

**NJ Department of Environmental Protection
State Plan Endorsement
Opportunities & Constraints Assessment Report
Vernon Township, Sussex County**

January 08, 2021

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Introduction

Municipal Plan Endorsement is a voluntary review process designed to ensure the coordination of state, county, and municipal planning efforts in achieving the goals and policies of the State Planning Act (Act). The State Development and Redevelopment Plan (State Plan) is the blueprint for achieving these goals and provides the template for coordination. The endorsement process expands upon the requirements of the Municipal Land Use Law (MLUL) and incorporates many planning initiatives of the State agencies.

This document constitutes the Department of Environmental Protection's (DEP) component of the State Opportunity and Constraints Assessment (OCA) conducted as part of the Plan Endorsement process. This document provides an overview of the Department's regulatory and policy concerns within Vernon Township, Sussex County. The information provided herein is intended to reflect the Department's current information concerning the Town.

Recommendations may be found throughout the document **in bold** and are listed for easy reference in the Summary of and Recommendations section at the end of this report.

Overview

Vernon Township encompasses 70 square miles, with just over 2 square miles of lakes, within Sussex County. Approximately two-thirds of the Township is located within the New Jersey Highlands Region Preservation Area with the remaining third in the New Jersey Highlands Region Planning Area. State Planning Areas in Vernon Township include Rural (PA4) and Environmentally Sensitive (PA5) Planning Areas, Parks, and the Highlands Preservation Area. Vernon Township received Town Center designation on July 16, 2003 by the New Jersey State Planning Commission. The center designation was set to expire on June 30, 2020. The expiration date has not been determined at this time.

Vernon Township submitted a Municipal Self-Assessment which was deemed complete by the Department of State's Office of Planning Advocacy (OPA) on September 30, 2020. The MSA proposes extending the existing designated town center from 1.27 square miles to a total area of 1.55 square miles. Based on a review by DEP and OPA, the proposed designated area has been refined and is 0.03 square miles smaller than proposed by Vernon in the MSA.

In addition to the center change the Township proposes the following changes to the planning areas increase preserved lands (parks) by 3,040.96 acres. Additionally, the Rural Environmentally Sensitive Planning Area was changed to Environmentally Sensitive and Parks (see table).

	Existing State Plan Planning Areas (Acres)	Proposed State Plan Planning Areas (Acres)
Designated Town Center *	809.59	991.83
Highlands Preservation Area **	29,280.30	29,280.30
Environmentally Sensitive	4,229.83	2,555.23
Parks	3,025.97	6,066.93
Rural	7,989.97	6,824.98
Rural Environmentally Sensitive	201.37	0
* Center overlays over other planning areas.		
** Highlands Preservation Area outside other planning areas.		

Land Use/Land Cover

DEP's 2015 Land Use Land Cover shows Vernon Township contains the following Land Types:

Urban	17%
Forest	57%
Wetlands	18%
Water	4%
Agriculture	4%
Barren	>1%

Note: Numbers may not equal 100% due to rounding

Impervious Surfaces

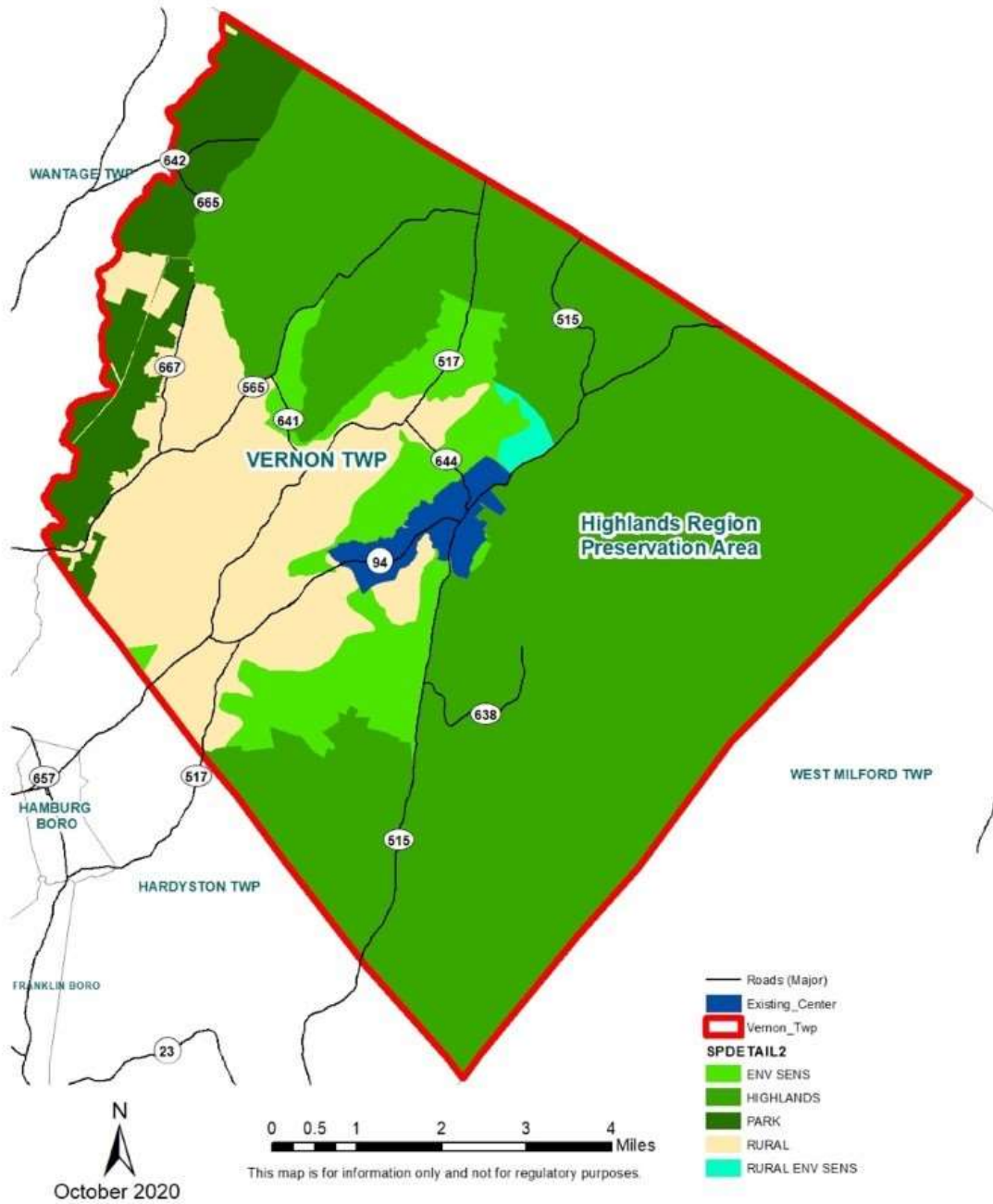
With additional development within the proposed center boundary, Vernon must address how to manage and minimize any additional impervious surface. An increase in stormwater runoff may result in a discharge of excessive nutrient and pollutant loads to nearby surface water bodies. Additional stormwater runoff can also lead to soil and stream bank erosion and further degradation of valuable surface water bodies.

As a result of changing climate conditions, including increases in temperature and precipitation, the ability of the municipality to manage an increase stormwater in situ will be challenged by an increase in new construction impervious surfaces. The proposed new town center boundary currently includes 88 additional acres of impervious surface for a total of 256.6 acres.

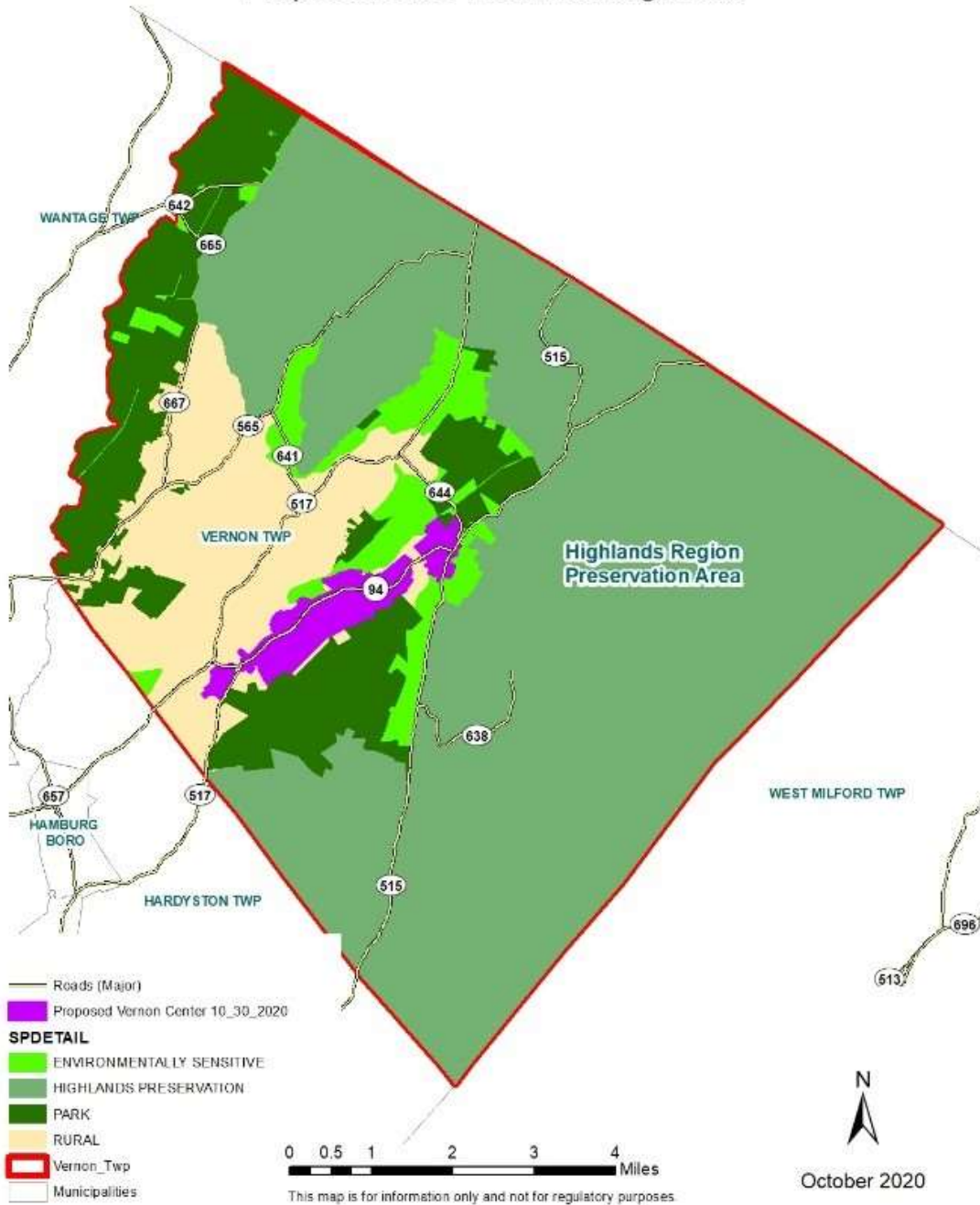
	Acres of Impervious	Pct. Impervious
Township (44,769.2 ac)	2,754.2	6.2%
Existing Center (809.6 ac)	168.6	20.8%
Proposed Center (991.8 ac)	256.6	25.9%

Note: Numbers are approximate.

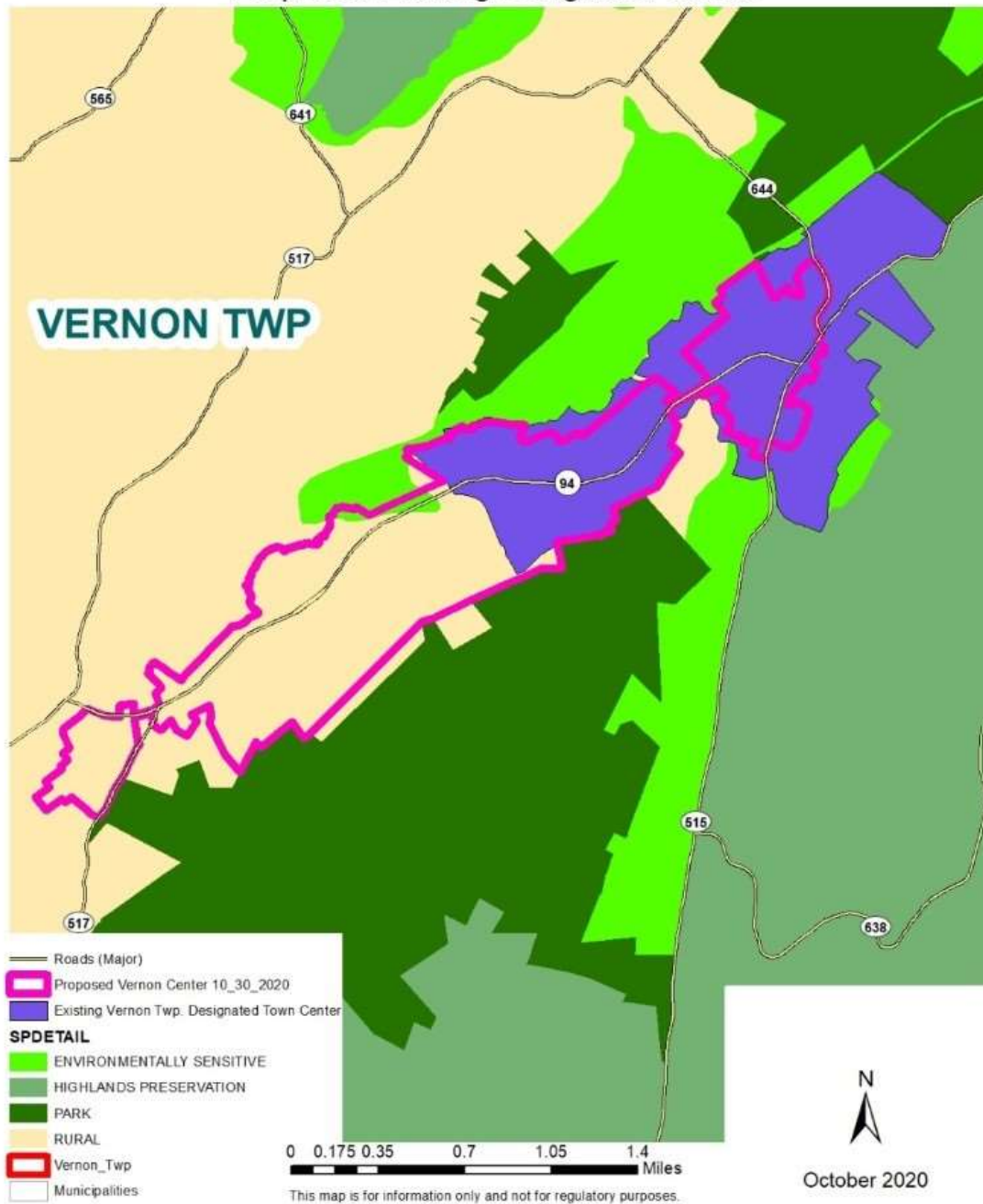
Vernon Township, Sussex County Existing State Plan Planning Areas



Vernon Township, Sussex County Proposed State Plan Planning Areas

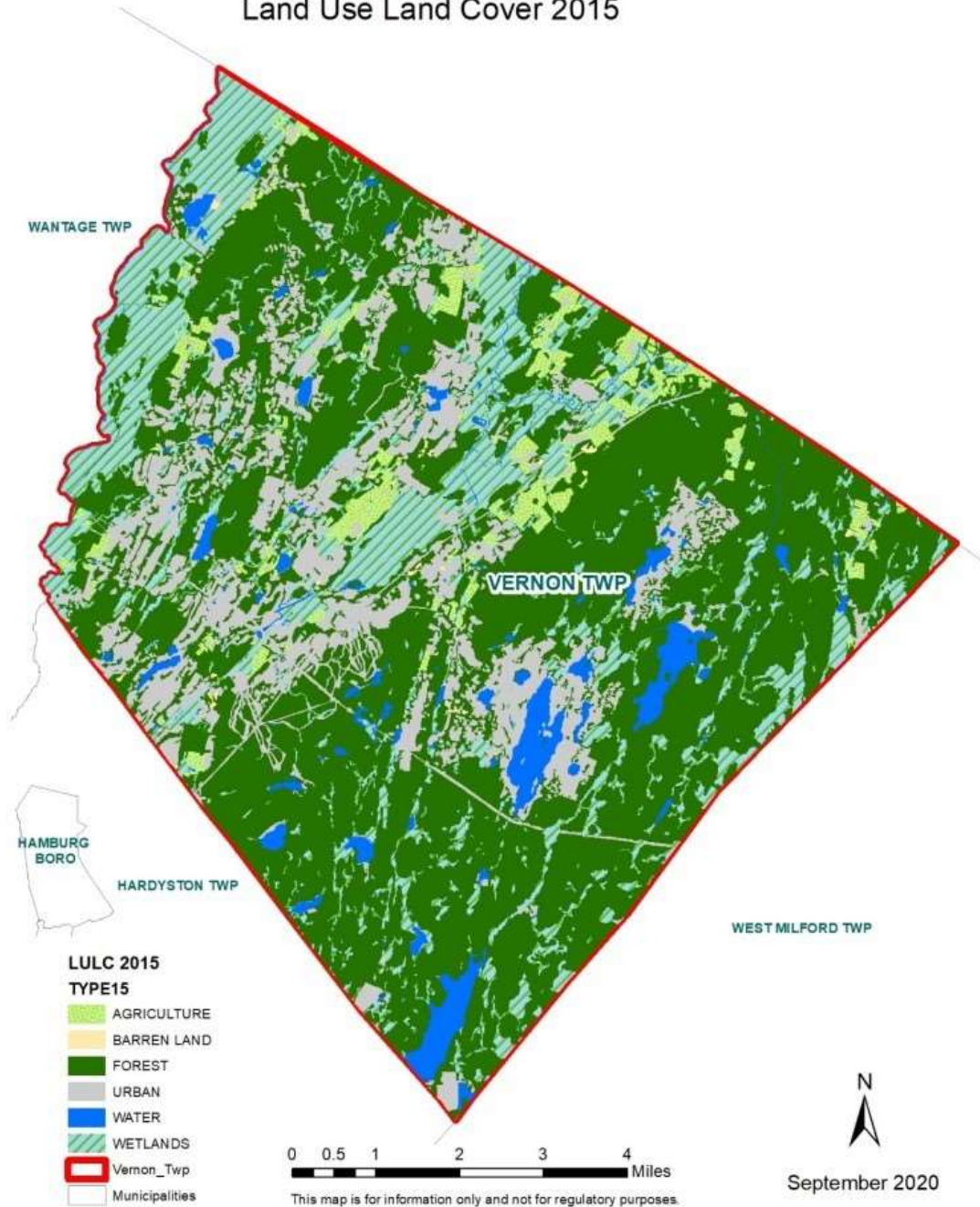


Vernon Township, Sussex County Proposed/ Existing Designated Center

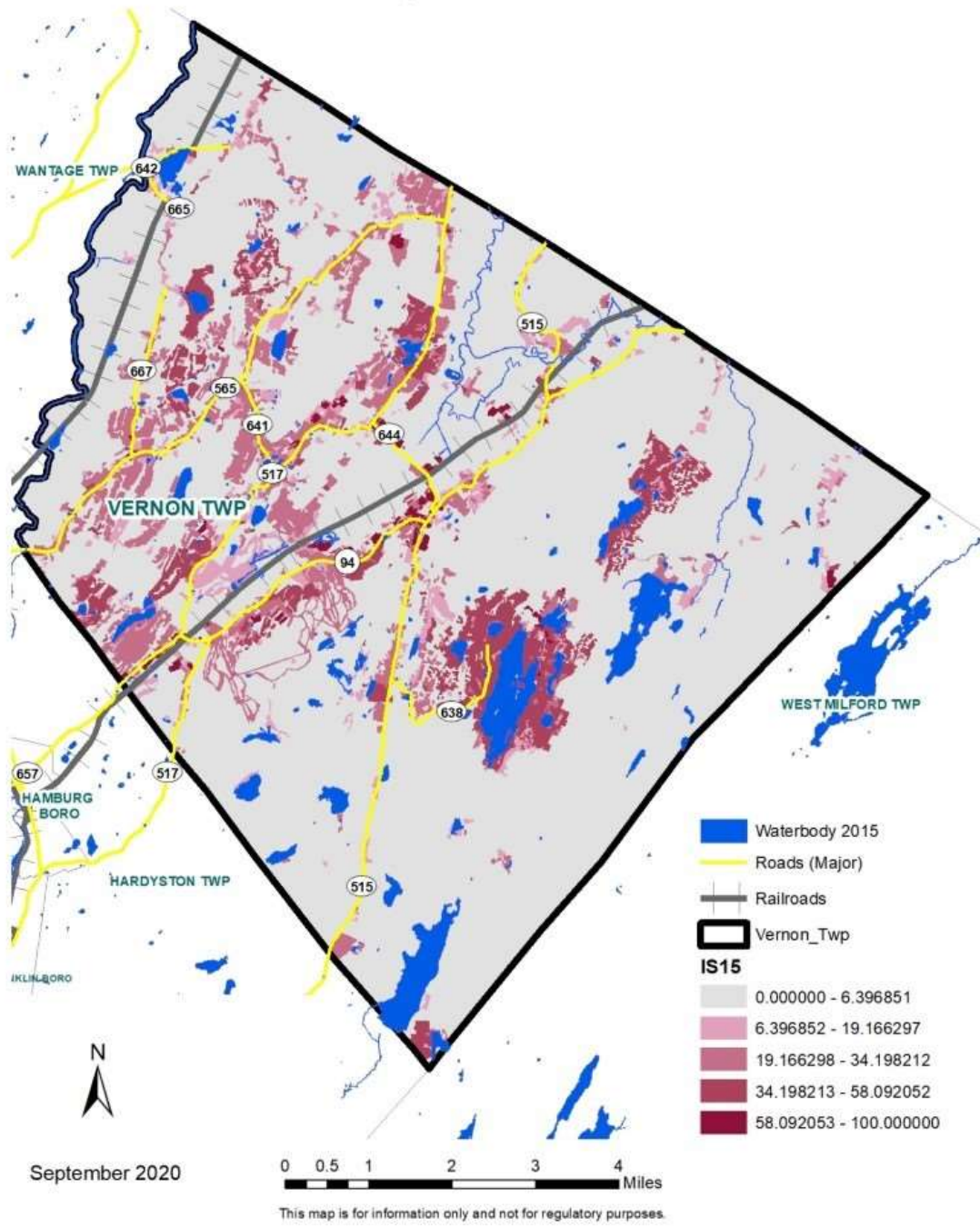


The Proposed Vernon Center illustrated in the map above is based on a series of discussions between Vernon Township and OPA, and DEP and OPA, and is updated from that proposed within the MSA. The proposed area was revised to minimize impact to flood areas and areas of potential impact to threatened and endangered species.

Vernon Township, Sussex County Land Use Land Cover 2015



Vernon Township, Sussex County 2015 Impervious Surface



Climate Change

In past OCA reports, DEP has largely focused on assessing the impacts to the development potential of municipalities based on environmental resources and water/wastewater capacity. In addition to addressing those issues, this OCA will consider the current and future impacts of climate change on those issues, as well as climate mitigation (e.g. greenhouse gas reduction, renewable energy) and climate resilience (e.g. vulnerability to increased flooding).

New Jersey issued its first *Scientific Report on Climate Change*¹ on June 26, 2020. The report details the latest science and describing the current and projected impacts of climate change, specific to New Jersey. As atmospheric levels of carbon dioxide and other greenhouse gases increase, Vernon Township can expect to see increases in average temperature, precipitation, flooding, and impacts to its extensive natural resources. Following, are key findings of the Scientific Report that may be germane to Vernon Township.

Temperature

- New Jersey is warming faster than the rest of the Northeast region and the world.
- Since 1895, New Jersey's annual temperature has increased by 3.5° F.
- Historically unprecedented warming is projected for the 21st century with average annual temperatures in New Jersey increasing by 4.1° F to 5.7° F by 2050.
- Heatwaves are expected to impact larger areas, with more frequency and longer duration by 2050.
- Climate change could result in a 55% increase in summer heat-related mortalities.

Precipitation

- Annual precipitation in New Jersey is expected to increase by 4% to 11% by 2050.
- The intensity and frequency of precipitation events is anticipated to increase due to climate change.
- Droughts may occur more frequently due to the expected changes in precipitation patterns.
- The size and frequency of floods will increase as annual precipitation increases.

Air Quality

- The effects of climate change are likely to contribute to an increase in air pollution, lead to increased respiratory and cardiovascular health problems, like asthma and hay fever, and a greater number of premature deaths.
- Environmental degradation from climate induced increases in air pollution will reduce visibility and cause damage to crops and forests.

Water Resources

- Water supplies will be stressed from the increase in the growing season and extreme temperatures expected due to climate change.
- Surface and groundwater quality will be impaired as increased nutrients and contaminants enter waters due to runoff from more intense rain events.

¹ <https://www.nj.gov/dep/climatechange/docs/nj-scientific-report-2020.pdf>

Agriculture

- The productivity of crops and livestock are expected to change due to the climate-induced changes in temperature and precipitation patterns.
- New Jersey may become unsuitable for specialty crops like blueberries and cranberries in the future as higher temperatures reduce necessary winter chills.

Forests

- The persistence of Southern pine beetle in New Jersey represents an early example of the destruction of invasive pests that can occur due to climate change impacts.
- Wildfire seasons could be lengthened, and the frequency of large fires increased due to the hot, dry periods that will result from increased temperatures.

Terrestrial Carbon Sequestration

- The loss of forest habitats to climate change will result in carbon losses and increase New Jersey's net greenhouse gas emissions.

Terrestrial Systems

- Climate change is likely to facilitate expansion of invasive plant species.
- 29% of New Jersey's bird species are vulnerable to climate change, including the American Goldfinch which is the state bird of New Jersey.

Freshwater Systems

- Freshwater fish, like brook trout, that need cold-water habitats are expected to lose habitat as water temperatures increase due to climate change.
- Reptiles with temperature-dependent sex determination could experience changes in sex ratios as New Jersey temperatures increase.

Climate Change Mitigation

As climate change, energy use, and environmental sustainability take on a larger role in New Jersey's policies, land use planning should promote energy efficiency, and specifically, integrate green building design and Greenhouse Gas (GHG) reduction into its planning and regulatory structures.

New Jersey's Global Warming Response Act calls for an 80% reduction of GHG emissions from 2006 levels by the year 2050. Released in October of 2020, the GWRA 80x50 Report² was written in response to that mandate and builds on the State's previous efforts to address and reduce greenhouse gas emissions. The report analyzes New Jersey's emissions reductions to date, evaluates plans presently in place for further reducing emissions, and presents a set of strategies across seven emission sectors for policymakers to consider in formulating legislation, regulations, policy and programs.

The 80x50 Report concludes that, "New Jersey can meet its goal of reducing GHG emissions to 80% below 2006 levels by 2050 – protecting our people, economy, and environment from the worsening impacts of climate change to which our state is uniquely vulnerable. Reaching our

² <https://www.nj.gov/dep/climatechange/docs/nj-gwra-80x50-report-2020.pdf>

80x50 goal requires planning and collaboration across all economic sectors, levels of government, political boundaries, and administrations, all fixed on a carbon neutral future. Achieving this goal depends upon a swift and decisive transition away from our reliance on fossil fuels, accomplished through adaptive policies that also ensure reliability and remain responsive to the scope and pace of efforts to electrify the transportation and building sectors while expanding renewable energy sources. However, only by working in concert across time and economic sectors can we implement the long-term, structural changes to how we generate and use energy, build our homes and businesses, operate our industries, develop and preserve our land, grow our food, manage our waste, and transport our people and products.”

While the 80x50 Report focuses on state-level actions, action at the municipal level will be crucial to meet the state’s GHG reduction goals. The Municipal Plan Endorsement Guidelines identify a series of mandatory requirements that will make substantial progress. Additionally, New Jersey’s climate change website identifies similar and additional actions for local governments at <https://www.nj.gov/dep/climatechange/action.html>.

Climate Resilience

Pursuant to Governor Murphy’s Executive Order 89, the state is developing a Climate Change Resilience Strategy (CCRS) to promote the long-term mitigation, adaptation, and resilience of New Jersey’s economy, communities, infrastructure, and natural resources throughout the State in a manner consistent with the Scientific Report on Climate Change. Much like the 80x50 Report, the CCRS will identify state-level action, including guidance and strategies for municipalities to implement resiliency measures, including through changes to plans, by-laws, regulations, policies, or land use standards. Executive Order 89 also requires the Climate & Flood Resilience Program at DEP to provide technical guidance and support to counties and municipalities in their efforts to plan for and address the current and anticipated impacts of climate change in accordance with the CCRS. Plan Endorsement is one avenue for the state to provide that assistance.

Flooding

Vernon participates in the National Flood Insurance Program (NFIP) and has approximately 30-40 policies in place. Vernon adopted a floodplain development ordinance in 2011. The town’s floodplain administrator is listed as Robert Westenberger.

Flood Zones

The Federal Emergency Management Agency (FEMA) maps Special Flood Hazard Areas (SFHA) adjacent to streams or rivers that experience flooding during periods of high precipitation and/or stormwater discharge. FEMA has identified flood hazard areas within Vernon Township. Most of Vernon’s floodplains are in various locations along the Wallkill River, Black River, Pochuck Creek, Wawayanda Creek, Double Kill Creek, Highland Lake, Lake Wanda, Wawayanda Lake, and Parker Lake. The SFHA for the one-percent storm (100-year) covers an area of 4,258 acres – 9.5 % of Vernon’s total surface area, while the SFHA associated with 0.2 percent storm (500-year) covers an additional 115 acres or 0.3%. In total, approximately 4,373 acres fall within a FEMA SFHA.

Flood Hazard	Acres	% of Total Municipal Area
100 - year Floodplain	4,258	9.5 %
500 - year Floodplain	115	0.3%

Source: Effective FEMA DFIRM

NJDEP LULC 2015 Surface Water Removed from FEMA Flood Hazard Area

A limitation of the currently delineated SFHAs is that they do not consider projections of future precipitation due to climate change. While annual increases may not result in significant additional flooding, the increased frequency of shorter but more intense precipitation events is expected to result in additional flooding events. **As such, DEP recommends that Vernon Township utilize the SFHA for the 0.2 percent (500-year) storm for planning purposes.** This will allow Vernon Township to inform its current decisions in a manner that is protective of health and safety from future impacts.

Vernon Township should also consider flood hazard area riparian buffers of any waterway in future planning. The regulated area of the riparian zone (50, 150 or 300 feet) that may restrict future development in these areas depends on the designation of that regulated waterbody as per the Flood Hazard Area Control Act rules at N.J.A.C. 7:13-4.1 below:

(c) The width of the riparian zone is as follows:

1. The width of the riparian zone along any regulated water designated as a Category One water, and all upstream tributaries situated within the same HUC-14 watershed, is 300 feet;
2. Except for the regulated waters listed at (c)1 above, the width of the riparian zone along the following regulated waters is 150 feet:
 - i. Any trout production water and all upstream waters (including tributaries);
 - ii. Any trout maintenance water and all upstream waters (including tributaries) located within one mile of a trout maintenance water (measured along the length of the regulated water); and
 - iii. Any segment of a water flowing through an area that contains a threatened or endangered species, and/or present or documented habitat for those species, which is critically dependent on the regulated water for survival, and all upstream waters (including tributaries) located within one mile of such habitat (measured along the length of the regulated water). A list of critically dependent species is available from the Department at the website set forth at N.J.A.C. 7:13-1.3; and
3. For all other regulated waters not identified in (c)1 or 2 above, the width of the riparian zone is 50 feet.

Critical Facilities and Assets in Flood Zones

These flood-prone areas are subject to state and federal regulation which limits new construction and promotes open space preservation. In addition, municipal code should minimize new construction in flood hazard areas and mitigate for any redevelopment of existing structures. Of

particular concern are adverse impact to existing assets, infrastructure and buildings within the flood zones, and how a municipality will mitigate for potential increased vulnerability to flooding. Several properties have been identified in or near flood zones including Highland Lakes Fire Department. Parcels with building structures in 100-year flood zone include:

- Block 101, Lot 1;
- Block 140, Lot 6;
- Block 143, Lot 19;
- Block 146, Lot 4 & 6;
- Block 151.07, Lot 18 & 23;
- Block 153.04, Lot 1;
- Block 153.12, Lot 13;
- Block 153.13, Lot 61;
- Block 183 Lots 9, 11, 11.02 & 11.03;
- **Block 231, L 9 & 12;**
- Block 232 Lot 7,14
- Block 232 Lot 15
- **Block 232 15.01, 16;**
- Block 270 Lot 2,3,4, 7.01;
- Block 40 Lot 8.

Of the above parcels in the 100-year flood zone, those in **orange** are located within the proposed designated center.

If not already done, **Vernon Township should map areas that flood regularly, including, but not limited to, repetitive loss (RL) and severe repetitive loss (SRL) properties.** If a local Floodplain Administrator is interested in obtaining a copy of their community's RL and SRL properties use the list for planning purposes, a request must be made in writing on the municipality's letterhead and signed by the mayor. The municipality will be required to sign an Information Sharing Access Agreement with FEMA to protect Personally Identifiable Information associated with this list. For more information on this, please contact the Region II Insurance Representative, [Marianne Luhrs at Marianne.luhrs@fema.dhs.gov](mailto:Marianne.luhrs@fema.dhs.gov).

Unimpeded transportation via rail and road are critical to safety and are also subject to flooding. A desktop analysis shows approximately 3.2-miles of roadways within the flood zone. However, DEP is unable to determine if the roadways are above the flood level. It is likely that municipal and public works officials are fully aware of areas in the township that flood regularly.

If not already done, **Vernon Township should map areas that flood regularly, including roadways/intersections, with particular attention given to evacuation routes or critical access areas.**

Vernon Township should also consider enhancing its own zoning regulations and building codes to encourage building outside of the flood zone and to minimize construction in flood prone areas to reconstruction of existing buildings.

When evaluating any construction within the identified floodplain of Vernon Township, one must also consider the cost of damage and replacement in the event of flooding.

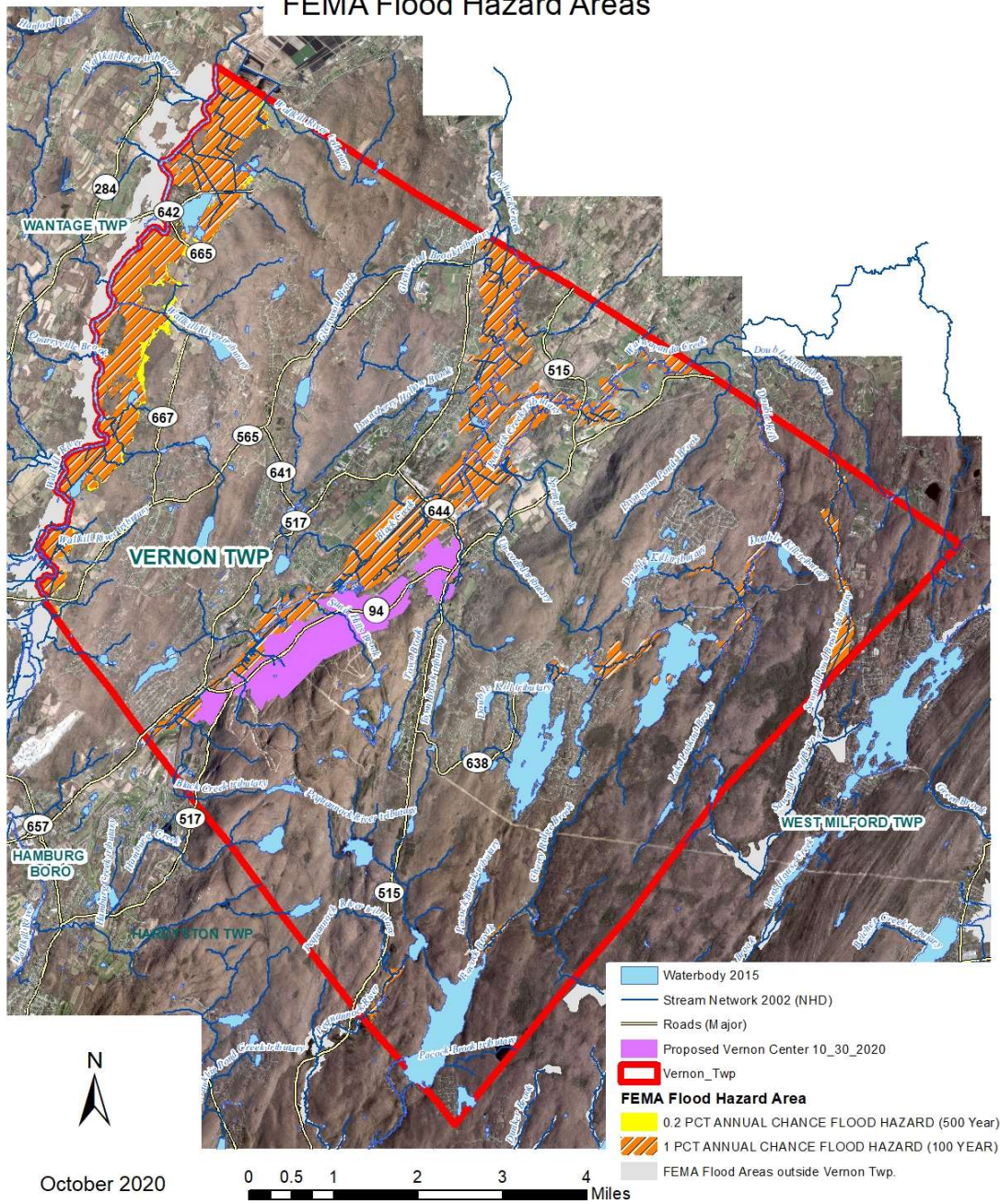
Construction of any critical utility line and associated infrastructure, emergency services, or public services buildings (schools, hospitals, churches, etc.) should be avoided in the flood hazard area. By avoiding construction in flood plains, one can avoid adverse impacts also to critical roadways and provide a safe level of distance in the event of a flood.

DEP recommends that Vernon Township review and update their floodplain development ordinance to make sure that it is consistent with the most recent standards and National Flood Insurance Programs. See link: <https://www.fema.gov/floodplain-management/manage-risk/local>.

Future development within the floodplain requires a higher level of regulation through state and federal environmental rules for flood hazard areas. **Any proposed conceptual plan should be presented to DEP early in review process, before planning board approval, and before submittal of any permit applications to determine if the project has any fatal flaws rendering it un-permittable in its current design.**

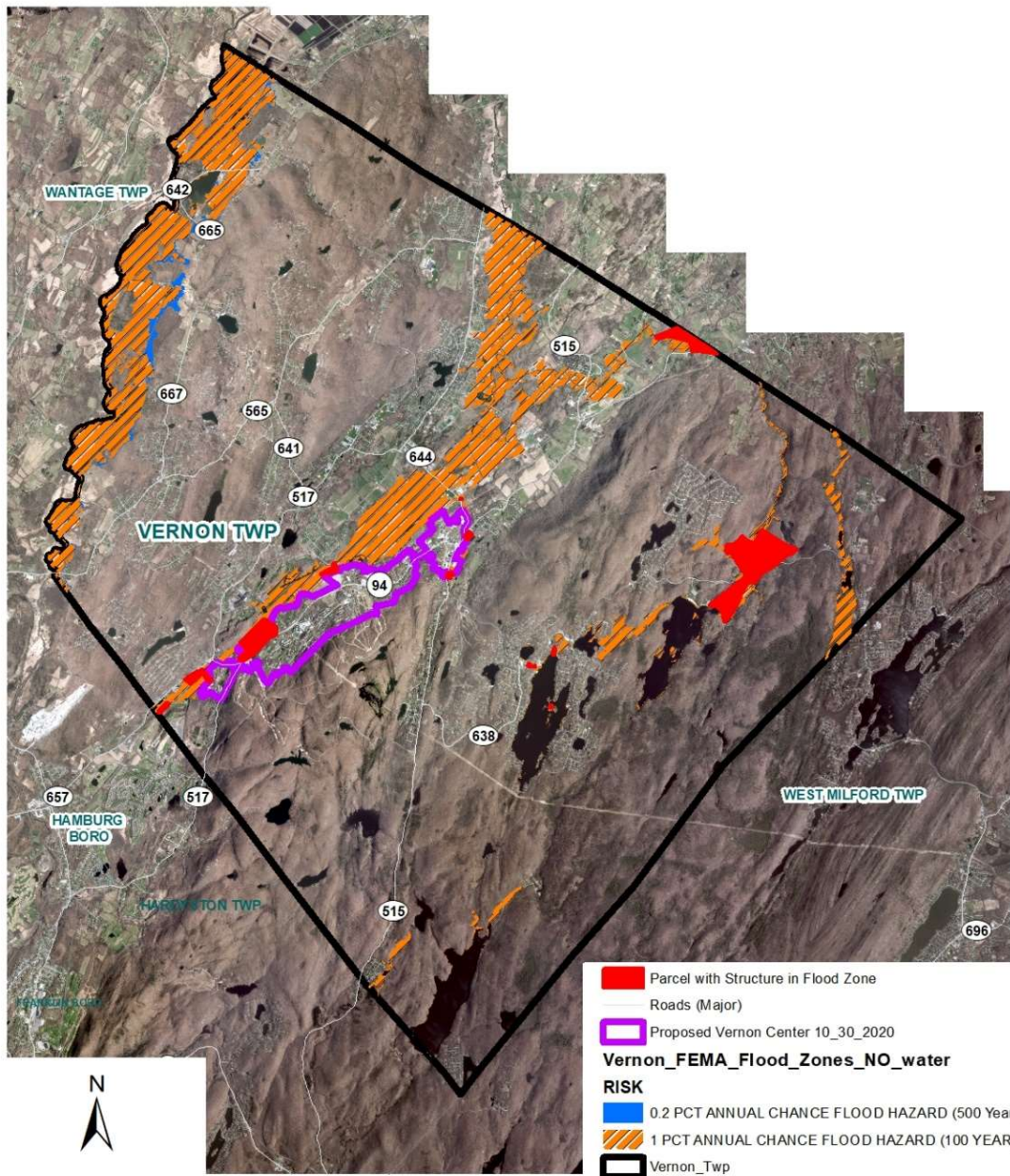
Green infrastructure should be incorporated into all projects within the floodplain. By creating more open public space, Vernon Township gains flood zone buffer areas and additional recreation area as well enhanced areas for stormwater management. Any opportunity in a flood area to enhance or expand a buffer area protects vulnerable residential areas and minimizes future flood events.

Vernon Township, Sussex County FEMA Flood Hazard Areas



This map is for information only and not for regulatory purposes.

Vernon Township, Sussex County Parcels with Structures in Flood Zone

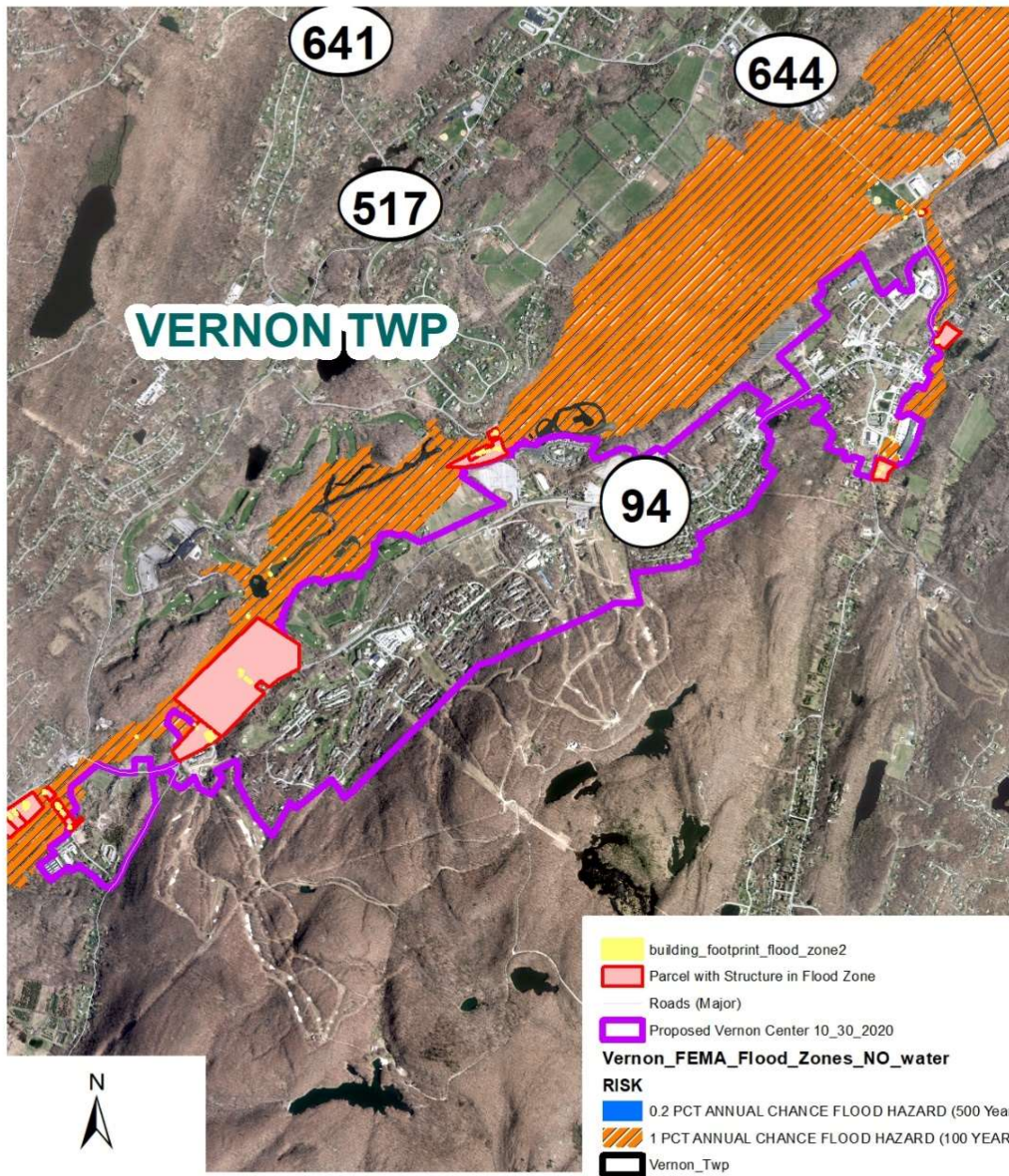


October 2020

0 0.5 1 2 3 4 Miles

This map is for information only and not for regulatory purposes.

Vernon Township, Sussex County
Parcels with Structures in Flood Zone



October 2020

0 0.15 0.3 0.6 0.9 1.2 Miles

This map is for information only and not for regulatory purposes.

Open Space

Open space provides Vernon residents not only with recreational opportunities but also acts as a means of climate change mitigation through enhanced tree cover shade and carbon sequestration, and improves Vernon and the state's natural resources by mitigating stormwater runoff, acting as flood storage, and protecting habitat for threatened and endangered species. In Vernon, there are approximately 3,500 acres of Federal open space and 15,032.27 acres of State, local and non-profit open space, totaling 18,532.27 acres.

Green Acres

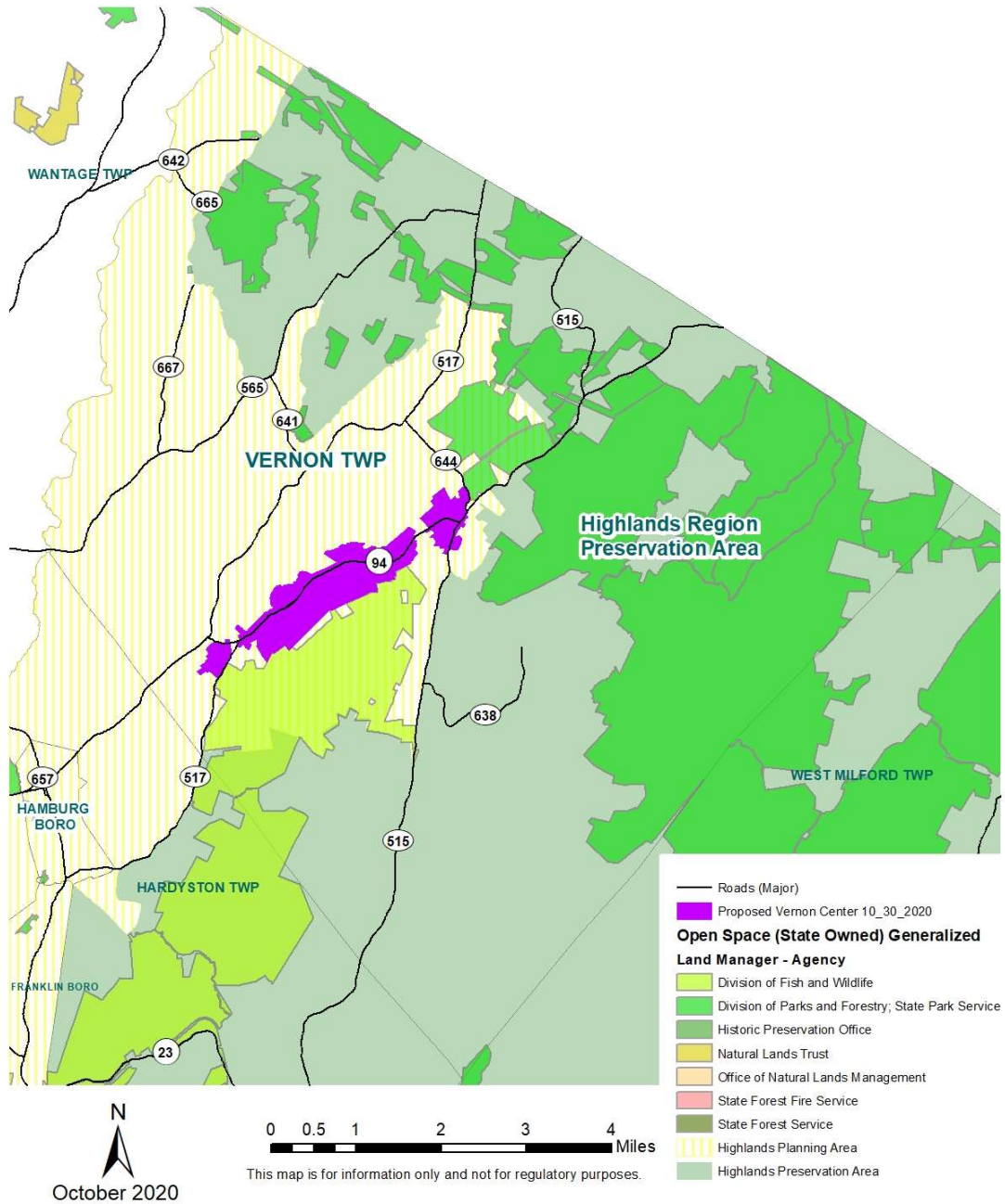
The Green Acres program was created in 1961 to meet New Jersey's growing recreation and conservation needs. Together with public and private partners, Green Acres has protected over a half a million acres of open space and provided hundreds of outdoor recreational facilities in communities around the State. Vernon Township has previously had two acquisition projects and two development projects under the Green Acres program. There are no serious compliance problems with the town's recreational facilities or conservation lands. **DEP recommends that Vernon Township further work with Sussex County, NJ Highlands Council and surrounding municipalities to provide and expand corridors of open space and natural features to support habitat connectivity and adaptation to changing conditions.**

These areas include but are not limited to the Pequannick Watershed, Wawayanda State Park, Hamburg Mountain Wildlife Management area, the Wallkill River National Wildlife Refuge, the Appalachian Nation Scenic Trail Corridor, the Four Seasons Greenway, the Black Creek Marshes, and Pochuck Mountain.

Blue Acres

The Green Acres, Farmland, Blue Acres and Historic Preservation Bond Act of 2007 authorized \$12 million for acquisition of lands in the floodways of the Delaware River, Passaic River or Raritan River, and their respective tributaries for recreation and conservation purposes. An additional \$24 million was approved by the voters in the Green Acres, Water Supply and Floodplain Protection, and Farmland and Historic Preservation Bond Act of 2009. Properties (including structures) that have been damaged by or may be prone to incurring damage caused by storms or storm related flooding, or that may buffer or protect other lands from such damage, are eligible for acquisition. DEP encourages any town that has homes and neighborhoods that repetitively flood, to consider contacting the DEP Blue Acres program regarding buyouts. (https://www.nj.gov/dep/greenacres/blue_flood_ac.html)

Vernon Township, Sussex County
Proposed Vernon Designated Town Center
Open Space and Highlands Preservation/ Planning Area



Natural and Historic Resources

New Jersey is the most densely populated state in the nation. One of the consequences of being the most densely populated state in the nation is the extreme pressure that is placed on our natural resources. As the population grows, we continue to lose or impact the remaining natural areas of the state. As more and more habitat has been lost, people have also gained a greater understanding of and appreciation for the benefits and necessity of conserving the natural ecosystems of the state.

For example, we know that wetlands are critical for recharging aquifers, lessening the damage from flooding and naturally breaking down contaminants in the environment. Forests and grasslands protect the quality of our drinking water, help purify the air we breathe and provide important areas for outdoor recreation. Collectively, these habitats are of critical importance to the diverse assemblage of wildlife found in New Jersey, including endangered, threatened and special concern species.

Wetlands

Freshwater wetlands and transition areas (buffers) are regulated by the Freshwater Wetlands Protection Act rules (NJAC 7:7A). The Highlands rule (NJAC 7:38), which implements the Highlands Water Protection and Planning Act, prohibits nearly all disturbance within all wetlands within the Highlands Preservation Area. Previously misunderstood as wastelands, wetlands are now recognized for their vital ecological and socioeconomic contributions. Wetlands contribute to the social, economic, and environmental health of our state in many ways:

- Wetlands protect drinking water by filtering out chemicals, pollutants, and sediments that would otherwise clog and contaminate our waters.
- Wetlands soak up runoff from heavy rains and snow melts, providing natural flood control.
- Wetlands release stored flood waters during droughts.
- Wetlands provide critical habitats for a major portion of the state's fish and wildlife, including endangered, commercial and recreational species.
- Wetlands provide high quality open space for recreation and tourism.

There are on-site activity limits on lands identified as wetlands. The NJ Freshwater Wetlands Protection Act requires DEP to regulate virtually all activities proposed in the wetland, including cutting of vegetation, dredging, excavation or removal of soil, drainage or disturbance of the water level, filling or discharge of any materials, driving of pilings, and placing of obstructions. The Department may also regulate activities within 150 feet of a wetland - called the transition area or buffer.

Vernon Township has 7,845 total acres of wetlands that are protected under state and federal regulation. Are there major wetlands systems or any of note in Vernon?

Surface Water

Vernon Township is traversed by multiple rivers and tributaries and has several valuable and recreational bodies of water including streams, rivers and lakes. Several of these water bodies are subject to flooding which is exacerbated by an increase in impervious cover and a decrease in stormwater's ability to infiltrate the ground. Including but not limited to the following:

Waterbody Name		
Barry Lakes	Lake Lookout	Pleasant Valley Lake
Barry Creek	Lake Lookout Brook	Pochuck Creek
Barry Creek Tributary	Lake Pochung	Pochuck Creek tributary
Canistear Reservoir	Lake Wanda	Scenic Lake
Cliffwood Lake	Lake Wildwood	Sleep Valley
Double Kill	Laurel Pond	Town Brook
Double Kill Tributary	Livingston Ponds	Upper East Highland Lake
Drew Lakes	Louemma Lake	Upper Highland Lake
East Highland Lake	Lounsberry Hollow Brook	Vernon Valley Lake
Glenwood Lake	Marshall Pond	Wallkill Lake
Great Gorge Lake	Mastodon Lake	Wallkill River
Hidden Valley Lake	Mud Pond	Wallkill River tributary
Highland Lake	Pacock Brook tributary	Wawayanda Creek
Kohout Lake	Panorama Lake	Wawayanda Lake
Lake Conway	Parker Lake	White Swan Lake

Surface Water Quality Standards

The Surface Water Quality Standards (SWQS) are rules established under the New Jersey Administrative Code at N.J.A.C. 7:9B that include the policies, surface water classifications, and surface water quality criteria necessary to protect the quality of New Jersey's surface waters. The SWQS protect the health of New Jersey waters and ensure that they are suitable for all existing and designated uses, including recreation and water supply. SWQS also protect the health of New Jersey citizens and visitors by ensuring that the waters at our bathing beaches are safe for swimming, that water supplies are suitable sources of drinking water and the fish and shellfish harvested from our waters are safe to eat. SWQS protect waters for other uses such as trout production and trout maintenance, and agricultural and industrial use.

The SWQS establish designated uses (e.g., drinking water supply, recreation, etc.) to the State's surface waters, classify surface waters based on those uses (e.g. FW1, FW2-TP, etc.), and set water quality criteria that protect the designated uses for each water classification. The SWQS contain various policies for protecting water quality, including general, technical, antidegradation, nutrients, and mixing zones. The SWQS also contain procedures for establishing and modifying water quality-based effluent limitations for NJPDES point sources and reclassifying specific stream segments.

Surface waters are classified based on the type of waterbody and the designated use of the waterbody. Freshwaters are classified as FW1 waters (not subject to any man-made wastewater discharges) and FW2 waters (all other freshwaters except Pinelands waters). FW1 waters are

non-degradation waters set aside for posterity because of their unique ecological significance. FW2 waters are further classified based on their ability to support trout, which thrive in cooler stream temperatures. Trout classifications include trout production (FW2-TP), trout maintenance (FW2-TM), and non-trout (FW2-NT).

The SWQS establish antidegradation policies for all surface waters of the State (see N.J.A.C. 7:9B-1.5(d)). The antidegradation policies require that all existing and designated uses shall be maintained and protected for all surface waters of the State; impaired waters must be restored to meet SWQS; and existing water quality shall be maintained.

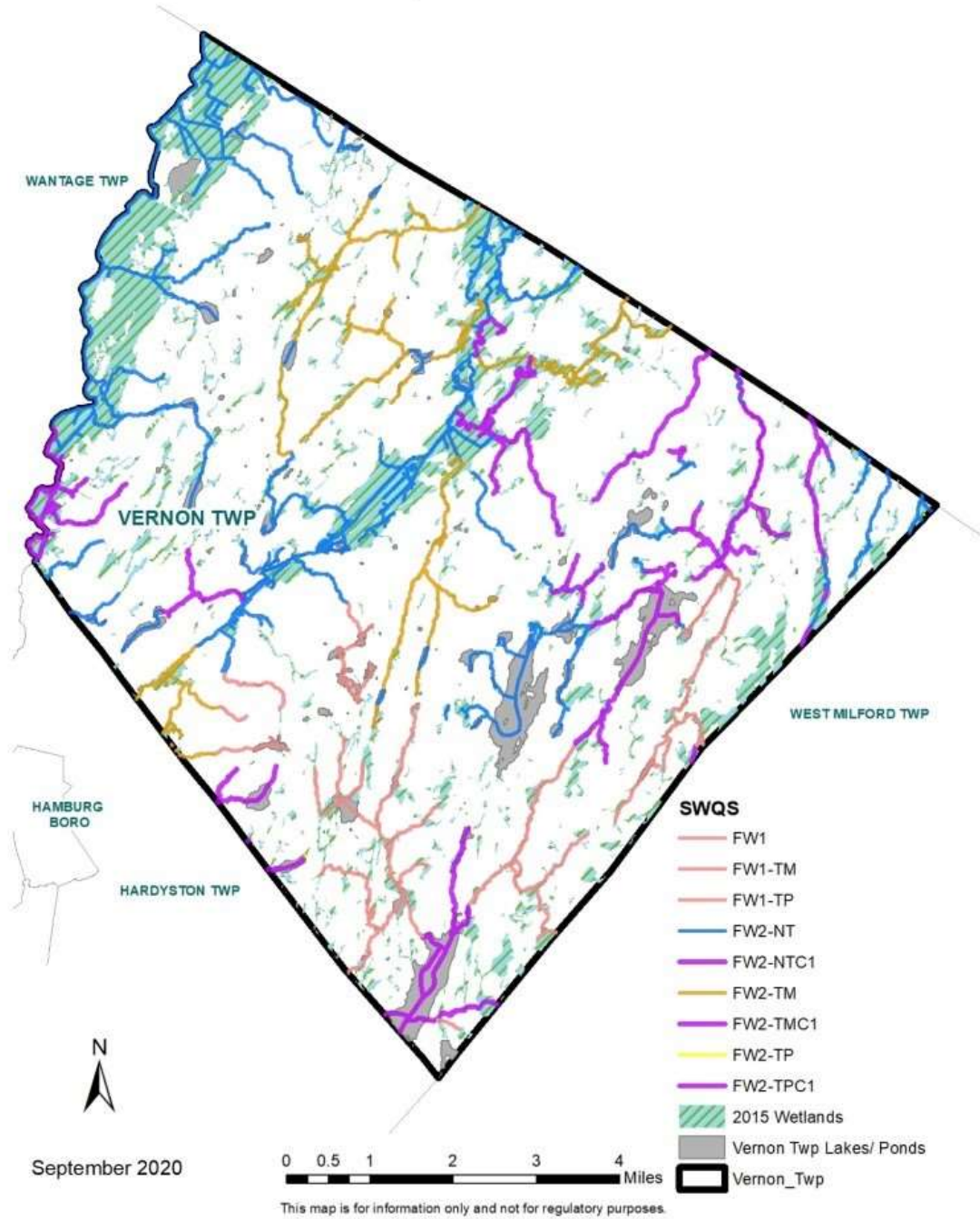
- Category One (C1) Waters: This tier of antidegradation designation applies to surface waters designated as C1 waters (see N.J.A.C. 7:9B-1.4). C1 waters are protected from any measurable change to existing water quality because of their exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resources. C1 waters have more stringent antidegradation requirements than Category Two waters.
- Category Two (C2) Waters: This tier of antidegradation designation applies to surface waters designated as C2 waters (see N.J.A.C. 7:9B-1.4). Some lowering of existing water quality may be allowed in C2 waters based upon a social and/or economic justification. However, all existing and designated uses must be protected in all cases and waterbodies that are generally not meeting criteria must be improved to meet water quality criteria. All waterbodies not designated as Outstanding Nature Resource Waters or Category One receive the Category Two antidegradation designation.

Additional information is also provided in the [Antidegradation/Category One Fact Sheet](#).

The following surface waters in Vernon Township are classified as Category One:

- Black Creek Tributary,
- Canistear Reservoir,
- Livingston Ponds,
- Mud Pond,
- Pacock Brook Tributary,
- Pochuk Creek,
- Wallkill River and Tributary,
- Wayawanda Creek and Lake.

Vernon Township, Sussex County
Surface Water Quality Standards and 2015 Wetlands



Vulnerable, Threatened and Endangered Species

Despite being the most densely populated state in the nation, and the fifth smallest in area, New Jersey provides habitat for an incredible number and diversity of wildlife species. There are more than 400 species of vertebrate wildlife which can be found within the state, due in large part to the state's geographic position within North America, as well as 134 freshwater fish and 336 marine finfish. New Jersey lies at the southern edge of the range of many "northern" species and the northern edge of the range of many "southern" species.

Many imperiled species require large contiguous tracts of habitat for survival. The consequence of the rapid spread of suburban sprawl is the loss and fragmentation of important wildlife habitat and the isolation and degradation of the smaller habitat patches that remain. Small patches of fields, forests and wetlands interspersed with development provide habitat for common species that do well living near humans, but do not provide the necessary habitat for most of our imperiled wildlife. We need to conserve large, contiguous blocks of forests, grasslands and wetlands to assure the survival of imperiled species over the long-term.

Future increases in stormwater runoff, flooding and contamination will adversely impact terrestrial and aquatic species. Climate change can adversely impact plants, trees, aquatic and terrestrial animals, reptiles, fish and birds. Increases in temperature and periods of drought can result in loss of suitable conditions for a tree or plant species to survive as well as a higher risk of wildfire.

The New Jersey Endangered Species Conservation Act was passed in 1973 and directed the New Jersey Department of Environmental Protection (DEP) to protect, manage and restore the state's endangered and threatened species.

Endangered Species are those whose prospects for survival in New Jersey are in immediate danger because of a loss or change in habitat, over-exploitation, predation, competition, disease, disturbance or contamination. Assistance is needed to prevent future extinction in New Jersey.

Threatened Species are those who may become endangered if conditions surrounding them begin to or continue to deteriorate.

There are other classifications for wildlife as well, including Stable, [Species of Special Concern](#) and Undetermined. For a complete listing of species monitored by the ENSP, see the [Species Status Listing](#). A full listing of the state's threatened and endangered species can be found at <https://www.nj.gov/dep/fgw/tandespp.htm>.

Landscape Project

Designed to guide strategic wildlife habitat conservation, the Landscape Project is a pro-active, ecosystem-level approach for the long-term protection of imperiled species and their important habitats in New Jersey. The project began in 1994 to protect New Jersey's biological diversity by maintaining and enhancing imperiled wildlife populations within healthy, functioning ecosystems. The Landscape Project focuses on large land areas called "landscape regions" that are ecologically similar with regard to their plant and animal communities. Using an extensive database that combines imperiled and priority species location information with land-use/land-

cover data, the Landscape Project identifies and map areas of critical importance for imperiled species within each landscape region.

Landscape Project critical habitat maps were developed to provide users with peer-reviewed, scientifically-sound information that is easily accessible. Critical habitat maps were designed for use by anyone, but especially those individuals and agencies who have the responsibility for making land-use decisions, i.e., municipal and county planners and local planning boards, state agencies, natural resource and lands managers, the general public, etc. Critical area maps can be integrated with planning and protection programs at every level of government - state, county and municipal, can provide the basis for proactive planning, zoning and land acquisition projects.

Most importantly, the critical information Landscape Project products provide can be used for planning purposes before any actions, such as proposed development, resource extraction (such as timber harvests) or conservation measures, occur. Proper planning with accurate, legally and scientifically sound information will result in less conflict. Less time will be wasted, and less money spent, attempting to resolve endangered and threatened species issues.

Additional information about the Landscape Project can be found at <https://www.nj.gov/dep/fgw/ensp/landscape/index.htm>.

Vernon Township Landscape Rank 3,4,5 Species are the following:

Vernon Twp Species List

COMNAME	
American Bittern	Least Bittern
American Kestrel	Long-eared Owl
Bald Eagle	Longtail Salamander
Barred Owl	Midland Clubtail
Black Rail	Northern Harrier
Black-throated Blue Warbler	Northern Myotis
Black-throated Green Warbler	Pied-billed Grebe
Blue-headed Vireo (Solitary Vireo)	Red-headed Woodpecker
Bobcat	Red-shouldered Hawk
Bobolink	Savannah Sparrow
Bog Turtle	Sedge Wren
Bronze Copper	Silver-bordered Fritillary
Brook Snaketail	Spatterdock Darner
Cliff Swallow	Timber Rattlesnake
Cooper's Hawk	Veery
Golden-winged Warbler	Winter Wren
Grasshopper Sparrow	Wood Thrush
Great Blue Heron	Wood Turtle
Indiana Bat	
Jefferson Salamander	

Vernon Township Wide Landscape Habitat Rank 3,4,5 covers the following:

Landscape Rank	Acres
3	566.77
4	8,230.29
5	27,437.93

These rankings define the following habitat types:

- Rank 3 is assigned to species-specific patches containing one or more occurrences of State threatened species.
- Rank 4 is assigned to species-specific habitat patches with one or more occurrences of State endangered species.
- Rank 5 is assigned to species-specific habitat patches containing one or more occurrences of wildlife listed as endangered and threatened pursuant to the Federal Endangered Species Act of 1973.

Additionally, there are a few farms along Route 94 (McAfee-Vernon Road) on the northwest side of the township that have open field habitats, and the one at 169 Route 94 has had sightings of threatened and endangered ground nesting birds. **If birding is not already being promoted in Vernon Township, it might be considered.**

DEP supports Vernon's commitment to renewable energy, although it encourages the Township to pursue it in an ecologically responsible manner. **Vernon should continue to protect the Township's open spaces and the recolonization and reuse of open field habitats for ground nesting and foraging birds.** Further research is needed to determine the causes and nature of direct and indirect effects of the placement of solar arrays on and/or over ground nesting habitat on birds.

Connecting Habitat Across NJ (CHANJ)

Connecting Habitat Across New Jersey (CHANJ) is an effort to make our landscape and roadways more permeable for terrestrial wildlife by identifying key areas and actions needed to achieve habitat connectivity across the state. CHANJ offers two main products – statewide Mapping and a Guidance Document – to help prioritize land protection, inform habitat restoration and management, and guide mitigation of road barrier effects on wildlife and their habitats. A review of the Department's CHANJ mapping program can be found at <https://www.nj.gov/dep/fgw/ensp/chanj.htm>).

The online CHANJ mapping indicates, but is not limited to, approximately 8 – 12 habitat connection corridors throughout Vernon Township. Go to CHANJ Online Map link here: <https://njdep.maps.arcgis.com/apps/webappviewer/index.html?id=53339ff12f27488d8462e5e2c4c21b5c>

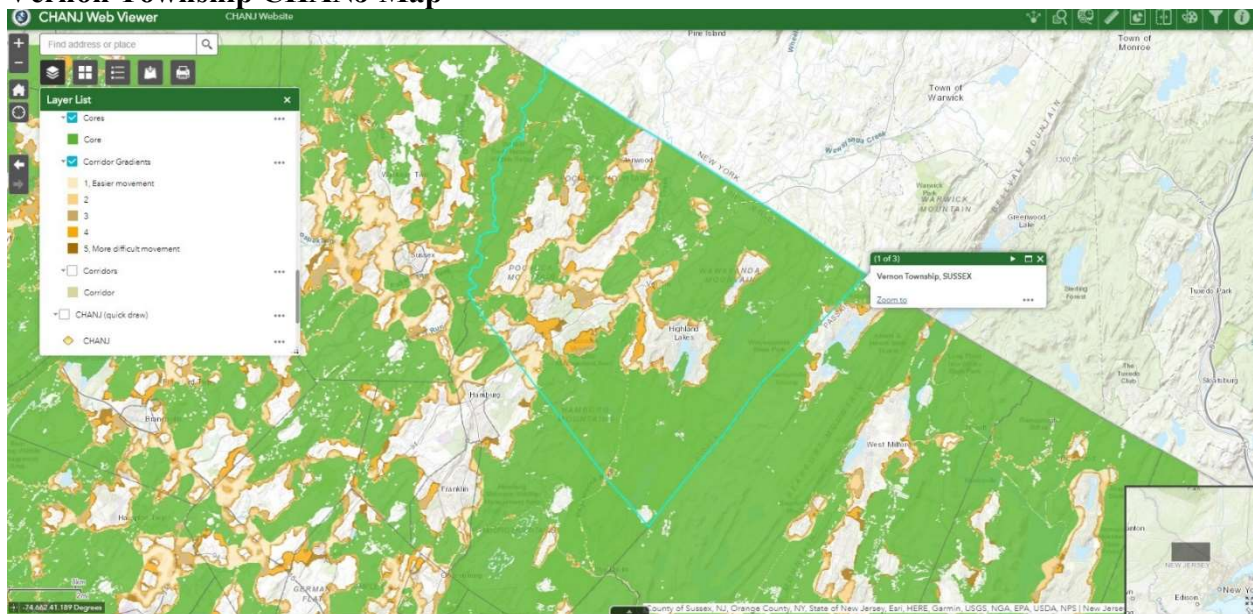
Vernal Pools

In 2001, DEP partnered with Rutgers University Center for Remote Sensing and Spatial Analysis (CRSSA) to develop a method for mapping potential vernal pools throughout New Jersey. Through an on-screen visual interpretation of digital orthophotography, CRSSA identified over 13,000 potential pools throughout the state. A subset of these pools was field verified and confirmed, with an 88% accuracy rate, to meet the physical characteristics to qualify as a vernal pool (Lathrop et al. 2005).

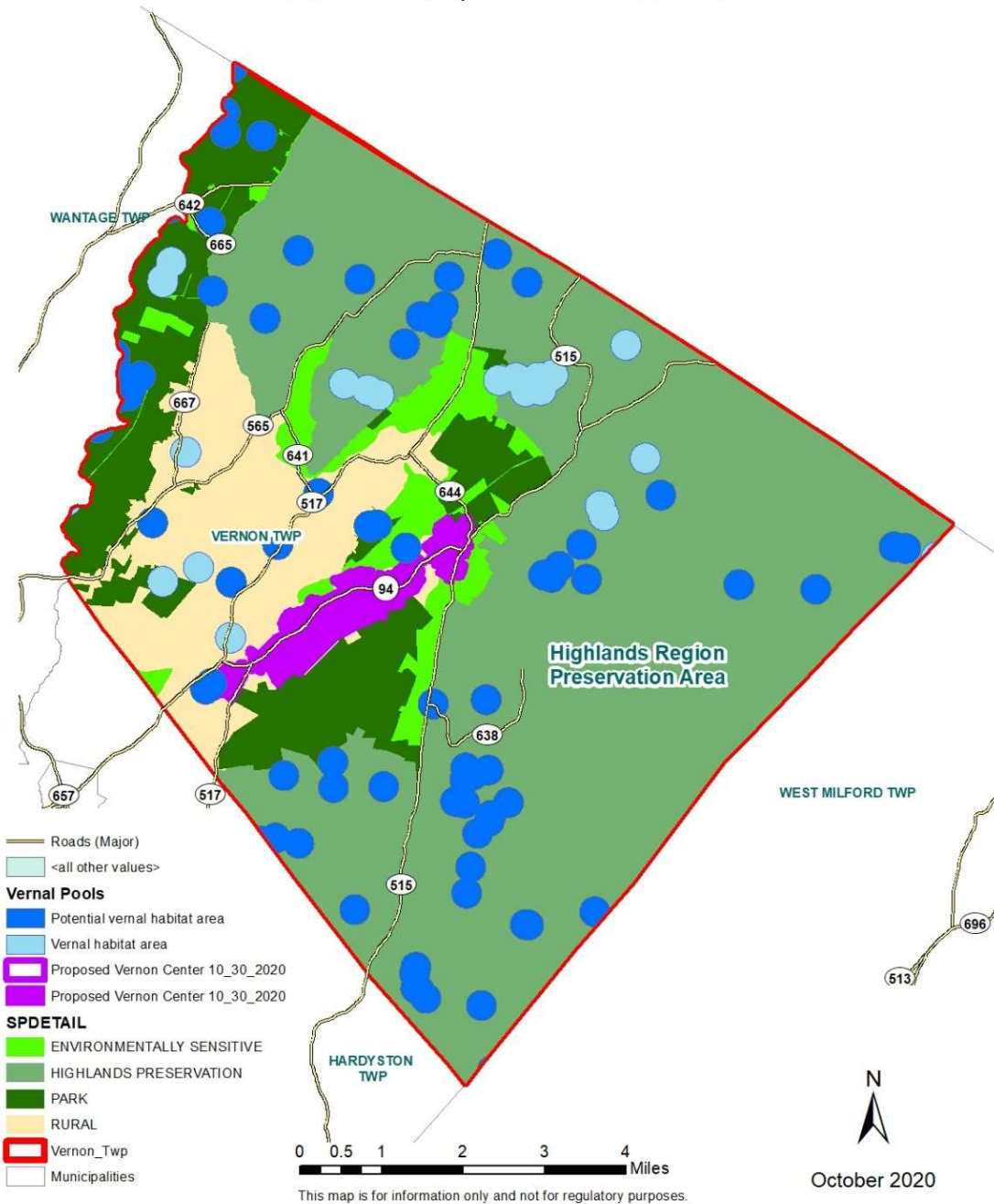
In accordance with N.J.A.C. 7:7A-1.4, the term “vernal habitat” includes a vernal pool - or the area of ponding - plus any freshwater wetlands adjacent to the vernal pool. Vernal habitat areas mapped in the Landscape Project rely upon those data developed by the DEP and CRSSA to identify sites that should be field checked for possible identification as vernal habitat areas. DEP staff is in the process of field-verifying these pools. The Department also maps vernal habitat areas based upon on-the-ground assessment of sites not captured by the CRSSA mapping. The Landscape Project includes all of the CRSSA-identified sites, as well as sites identified by on-the-ground reconnaissance.

Within Vernon, there are 12 documented vernal pools and 42 potential vernal pools identified by the DEP. Of these, no documented or potential vernal pools are located within the proposed center but 2 potential vernal pools are located adjacent to the proposed designated center.

Vernon Township CHANJ Map



Vernon Township, Sussex County Vernal Pools, Species Based Habitat



State Wildlife Action Plan

The **State Wildlife Action Plan** (SWAP) is a strategic and cost-effective strategy for preserving the state's wildlife resources for the future. Recovering species that have reached threatened or endangered status is typically more costly than preventative actions that keep species populations from reaching such declines. Proactive management actions identified in the SWAP are intended to keep species from becoming threatened or endangered or to aid in the recovery of those that are already listed.

State Wildlife Action Plans are proactive plans created by virtually every state and U.S. territory that assess the health of each state's wildlife and habitats, identify the problems they face, and outline the actions that are needed to conserve them over the long term. The New Jersey Wildlife Action Plan identifies both priority species and habitats, assesses the threats they face and outlines actions to take to improve or stabilize their condition.

New Jersey's State Wildlife Action Plan (2018) was approved by the U.S. Fish and Wildlife Service in July 2018. New Jersey's Plan serves as a blueprint for conserving our wildlife heritage over the next decade. The Plan identifies priority actions over the next five to ten years to address the myriad threats facing our wildlife populations and their habitats. It also identifies species of greatest conservation need in New Jersey, as well as 107 focal species that are of the highest conservation priority.

New Jersey's State Wildlife Action Plan can be found at https://www.nj.gov/dep/fgw/ensp/wap/pdf/wap_plan18.pdf.

Natural Heritage Priority Sites

As New Jersey continues to experience industrial and economic growth, it is imperative that we take steps to ensure that remaining areas of natural significance be preserved for their resource potential, their educational and research use, and their aesthetic and cultural values for present and future generations. As we become more aware of our dependence on our natural environment for our well-being and ultimate survival, we must answer one question: how can we best preserve our irreplaceable natural heritage?

The protection of New Jersey's natural heritage can be accomplished in harmony with older human concerns as long as planning accompanies growth. Information from the Natural Heritage Database facilitates the sound evaluation of lands by ecological resources in the state and focusing on the most threatened significant natural areas.

Through its Natural Heritage Database, the DEP Office of Natural Lands Management (ONLM) identifies critically important areas to conserve New Jersey's biological diversity, with particular emphasis on rare plant species and ecological communities. The database provides detailed information on rare species and ecological communities to planners, developers, and conservation agencies for use in resource management, environmental impact assessment, and both public and private land protection efforts. Using the database, ONLM has identified 343 Natural Heritage Priority Sites (NHPS), representing some of the best remaining habitat for rare species and rare ecological communities in the state.

In addition, each NHPS includes a Biodiversity Rank according to its significance for biological diversity using a scale developed by The Nature Conservancy, the network of Natural Heritage Programs and the New Jersey Natural Heritage Program. The ranks can be used to distinguish between sites that are of global significance for conservation of biological diversity vs. those that are of state significance. The global biodiversity significance ranks range from B1 to B5. Within the Highlands Region the global biodiversity significance rank has been combined with a state biodiversity significance rank which provides information about the significance of the site on a state level. The state biodiversity significance ranks for sites in the Highlands Region range from V1 to V5. Therefore, all sites have been assigned a global biodiversity rank (B rank), but not all sites have been assigned a state biodiversity rank (V rank).

Rank	Description
B1	Outstanding significance on a global level, generally the "last of the least" in the world, such as the only known occurrence of any element (species or ecological community), the best or an excellent occurrence of an element ranked critically imperiled globally, or a concentration (4+) of good or excellent occurrences of elements that are imperiled or critically imperiled globally. The site should be viable and defensible for the elements or ecological processes contained.
B2	Very high significance on a global level, such as the most outstanding occurrence of any ecological community. Also includes areas containing other occurrences of elements that are critically imperiled globally, a good or excellent occurrence of an element that is imperiled globally, an excellent occurrence of an element that is rare globally, or a concentration (4+) of good occurrences of globally rare elements or viable occurrences of globally imperiled elements.
B3	High significance on a global level, such as any other viable occurrence of an element that is globally imperiled, a good occurrence of a globally rare element, an excellent occurrence of any ecological community, or a concentration (4+) of good or excellent occurrences of elements that are critically imperiled in the State.
B4	Moderate significance on a global level, such as a viable occurrence of a globally rare element, a good occurrence of any ecological community, a good or excellent occurrence or only viable state occurrence of an element that is critically imperiled in the State, an excellent occurrence of an element that is imperiled in the State, or a concentration (4+) of good occurrences of elements that are imperiled in the State or excellent occurrences of elements that are rare in the State.
B5	Of general biodiversity interest.
V1	Outstanding significance on a state level. Only known occurrence in the state for an element; or Site with an excellent occurrence or the best occurrence in the state for an element ranked critically imperiled in the state; or a concentration (4+) of good or excellent occurrences of elements that are imperiled or critically imperiled in the state.
V2	Very high significance on a state level. Includes sites containing other occurrences of elements that are critically imperiled in the state; or a concentration (4+) of other occurrences of state imperiled elements and/or good or excellent occurrences of state rare elements.
V3	High significance on a state level. Includes sites containing the best occurrence in the state or an excellent occurrence of a state imperiled element; or multiple (2+) other

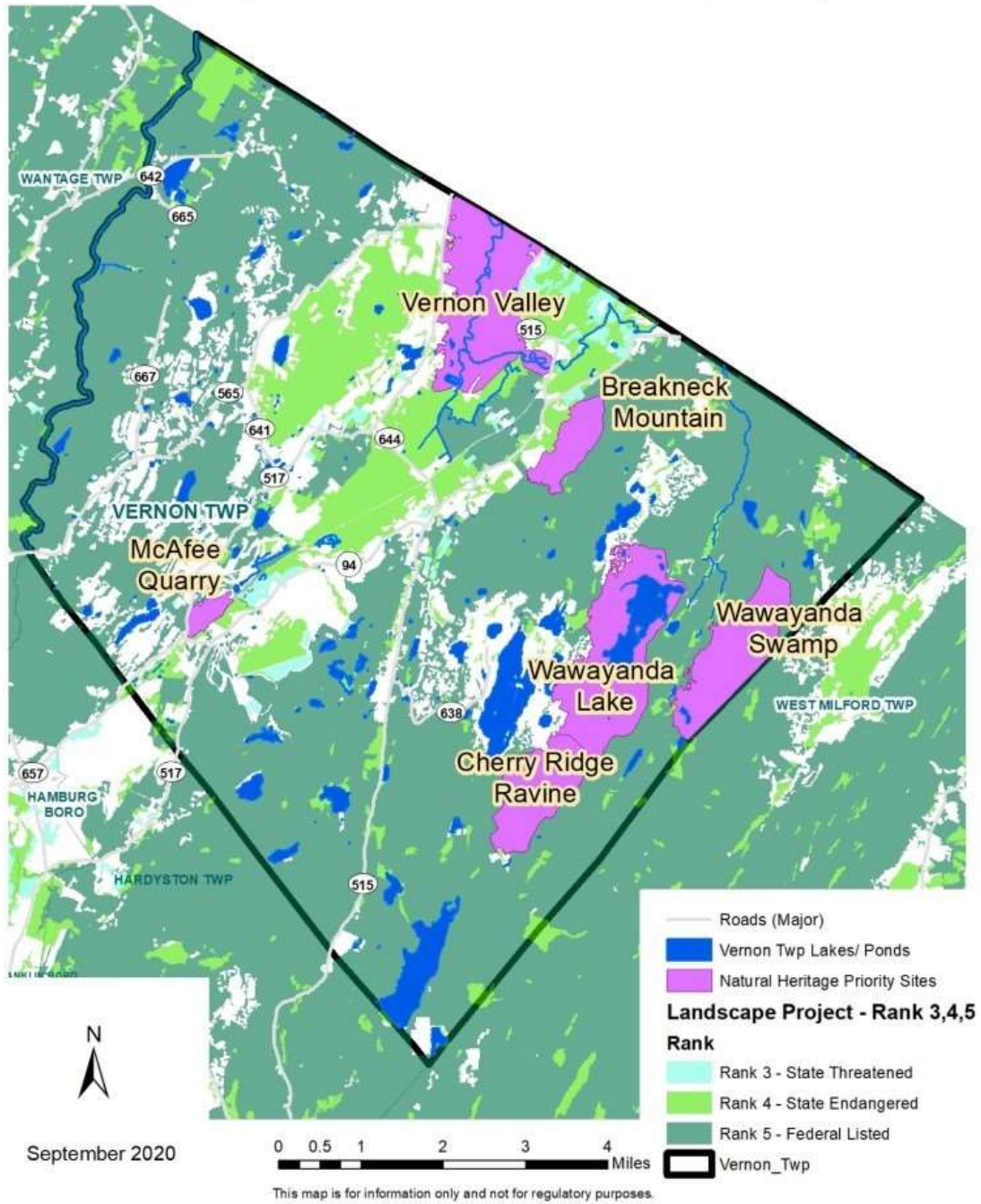
	occurrences for state imperiled elements and/or excellent, good or moderate quality occurrences of state rare elements.
V4	Moderate significance on a state level. Includes sites containing the best occurrence in the state or an excellent occurrence of a state rare element; or any site with other occurrences of a state imperiled element; or multiple (2+) other occurrences of state rare elements.
V5	Any site with any other occurrence of a state rare element.

Roughly 80% of the proposed Town Center and roughly 70% of Vernon Township is covered by Natural Heritage Grid Mapping. The mapping layer indicates occurrences of state-listed plants, including data sensitive species or ecological communities and cave terrestrial community.

SITENAME	BIODIVRANK
Cherry Ridge Ravine	B4V1
Breakneck Mountain	B4V1
McAfee Quarry	B4V1
Wawayanda Lake	B4V1
Wawayanda Swamp	B2V1
Vernon Valley	B4V1

A full listing of Rare Plant Species and Ecological Communities Presently Recorded in the NJ Natural Heritage Database for Sussex County can be found at <https://www.nj.gov/dep/parksandforests/natural/heritage/textfiles/sussex.pdf>.

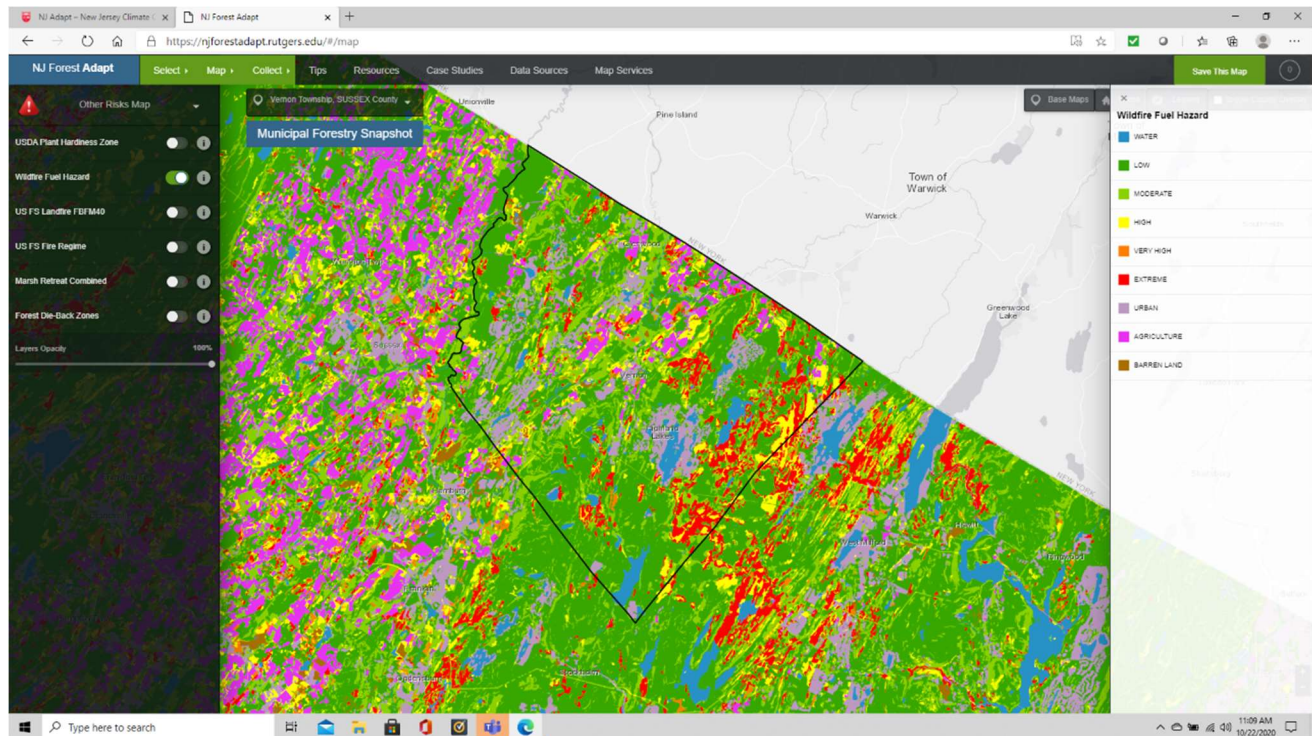
Vernon Township, Sussex County
Landscape Project Rank 3,4,5 and Natural Heritage Priority Sites



Forest Fire Management and Mitigation

Adverse effects of climate change increases in average daily temperature contribute to an increase in the potential for forest fires. Public and private property, infrastructure, public safety and utilities could be compromised in a wildfire emergency. The impacts of a wildfire event can be reduced through the enhancement of the Township's emergency response plan and through the implementation of pre-event wildfire mitigation and response measures.

Forest fuel loading conditions are characterized by fire hazard ratings and through coordination with the New Jersey Forest Fire Service and the New Jersey Emergency Management Program.



Cultural and Historic Resources

It is also critical to protect our cultural and historic resources. The New Jersey Historic Preservation Office (HPO) administers a variety of programs that offer protection for historic properties. The HPO consults with federal agencies under Section 106 of the National Historic Preservation Act for federally funded, licensed or permitted projects. At the state level, the New Jersey Register of Historic Places Act requires that actions by state, county, or local governments, which may impact a property listed in the New Jersey Register of Historic Places, be reviewed and authorized through the HPO. The HPO also provides advice and comment for a number of permitting programs within the Department of Environmental Protection, including some permits required under the Land Use Regulation Program. The Historic Preservation Office also maintains an inventory of historic properties in each municipality.

The New Jersey and National Registers of Historic Places listings include properties and historic districts in New Jersey for which a formal action was taken by the State Historic Preservation

Officer or designee. The listings itemize the buildings, structures, sites, objects, and districts listed on the New Jersey Register of Historic Places (SR) and the National Register of Historic Places (NR). They also include resources that have received Certifications of Eligibility (COE), opinions of eligibility from the State Historic Preservation Officer (SHPO Opinion), or Determinations of Eligibility (DOE) from the Keeper of the National Register. These properties and historic districts all meet the New Jersey and National Register criteria for significance in American history, archaeology, architecture, engineering or culture, and possess integrity of location, design, setting, materials, workmanship, feeling and association. Properties that have been entered on the New Jersey and/or National Registers of Historic Places are listed by their historic names, which may be different from their current names. Properties that have SHPO Opinions or DOE's are listed by their historic name, when known. The listings are updated regularly to reflect ongoing additions and corrections. The most effective way to protect historic resources and promote our architectural and archaeological heritage is through local stewardship.

NAME	ADDRESS
"Sea Captains House"	Route 515
Winans Tavern ("Stage Coach Stop") [Destroyed]	NJ Route 94
Stewart House	189 McAfee-Vernon Road
Saint Thomas' Cemetery	305 Route 94
Saint Thomas' Vicarage	307 Route 94
Saint Thomas' Community House	305 Route 94
Saint Thomas' Chapel	305 Route 94

When implemented at the local level, historic preservation activities may take the form of master plan elements, comprehensive zoning ordinances, the establishment of a local historic preservation commission, regulated code enforcement, or public education and outreach programs. Local initiatives have far reaching effects on preserving historic resources for future generations. The HPO provides technical assistance, training, and other resources for historic preservation to New Jersey's communities through a variety of programs, including the Certified Local Government (CLG) program. The CLG program is a formalized partnership between the National Park Service, the States, and local municipalities. To become a CLG, a local government must a) enact a preservation ordinance that establishes a Historic Preservation Commission, b) establish criteria and procedures for the designation of local historic properties and the review of proposed changes to those properties, c) maintain a system for the survey and inventory of historic properties, d) provide for adequate public participation in the local historic preservation program, including the process of nominating properties to the National Register of Historic Places, and e) perform the responsibilities delegated to the local government in the certification agreement. The requirements for certification are outlined in the document "New Jersey's Certified Local Government Guidelines," available from the Historic Preservation Office (HPO) or online at http://www.state.nj.us/dep/hpo/3preserve/clgguides8_07.pdf.

One of the chief benefits of this partnership for local governments is access to grant funding. Each federal fiscal year, New Jersey sets aside ten percent of the state's allocation of federal historic preservation funds for pass-through as sub-grants to communities participating in the CLG program. The total amount of available funding varies each year with the federal allocation.

Finally, the Historic Preservation Office maintains the State's Cultural Resources Geographic Information System (CRGIS) to record the location and extent of cultural resources in our statewide inventory. LUCY is our NJCRGIS Online Map Viewer. It is an ARCGIS Online based web mapping application delivering HPO CRGIS data in an intuitive, browser-based format. LUCY can be found at

<https://njdep.maps.arcgis.com/apps/webappviewer/index.html?id=44ce3eb3c53349639040fe205d69bb79>. https://www.state.nj.us/dep/hpo/identify/gis_LUCY_User_Guide_1.0.pdf.

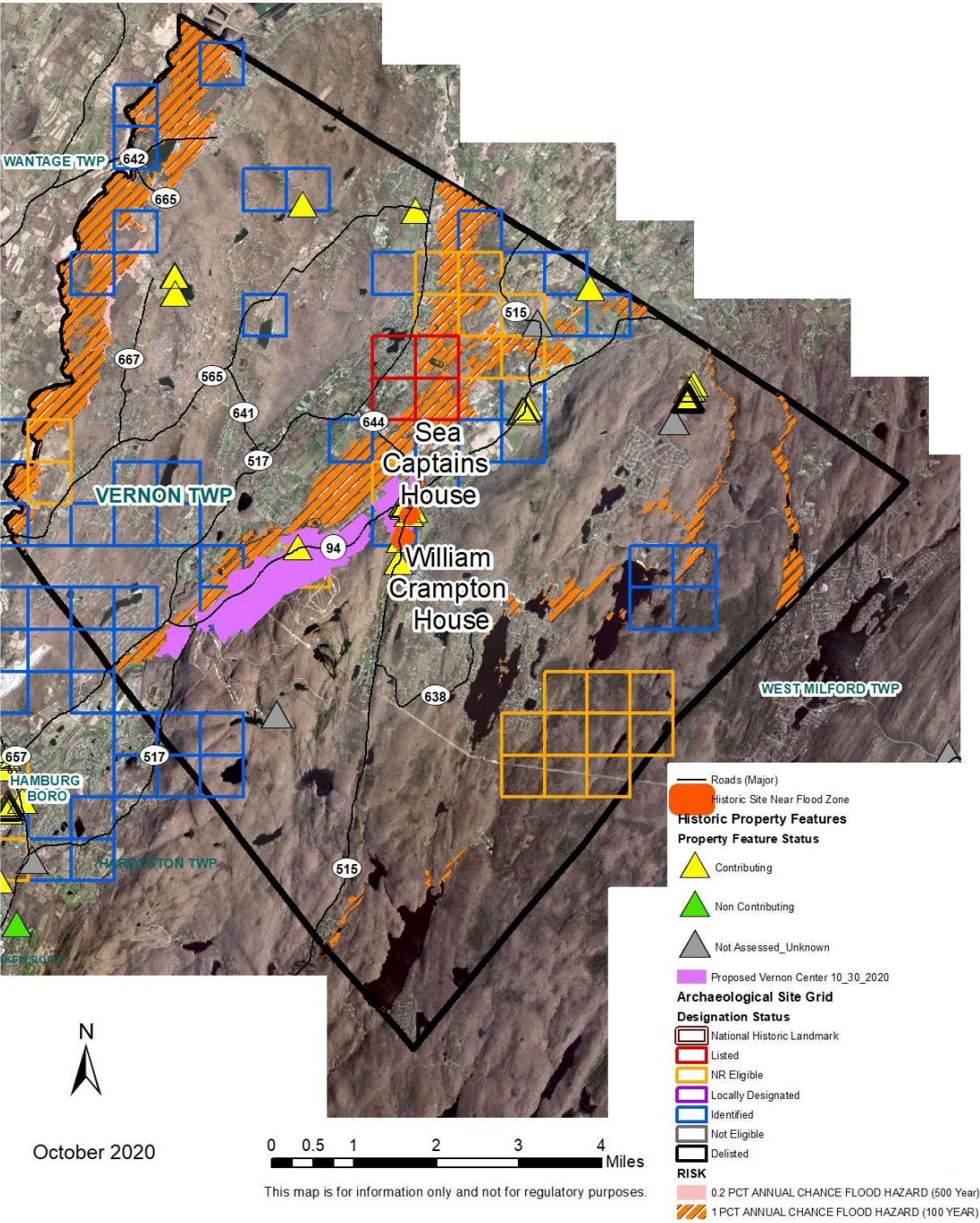
Historic Resources in Floodprone Areas

In Vernon, some Archaeological/ Historic districts have been identified near flood prone areas, including Black Creek and Pochuck Creek. Adjacent to the Town Creek Flood zone, the William Crampton House and the Sea Captain House area could have potential issues if future flooding increase due to climate change.

Historic structures should be evaluated and protected with enhanced stormwater management plans and flood minimization plans. DEP adopted Elevation Design Guidelines for Historic Properties in December 2019, which can be found at

https://www.state.nj.us/dep/hpo/images/_MULT_DG_32_v2_ID14078r.pdf.

Vernon Township, Sussex County Historic Features and FEMA Flood Zone



Wastewater and Water Supply

Wastewater Analysis

The infrastructure to collect and convey sanitary wastewater within the municipality is owned and operated by the Vernon Township Municipal Utility Authority (MUA). The wastewater is pumped to the Sussex County Municipal Utility Authority (SCMUA) for treatment at the County sewage treatment plant (STP) (#NJ0053350) and discharged to the Wallkill River in Hardyston Township. There are several small sanitary sewage treatment systems that discharge to groundwater in various locations within Vernon Township, including Hidden Village Condo Association, Vernon High School, Walnut Ridge Middle School, and Vernon Colonial Plaza. Many of Vernon Township residences are served by individual septic systems for sanitary sewage disposal.

The current Sussex County wastewater management plan (WMP) was adopted December 14, 2001. The currently approved Future Wastewater Service Area Map (SSA) was adopted in 2014. The township of Vernon has submitted an amendment for a municipal chapter to the Sussex County WMP, which is under review and will modify the approved SSA. In this review, vacant land within the currently approved SSA is being evaluated under the Landscape Project (Version 3.3) for eligibility to remain as SSA under the 25-acre composite ESA requirements of the WQMP rule. The SSA has no associated EPA grant conditions.

Capacity Analysis

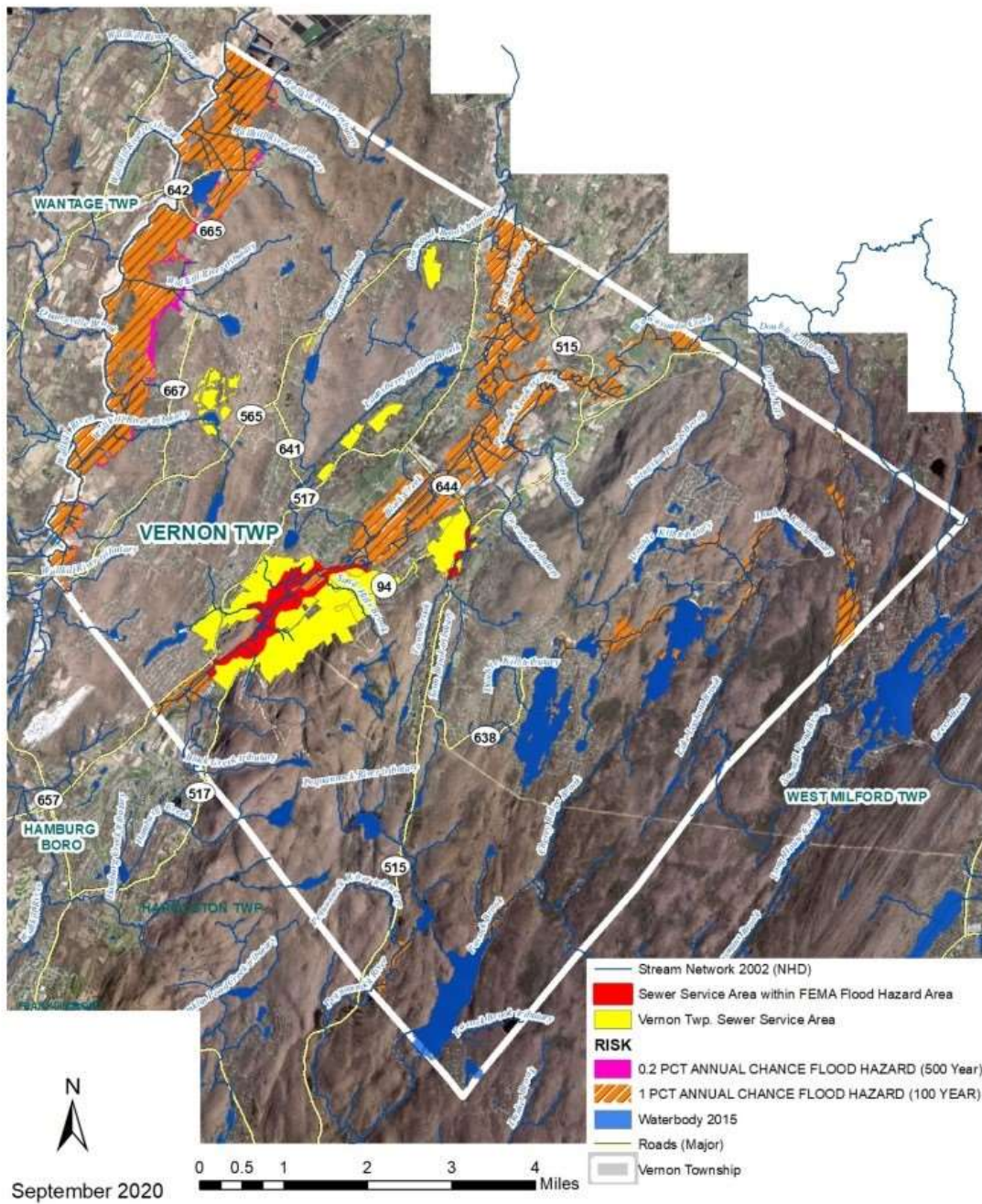
The WQMP rule at NJAC 7:15-4.5(b)5 requires that if the “existing permitted flow is 80% or more at the time of WMP development, a municipality must determine, as part of the buildout analysis, if remaining projected growth (for buildout of the SSA) will result in a capacity deficiency and, if the potential for a capacity deficiency exists.” The SCMUA STP is currently permitted to discharge up to 3.0 MGD. Recent discharge monitoring reports (DMR) data indicates that the STP is discharging a monthly average of approximate 1.4 MGD. Therefore, the existing flow is under 80% of the permitted capacity. The submitted draft County-wide WMP buildout analysis for the entire SCMUA SSA projects a future flow of 3 MGD or at 100% of the permitted capacity. Based on the buildout analysis, the SCUMA does not anticipate an expansion for the STP permitted flow at this time.

Based on a preliminary review of the Sussex County WMP and in particular, the Vernon chapter, the Primary Hydrologic Unit Code (HUC) 12 that is within the Proposed Center boundary is the Upper Pochuck Creek (020200070203). Total Undeveloped Land Available for Dilution is 2,895 acres, and total units as projected by the Nitrate Dilution/recharge model at 4.8 ac/unit is 603 units. The number of projected new units based on current zoning is 395. This HUC-12 meets the septic density to achieve the target 2 mg/l nitrate.

Wastewater Infrastructure in Floodprone Areas

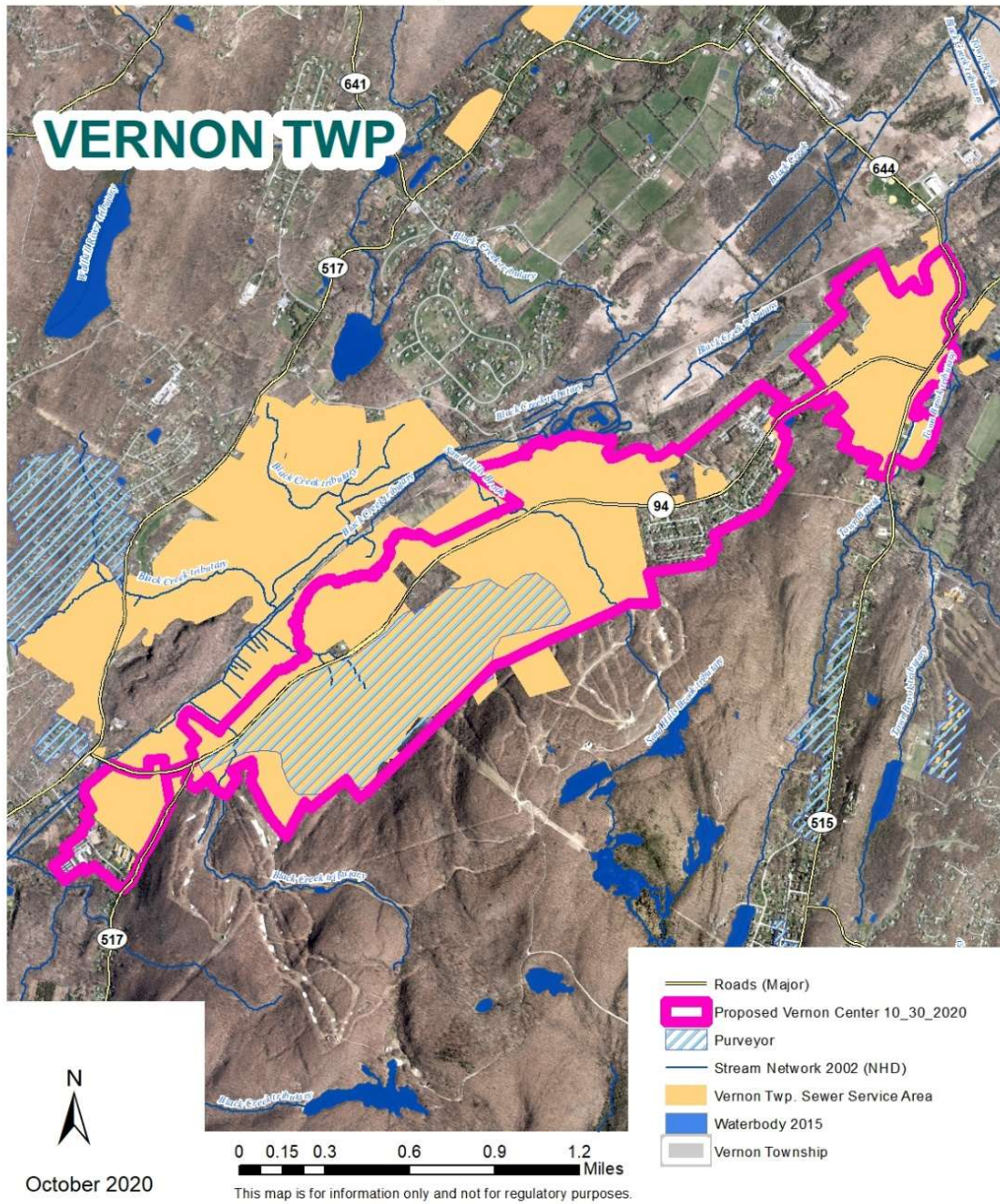
Critical utility infrastructure like powerlines, sewers, and potable water lines can be adversely impacted by flooding. The sewer service area covers 1,583 acres of Vernon Township and includes 169 acres in the flood zone. **Vernon Township should work with the sewer utility to identify any treatment plant, pump stations, or outfalls in the flood zone and determine their specific vulnerability to flooding events.**

Vernon Township, Sussex County Sewer Service Area within FEMA Flood Hazard Areas



This map is for information only and not for regulatory purposes.

Vernon Township, Sussex County
Sewer Service Area and Water Purveyor Area
with Proposed Center



Water Supply

Vernon Township lies within the public water service area served by Suez Water Company, Vernon Valley (SWCVV), which operates 13 public community water systems in Vernon Township. Hidden Village Condo Association and a water system operated by Aqua NJ are also in the township. There are a number of public non-community systems inspected by the Sussex County Health Department. Vernon should confirm the area of service of all public and private water systems utilized by Vernon residents.

The consolidation of small water systems by Suez Water and Aqua Water, which were privately run by very small companies years ago, have enabled these systems to be operated and managed properly with the resources available to these larger water purveyors. For example, one Suez water system with less than 30 homes required radiological treatment to be installed. Suez purchased one of the homes and built a treatment plant and installed the necessary radiological treatment. This would have been very difficult to many small water systems due to costs of design, construction, and annual operation.

Capacity Analysis

A Well Search indicates that there are over 700 domestic wells within the Township. The Bureau of Water Systems Engineering (BWSE) Deficit/Surplus webpage indicates that the system has a surplus of water available to service all pending and future projects that have received approval through the BWSE. However, while the BWSE's Deficit/Surplus analysis for the Township indicates that SWCVV has sufficient treatment capacity and infrastructure to meet demands, a recent application to modify corrosion control submitted in response to a 2018 lead level action exceedance indicates that only one of their wells is active and the only treatment plant has a capacity of 0.389 MGD. This capacity is lower than their summer and peak demand, which may be cause for concern. The BWSE has reached out to the permittee regarding these discrepancies and an update is pending.

The system has historically reported high unaccounted-for-water, with the most recent levels reported on the annual Water Utilization Report as 24.6 and 50.4 percent in 2018 and 2019, respectively. These figures are well above 15 percent, which DEP deems acceptable. As a part of the Water Allocation Permit effective June 1, 2011, the permittee was required to implement a leak detection and repair program to reduce unaccounted-for-water to below 15 percent within 5 years which does not appear to have been effective. Text Condition 1 of the aforementioned permit requires that water shall not be used to serve non-potable, consumptive purposes for new projects that are greater than 50 percent non-potable and greater than 50 percent consumptive, where, as determined by the Department, alternate water sources, including but not limited to reclaimed water for beneficial reuse, are feasible to serve the non-potable, consumptive needs of the project.

Water Supply Infrastructure in Floodprone Areas

Potable drinking water is provided to Vernon Township residents by private wells and water purveyors including Community Well Protection Areas. By a desktop analysis it was shown that approximately 25-acres of the *Suez Water NJ, Vernon Hills – Highland Lakes* purveyor area is within a flood zone.

Vernon Township should identify any public potable water wells and pump stations located in the flood zone and determine their specific vulnerability to flooding events.

Additionally, DEP recommends that Vernon perform a similar analysis for private wells and both inform the owners of their vulnerability and identify potential solutions to that vulnerability.

Stormwater

Improvements to surface water infiltration and stormwater management can be implemented in many ways including replacing impervious pavement with pervious surfaces, maintain and restore all surface water bodies potential for additional stormwater retention through dredging and silt control, constructing green infrastructure, requiring buffers to surface water bodies, restoring wetland areas, adhering to state requirements for stormwater management best management practices, and adding stricter municipal building codes. To reduce flooding as temperatures and precipitation rise, **DEP recommends that Vernon Township continue to address stormwater runoff and improve stormwater retention on site at its source.**

Vernon Township should also identify the location of any stormwater outfalls located within the flood zone and determine their specific vulnerability to flooding events.

Vernon Township should seek opportunities to install green infrastructure measures to offset increased stormwater, but also to lower the impacts of heat-island effect which are directly related to the amount of impervious surface.

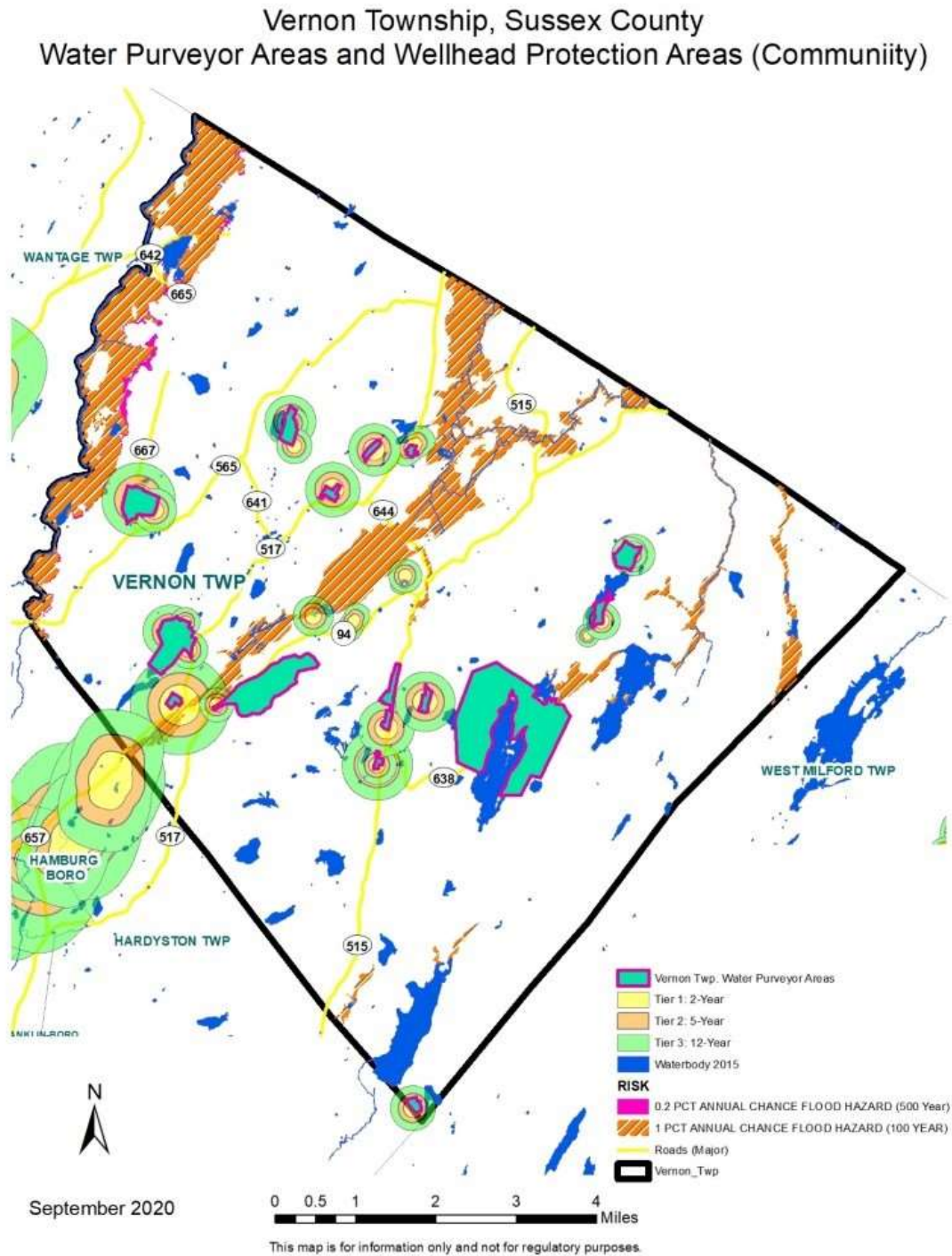
Well Head Protection Areas

Areas of land surrounding public community wells, known as Well Head Protection Areas, from which contaminants may move through the ground to be withdrawn in water taken from the well, have been delineated. Protection of the public health, safety and welfare through protection of ground water resources, ensures a supply of safe and healthful drinking water.

Well Head Protection Areas (WHPA) are mapped areas calculated around a Public Community Water Supply (PCWS) well in New Jersey that delineates the horizontal extent of groundwater captured by a well pumping at a specific rate over a two-, five-, and twelve-year period of time for confined wells. The confined wells have a fifty-foot radius delineated around each well that defines the well head protection area, which must be acquired and controlled by the water purveyor in accordance with Safe Drinking Water Regulations (see NJAC 7:10-11.7(b)1). WHPA delineations are conducted in response to the Safe Drinking Water Act Amendments of 1986 and 1996 as part of the Source Water Assessment Program (SWAP). The delineations are the first step in defining the sources of water to a public supply well. Within these areas, potential contamination will be assessed and appropriate monitoring will be undertaken as subsequent phases of the SWAP. WHPA delineation methods are described in *Guidelines for Delineation of Well Head Protection Areas in New Jersey*³.

³ <https://www.state.nj.us/dep/njgs/whpaguide.pdf>

Vernon should identify all wellhead protection areas around public supply wells in its planning documents. Of the known delineated wellhead protection areas in Vernon, there are approximately 1,037.48 acres of Tier 1; 1,599.69 acres of Tier 2, and 3,926.74 acres of Tier 3 Community Wellhead Protection Areas in Vernon Township. Three wellhead protection areas are located in or adjacent to the proposed designated center.



Social Vulnerability and Human Health

Population Assessment

Vernon Township is a diverse community of 22,369 as of 2018 (Vernon Municipal Self-Assessment, August 2020). Within the proposed town center boundary of 1.98 square miles, there exists a population of 2,745 people and 1,878 housing units. In planning for climate change related resilience measures, Vernon must also consider the vulnerability of various populations within the Township to adverse effects of climate change. All residents of Vernon are vulnerable to adverse impacts of a climate change, including an increase in temperature and precipitation and a degradation of natural resources. However, climate change also impacts residents differently based on their location in the Township, their social and economic situation, and depending on their ability to anticipate, resist, or recover from a natural hazard.

The degradation of air quality and elevated temperatures can lead to negative health issues. Elevated temperatures can interrupt power supply to all residences which could impact those who need electricity for medical equipment in their homes and loss of air conditioning could increase heat stress and its associated impacts.

	Vernon Township	Sussex County	New Jersey
Land area (sq mi)	69.96	535.44	8,723.09
Population	22,369	142,298	8,881,845
Households	8,354	53,361	3,213,362
Average Household Size	2.76	2.66	2.73
Housing Units	10,922	62,371	3,605,401
Median Household Income	\$79,363	\$90,520	\$93,902
Per Capita Income	\$42,010	\$42,639	\$40,895
Poverty Rate (% of Families)	2.6	3.1	7.6
Civilian Population in Labor Force 16 Years and Over	13,437	80,037	4,675,686

Data Source: Social Explorer Tables: ACS 2018 (5-Year Estimates) (SE), ACS 2018 (5-Year Estimates), Social Explorer; U.S. Census Bureau

For those living near Vernon's flood zones, increased stormwater runoff under elevated precipitation and current impervious cover conditions could lead to catastrophic flooding. Any vulnerable residents that are adjacent to or in the floodplain may be at greater risk to flooding. Vernon Township should evaluate residents living in tracts close to or in the floodplain including the elderly, disabled, minorities, and those without personal transportation to identify the social vulnerabilities they may face as a result of increased flooding. For example, if there are people without cars who rely on public transportation, increased flooding could result in loss of wages or their jobs if they cannot get to work on flooded days.

Environmental Justice

As of September 2020, New Jersey has passed new environmental justice legislation and guidance, building on Executive Order 23 to mandate integration of equity considerations into government decision-making. All municipalities should seek to reduce disproportionate environmental and public health stressors and increase environmental and public health benefits

for communities of concern, which defined as community block groups having concentrations of low-income, minority, or limited English-proficient residents. Municipalities should empower residents, particularly their most socially vulnerable residents, to meaningfully participate in decision-making that affects their environment, communities, and health. More information can be found on the Office of Environmental Justice Website, <https://www.nj.gov/dep/ej/>.

Healthy Communities

DEP strongly encourages Vernon Township to work with its municipal and county Offices of Emergency Management (OEMs) to review their Emergency Management Plans as a matter of planning, especially but not limited to freight rail transported through the township. Over 3,500 residents and a portion of the proposed center is within 3,000 feet of the freight lines.

Department of Health data is limited, at this time, for Vernon due to its size. DOH data is more available for municipalities with larger populations. Data for Vernon can be found at <https://www-doh.state.nj.us/doh-shad/>.

Contaminated Sites, Solid and Hazardous Waste, & Recycling

Known Contaminated Sites

To protect public health, Vernon shall maintain a map of known contaminated sites and their remediation status. Approximately 28 known contaminated sites have been identified within municipal boundaries that have an impact on ground water quality and are or have been subject to remediation measures. These include underground storage tanks and a former municipal landfill. Adhering to DEP regulations for spill prevention and completing any required remediation and long-term groundwater monitoring of existing contamination are required in order to protect this valuable resource and public health. Vernon Township Known Contaminated Sites:

PI_NAME	ADDRESS	PI_NUMBER
INDEPENDENCE CORNER GAS INC	1596 RT 565 N	023515
BOB BALDWIN'S TRANSPORTATION INC	5 OMEGA DR	000510
SINGH BROTHER PETRO LLC	189 BREAKNECK RD	006469
MCAFFEE EXXON NJ 0245	81 RT 94	001650
SEASONS RESORT	RTE 517 (MCAFFEE GLENWOOD RD)	014002
515 TANGLEWOOD DRIVE	515 TANGLEWOOD DR	G000011444
211 ANNISQUAN ROAD	211 ANNISQUAN RD	G000038345
CONGRUENT MACHINE COMPANY	107 MAPLE GRANGE RD	G000030932
19 CLOVER LANE	19 CLOVER LN	G000032792
19 Paddock Lane	19 Paddock LN	G000062147
67 BARRY DRIVE NORTH	67 BARRY DR N	194499
9 HALLS HILL	9 HALLS HILL	459484
8 COURTLAND ROAD	8 COURTLAND RD	468181
63 CEDAR TREE DRIVE	63 CEDAR TREE DR	220809
474 ROUTE 515	474 RT 515	479324
9 EAST LAKE SHORE DRIVE	9 EAST LK SHR DR	490768
255 LAKE WALLKILL ROAD	255 LAKE WALLKILL RD	601721
SANG DONALD & ELLEN	5 LAKEVIEW RD	604625
DONS AUTOMOTIVE & TIRE CENTER	301 RT 94	519622
60 BREAKNECK ROAD AST SPILL	60 BREAKNECK RD	520441
20 WAGON WHEEL ROAD	20 WAGON WHEEL RD	535797
LAWRENCE DR. GROUND WATER CONTAMINATION	27 LAWRENCE DR	799113
32 WHITE BIRCH ROAD	32 WHITE BIRCH RD	799186
LUKOIL 57722	312 RT 94	009291
16 GLENWOOD LANE	16 GLENWOOD LN	161704
FT FARM	956 RT 517	752294
47 LAKE WALLHILL RD	47 LK WILLKILL RD	172435
841 - 847 ROUTE 517 PROPERTY	841-847 Route 517	837000

Brownfields

Although Vernon identifies a few contaminated sites within the proposed center, **Vernon should identify if any of these Known Contaminated Sites (KCS) meet the DEP definition of a brownfield site.**

The Brownfield Act (N.J.S.A. 48:3-51) defines “brownfield” as:

“[A]ny 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.”

The Solar Act (N.J.S.A. 48:3-51) also defines “brownfield” as:

“[A]ny 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.”

These known contaminated sites have been identified in the proposed center.

PI_NAME	ADDRESS	PI_NUMBER
BOB BALDWIN'S TRANSPORTATION INC	5 OMEGA DR	000510
8 COURTLAND ROAD	8 COURTLAND RD	468181
DONS AUTOMOTIVE & TIRE CENTER	301 RT 94	519622
LUKOIL 57722	312 RT 94	009291

Three (3) known contaminated sites in the proposed center also were identified with Groundwater Contamination Areas:

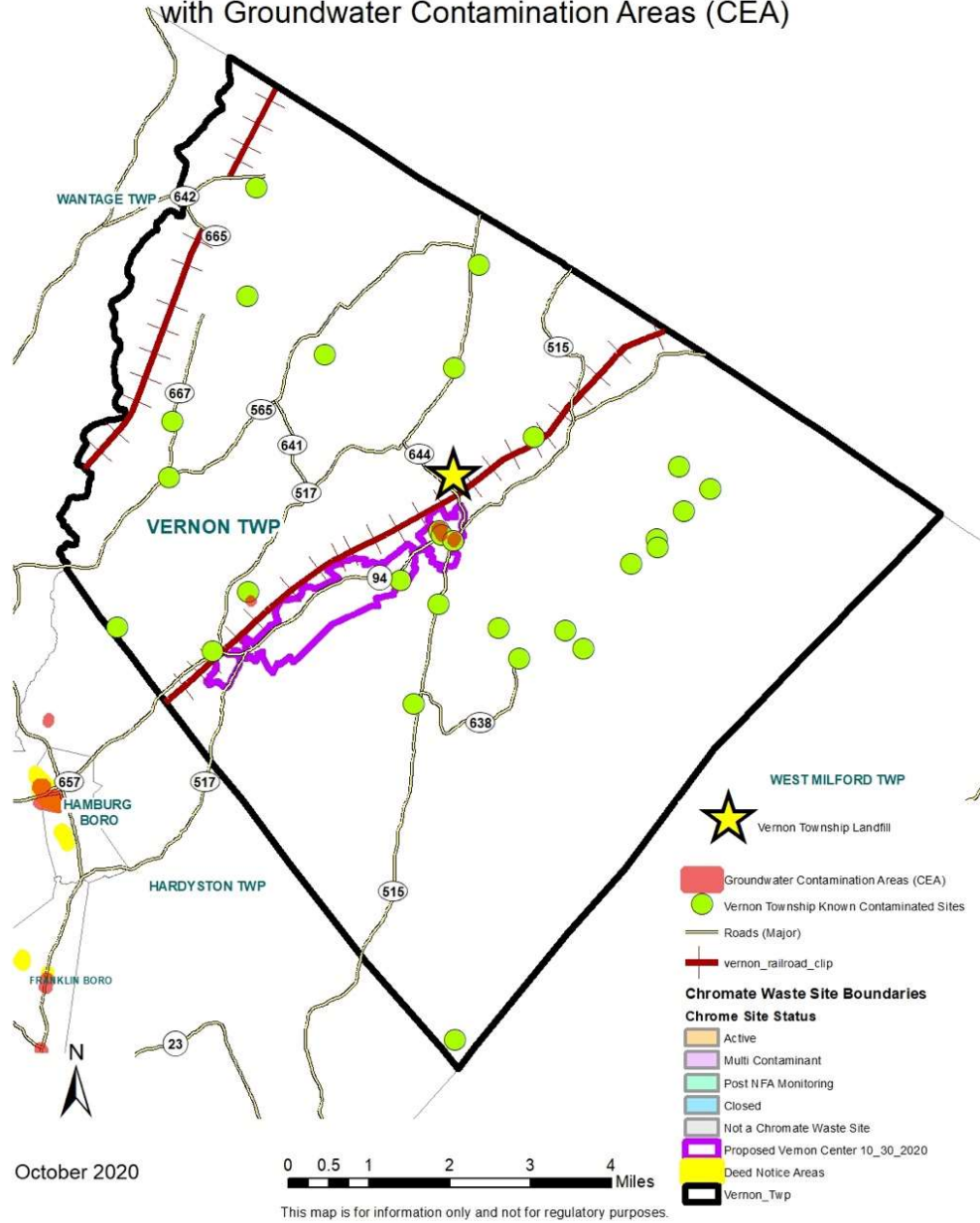
- 1) Bob Baldwin's Transportation Inc.
- 2) Dons Automotive & Tire Center
- 3) Lukoil 57722

If the Township pursues brownfield cleanup and development in the future, DEP recommends taking actions as part of the Sustainable Jersey Certification Program. These actions include Brownfield Inventory and Prioritization, Brownfield Reuse Planning, Brownfield Marketing, and Brownfield Assessment and Investigation. Each of these Sustainable Jersey Actions provide information on why they are important and how they can be accomplished. There are also resources provided to help municipalities accomplish the Action goals and examples of what other municipalities have done. The DEP has also created programs to aid municipalities with the cleanup of their brownfield sites.

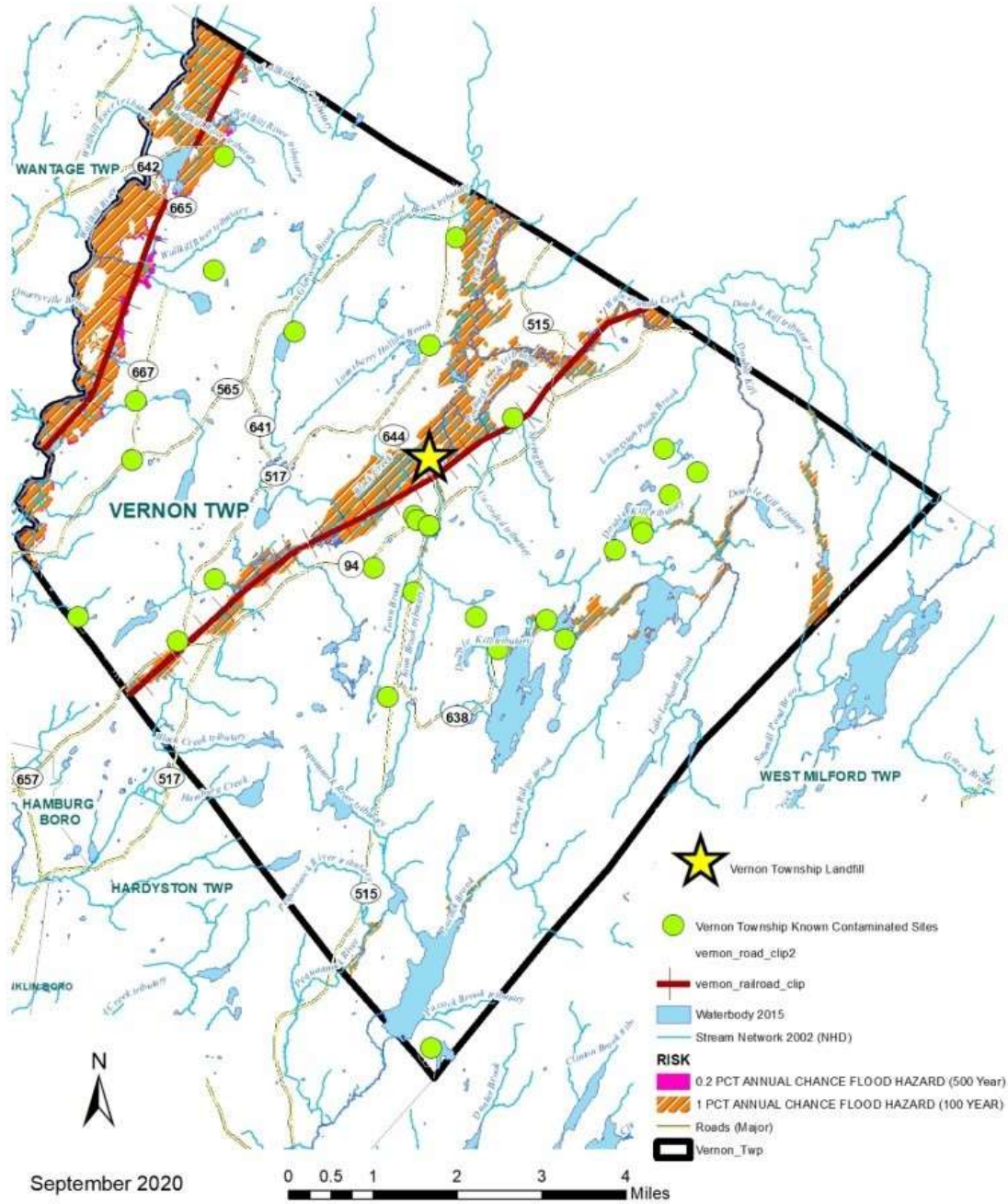
Contaminated Sites and Waste Facilities in Floodprone Areas

The former municipal landfill is located off of Vernon Crossing Road (Route 644) to the northeast of the proposed designated center and is in an area subject to flooding by Pochuck Creek and/or its tributaries.

Vernon Township, Sussex County
Known Contaminated Sites, Solid Waste Landfill
with Groundwater Contamination Areas (CEA)



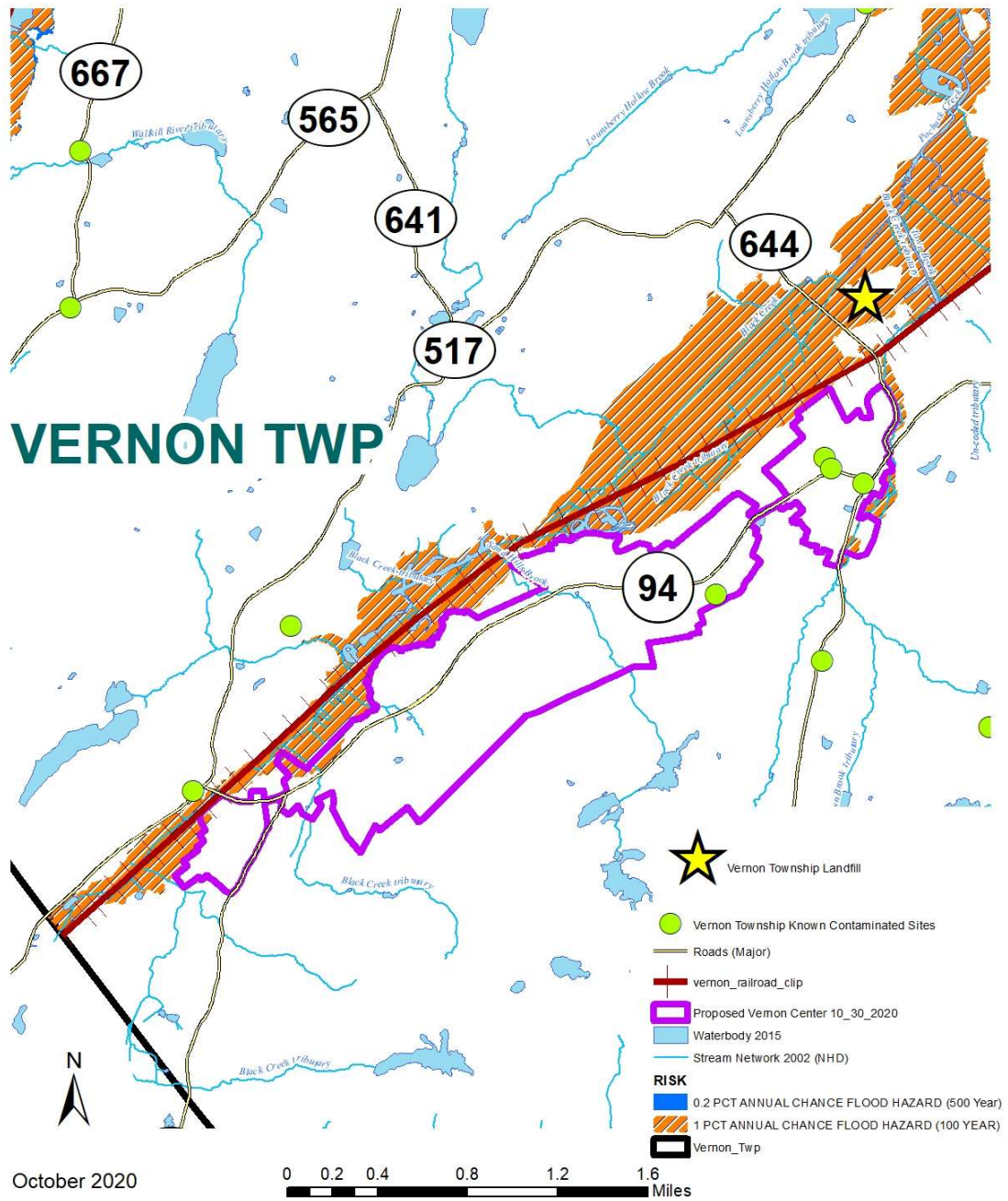
Vernon Township, Sussex County FEMA Flood Hazard Areas with KCS and Solid Waste Landfill



September 2020

This map is for information only and not for regulatory purposes.

Vernon Township, Sussex County
FEMA Flood Hazard Areas with KCS and Solid Waste Landfill



This map is for information only and not for regulatory purposes.

Solid and Hazardous Waste

DEP recommends that Vernon Township identify not only public, but also private facilities that either collect, transfer, process, or dispose of solid waste or recyclables on its municipal inventory. Vernon Township should also continue to inform its residents of any opportunities for recycling including drop-off depot locations for residents, any Township plans to build waste facilities in town, and any additional waste facilities or services to provide a more holistic view of how the Township manages its waste.

Vernon Township Sanitary landfill has been identified in the Black Creek and Pochuck Creek flood zones.

Recycling

Vernon Township has provided a recycling statement of consistency in its self-assessment to meet the requirement. Per [N.J.S.A. 13:1E-99.11 et seq.](#) (Recycling Act), NJ Statewide Mandatory Source Separation and Recycling Act, Vernon Township should build on this statement and identify a recycling coordinator, include provisions for recycling in its master plans, provide the State with tonnage reports each year, and publicize recycling provisions every six months.

Similarly, the Township has met its obligation to list at least one municipal recycling ordinance, although this can be expanded upon. **DEP recommends that the Township notify the State of all recycling ordinances adopted through a statement of consistency, pursuant to N.J.S.A. 13:1E-99.16(b).** Future communication with the State should also include long-term plans including recycling education campaigns, how the municipality plans to enforce proper recycling practices, and potential plans to build upon the current recycling infrastructure in order to provide the State with an understanding of how the municipality plans to improve its current recycling system.

Assessment of Proposed Center(s) and Planning Area(s)

The MSA presented by Vernon includes an expansion of the town center boundary, as well as changes to planning areas. Following are DEP's issues and concerns with the proposed changes.

Threatened and Endangered Species

Overall, the proposed changes to the designated center appear to have minimal potential conflicts with threatened and endangered species' habitat. While areas of landscape mapped habitat are still present within the proposed boundaries, a majority of these valued patches are relatively insignificant due to their isolated nature within what is otherwise an urbanized landscape for the species involved, mostly Northern Myotis and Bobcat. These patches are a result of the landscape mapping protocols developed based on the wide-ranging nature of the species (Bobcat) or broad habitat use traits (Northern Myotis). However, DEP notes that there are some properties within the proposed Town Center boundary that are not within the sewer service area that are identified by the landscape maps as sensitive areas. Such properties would be subject to a more detailed review under a site-specific amendment.

That said, there are three specific locations of concern.

1. Block 231, Lots 14, 14.03 and 15. A review of DEP data shows two occurrences of the state endangered *Solidago rigida var. rigida* (Prairie Goldenrod) on lot 14 within the proposed boundaries. Due to the documented goldenrod habitat, DEP recommended that the Town Center portions of lot 14 be removed from the Center boundaries or at least the area between lot 14.03 and lot 15 (See Figure 1) in order to protect this state endangered plant. This area is also identified as a habitat connection corridor and will be discussed further below. **This issue was subsequently addressed by modifying the center boundary to be consistent with this recommendation which excludes all or parts of the identified lots.**

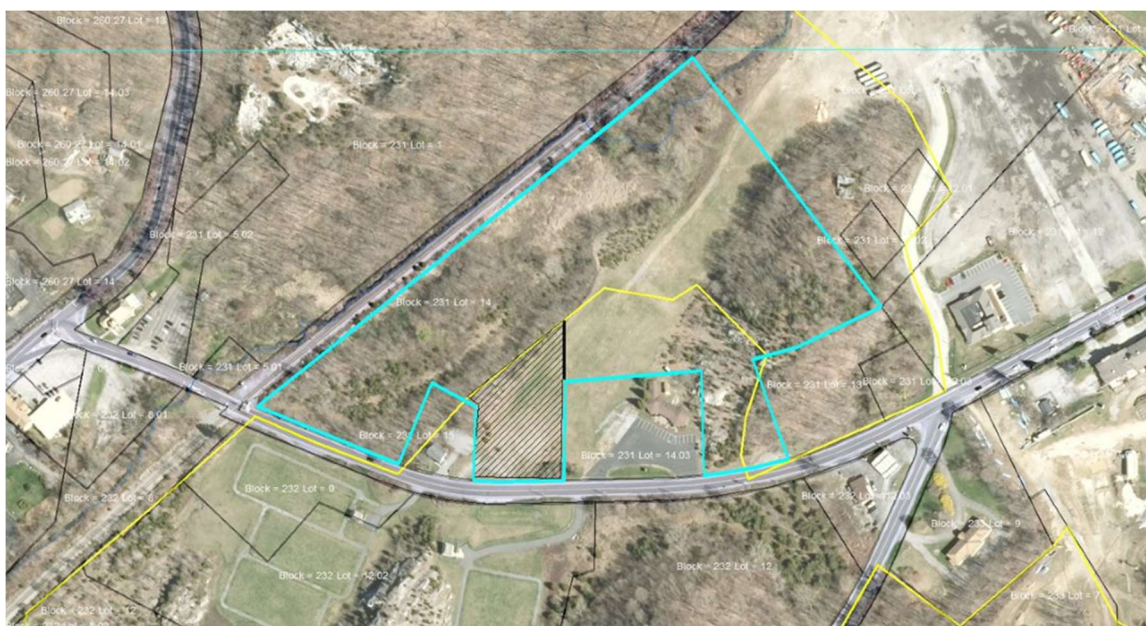


Figure 1: Rare plant exclusion area.

The other two areas of concern involve the maintenance of two identified wildlife travel corridors, primarily for bobcat, within the proposed Center. A review of the Department's CHANNJ mapping shows that within the approximately 5-mile long center, there are only 2 locations that could serve as viable wildlife passageways from the north to the south. One occurs near the southwestern edge of the boundary of the Center and is classified as a more restricted wildlife corridor, shown in brown. The second occurs in the northeasterly section of the Center and is classified as less restrictive to wildlife movement, shown in tan, based on the land cover features occurring within it (Figure 2).

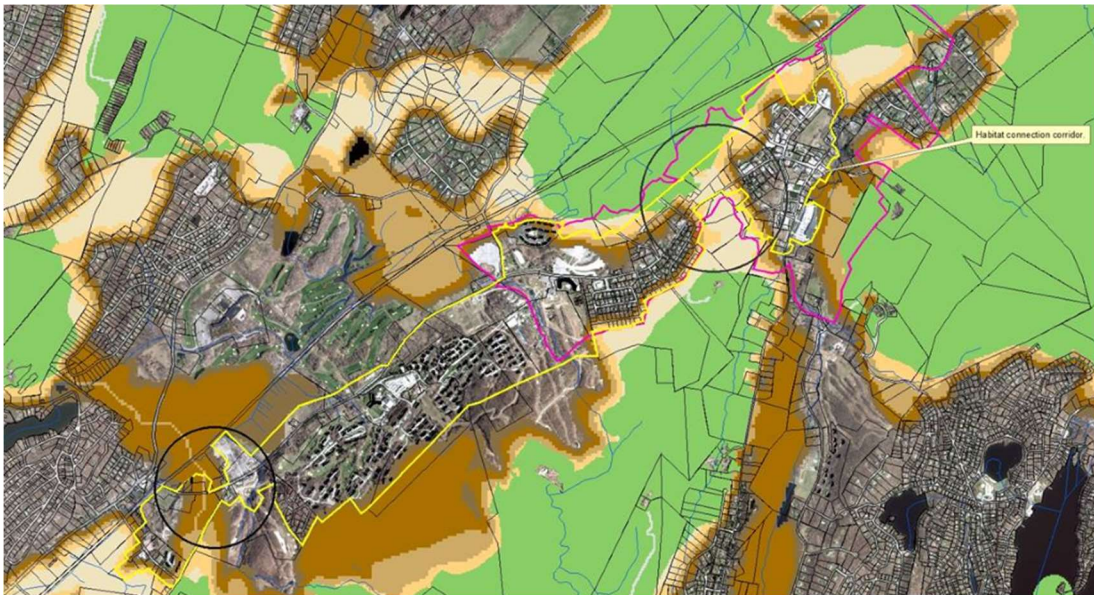


Figure 2: CHANNJ mapping of the Vernon Township area.

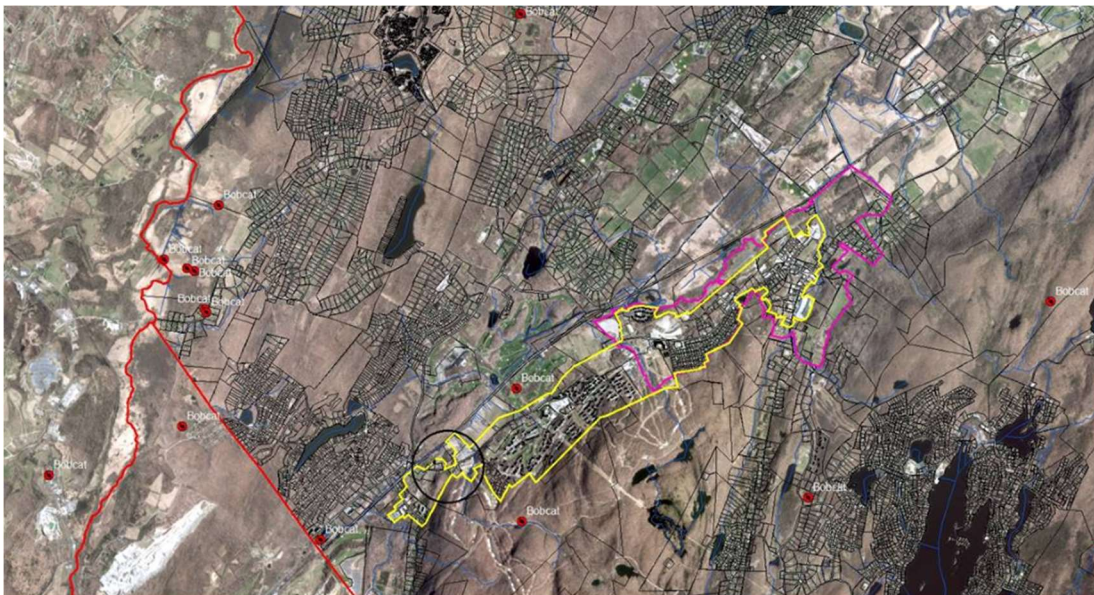


Figure 3: Bobcat sightings in the Vernon area.

2. Southwesterly Corridor. In regard to the southern wildlife corridor, while the development of lot 14.03 has compromised this projected movement corridor on the north side of Route 94, there is still sufficient space on either side to maintain a functional connection. A review of DEP sightings data shows various bobcat records on the northwest and southwest sides of the urban Center area (Figure 3). These data suggest that there is or could be movement between larger habitat areas to the north and south through this corridor. While there are breaks in the valued landscape mapping habitat patches on either side of Route 94 at this location. These breaks are more a result of landscape mapping protocols relating to bobcat home range parameters and are not necessarily related to how wildlife move through the landscape (for example, there is a bobcat sighting on the golf course north of the Town Center boundary and this area is not valued by the landscape mapping).

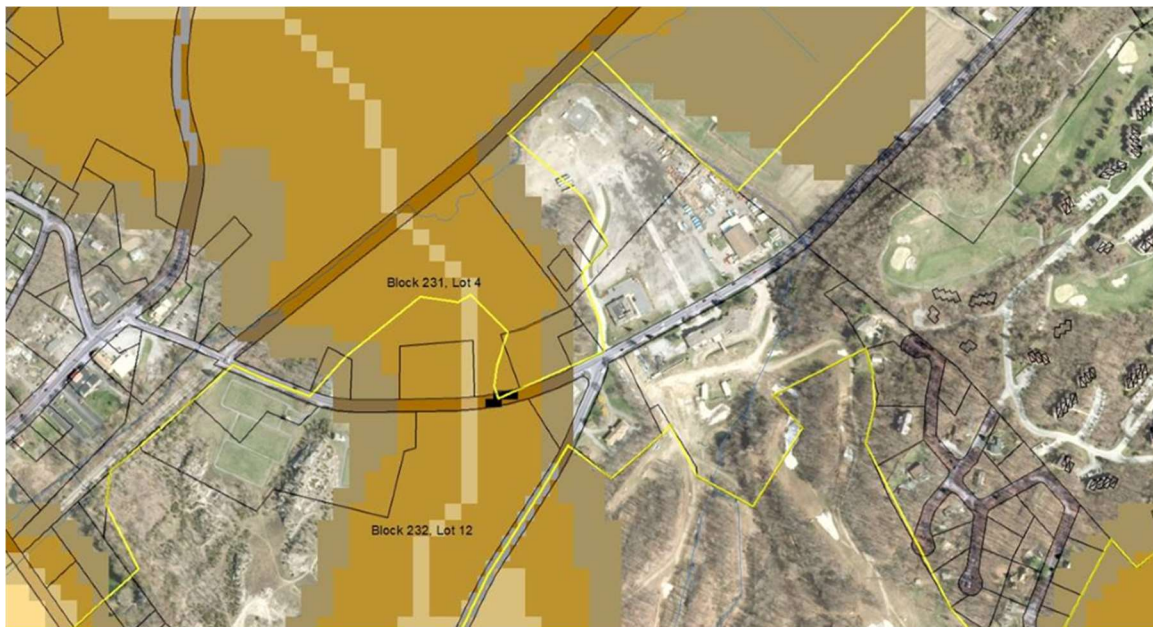


Figure 4: Southwestern wildlife corridor.

To assist in maintaining a functional north/south movement corridor DEP recommends removing Block 231, Lot 14 and a portion of Block 232, Lot 12 from the Town Center boundaries (Figure 4). DEP also recommends that the boundaries of the proposed Town Center exclude all or parts of several lots to the NW of Rout 94 due to flood zone. **This issue was subsequently addressed by modifying the center boundary to be consistent with this recommendation which excludes all or parts of the identified lots.**

3. Northeast Corridor. In reference to the northeastern movement corridor, the landscape mapping does identify habitat on either side of Route 94 for the state endangered bobcat (See Figure 5).



Figure 5: Landscape mapping for the northeastern CHANNJ mapped travel corridor.

As noted above, this area is classified as a fairly unrestricted wildlife movement corridor from core habitat north and south of the proposed Vernon Town Center. Given the potential significance of this area as a landscape habitat connector/wildlife movement corridor, **DEP recommends that the boundaries of the proposed Town Center exclude all or parts of several lots to the NW of Route 94 (see Figure 6).** By reducing the development potential of this critical area, the likelihood that this area will remain a suitable corridor is significantly increased.



Figure 6: Parcels associated with the northeast movement corridor.

Additionally, more lots were added to the proposed center west of the Route 94 corridor. With the additions, Block 183, Lot 15 was identified by DEP as having several species of grasslands birds since 2010. A review of multiple years of subsequent aerial photography shows that the site remains suitable for these species. **As a result, the 250-foot portion of Block 183, Lot 15 adjacent to Route 94 has been included in the updated center boundary. The back portion of the Lot was excluded from the center boundary due to its suitable habitat for grassland birds.** Finally, it is recognized that part of the ski area parking lot and the frontage on Rt 94 of Block 231, Lot 9 is in the 100-year flood zone. This site can be included in center as long as it is understood that those areas are subject to all applicable Department regulations if any future development proposed. These decisions were the result of conversations between OPA and DEP and conversations between OPA and Vernon Twp.

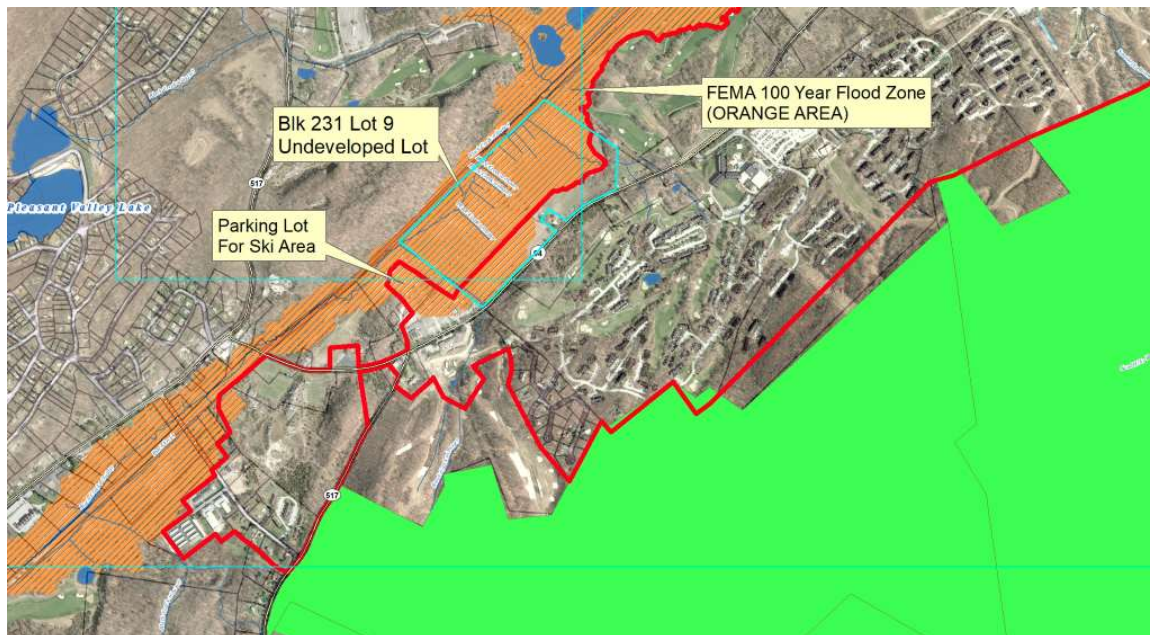


Figure 7: Parcels associated with the 250-foot portion and 100-year flood zone adjacent to Route 94.

Natural Resources

There are multiple regulated waters within or in close proximity to the proposed town center which include Black Creek, Town Brook, Sand Hills Brook, and their tributaries. Black Creek, Town Brook and their tributaries have an associated Flood Hazard Area as per the FEMA maps. In addition, Town Brook and its tributaries, as well as a portion of Black Creek and some of its tributaries, are mapped for trout maintenance waters and would have a 150-foot Riparian Zone (RZ). The remainder of the regulated waters would have either a 50-foot or 150-foot RZ which would need to be determined by a review of any water dependent species within one mile. For any proposed project that is located within a Flood Hazard Area or RZ that would require permits, DEP would recommend a pre-application meeting.

In addition to Flood Hazard, there are a few areas of mapped potential wetlands depicted on the wetlands (2012) layer. These range from managed wetlands within maintained area; to, deciduous wooded wetlands. There may also be additional wetlands within the town center limits

which do not appear on this layer. The DLRP has jurisdiction over State open waters, freshwater wetlands and wetlands transition area so any development impacting these areas would require an application to our Division for approval. Additional constraints which could impact our review of a Flood Hazard or Freshwater Wetlands application include:

- Multiple archeological grid maps and historical sites are within the limit of the proposed town center. Any project within these areas which impacts freshwater wetlands would require additional input from The Historic Preservation Office.
- There is a portion of the proposed town center which borders an EPA priority listing associated with the Sussex County Regional Wetlands Black Creek Swamp, which could impact the review of any wetland applications within this area.
- While the majority of the area is mapped rank 2 or below for threatened and endangered species, there is some mapped habitat for Barred Owl, Bob Cat, Northern Myotis, Wood Turtle, and other ranked 4 and 5 species. There are also portions of the Natural Heritage Grid mapped as for some plant species of concern, and a Natural Heritage letter should be requested and submitted for any DLRP application for regulated development in this area. Applications for projects in areas mapped for these species will require a review by our Threatened & Endangered Species unit.
- While the proposed town center is within the Highlands Planning Area, it is outside of the Highlands Preservation Area and would not impact DLRP's review. Please note the boundary of the Highlands Preservation Area within Vernon Township is just outside of the proposed town center.

Along with the boundary of the proposed town center, there was also a layer in the provided data set labeled "Areas in Need of Redevelopment." Some of these depicted areas are outside the limit of the proposed town center and have further environmental constraints including a certified vernal pool and a C1 segment of Black Creek which is mapped as a trout production water. Also as a note, projects in many of these area would not be considered by DLRP to be redevelopment since they are currently forested.

In reviewing the Vernon Township Final Draft Master Plan 12-11 (page 49 'Redevelopment Areas') the Municipality identified the following five areas: the Vernon Town Center Area (62 acres); the Mountain Creek Village Area (523 acres); the McAfee Village Mixed Use Redevelopment Area (590 Acres); the McAfee Village Commercial Resort Area (Legends Resort) (42.76 Acres) and McAfee Village Highway Hotel Area (St. Frances Site) (2.05 Acres). A desktop analysis has shown McAfee Village Mixed Use Redevelopment Area with extensive flood zone areas. **The Township should identify any Redevelopment Areas vulnerable to future flooding during the planning process.** Resiliency actions and restrictions should be applied to any sections in flood zones. DEP can offer Technical Assistance in clarifying development constraints for sites.

Conclusion

DEP does not object to the proposed changes to planning areas in Vernon Township. They continue to be consistent with underlying land use and natural resources. Modifications to the Proposed Center as presented by Vernon Twp. in the MSA were made to avoid and minimize impacts to T& E Species, Wetlands, Flood Zones, Historic Resources, Surface Water Quality

and Critical Infrastructure. These modifications are responsive to projected climate change impacts, allowing Vernon to avoid, prepare for, minimize the effect of, adapt to and recover from extreme weather events and changes in environmental conditions that have the potential to adversely affect the resources and residents of Vernon Township.

Summary of Recommendations

None of the following recommendations (info/items) need to be provided or addressed as necessary for NJDEP to complete consistency determination and will be delineated in the action plan or PIA.

Assessment of Proposed Center(s) and Planning Area(s)

In reviewing the Vernon Township Final Draft Master Plan 12-11 (page 49 ‘Redevelopment Areas’) the Municipality identified the following five areas: the Vernon Town Center Area (62 acres); the Mountain Creek Village Area (523 acres); the McAfee Village Mixed Use Redevelopment Area (590 Acres); the McAfee Village Commercial Resort Area (Legends Resort) (42.76 Acres) and McAfee Village Highway Hotel Area (St. Frances Site) (2.05 Acres). A desktop analysis has shown McAfee Village Mixed Use Redevelopment Area with extensive flood zone areas.

- The Township needs to further identify in Redevelopment Areas any vulnerable to future flooding during the planning process. Resiliency actions and restrictions should be applied to any sections in flood zones. DEP can offer Technical Assistance in clarifying development constraints for sites.

Flooding

- DEP recommends that Vernon Township utilize the SFHA for the 0.2 percent (500 year) storm for planning purposes.
- When evaluating any construction within the identified floodplain of Vernon Township, the Township and others involved must also consider the cost of damage and replacement in the event of flooding.
- Any proposed conceptual plan should be presented to DEP early in review process, before planning board approval, and before submittal of any permit applications to determine if the project has any fatal flaws rendering it un-permittable in its current design.
- The Township should identify any Redevelopment Areas vulnerable to future flooding during the planning process.
- If not already done, Vernon Township should map areas that flood regularly, including, but not limited to, repetitive loss (RL) and severe repetitive loss (SRL) properties, as well as roadways and intersections, with particular attention to evacuation routes or critical access areas.
- DEP recommends that Vernon Township review and update their floodplain development ordinance to make sure that it is consistent with the most recent standards and National Flood Insurance Programs.
- The Township should consider enhancing its own zoning regulations and building codes to encourage building outside of the flood zone and to minimize construction in flood prone areas to reconstruction of existing buildings. Flood zone area new construction or redevelopment of existing buildings should avoid high density concentration and areas of severe flooding.
- Construction of any critical utility line and associated infrastructure, emergency services, or public services buildings (schools, hospitals, churches, etc.) should be avoided in the flood hazard area.

- Green infrastructure should be incorporated into all projects within the floodplain.

Historic Resources

- Historic structures should be protected with enhanced stormwater management plans and flood minimization plans.

Open Space and Wildlife

- DEP recommends that Vernon Township further work with Sussex County, NJ Highlands Council and surrounding municipalities to provide and expand corridors of open space and natural features to support habitat connectivity and adaptation to changing conditions. These areas include but are not limited to the Pequannock Watershed, Wawayanda State Park, Hamburg Mountain Wildlife Management area, the Wallkill River National Wildlife Refuge, the Appalachian National Scenic Trail Corridor, the Four Seasons Greenway, the Black Creek Marshes and Pochuck Mountain.
- If birding is not already being promoted in Vernon Township, it might be considered.
- DEP supports Vernon's commitment to renewable energy, although it encourages the Township to pursue it in an ecologically responsible manner. Vernon should continue to protect the Township's open spaces and the recolonization and reuse of open field habitats for ground nesting and foraging birds.
- Due to its large amount of forested area, Vernon should prepare long-term adaptive management forestry practices to preserve its tree cover as precipitation and temperatures increase.
- Future development in the Township will likely be limited by overlapping restrictions of Special Flood Hazard Areas and regulated trout maintenance waters in riparian zones.
- DEP encourages any town that has homes and neighborhoods that repetitively flood to consider contacting the DEP Blue Acres program regarding buyouts.
(https://www.nj.gov/dep/greenacres/blue_flood_ac.html)

Wastewater, Water Supply, and Stormwater

- Vernon Township should work with the utility authority and water purveyor to perform a detailed vulnerability assessment of the infrastructure that serves the town, and work with the sewer utility to identify any treatment plant, pump stations, or outfalls in the flood zone and determine their specific vulnerability to flooding events.
- Vernon Township should identify any public potable water wells and pump stations located in the flood zone and determine their specific vulnerability to flooding events. Additionally, DEP recommends that Vernon perform a similar analysis for private wells and both inform the owners of their vulnerability and identify potential solutions to that vulnerability.
- Vernon Township should identify all well head protection areas around existing public potable water supply wells.
- Vernon Township shall confirm with the Suez Water Company Vernon Valley (SWCVV) that the reported water supply capacity is lower than Vernon's peak seasonal demand. The SWCVV public water system (PWSID1922026) is supplied from two wells that go to a single treatment plant that has a firm capacity of 0.864 MGD with Water Allocation limits of 19.378 MGM and 193.779 MGY. The system's peak demand occurred in 2019 at 0.62 MGD; 18.31 MGM and 157.869 MGY resulting in a spare

production capacity of 0.244 MGD and spare allocation capacity of 1.07 MGM and 35.9 MGY.

- An application to modify corrosion control submitted in response to a 2018 lead level action exceedance indicated that only one of the Township's wells is active and the only treatment plant has a capacity of 0.389 MGD, although the BWSE's Deficit/Surplus analysis for the Township indicated that SWCVV has sufficient treatment capacity and infrastructure to meet demands.
- DEP notes that there are some properties within the proposed Town Center boundary that are not within the sewer service area and are identified by the landscape maps as habitat for threatened and endangered species. Such properties would be subject to a more detailed review either through a Municipal Chapter to the Sussex County Wastewater Management Plan or through a site specific amendment pursuant to the Water Quality Management Planning rules.
- DEP recommends that Vernon Township continue to address stormwater runoff and improve stormwater retention on site at its source.
- Vernon Township should identify the location of any stormwater outfalls located within the flood zone and determine their specific vulnerability to flooding events.
- Vernon Township should seek opportunities to install green infrastructure measures to offset increased stormwater, but also to lower the impacts of heat-island effect which are directly related to the amount of impervious surface.
- Vernon Township shall confirm that they are up to date with their Municipal Stormwater (MS4) permit and required reporting. Vernon shall update their stormwater ordinance by March 3, 2020.

Contaminated Sites, Solid and Hazardous Waste, and Recycling

- Although Vernon identifies a few contaminated sites within to the proposed center, Vernon should identify if any of these Known Contaminated Sites (KCS) also meet the DEP definition of a brownfield site.
- If the Township pursues brownfield cleanup and development in the future, DEP recommends taking actions as part of the Sustainable Jersey Certification Program.
- Vernon has several contaminated sites in floodprone areas, including a landfill, that are currently undergoing remediation efforts and groundwater monitoring.
- DEP recommends that Vernon Township identify not only public, but also private facilities that either collect, transfer, process, or dispose of solid waste or recyclables on its municipal inventory. Vernon Township should also notify the State of all recycling ordinances adopted through a statement of consistency, pursuant to N.J.S.A. 13:1E-99.16(b).

Environmental Justice

- All municipalities should seek to reduce disproportionate stressors and increase benefits for socially vulnerable populations and frontline communities. Vernon can do this by empowering residents, particularly its most socially vulnerable residents, to meaningfully participate in decision-making that affects their environment, communities, and health.

Energy

- All communities are encouraged to implement actions to meet New Jersey's goals for greenhouse gas emissions reduction. The Sustainable Jersey Gold Star in Energy identifies a suite of actions and levels of performance that municipalities can take to reduce greenhouse gas emissions.