
Contaminated Sites.....	24
Infrastructure .....	25
Water and Wastewater Utilities.....	25
Roadway and Transit .....	26

**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

## **List of Figures**

- Figure 1. Phillipsburg Planning Area
- Figure 2. Land Use Capability Map
- Figure 3. HUC 14 Boundaries
- Figure 4. Forest Resource Area
- Figure 5. Total Forest Area
- Figure 6. Forest Subwatersheds
- Figure 7. Highlands Open Waters
- Figure 8. Highlands Riparian Area
- Figure 9. Watershed Values
- Figure 10. Riparian Integrity
- Figure 11. Steep Slope Protection Area
- Figure 12. Critical Wildlife Habitat
- Figure 13. Significant Natural Areas
- Figure 14. [Reserved]
- Figure 15. Preserved Lands
- Figure 16. [Reserved]
- Figure 17. [Reserved]
- Figure 18. Carbonate Rock Area
- Figure 19. [Reserved]
- Figure 20. Net Water Availability
- Figure 21. Prime Ground Water Recharge Areas
- Figure 22. HUC 14s on NJDEP Impaired Waters List
- Figure 23. Wellhead Protection Areas
- Figure 24. Agricultural Resource Area
- Figure 25. Agricultural Priority Area
- Figure 26. Preserved Farms, SADC Easements, All Agricultural Uses
- Figure 27. Important Farmland Soils
- Figure 28. Historic, Cultural, and Archaeological Resources Inventory
- Figure 29. Baseline Scenic Resources Inventory
- Figure 30. Highlands Contaminated Site Inventory
- Figure 31. Public Community Water Systems
- Figure 32. Highlands Domestic Sewerage Facilities
- Figure 33. Highlands Roadway Network
- Figure 34. Highlands Transit Network

**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

## **Purpose and Scope**

An Environmental Resource Inventory (ERI), sometimes called a Natural Resource Inventory, identifies and depicts the natural and cultural resources present in a community. Natural resources maps and accompanying narrative provide the basis for inventorying a community's natural resource components and provide the base source for resource conservation. Identifying a community's natural resources is the first step toward establishing mechanisms for their protection. As an integral component of a master plan, an ERI functions as the basis for development of natural resources protection ordinances.

The purpose of the Highlands Environmental Resource Inventory is to provide a framework that supports the efforts of the Town of Phillipsburg to bring its planning documents, including the ERI, into conformance with the RMP. The ERI is one requirement for Plan Conformance. It provides critical support to the Conservation Plan Element of the municipal master plan and to implementation of resource protection requirements in the land use ordinance and health codes of the Town of Phillipsburg.

## **Highlands Region**

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. These boundaries were delineated by the Legislature in the Highlands Act, and as a legislative enactment, are not subject to modification through the Conformance Process.

The fundamental distinction between the Preservation and Planning Areas is that municipal and county conformance with the RMP is required in the Preservation Area and is voluntary in the Planning Area.

Phillipsburg is located entirely within the Highlands Planning Area (Figure 1).

## **Land Use Capability Map Series**

The Highlands Act requires that the RMP include a land use capability map and a comprehensive statement of policies for planning and managing the development and use of land based upon the results of the Council's resource assessment and smart growth analysis. The RMP requires that future land use in the Highlands Region be guided by the RMP's Land Use Capability Map (LUCM) Series. The LUCM Series includes components necessary to protect the natural, scenic and other Highlands resources, including but not limited to, agriculture, forests, wetlands, stream corridors, steep slopes, and critical habitat for flora and fauna. The entire Town of Phillipsburg is a designated Highlands Center and therefore, the Highlands Center regulations supplant the Land Use Capability Zone and density provisions, with respect to this portion of the Highlands Region Planning Area

**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

## **Highlands Subwatersheds**

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 from which all water, above ground (e.g., rain and snowmelt) and below ground (e.g. ground water), drains to the same point. Nearly all watersheds in New Jersey are part of larger watersheds, and may range in size from a few acres to thousands of square miles.

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 in size (i.e., higher order) as the water moves downstream and the size of the contributing drainage area increases. The connectivity of streams 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 RMP 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.

The Town of Phillipsburg includes portions of two HUC14 subwatersheds, as depicted in Figure 3.

<b>HUC 14 Subwatersheds</b>	<b>HUC 14 SW Name</b>
02040105120020	Lopatcong Creek (below Route 57) incl UDRV
02040105110030	UDVR tribs (Route 22 to Buckhorn Creek)

**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

**Forest Resources**

The forests of the Highlands Region provide essential ecosystem functions, including surface water filtration, which is important to protecting essential drinking water supplies for the Highlands Region, and air filtration, which helps to reduce the effects of global warming through carbon sequestration. Forests also serve as habitat for animal and plant species and are critically important to maintenance of biodiversity in the Highlands Region. In addition, properly managed, they provide an important renewable source of wood products.

The Highlands Council assessed the ecological integrity of forests through the examination of landscape level characteristics at both the forest patch and subwatershed (HUC14) 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. 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.

In addition, the Highlands Council assessed forest cover integrity in the Highlands Region at the watershed level. Forests are important 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 as follows:

- **High Integrity Forest Area** – 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 Area** – Predominantly forested, but do not exhibit a high proportion of forest cover, core area or patch size and an increase in distance to nearest patch.
- **Low Integrity Forest Area** – Predominantly non-forested or include 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. The Forest Resource Area and the Forest Integrity Indicators are used in the Highlands RMP to achieve the protection of forest areas in the Highlands Region.

The Town of Phillipsburg contains 6 acres of Forest Resource Areas, which are an extension of a larger forested area to the north in Lopatcong as depicted in Figure 4. Phillipsburg also contains 256 acres of Total Forest, as depicted in Figure 5, primarily along railroad rights-of-way and steep slopes. The HUC14 subwatershed scores for forest integrity for Phillipsburg are low to moderate as outlined in the table below, and are depicted in Figure 6.

HUC 14 Subwatersheds	HUC 14 SW Name	Forest Integrity Score
02040105120020	Lopatcong Creek (below Route 57) incl. UDRV	Low
02040105110030	UDRV tributaries (Route 22 to Buckhorn Creek	Low

## Highlands Open Waters and Riparian Areas

Highlands Open Waters are a critical public trust resource and an essential source of drinking water for New Jersey. These 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 endangered and threatened in the State. Highlands Open Waters also 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, as defined by the Highlands Act, are protected in the RMP using a holistic approach to policies and programs in recognition that maintaining a clean water supply depends upon factors independent of jurisdictional boundaries. NJDEP Stormwater regulations assign buffers based on the quality of the water body and can range from 50 feet to 300 feet. The RMP establishes a uniform 300-foot buffer for all open water bodies, but provides relief from certain regulations in previously disturbed areas by supporting restoration and mitigation as appropriate. Therefore, the RMP protection mechanisms meet both the spirit of the Highlands Act and provide for a balanced approach to smart growth in the existing developed areas of the Region such as the Town of Phillipsburg Highlands Center.

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. Specific definitions for the various types of Highlands Open Waters follow:

- **Stream** – A surface water drainage channel with definite bed and banks. A stream can be perennial, intermittent, or ephemeral. Perennial streams have a permanent flow of water. Many perennial streams are shown as “blue line” watercourses on United States Geological Survey Quadrangle Maps. Intermittent and ephemeral streams do not have a permanent flow of surface water. Surface water flow in an intermittent stream generally occurs for several weeks or months, due to seasonal precipitation and/or ground water discharge to the channel. Surface water flow in an ephemeral stream generally occurs after rain events, and typically lasts a few hours to days following the rain event.
- **Lake/Pond** – Any impoundment of water, whether naturally occurring, or created in whole or in part by the building of structures for the retention of surface water.
- **Seep** – The natural movement of water from below ground to the ground surface, many times forming a pool.
- **Spring** – A point where ground water flows from the ground to the surface creating a flow of water, representing the point where an aquifer meets the ground surface. Springs may be ephemeral or perennial.
- **Wetland** – NJDEP defines a freshwater wetland as an area that is inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation; provided, however, that the Department, in designating a wetland, shall use the three-parameter approach (that is, hydrology, soils, and vegetation) enumerated in the 1989 Federal Manual as defined in N.J.A.C. 7:7A-1.4.

The Highlands Council prepared a Highlands Open Waters Inventory using three primary GIS-based spatial data sets: 1) NJDEP 2007 Land Use/Land Cover (LU/LC); 2) NJDEP 2002 Hydrography (HYDRO) mapping; and 3) the Highlands Council Supplemental Headwater Stream Delineation.

The Highlands RMP requires a 300 foot protection area buffer around all Highlands Open Waters. Any improvement or development project that qualifies as a Highlands Act Exemption is exempt from the



**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

Highlands Open Waters buffer protection requirements. Disturbances of a Highlands Open Waters buffer are permitted within portions of such a buffer that have been previously disturbed, and may be allowed under certain other circumstances, such as redevelopment within a Highlands Redevelopment Area. Any lawfully pre-existing structure or improvement located within a Highlands Open Waters protection buffer area may remain and be maintained or rehabilitated, provided that the existing area of disturbance attributed to or associated with such structure or improvement shall not be increased. The specific regulations for the Town of Phillipsburg Highlands Center will be developed through the master planning process and implemented through modifications to the Town's development regulations.

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 RMP features a mitigation requirement, which requires demonstration of no net loss of functional value of a protection area buffer through the conduct of a Highlands Open Waters buffer functional value assessment. The functional value assessment entails analysis of the following Highlands Open Waters buffer functions:

- **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;
- **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;
- **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
- **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.

Riparian Areas are hydrologically connected to surface water through overland surface runoff, hydric soils, wetlands, or subsurface flow. They serve as an interface between surface water bodies (e.g., streams, rivers, lakes, or reservoirs) and terrestrial ecosystems. 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 and for a variety of animal species and support terrestrial and aquatic food webs through deposition of woody debris.

Riparian areas in the Highlands Region were defined and mapped by the Highlands Council using hydrologic properties of land cover, soil, and evidence of periodic inundation or saturation. Riparian areas include the integration of Highlands Open Waters with their associated flood prone areas, riparian soils, and wildlife corridors. A single riparian GIS coverage was created by joining flood prone area, riparian soil, wetland and stream, and wildlife corridor coverages to create a combined riparian area map. Each is described in more detail below.

**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

- **Highlands Open Waters** – Defined as all mapped rivers, lakes, streams and wetlands that are adjacent to and hydraulically interconnected with a river or stream as identified in the Highlands Open Water Inventory.
- **Flood Prone Areas** – Defined as NJDEP documented and undocumented flood prone areas and Federal Emergency Management Agency (FEMA) 100-year floodplain.
- **Riparian Soils** – Defined as a hydric soil, a soil exhibiting a shallow depth to seasonal high water table, or alluvial soil.
- **Wildlife Corridors** – Defined as a 300-foot corridor on each mapped stream bank or from the stream centerline if no stream bank is mapped.

Highlands Open Waters and Riparian Areas located within Phillipsburg are depicted in Figures 7 and 8, respectively. These include 1 mile of streams, 110 acres of wetlands, lakes, and ponds, 429 acres of open water protection areas, and 398 acres of riparian areas.

The Highlands Council utilized a watershed-based assessment to evaluate the integrity and protection needs of Highlands Open Waters at the HUC14 subwatershed level. The Highlands Council assigned a watershed value class to each HUC14 subwatershed in the Highlands Region based on a cumulative assessment of selected 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's characterization of 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 Council assigned a Riparian Area integrity value class to each HUC14 subwatershed in the Highlands Region, based on a cumulative assessment of selected watershed 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.

Watershed Value classifications for subwatersheds located within Phillipsburg are depicted in Figure 9 while Riparian Integrity valuations are depicted in Figure 10.

**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

## **Steep Slopes Protection Areas**

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 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 to effectively manage critical natural resources in the Highlands Region.

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 2007 Light Detection and Ranging (LiDAR) elevation data. A Digital Elevation Model (DEM) was then generated from the LiDAR dataset. The DEM includes records of terrain elevations for ground positions at regularly spaced horizontal intervals. The Council originally examined areas of slope in the Highlands Region based on the LiDAR derived DEM that exhibited one of the following grade classifications. 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.

All lands with slopes of 20% or greater and lands within Riparian Areas with slopes of 10% and greater are considered as Severely Constrained Slopes. All non-Riparian lands having a slope of 15% to less than 20% which are forested are considered Moderately Constrained Slopes. 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 are 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. 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, are considered Limited Constrained Slopes.

Phillipsburg includes 9 acres of Moderate Constrained Slopes and 275 acres of Severely Constrained Slopes. They are generally found along the river and along railroad rights-of-way. Each of the steep slope protection classifications are depicted in Figure 11.

**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

## **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 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.

The Highlands RMP defines three categories of Critical Habitat in the Highlands Region:

- **Critical Wildlife Habitat** – Habitats of animal species identified as endangered, threatened, of special concern, or of regional conservation priority in the Highlands Region;
- **Significant Natural Areas** – Regionally significant ecological communities, particularly for protection of endangered and rare 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.

Critical Wildlife Habitat and Significant Natural Areas are designated based on the presence 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 Highlands Council utilized NJDEP's Endangered and Nongame Species Program Landscape Project data to delineate suitable critical wildlife habitat for species of concern within the Highlands Region. A Landscape model (Version 3) was developed as a landscape level approach for the Highlands Region to identify areas of habitat based upon documented occurrences of rare, threatened and endangered wildlife species. It identifies the locations and types of critical wildlife habitat that are critically important to maintaining biological diversity in the Highlands Region.

The Landscape Project ranks habitat according to the status and distribution of wildlife species of concern. Landscape Ranks include the following:

- **Federally Listed (5)** – A wildlife species listed by the U.S. Fish and Wildlife Service as threatened or endangered.
- **State Endangered (4)** – A species listed on the official endangered wildlife list that the NJDEP promulgates pursuant to the Endangered and Nongame Species of Wildlife Conservation Act of 1973 (ENSCA).
- **State Threatened (3)** – A species designated as “threatened” on the list of nongame wildlife species that the NJDEP promulgates pursuant to ENSCA.
- **Special Concern (S3) (2)** – Nongame wildlife that are considered by the NJDEP to be species of special concern as determined by a panel of experts or S3 according to NatureServe methodology.
- **Suitable (1)** – Meets minimum habitat suitability requirements.

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:

**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

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

Critical Wildlife Habitat in the Highlands Region is the acreage of rare, threatened and endangered species habitat (Landscape Rank 2 through 5 in the Preservation Area; Landscape Rank 3 through 5, and Rank 2 with a Highlands Conservation Rank of 2 or 3 in the Planning Area) in the Region.

Significant Natural Areas are those Natural Heritage Program (NHP) Priority Sites within the Highlands Region that are regionally significant due either to the presence of rare or endangered plant species or unusual or exemplary natural ecological communities. The Highlands Council reviewed Priority Site boundaries using 2007 color orthophotography and the 2007 Land Use/Land Cover data to identify land use and land cover within and adjacent to NHP delineated Priority Sites. Where land use or land cover indicated a habitat disturbance or feature constraint, boundary lines were revised. Final revised boundaries of Priority Sites were identified as Highlands Significant Natural Areas. The Highlands Council may add Significant Natural Areas over time based on additional field survey results.

Phillipsburg contains 13 acres of Critical Wildlife Habitat suitable to support populations of rare, threatened, and endangered species, as depicted in Figure 12. This land includes habitat that supports the species listed in the following table:

Species	Landscape Rank
Bobcat	4

Phillipsburg contains 11 acres of Significant Natural Area as depicted in Figure 13, which are found along the river in the southern tip of the Town. Phillipsburg has no vernal pools or vernal pool protection buffer areas.

**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

## **Land Preservation and Stewardship**

The Highlands RMP and the *Land Preservation and Stewardship Technical Report* describe how the Highlands Council evaluated the status of land preservation in the Highlands Region. The technical report records the public and private resources that provide existing recreation and preserved lands for the Highlands Region. This inventory presents a catalog of the public and private land and water areas that have been preserved for conservation and recreation or are presently protected as open space and recreation facilities. The inventory considers significant recreation and conservation resources in the Highlands Region including:

- Public and private land and water areas available for active and passive recreation;
- Public and private land and water areas maintained as conservation areas dedicated to the preservation of natural and cultural resources;
- Lands that provide access to inland water bodies; and
- Other public or private lands that may not be directly accessible to the public but that enhance the open space system in the Highlands Region.

The inventory also includes preserved farmland in the Highlands Region, which generally is not available for public access except where used as part of agri-tourism.

Since the preserved lands data were acquired from numerous sources and measured at different scales, there may be discrepancies in the attribution of some sections of preserved open space or preserved farmland. Additionally, certain assumptions were made in the creation of the figures.

The Town of Phillipsburg has reviewed the municipal data provided by the Highlands Council and updated the information as necessary, in support of the municipal build-out process and this ERI. The municipality contains 119 total acres of Highlands Preserved Lands, as depicted in Figure 15 and listed by category, in the following table.

<b>Preserved Land Category</b>	<b>Acres</b>
Preserved Farmland	0
<b>Preserved Open Space by Ownership</b>	
Federal	0
State	11
County	0
Municipal	104
Non-Profit/Private	4
Water Supply Watershed Lands	0
Total Preserved Open Space Lands	119
<b>Total Preserved Lands</b>	<b>119</b>

**TOWN OF PHILLIPSBURG**  
**HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

## **Carbonate Rock Areas**

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.

The Highlands Council utilized 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 Carbonate Rock Areas. Because 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 Town of Phillipsburg contains approximately 2,120 acres of Carbonate Rock Areas, as depicted in Figure 18.

## 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. The Highlands RMP provides a Net Water Availability analysis for identifying the quantity of available water resources in the 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.

The Net Water Availability analysis examines 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. Overuse of water can reduce base flows, impair ecological function and integrity, and reduce the reliability of potable water supplies.

The Highlands Council selected the Low Flow Margin (LFM) method for this analysis, which considers the severity and duration of low flows as a reasonable surrogate for ecosystem and water supply impacts. The Low Flow Margin yields a value called Ground Water Capacity, expressed in million gallons per day (MGD), for each HUC14 subwatershed. The HUC14 subwatershed, which generally is between 10 and 20 square miles, was selected as the smallest drainage area available for application of the method.

A key issue for water availability is to what extent the estimated Ground Water Capacity should be made “available” for both current and future human uses, factoring in the nature of the environmental resources and conservation objectives of the RMP and respective zone goals of Land Use Capability Map. The resulting quantity, defined as Ground Water Availability, must be conservative and sensitive to varied ecological needs within the region, among other factors. In more ecologically sensitive HUC14 subwatersheds, this amount should be limited in order to protect aquatic ecosystems and the related terrestrial ecosystems. The RMP sets Ground Water Availability thresholds of 5%, 5% and 20% for Protection Zone, Conservation Zone and Existing Community Zone, respectively, plus a 10% availability threshold dedicated only for agricultural uses in the Conservation Zone. When Ground Water Capacity is multiplied by the appropriate threshold, Ground Water Availability is derived.

$$\text{Ground Water Availability} = (\text{Ground Water Capacity} * \% \text{ Water Availability Threshold})$$

After Ground Water Availability has been calculated, the amount of water currently being used must be factored in, as this will reduce the amount remaining for future uses. A significant amount of water use is either consumptive (not returned as recharge) or depletive (exported out of the watershed). Both consumptive and depletive water uses reduce the amount of water available to sustain human activity and the integrity of water resources. The RMP calculated maximum monthly consumptive and depletive use that are not supported by reservoir storage or safe yields for each HUC14. Wastewater discharges were identified and estimated to account for returns to the subwatershed. When consumptive and depletive demands are subtracted from Ground Water Availability, the remainder is called Net Water Availability. The formula for Net Water Availability is as follows:

$$\text{Net Water Availability} = (\text{Ground Water Availability}) - (\text{Consumptive/Depletive Water Use})$$

Where Net Water Availability is positive, it is assumed there is water available beyond existing demands. This availability must not be exceeded, so that new deficits are avoided in the future. Where Net Water Availability is negative, existing uses are exceeding sustainable supplies and the subwatershed is deemed to be a Current Deficit Area. 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.



**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

These areas, classified as Existing Constrained Areas, have their Ground Water Availability threshold adjusted to 5% more than the existing consumptive/depletive uses or the default threshold for the Zone, whichever is lower. Where water resources are stressed, additional planning and mitigation is necessary.

Figure 20, Net Water Availability, depicts net water availability for Highlands subwatersheds. The Town of Phillipsburg is located within two different subwatersheds, as depicted in Figure 3. Of these, one is calculated to be in deficit, as indicated by a bolded negative value for volume of net water availability.

<b>HUC 14 Subwatersheds</b>	<b>HUC 14 SW Name</b>	<b>Net Water Availability (MGD)</b>
02040105110030	UDRV tributaries (Route 22 to Buckhorn Creek)	<b>-0.154*</b>
02040105120020	Lopatcong Creek ( below Route 57) incl UDRV	0.392305

\*As per RMP Update No. NWA\_UPD001\_091214 December 2009

## Prime Ground Water Recharge Areas

In the hydrologic cycle, when precipitation occurs over the land surface a majority of it will be returned back to the atmosphere through evaporation. Some of it will flow over the surface in a process known as overland flow or runoff, to lakes and other open water bodies which then flow into streams and eventually to the ocean where the cycle begins again. A small percentage of precipitation that reaches the land surface will find its way into the subsurface in a process known as infiltration. Where infiltration reaches the water table, it is considered ground water recharge, and the overlying land areas are classified as ground water recharge areas. Ground water recharge areas can be defined as locations within a drainage basin where meteorological, ecological, geological and hydrogeological factors are conducive to infiltration of water from the surface into the subsurface. The factors that determine recharge potential are:

- **Precipitation:** The primary meteorological factor controlling infiltration. The amount of precipitation and its characteristics such as intensity and duration control the overall volume of water that is available for infiltration.
- **Evapotranspiration:** The combined evaporation from streams, open water bodies and land surfaces, and transpiration from plants. Of all the precipitation that falls within a drainage basin, a majority will be returned back to the atmosphere as evapotranspiration. Evapotranspiration rates are controlled by a combination of meteorological factors such as temperature, relative humidity and wind speed, and ecological factors such as type of vegetation, soil type and the size and volume of a water body.
- **Anthropogenic:** Development and land use factors such as the extent of urbanization, suburban areas, industrial zones, the presence of sewer service areas, public and private water supply wells, reservoirs, and septic system densities, cultural and historical and agricultural activities. Anthropogenic factors are the primary non-meteorological factor affecting infiltration.
- **Ecological Factors:** Include the types of vegetation, the density of forested areas, wetlands, vernal pools, critical habitat and riparian buffer zones.
- **Geological Factors:** Include soil type and characteristics, depth to bedrock, rock type and its characteristics, rock outcroppings, faulting, and topography.
- **Hydrogeological Factors:** Include depth to ground water, soil permeability, rock type porosity, the presence or absence of fractures and wellhead protection areas.

Once into the subsurface, the infiltrated water under the pull of gravity will move down through the soil root zone to zones of saturation to become ground water. A portion of this ground water will become ground water runoff or ground water base flow which is ground water that migrates horizontally along zones of lower permeability soil or along the soil-bedrock interface and more quickly exits the drainage basin as stream flow. Some ground water will move further downward to enter an aquifer system where it can be used as a water-supply resource, or will eventually migrate to surface waters and again exit the drainage basin as stream flow.

The Highlands Council defines Prime Ground Water Recharge Areas as those lands within a HUC14 subwatershed that most efficiently provide 40 percent of total drought recharge volume for that HUC14 subwatershed, as defined using a GSR-32 analysis available based upon the 2002 land use/land cover and 1964-1966 drought of record precipitation.

Prime Ground Water Recharge Areas are not stand alone features, but instead are totally interrelated to local anthropogenic, ecological, geological and hydro-geological conditions which function as constraints that control the degree of infiltration and hence the volume of water that is recharged to ground water base flow and aquifer systems. Changes in anthropogenic factors, particularly land use, greatly affect the degree of infiltration and water quality within a ground water recharge area by changing the ecological, geological and

**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

hydro-geological constraining factors. These changes can be controlled through the land development regulatory process.

The Town of Phillipsburg contains 226 acres of Prime Ground Water Recharge Areas as depicted in Figure 21.

**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

## **Water Quality**

Water quality affects drinking water, recreation, ecosystems, and aesthetic beauty. The most commonly found parameters that indicate poor surface and ground water quality are fecal coliform bacteria, phosphorus, temperature, arsenic, and nitrate-nitrogen. These and other contaminants can either cause health risks if ingested or harm native biota, resulting in non-attainment of designated water uses for the water body.

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.

Section 303(d) of the Federal Water Pollution Control Act (33 U.S.C. 1313(c)), commonly known as the Clean Water Act, requires states to identify “Impaired Waters” where specific designated uses are not fully supported. Known as the 303(d) list, this list identifies the name of the water body and the pollutant or pollutants causing the water body to be listed as impaired. Section 305(b) of the Clean Water Act also requires states to periodically assess and report on the overall quality of their waters. With guidance from USEPA, in 2002 the NJDEP integrated the 303(d) report with the 305(b) report into one report titled the New Jersey Water Quality Monitoring and Assessment Report (Integrated Report).

The 2006 Integrated Report identifies river segments and lakes of attainment of each of several designated uses. Designated Uses include Aquatic Life (general), Aquatic Life (trout), Primary Contact Recreation, Secondary Contact Recreation, Drinking Water Supply, Agricultural Water Supply, Industrial Water Supply, Shellfish Harvest, and Fish Consumption. The Integrated List lists the attainment of HUC14s of designated uses based on six categories as follows:

- **Sublist 1:** The designated use is assessed and attained AND all other designated uses in the assessment unit are assessed and attained. (Note: The fish consumption use is not used for this determination based on USEPA guidance).
- **Sublist 2:** The designated use is assessed and attained BUT one or more designated uses in the assessment unit are not attained and/or there is insufficient information to make a determination.
- **Sublist 3:** Insufficient or no data are available to determine if the designated use is attained.
- **Sublist 4:** The designated use is not attained or is threatened; however, development of a TMDL (Total Maximum Daily Load) is not required for one of the following reasons:
  - a. A TMDL has been completed for the pollutant causing non-attainment.
  - b. Other enforceable pollution control requirements are reasonably expected to result in the conformance with the applicable water quality standard(s) in the near future and the designated use will be attained.
  - c. Non-attainment is caused by something other than a pollutant (e.g. “pollution”), such as natural conditions.

**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

- **Sublist 5:** The designated use is not attained. The water body is impaired or threatened for the designated use by a pollutant(s), and requires a TMDL.
- **N/A:** Designated use does not apply.

Sublist 4 and Sublist 5 indicate that a water body is not attaining the designated use. The Water Resource Technical Report Volume 1: Watersheds and Quality Appendix B developed by the Highlands Council contains a table of Designated Use attainment in the Highlands Region, and Appendix D of the Technical Report displays the Spatial Extent of Designated Uses.

The 2006 Integrated Report also categories Impaired Waters by HUC14. The List of Impaired Waters identifies the parameters that a HUC14 does not attain with Priority Ranking from high to low. Parameters listed include metals, nutrients, pathogens, etc. Appendix E of the Water Resource Technical Report Volume 1: Watersheds and Quality identifies the spatial extent of parameters not meeting water quality standards.

Section 303(d) of the Clean Water Act requires TMDLs to be developed for water bodies that cannot meet surface water quality standards after the implementation of technology-based effluent limitations. A TMDL defines the pollutant load that a water body can assimilate without causing violations of water quality standards, and allocates the loading between contributing point sources and source categories. It is a mechanism for identifying all contributors to surface water quality impacts and setting pollutant load reduction goals to meet surface water quality standards. TMDLs may also be established to help maintain or improve water quality in waters that are not impaired. New Jersey’s TMDL regulations are in N.J.A.C. 7:15-7 (Water Quality Management Planning rules). The RMP figure *Impaired Waters Overall Assessment by HUC 14* displays the status of designated uses for water bodies by the subwatersheds (HUC14) within the Highlands Region. Water Resource Technical Report Volume 1: Watersheds and Quality Appendix H outlines TMDLs that have been established by NJDEP divided by Watershed Management Areas.

The Water Resource Technical Report Volume 1: Watersheds and Quality (Appendix H) list the TMDLs have been developed for Fecal Coliform in one HUC 14 located in the Town of Phillipsburg. Additional information is located at the NJDEP TMDL Documents (located at <http://www.state.nj.us/dep/watershedmgt/tmdl.htm>)

Appendix B in the Water Resource Technical Report Volume 1 includes tables from the NJDEP’s Integrated Water Quality Monitoring and Assessment Report 2006, which identify one HUC 14 that does not attain (listed on Sublist 4 or Sublist 5) the Designated Use for Aquatic Life General, Aquatic Life Trout and Primary Contact Recreation in Phillipsburg. NJDEP’s Integrated Water Quality Monitoring and Assessment Report 2006 (<http://www.nj.gov/dep/wms/bwqsa/2006IntegratedReport.pdf>) includes an Impaired Water List in Appendix B “303d List of Water Quality Limited Waters (“List of Impaired Water”).

The Town of Phillipsburg has one HUC 14 listed on the Impaired Water List, as depicted in Figure 22. The definitions and acronyms of the parameters listed in the Impaired Water List are located in the Metadata. The table below indicates which HUC14s have impairments.

HUC 14s in the municipality	TMDL(s)	Designated Uses not attained and Sublist	Parameters not attained
02040105110030	Fecal Coliform	Aquatic Life – General (5), Aquatic Life – Trout (5), Primary Contact Recreation (4A)	Unknown Pollutant
02040105120020	Fecal Coliform	Aquatic Life – Trout (5)	Unknown Pollutant

**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

## **Wellhead Protection**

Wellhead Protection Areas (WHPAs) around public community wells, defined as public water supply wells serving at least 15-service connections used by year-round residents regularly serving at least 25-year round residents, and non-community water supply wells defined as public water supply wells that are not public community wells and regularly service at least 25-individuals for at least 60-days in any given calendar year. WHPAs are mapped areas that delineate the horizontal extent of ground water captured by pumping at a specific rate. Once a well is located on the New Jersey Department of Environmental Protection's Geographic Information System database, a WHPA is mapped based upon time of travel, which is the amount of time it will take for ground water to flow to the well. In New Jersey, well head protection ordinances use three tiers based upon a 2-year, 5-year and 12-year time of travel.

- Tier 1 is a two-year time of travel to reflect the potential for bacterial and viral contaminant movement.
- Tier 2 is equivalent to a five-year time of travel based upon limitations on technological options for preventing long-lived contaminants from reaching a well without interfering with well function.
- Tier 3 is equivalent to a twelve-year time of travel, the longest times of travel customarily seen in New Jersey for plumes of long-lived contaminants.

Phillipsburg includes two Non-Public Community Water Supply wells for which Wellhead Protection Areas have been delineated, as depicted in Figure 23. There are two additional wellhead protection zones that extend into Phillipsburg from wells in adjacent communities.

**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

## **Agricultural Resources**

The Highlands RMP and the *Sustainable Agriculture Technical Report* describe the Agricultural Resource Area (ARA) and the resource values used to define the ARA. The ARA consists of those areas of the most concentrated, contiguous agricultural uses, using Important Farmland Soils as a critical factor in the Highlands Region.

In order to identify critical agricultural lands in the Highlands Region, the Highlands Council examined the Region's agricultural resources and evaluated them specifically considering the realities of farming in the Highlands Region. The Council then utilized the following criteria to assess the Region's farmland and identify the Region's most important agricultural resources: contiguous farming landscapes; farms that include Important Farmland Soils; the extent of lands adjoining a farm that are in agricultural use; and concentrations of existing preserved farmland. An examination of these factors permitted the Highlands Council to spatially delineate areas in the Highlands Region, with a prevalence of active farms to develop the ARA. The categories mapped within the ARA are defined below.

### **Preserved Farmland**

The New Jersey Department of Agriculture (NJDA) State Agriculture Development Committee (SADC) Farmland Preservation Program provides spatial files to the Highlands Council, which include farms that are preserved, farms that have final approval from the SADC, and farms under the eight year easement program.

### **All Agricultural Uses**

All agricultural uses were derived from the NJDEP Draft 2007 Land Use/Land Cover spatial files.

### **Important Farmland Soils and Soil Quality**

The Highlands RMP considers the four soil types of Prime, Statewide Importance, Unique, and Locally Important soils as Important Farmland Soils which are critical agricultural resources of the Highlands Region. The primary factor used in determining important farmland is soil quality, which is measured based on land capability classes, important farmland classes, and soil productivity rating. Soil data are prepared by the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) and are used as the reference to identify soil quality. Usually a percentage figure for each of these four soil categories is calculated for the entire farm targeted for preservation.

Prime farmland soil has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. It has the soil quality, growing season, and moisture supply needed to produce high yields of crops when treated and managed according to acceptable farming methods. Prime farmland soils are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding.

Farmland of Statewide Importance soils are similar to Prime farmland soils and produce high yields of crops when treated and managed according to acceptable farming methods. This soil may support yields as high as Prime farmland if conditions are favorable. Farmland of Locally Important soils include those soils that are not Prime or Statewide Importance and are used for the production of high value food, fiber, or horticultural crops.

**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

Unique farmland soils are soils used for special crops (such as cranberries in the New Jersey Pinelands). Unique soils are determined on a statewide basis by the State Soil Conservation Committee. Locally Important soils are generally defined through county ranking processes, rather than by the NRCS.

The USDA, NRCS, Soil Survey Geographic (SSURGO) Database for farmland soil quality including Prime, Statewide, Unique, and Locally Important farmland soils can be found at the following link: <http://soildatamart.nrcs.usda.gov/SSURGOMetadata.aspx>

### **Agricultural Priority Areas**

In order to determine the priority areas for farmland preservation, the Highlands Council, in coordination with the NJDA and the SADC, utilized the results of the agricultural resource assessment to identify those lands within the Highlands Region that have the highest agricultural resource values. The Agricultural Priority Area (APA) displays the relative value of these agricultural resources in order to provide a prioritization mechanism for future farmland preservation activities in the Highlands Region. The seven indicators used to determine the APA are: ARAs; Important Farmland Soils – Undeveloped; Preserved Farms; Contiguous Farms greater than 250 acres; Agricultural Uses 10 acres or greater; 50% or greater Prime Soils; and ¼ mile proximity to Preserved Farms. The *Land Preservation and Stewardship Technical Report* describes the seven indicators and the development of the APA. The APA consists of priority areas established by the Highlands Council in coordination with the NJDA and the SADC Farmland Preservation Program. The Highlands Council acknowledges that municipalities may have different mechanisms for setting priorities regarding future farmland preservation activities in the Highlands Region.

Phillipsburg contains 127 acres of Agricultural Resource Areas and 88 acres of Agricultural Priority Areas, as depicted in Figure 24 and Figure 25, respectively. Phillipsburg contains 0 acres of Preserved Farms, 49 acres of All Agricultural Uses and 112 acres of Important Farmland Soils, as depicted in Figures 26 and 27. Most of the agricultural acres are located on the southern end of the Ingersoll Rand property which is part of an approved Local Housing and Redevelopment Law Redevelopment Area. Another small portion is part of a ball field complex near the southwestern municipal border with Pohatcong Township.



**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

## **Historic, Cultural, and Archaeological Resources**

The Highlands RMP identifies protection and preservation of the historic, cultural and archaeological resources of the Highlands as a resource protection goal. Cultural resources are part of the character of the Highlands Region and protecting these resources is vital to protecting that essential character. They preserve the Region's history and provide a link to its past. They provide evidence of significant human and environmental events, and they provide vital information about how the people in this Region lived, worked and recreated.

The Historic and Cultural Resource Inventory includes: 1) all properties listed on the State or National Register of Historic Places; 2) all properties which have been deemed eligible for listing on the State or National Register; and 3) all properties for which a formal State Historic Preservation Office (SHPO) opinion has been issued. The Highlands Region Historic and Cultural Resource Inventory is a dynamic inventory and will automatically be updated according to SHPO's additions or deletions.

The Highlands Region Historic, Cultural, and Archaeological Resources data layer for the Town of Phillipsburg, as of November 2007 is depicted in Figure 28. There are 251 historic, cultural, and archaeological resources in Phillipsburg including those listed in the following table.

**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

**NEW JERSEY AND NATIONAL REGISTERS OF HISTORIC PLACES  
PHILLIPSBURG, NJ**

Site or District	Register or Opinion Date
Andover Iron Furnace's Concrete Faced Loading Ramp (ID#2779)	SHPO Opinion: 1/13/78
Central Railroad of New Jersey Main Line Corridor Historic District (ID#3500)	DOE: 11/30/95 SHPO Opinion: 7/19/91
P. Coal Site (28-Wa-543) (ID#2780)	SHPO Opinion: 9/16/1983
Dormida House (ID#2781) 112 Lock Street	SHPO Opinion: 9/16/1983
Doughty House (ID#2782) 221 Lock Street	SHPO Opinion: 9/16/1983
Dutch Canal (ID#4032) Beneath the streets at Union Square and North Main Street.	SHPO Opinion: 5/1/1992
Green's Bridge (ID#275) NJ Transit Raritan Valley Line, Milepost 70.44	SHPO Opinion: 2/3/1999
Ingersoll-Rand Corporation Complex (ID#4098) Centre Street	SHPO Opinion: 6/18/2002
Lander-Stewart Mansion and Sutes Building (ID#4772) 102-104 South Main Street	SR: 5/6/2008 NR: 6/25/2008
Lehigh Valley Railroad Historic District (ID#4154)	SHPO Opinion: 3/15/2002
Main Street Commercial Historic District (ID#2783) Main Street	SHPO Opinion: 7/21/1992
Main Street Bridge (ID#276) NJ Transit Raritan Valley Line, Milepost 72.15	SHPO Opinion: 2/3/1999
Morris Canal (ID#2784) Existing and former bed of the Morris Canal	SHPO Opinion: 4/27/2004 SR: 11/26/1973 NR: 10/1/1974
Phillipsburg Commercial Historic District (ID#4832) Portions of: South Main, Hudson, Morris, North Main, Market Streets and Union Square	SR: 8/20/2008 NR: 10/8/2008
Railroad Passenger Coach 5319 (ID#4812) AKA Great Northern Railroad Coach 1223	SHPO Opinion: 3/31/2000
Railroad Passenger Coach 5320 (ID#4813) AKA Great Northern Railroad Coach 1229	SHPO Opinion: 3/31/2000
John Roseberry Homestead (Gess) (ID#2785) 540 Warren Street	SR: 10/18/1972 NR: 4/3/1973
Union Station (ID#4228) 178 South Main Street	COE: 11/26/2003
U.S. Post Office (ID#2787) 361 Memorial Parkway	SR: 1/31/1986
Valley View Historic District (ID#4347) Congress, Ridge, Tuttle, Arlington and Gate Streets, Hillside Road, Valley View Circle	SHPO Opinion: 9/21/2004
Vargo House (ID#2788) 155-157 Lock Street	SHPO Opinion: 9/16/1983

Source: NJ DEP Historic Preservation Office Updated to 1/8/09.

**NR:** Indicates that a property is listed on the National Register of Historic Places.

**SR:** Indicates that a property is listed on the New Jersey Register of Historic Places (State Register).

**SHPO Opinion:** This is an opinion of eligibility issued by the State Historic Preservation Officer. It is in response to a federally funded activity that will have an effect on historic properties not listed on the National Register.

**COE:** A Certification of Eligibility is issued by the New Jersey State Historic Preservation Officer. For properties not already listed on the New Jersey Register of Historic Places, a COE satisfies a prerequisite to apply for funds from the New Jersey Historic Trust, as well as several county preservation funding programs.

**DOE:** A Determination of Eligibility is issued by the Keeper of the National Register, National Park Service, Department of Interior. It is a formal certification that a property is eligible for registration.

**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

## **Scenic Resources**

Protection of the scenic resources of the Highlands is one of the goals of the Highlands Act. In the Planning Area, the Act calls for the regional master plan to “protect and maintain the essential character of the Highlands environment;” and to “preserve farmland and historic sites and other historic resources;” (section 10 (c) (3&4)).

The goals associated with protecting scenic resources are to maintain the visual integrity and scenic beauty of noteworthy viewsheds and natural and cultural features of regional significance in the Highlands Region.

The Highlands Region baseline scenic resources data layer for the Town of Phillipsburg is depicted in Figure 25. There is one scenic resource shown in Figure 29, a forested area in the northern portion of the Town identified as the Delaware River Bluffs.

**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

## **Contaminated Sites**

Inclusion of contaminated sites in the Highland ERI provides a municipality with a large-scale perspective about its contaminated sites locations and the potential impact of the contamination regarding on-site or adjacent natural resources, neighborhoods and economic potential. Awareness of contaminated sites locations and details provides a municipality with additional planning tools in terms of natural resources protection and planning for future remedial actions. Contaminated sites associated with prior development may qualify as brownfields under the Highlands Act, and be eligible for formal designation as Highlands Redevelopment Areas by the Highlands Council.

The Highlands Council utilized portions of NJDEP's Known Contaminated Sites in New Jersey (KCS-NJ) database, the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database, and the Resource Conservation and Recovery Act (RCRA) database for contaminated sites listings. For further information regarding data selection, refer to the Highlands Council *Regional Land Use Conditions and Smart Design Technical Report*. Sites become listed if contamination of soil or ground water has been confirmed.

The contaminated site inventory will be updated to include additions and deletions as needed based upon input from local, county, state, and non-profit stakeholders beginning during the Plan Conformance process. Two tiers of contaminated sites were created based upon information gleaned from KCS-NJ, the CERCLIS database, and the RCRA database. Tier 1 sites are considered to have somewhat more complex contamination issues than Tier 2.

Tier 1 consists of:

- All Final and Deleted Superfund sites (CERCLIS);
- All RCRA identified sites;
- All sites with a Remedial Level of C3 or D (KCS-NJ); and
- Remaining sites with a Remedial Level of C2 located in the Preservation Area (KCS-NJ).

Tier 2 consists of:

- Remaining sites with a Remedial Level of C2 located in the Planning Area (KCS-NJ).

There are four Tier 1 sites and two Tier 2 sites in Phillipsburg as shown in Figure 30. Municipal awareness of these sites is the first step toward learning more about them, including such information as the nature, extent and characterization of on-site contamination, past uses, and redevelopment and restoration potential.

## Infrastructure

The Highlands ERI includes three sections on infrastructure (i.e., water and water utilities, and roadway/transit), as these three elements contribute to, or are a significant basis for, the Highlands Land Use Capability Zones. Additionally, water and wastewater utilities rely upon significant volumes of ground water or surface water, and thus are intrinsically linked to those natural resource components for which the Highlands RMP provides protection policies. Incorporation of the following three elements into the Highlands ERI provides for support of RMP protection policies and long-term planning goals.

## Water and Wastewater Utilities

### Water Supply Utility

Future development within the Highlands Region at densities consistent with smart growth principles will generally require access to public water supply utilities. A Public Community Water System is a public water system that pipes water for human consumption to at least either 15 service connections or one that regularly serves at least 25 year-round residents. They may be owned and operated by governmental entities (either as municipal operations or utility authorities) or investor-owned utilities. These community systems, whether their source consists of ground water or surface water withdrawals, may have the potential for inducing or supporting growth. The figure *Public Community Water Systems Map* in the RMP represents the most current and detailed information available on the extent of PCWS existing areas served and their associated remaining capacity.

Phillipsburg is served by Aqua New Jersey (formerly Consumers NJ Water Company). Figure 31 illustrates those properties that are presently connected to the water utility and does not represent the actual franchise area.

### Wastewater Utility

The primary wastewater collection systems in the Highlands Region are regulated by NJDEP as Domestic Sewerage Facilities. Domestic Sewerage Facilities are wastewater treatment systems that serve more than an individual residential or non-residential customer and treat sanitary sewage. These systems are distinct from industrial treatment works (which treat industrial process wastes from individual manufacturing sites) and Individual Subsurface Disposal Systems (ISSDS, or septic systems, which handle sewage from individual homes). Domestic Sewerage Facilities include municipal and regional sewage systems that are publicly-owned, similar systems that are investor-owned, and privately-owned systems (e.g., homeowners associations, mobile home parks) that provide sewage treatment. The *Highlands Domestic Sewerage Facilities* figure in the RMP represents the most current and detailed information regionally available on Existing Areas Served and outlines estimates of available treatment capacity.

The inventory of Highlands Domestic Sewerage Facilities Existing Areas Served is an important tool to identify areas where growth should or should not be encouraged and where land adjacent to this infrastructure is appropriate for growth. Additionally, this inventory will assist in the identification of areas of concern where dense development patterns without sewer service exist. Such situations may require the replacement of septic systems with community wastewater systems in order to safeguard public health.

**TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY**

Phillipsburg is served by the Phillipsburg Sewage Treatment Plant. . Figure 32 illustrates those properties currently connected to the system but does not represent the actual sewer service area.

## **Roadway and Transit**

Future and existing development and redevelopment in the Highlands Region will rely on a complex network of roads, railways and bridges and various modes of transportation, including automobile, bus, rail, truck, bicycle and pedestrian, to carry people and move goods throughout the Region. Numerous factors including past development patterns of inefficient land use in the Region have led to an increased dependence on automobile travel, which has adverse impacts on natural resources and overall quality of life. By using smart growth principles and encouraging more efficient land use, the potential for an accessible, multi-modal transportation system will increase in the Region, while protection of environmentally sensitive areas can be improved.

The existing transportation and transit features for the Region support the Land Use Capability Zone Map with the goal of better understanding the movement of people and goods, and the relationship of these features to the resources and land use conditions of the Region. The nature and extent of the regional and local roadway and transit features provide a framework for evaluating environmental resources that are potentially affected by the presence of these features. Such impacts could involve habitat features that are bisected by road or transit networks, for example, or habitat that surrounds these networks and should be evaluated when planning for future development and redevelopment activities.

The roadway and transit networks for the Town of Phillipsburg are presented in Figures 33 and 34, respectively.

TOWN OF PHILLIPSBURG  
HIGHLANDS ENVIRONMENTAL RESOURCE INVENTORY

**Figures**