

Pelham Conservation Plan



2023

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Chapter I: Introduction

Increasing development pressures and land values in southern New Hampshire together with other mounting threats to Pelham's natural resources have increased the urgency of accelerating efforts to protect the town's surface and groundwater resources, forests, wetlands, agricultural lands, steep slopes, and other natural areas. Demands on groundwater to support increased development and threats to the town's great ponds resulting from runoff and substandard septic systems are of particular concern. Protecting important wildlife habitats from further fragmentation is also a high priority and it is recognized Pelham's remaining farms, forests and wetlands are extremely important to the overall character of the community. Realizing that it would not be possible to save everything, it is important for the community to prioritize the resources of highest value to meeting the Town's conservation goals and to identify alternative means of protecting these critical assets. Pelham residents also place great importance on the scenic and recreational value of the town's existing town forests and conservation lands and these lands are managed therefore, is also a key component of this plan.

This Conservation Plan builds upon the [Natural Resources Inventory](#) (NRI) adopted by the Conservation Commission in 2022. The NRI includes a comprehensive overview of Pelham's Natural resources including groundwater, surface waters, wetlands, and forests, a detailed description of existing conservation lands and town forests, an overview of the principal threats to the town's natural resources, a summary of relevant state, federal and local regulations, together with other related information and materials. The information and materials included in the NRI is accompanied by a detailed series of tables, maps and figures used to both illustrate and supplement the substance of the document. The Conservation Plan is a direct outgrowth of the NRI and as such, this document does not replicate the content of the NRI except where necessary to support the goals, recommendations, or conclusions of the plan. The primary focus of the Conservation Plan is to articulate the conservation priorities of the town and to identify available tools to meet Pelham's conservation goals including land acquisition, land management, and local land use regulations.

To achieve its conservation goals, a multifaceted approach will be required including the following key strategies:

- Land Use Controls
 - Maintain and improve upon existing regulations like the Conservation Open Space Development, Aquifer, Floodplain and Wetlands Conservation Districts.
 - Encourage innovative land use controls such as conservation easements to preserve open space and minimize the impacts of development.
 - Promote tree retention and regulate tree clearing in subdivisions and commercial developments.
 - Obtain conservation and public access easements to parcels during the subdivision and site plan review process.

- Acquisition
 - Pursue fee simple acquisition and easements to protect key resources.
 - Develop a Land Acquisition Plan with a prioritized list of parcels for future development.
 - Pursue open space acquisition for the most important ecological habitats, water resources protection areas. Large forest blocks and key linkages connecting existing protected lands.
- Education by the Conservation Commission
 - Provide materials on the town website and in printed form on the following topics: water resources; non-point pollution; designation and management of town forest and smaller forested areas; tree retention; septic system maintenance; and other relevant topics.
 - Utilize social media to educate town residents and promote the protection of key assets.
 - Collaborate with and serve as a resource to town boards and commissions, especially the Planning Board, Zoning Board, Board of Selectmen and Budget Committee.

The Town of Pelham is located in the south-central region of the State, bounded by the towns of Salem, Windham and Hudson in New Hampshire, the towns of Dracut and Tyngsborough in Massachusetts and the City of Lawrence, MA. Pelham is part of the Nashua Urbanized area and the Boston Metropolitan Statistical Area, two factors that have greatly influenced growth in recent decades. Over the past several years, southern NH experienced a significant period of overall growth, and residential development. Acres of forest, field and farmland continue to be subdivided for residential, commercial, and industrial purposes. Tax map records illustrate the dramatic change in Pelham. In addition, there is growing concern in the town and throughout the State for the protection of wetlands, aquifers, rivers, and streams as natural areas and as water resources. These concerns led the town to adopt a moratorium on new development in the Sherburne Road Area in March 2023 together with a new Natural Resources Management Ordinance. Clearly, conserving greenspace and protecting the town's groundwater resources are community priorities.

Pelham is committed to protecting its significant resources as is evidenced by the numerous direct and indirect protection mechanisms already in place. In addition to the recently adopted ordinances mentioned above, the town has adopted the Aquifer Conservation District, the Wetlands Conservation District, the Floodplain Development Ordinance, the Illicit Discharge Detection and Elimination (IDDE) Ordinance, the Residential Open Space Subdivision, and the Well Ordinance for New Construction. All of these ordinances provide protection for the Town's resources.

RSA 36-A provides the legislative authority for towns to create conservation commissions and identifies their responsibilities. One of those responsibilities is to "keep an index of all open space and natural, aesthetic or ecological areas within the city or town and scenic resources." In addition, "it shall keep an index of all marshlands, swamps and all other wetlands in a like manner, and may recommend to the city council or selectmen or to the department of natural and cultural resources a program for the protection, development or better utilization of all such areas." These requirements were met upon the adoption of an updated Natural Resources Inventory (NRI) by the town in 2022. This Plan builds upon the NRI to provide a roadmap for the Conservation Commission to achieve its goals and objectives including strategies for land acquisition, regulatory changes, and land management.

Chapter II: Vision and Goals

The goals of the Conservation Plan are based on a review and summary of existing conservation related goals currently identified in the most recent Master Plan, the 2022 NRI, input from the ongoing master plan update process and other sources. These goals, summarized below, are incorporated into the Conservation Plan.

Current Master Plan Natural Resources Goals

- Preserve and protect the natural resources of the Town of Pelham in order to provide a safe and attractive community for current and future residents and to protect such resources from the adverse impacts of development. These natural resources include wetlands, floodplains, air, forest, soils, agricultural lands, wildlife habitats, open space, scenic vistas, ground and surface water and other sensitive resources.
- Maintain and create a clean, unpolluted environment free of land, air, water, visual and noise pollution.
- Preserve and enhance the Town's prominent natural features.
- Protect the quantity and quality of the Town's water resources.

Natural Resources Inventory (NRI) Goals

- Seek to acquire an additional 1,000 acres of land to achieve a goal of dedicating at least 25% of the land area of Pelham to conservation.
- Pursue protection for existing farmland and undeveloped lands with Prime/State designated soils.
- Prioritize parcels with two or more co-occurring natural resource priority layers, especially adjacent to or in close proximity to existing conservation land:

- Farmland (active)
- Aquifers
- Floodplain
- Forested areas
- Grassland
- Hydric Soils
- Prime Farmland Soils
- Important Wildlife Habitat Areas
- Steep Slopes
- Surface Water
- Unfragmented Lands
- Wetlands
- Prime Wetlands

2023 Master Plan Update Public Input

- Protect the town’s more rural areas and “small town feel.” Balance open space protection, including Pelham’s forests and farmlands, with management of development and growth.
- Build on the town’s land protection and conservation efforts by continuing these in the future. Focus further natural resource protection efforts on Pelham’s surface and drinking water resources.
- Preservation of forested areas of Pelham should be a future priority, especially wooded areas that are impacted by housing development. Some respondents noted that they thought too much of the town’s forested areas was being lost to development.
- The town should focus further protection efforts to protect Pelham’s surface and drinking water as well as along stream corridors like Beaver Brook.
- Continue to maintain existing public trails and add more trails on lands in town.

It is also important to acknowledge the potential impacts of climate change. Average annual temperatures across New Hampshire are anticipated to rise as a for the foreseeable future which may have significant impacts on the natural environment. The may include increased frequency of hot temperature extremes, warmer winters, and reduced snow cover. These changes will likely impact wildlife and vegetation and Pelham may experience increased impacts from invasive species expanding their ranges into the region. Precipitation is expected to increase in spring and winter together with increased frequency and severity of storm events

with important implications for flooding. On the other hand, drought events are expected to increase in the summer. Further, water quality in our lakes and ponds may be impacted by climate driven increases associated with toxins released by cyanobacteria.

Chapter III: Water Resources

Watersheds

A watershed is defined as the land area that drains into a watercourse or waterbody. These pathways can be underground or on the surface and they typically become progressively larger as the water moves downstream. Watersheds vary in size and every stream, tributary, and river has an associated watershed. Small watersheds join to become larger watersheds. Most of the waters in Pelham are part of the greater Merrimack River watershed.

There are four main watersheds in Pelham: Upper Beaver Brook, Lower Beaver Brook, Golden Pond and Spicket River. Of these, the Lower Beaver Brook watershed is by far the largest and contains some of the town's most critical water resources including a substantial portion of its highest yield aquifers, most of the town's Prime Wetlands and two great ponds, Gumpas Pond and Long Pond. It should be stressed though, that the Upper Beaver Brook and Golden Pond watersheds are closely related to the Lower Beaver Brook Watershed as well. Because the land areas within a watershed drain into its associated watercourses or water bodies, protecting the quality of the town's streams and ponds depends on effectively managing activities within the watershed. Effective management includes addressing stormwater drainage, the use of fertilizers, septic system installation and maintenance, and other land use related impacts.

The size and interjurisdictional nature of watersheds make them difficult to manage. Because watersheds are not constrained by municipal boundaries, it is important for Pelham to develop a strong working relationship with its neighboring towns. It is essential to evaluate the impact of individual development proposals as well as the cumulative impact of development within the watershed on its surface and ground water resources.



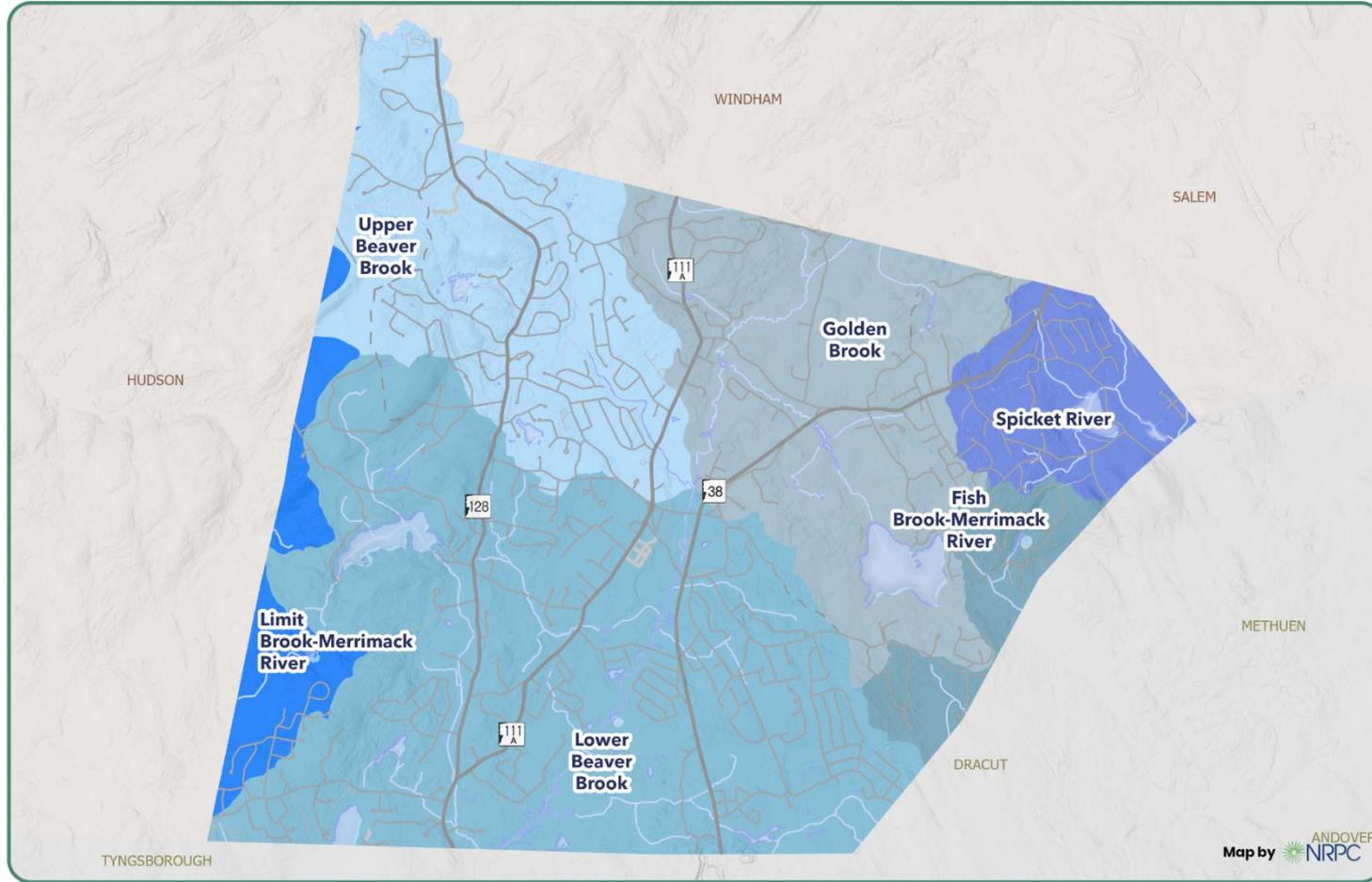
Source: Courtesy of Christine Kamal

Table 1: Watersheds in Pelham

Minor Watershed name	Acres in Pelham	% of watershed in Pelham
Lower Beaver Brook	7437	43.3%
Upper Beaver Brook	3233	18.8%
Golden Brook	3810	22.2%
Spicket River	1178	6.9%
Fish Brook	768	4.5%
Limit Brook	751	4.4%

Map 1 - Watersheds

Watersheds



SOURCES: USGS, NHDES, GRANIT, NRPC GIS
Watersheds shown using the HUC12 level of designation.

Maps prepared by the Nashua Regional Planning Commission are for planning purposes only.
NRPC uses data gathered from multiple sources at various scales of accuracy. No warranties,
expressed or implied, are provided for the data herein, its use, or its interpretation.

Floodplains

Floodplains are areas adjacent to watercourses and water bodies, which are susceptible to the natural phenomenon of flooding during periods of high run-off. The unpredictable nature of flooding requires the application of precautionary measures to avoid substantial damage to life and property in areas susceptible to floods.

Two methods are available to avoid the problems presented by periodic flooding. Protective measures can be applied to structures already located, or proposed for location, on floodplain areas. Preventive measures can also be used to regulate the types of development permitted in these areas to minimize the potential hazards to life and property of community residents and landowners. To employ either approach requires the identification of affected properties.

The Town of Pelham requires a floodplain permit for all proposed developments in any special flood hazard areas. The special flood hazard areas are determined by the various zones within the 100-year flood elevation as defined in the Community's Flood Insurance Study, the Federal Insurance Rate Map, and the Flood Hazard Boundary Map.

National Geodetic Vertical Datum

The Pelham Floodplains Conservation District requires all proposed development in any special flood hazard area to obtain a permit. The Code Enforcement Officer shall review all building permit applications for new construction or substantial improvements to determine whether proposed building sites will be reasonably safe from flooding. Any applicant also needs to provide the following:

1. The as-built elevation (in relation to National Geodetic Vertical Datum (NGVD) of the lowest floor (including the basement) and include whether or not the structure contains a basement;
2. If the structure has been flood-proofed, the as-built elevation (in relation to NGVD) to which the structure was flood-proofed; and
3. Any certification of flood-proofing.

Aquifers

This section describes the location and characteristics of hydrogeological features and protection of replenishable - but also depletable - groundwater resources. Stratified drift aquifers are composed of sand and gravel deposited by the melting of glacial ice. These deposits may be quite extensive, layered or "stratified" and coarse in texture. This coarse texture allows for the storage of large volumes of water and the high porosity allows groundwater to flow through quite readily. Because of their potential to yield large volumes of water, stratified drift aquifers are considered prime sources of water for municipalities or other large volume users.

Pelham does not permit any “[] individual, company, or entity shall cause to remove from the Town’s above ground water resources or below ground aquifers more than 1000 gallons of water per day, unless said water is for the purpose of redistributing that water to the landowners of Pelham.”

The United States Geological Survey (USGS) conducted a survey of stratified drift aquifers in the NRPC region. USGS delineates aquifers based on transmissivity and material composition. Transmissivity is the capacity of the aquifer to transmit water measured in feet squared per day. Aquifers are classified into four basic types based on material composition. Material composition is directly related to the storage capacity and transmissivity of the aquifer, for example coarse grained stratified drift is more porous than fine grained stratified drift and therefore it has a greater capacity to store and transmit water.

Aquifers are highly susceptible to pollution due to the ease and speed with which water-borne pollutants are transmitted through the soil. Insecticides, septic tank effluent, leaking underground storage tanks, landfill leachate or improperly stored hazardous wastes are potential sources of aquifer pollution. In addition, development which involves extensive amounts of impervious material cover (e.g., asphalt or cement) can reduce the productivity of aquifer areas. Extensive sand and gravel excavations can also have a negative impact on aquifers and removal of too much material increases the likelihood of contamination. Decreasing the amount of material overlaying the aquifer increases the potential for the contaminant to infiltrate into the aquifer at an increased rate and at an increased concentration.

- **Till Aquifers**

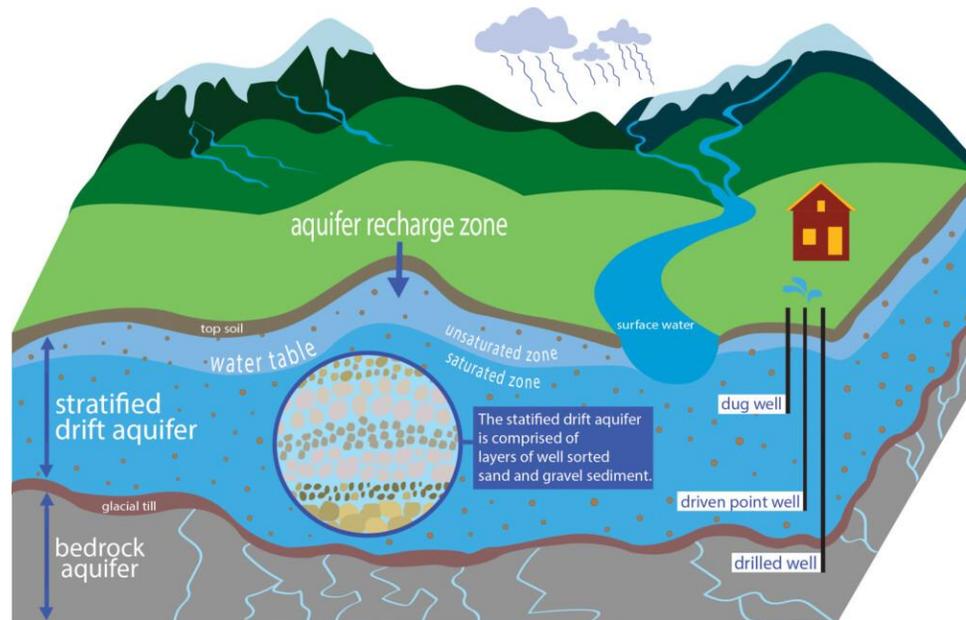
Till aquifers are also composed of glacial material. Material porosity and thickness are the main differences between till and stratified drift aquifers. Till aquifers contain an unsorted mixture of clay, silt and gravel that were ground up from solid rock by the glaciers. This mixture of different sized particles limits the available pore space for water storage. Therefore, it is difficult for these deposits to store and transmit water. Wells drilled in till usually yield only small volumes of groundwater adequate for private residential use. The only protection mechanism provided for wells in till deposits is the minimum setback requirements from property boundaries and septic leach fields. To protect these individual water supplies the Town should consider adopting more stringent setback requirements to prevent contamination.

- **Bedrock Aquifers**

Bedrock aquifers are composed of fractured rock or ledge with groundwater stored in the fractures. These aquifers are very complex because bedrock fractures decrease with depth, "pinch out" over short distances and do not carry much water. Locating water supply wells in bedrock aquifers is often a hit or miss proposition because it is difficult and costly to determine the location of fractures. Bedrock aquifers exist in Pelham and are used for individual wells. Again, the only source of protection for bedrock

aquifers is minimum requirements from property lines and septic leach fields. Recharge areas for bedrock aquifers are difficult to pinpoint which complicates any effort of protection.

There are two key issues affecting groundwater resources in Pelham. The first is the increased amount of impervious surface, which reduces the natural infiltration of stormwater and the recharge of groundwater resources. Stormwater contains many sources of contaminants, which are piped or flow over impervious surfaces and drain directly into surface waters without natural soil filtration. Chemicals in runoff can also lead to long term pollution of groundwater. The second issue is the demand for water. The continued growth of Pelham and NRPC Region has fueled more pressure on current water resources. In recent years, much of this growth has occurred in areas with limited groundwater resources. As previously, these concerns led the Town to adopt a moratorium on new development in the Sherburne Road Area in March 2023. The moratorium, however, is only a short-term intervention. In addition to the adoption of more stringent well yield requirements, consideration should be given to adopting long-term limits on residential development in areas with limited groundwater availability. Map 2 illustrates aquifer location and transmissivity in Pelham.



Source: Green Mountain Conservation Group

Aquifer Conservation Ordinance

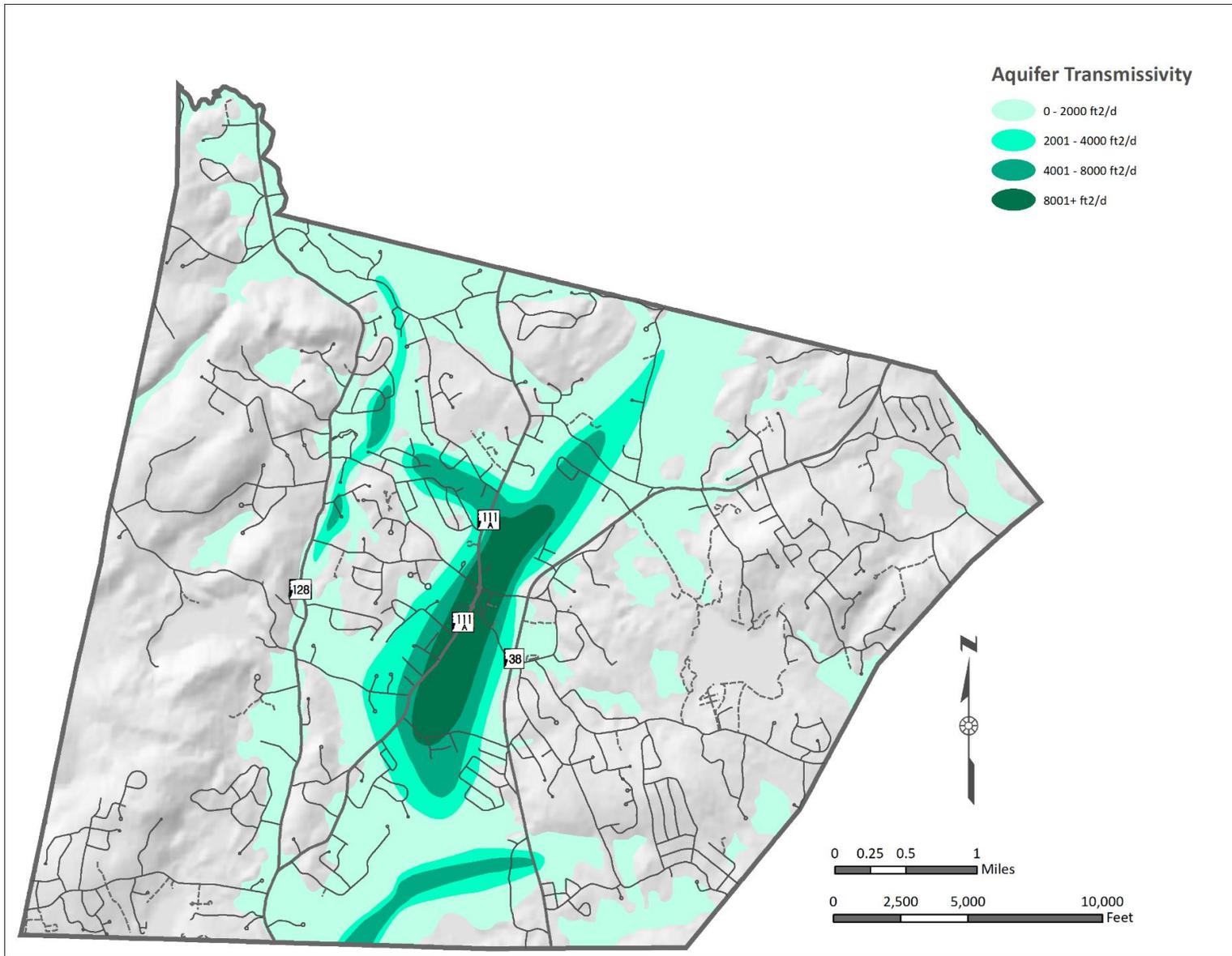
Pelham defines an aquifer as: “those areas shaded in blue on the United States Geological Survey Map entitled "Saturated Thickness, Transmissivity and Materials of Stratified-Drift Aquifers in the Nashua region, South Central New Hampshire" from the study Hydrogeology of Stratified Drift-Aquifers and Water Quality in the Nashua Regional Planning Commission Area, South Central New Hampshire (1987) prepared by Kenneth W. Toppin, United States Geological Survey-Water Resources Investigations Report 86-4358...” These areas are depicted in green on Map 2.

The Aquifer Conservation District is an overlay district meaning that all uses permitted in the underlying zoning districts (e.g., Rural, Residential, Business District, etc.) are permitted unless specifically prohibited or limited by the overall district. Prohibited uses include:

- Industrial uses which discharge contact-type process waters on the site. Noncontact cooling water is permitted.
- Excavation of sand or gravel except as such use is conducted in accordance with an approved earth-removal permit being issued by the Pelham Planning Board.
- Bulk storage of toxic material for resale or distribution.

In addition, the ordinance provides that “no individual, company, or entity shall cause to remove from the Town’s above ground water resources or below ground aquifers more than 1000 gallons of water per day, unless said water is for the purpose of redistributing that water to the landowners of Pelham.” The ordinance also requires that monitoring wells must be installed for any industrial or commercial use that stores or uses hazardous or toxic materials and regulates the use of pesticides, herbicides, fertilizers, manure, and other potentially dangerous materials based on NHDES rules.

Map 2 - Aquifers



The Planning Board reviews all subdivision and nonresidential site plans proposed development within the Aquifer Conservation District to ensure that:

- All such proposals are consistent with the need to protect the groundwater of the Town of Pelham and adjacent communities.
- All sanitary sewer systems are designed to minimize or eliminate leakage or discharges from the system into the groundwater.
- On-site waste disposal systems are located so as to avoid or minimize groundwater contamination.

In general, Pelham's Aquifer Conservation District ordinance provides reasonable protections for groundwater uses, however it is heavily dependent on inspections and enforcement by the Board of Selectmen and the Board of Health which can be challenging given the extent of the district.

Drinking Water Resources and Potential Contaminant Sources

There are two key issues affecting water resources in the region. The first is the increased amount of impervious surface, which reduces the natural infiltration of stormwater and the recharge of groundwater resources. Stormwater contains many sources of contaminants, which are piped or flow over impervious surfaces and drain directly into surface waters without natural soil filtration. Chemicals in runoff can also lead to long term pollution of groundwater.

The second issue is the demand for water. The continued growth of Pelham and NRPC Region has fueled more pressure on current water resources. This makes it imperative to monitor and maintain the quality of all the water resources in Pelham and the region. In the below sections several potential contaminants to the water supplies have been identified and explained further.

- **Underground Storage Tanks**

Leaks in improperly equipped underground storage tanks (USTs) are difficult to detect and may go unnoticed for a long time. Small leaks of only a few gallons can contaminate millions of gallons of ground water. The State regulates USTs where the cumulative volume of all tanks at the facility is 1,100 gallons or more. Some tanks, including those containing non-petroleum-based chemicals and those containing heating oil for on-site residential consumption are exempted.

- **Per- and Polyfluoroalkyl Substances (PFAS)**

Per- and Polyfluoroalkyl Substances (PFAS) are a group of synthetic chemicals that have been used for decades to manufacture household and commercial products that resist heat, oil, stains, grease, and water. PFAS have been used in many consumer products, including non-stick cookware, stain-resistant furniture and carpets, waterproof clothing,

microwave popcorn bags, fast food wrappers, pizza boxes, shampoo, and dental floss. They have also been used in certain firefighting foams and various industrial processes. The widespread use of these chemicals has led to their appearance in drinking water sources in NH. Recent examples include the widespread contamination of public and private drinking water supplies in Merrimack, Pelham and Bedford resulting from emissions from the Saint-Gobain Performance Plastics facility in Merrimack that came to light in 2016, as well as the Coakley Landfill and former Pease Air Force Base superfund sites in the Seacoast area. Concern for long term public health prompted legislation enabling the state to set Maximum Contaminant Levels (MCLs) in 2020. These MCLs apply to public water systems and not to private wells, however the NHDES strongly recommends periodic testing of private wells for PFAS among other substances.

- **Household Hazardous Waste**

Household Hazardous Wastes (HHW) come from everyday products used in the home, yard, or garden. By definition, they are corrosive, flammable, toxic, or reactive. Examples include paints, adhesives, solvents, pool chemicals, pesticides, fertilizers, drain openers and auto chemicals. Disposal in the trash, down the sink, into storm drains, or in the woods poses a threat to water quality and may kill fish and wildlife if the chemicals are released into the environment. Household toxins may also injure human and animal health through exposure due to careless storage and handling. NRPC coordinates household hazardous waste collections for 11 communities in the region, including Pelham. In 2020, the HHW Collection program removed 129,965 pounds from the waste stream that could have otherwise impacted our environment. Six collection events are scheduled each year between April and November that allow residents to dispose of these products properly. Pelham hosts one hazardous waste collection every other year (open to all district members) to better serve the eastern reaches of the region. Collection dates and other information can be found at www.nashuarpc.org/hhw.

- **Junkyards**

Since 1965, all municipalities in New Hampshire have had the responsibility to license junkyards at the local level. This responsibility is contained in RSA Chapter 236 sections 111 through 129. It applies to all municipalities, whether or not there is a local zoning ordinance. The obligation to license is broad. The landowner does not need to be involved in a commercial operation, or even intend to sell the material. If the material is a motor vehicle or auto parts, an accumulation amounting to two or more vehicles is enough to require a license. Under state statute, it no longer matters whether the vehicles are registered; they become "junk" if they are no longer intended for operation on the highways. The legislature has provided a range of remedial options for use in these cases. In most instances, assistance should be sought from the municipal attorney

before commencing court proceedings. Fines and penalties may be assessed through the court system pursuant to RSA Chapter 236 Sections 127-129.

- Improve the licensing checklist to include the review of the National Pollution Discharge Elimination System permit, especially the facility's Stormwater Pollution Prevention Plan.
 - Enforce licensing requirements of all junkyard facilities.
 - Conduct a site walk prior to license renewal to make further recommendations for the protection of natural resources.
 - Update and increase the fines for violations.
- **Arsenic and Radon/Uranium**

Southern New Hampshire is a rapidly growing region that has been identified as having higher than average concentrations of arsenic and radionuclides in drinking water from groundwater sources. This conclusion is based on the analysis of public bedrock wells as required by the Safe Water Drinking Water Act. According to the USGS, high levels in ground water are probably derived from geologic origins. However, in some areas, arsenic may originate from past human activity such as the use of arsenical pesticides. The quality of water obtained from private wells in New Hampshire is not regulated. Private wells are often not tested unless homeowners are made aware of the need to do so, or if testing is a condition prior to granting an occupancy permit. Fractured bedrock aquifers have the highest risk for arsenic contamination. The State of New Hampshire is aggressively promoting the testing of private wells. It is recommended that residents have their wells tested, and that information concerning arsenic and radon be added to the town website.
 - **Stormwater Runoff/MS4**

The development of land for residential, commercial, or industrial purposes necessarily increases the amount of impervious surface area within any given site due to the construction of buildings, roads, driveways, parking lots and other improvements. Impervious surfaces reduce the natural infiltration of stormwater into the ground, reducing recharge of groundwater resources. This is particularly true where stormwater is discharged into a storm drainage system that exports stormwater off of a site and out of a watershed. Development can also reduce groundwater recharge through increased evaporation resulting from land clearing. Where increased imperviousness results in direct stormwater discharges into streams and rivers, the result is often alteration of the natural flow of the stream, causing erosion and sedimentation, loss of aquatic wildlife habitat and increased flood hazards.

Because Pelham contains significant areas that are defined as “urbanized” by the US Census, Pelham is subject to federal MS4 stormwater management regulations under the EPA Clean Water Act (CWA) and requires a permit for discharges to the environment. A municipal separate storm sewer system (MS4) includes the stormwater collection, conveyance, and outfall structures within the town. These structures include (but are not limited to) catch basins, drain manholes, culverts, stormwater basins, retention ponds and swales.

Local drainage systems, whether natural or constructed, are important features that generally carry stormwater runoff away from developed areas to undeveloped areas, waterbodies, and wetlands. Although these drainage systems help to manage stormwater in our built environment, they are also a primary source of untreated pollutants in receiving waters including pathogens such as viruses and bacteria; phosphorous; nitrates; heavy metals, oil, MBTE, pesticides, herbicides, and many other pollutants. These untreated pollutants in stormwater runoff are defined by the U.S. Environmental Protection Agency (EPA) as “nonpoint source pollution,” meaning that the source of the pollution is not directly attributable to a single spatial point or polluter. Stormwater runoff from streets, parking lots, and lawns picks up and carries contaminants as it moves across the ground surface before entering into local drainage systems. Non-point source pollution and urban runoff in particular, is now acknowledged as being the most serious threat facing surface and groundwater resources in New Hampshire.

Pelham has taken significant steps toward addressing stormwater management and complying with EPA’s MS4 Permit requirements. The town has adopted a Stormwater Management Plan, most recently updated in June of 2021, is an active participant in the Lower Merrimack Valley Stormwater Coalition and has posted and has a page dedicated to stormwater management on the town’s website. The stormwater management page includes an array of useful information sheets and links to resources for homeowners, businesses and other stakeholders on issues including proper septic system maintenance, lawn care, pet waste disposal, and management of construction sites. In addition, Pelham’s *Clean Water Initiative* provides educational information and resources to the public on best management practices to prevent adverse stormwater related impacts to the town’s surface and groundwater resources.

Well Ordinance

Pelham’s Well Ordinance requires that all wells for new construction must be set back a minimum of seventy-five (75) feet from all septic tanks and leach fields and a minimum of seventy-five (75) feet from all lot lines unless a “[] Standard Release Form for Protective Well Radii has been executed and recorded by the owner of the well” which is consistent with state requirements. In addition, it goes above and beyond state rules to require a “[] set back fifty (50) feet from the nearest edge of all existing traveled

ways or rights-of-way.” Importantly, all wells must be pump tested to establish a sufficient yield prior to the issuance of a Certificate of Occupancy along with water sample tests to evaluate water quality for potential contaminants such as Bacteria, Nitrates, Arsenic and Radon. This ordinance helps ensure that there is a sufficient supply of quality water available to support any new development, however, it does allow a portion of the 75-foot protective well radius to include streets and roads which could increase the potential for contamination from road salts and spills. The Town should consider increasing the well setback to 75-feet from the nearest edge of any existing to proposed traveled way or rights-of-way.

Illicit Discharge Detection and Elimination Ordinance

The purpose of this Illicit Discharge Detection and Elimination Ordinance is to protect water quality in the Town of Pelham through “[] the regulation of non-storm water discharges to storm drain systems, surface waters, or ground water to the maximum extent practicable as required by federal and state law.” The ordinance is also a means of complying with federal MS4 Permit requirements within the *urbanized* portions of Pelham. The Ordinance prohibits illicit discharges that can carry pollutants into storm drain systems, surface waters, or ground water and authorizes the Town to conduct all necessary inspections and enforcement procedures to ensure compliance with this Ordinance. It should be noted, however, that the ordinance does not apply outside urbanized areas.

Natural Resources Management

Adopted by Town Meeting in 2023, this Ordinance requires that the Conservation Commission must have the opportunity to provide input to the Planning Board on (presumably) impacts to the Town’s natural resources for a new development proposal. This is a significant expansion of the role of the Conservation Commission in the development review process. The Ordinance also requires that all development maintain a fifty-foot undisturbed buffer around all parcels with limited exceptions for access and entrance into the property. How the buffer requirement will apply to smaller development proposals is unclear. In addition, the Ordinance restricts tree cutting to not more than 50% on a property that has a development project under Planning Board review and requires a performance guaranty for new wells.

Wetlands

Wetlands perform many critical functions including aquifer recharge, flood storage, erosion control and water purification of sediment contaminants and problem nutrients (phosphorus/nitrogen). They also provide important habitat to a variety of plant and animal life including aquatic plants, insects, amphibians, fish, and waterfowl. Given the detrimental effect excessive nutrient loading can have on water resources, it is important that septic systems and leachfields be set back far enough from wetlands to prevent their accelerated eutrophication. It is also important that setbacks from new buildings and structure and buffer areas be maintained

to protect against erosion, sedimentation, contaminated runoff, and to provide protected upland areas for wildlife adjacent to wetland areas.

Pelhams' Zoning Ordinance defines a wetland as:

“Wetland: a wetland is an area that is inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal conditions, does support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include, but are not limited to, swamps, marshes, bogs, and similar areas. Wetlands shall be delineated by either a certified soil scientist or a professional wetland scientist according to the Corps of Engineers Wetlands Delineation Manual, 1987, and the Regional Field Indicators for Identifying Hydric Soils in New England, 1995.”

Wetland areas are for the most part located adjacent to or very near open water as found in the Town's rivers, streams, and ponds. This relationship is the result of a localized higher water table and the source of greater quantities of soil water during periods of high stream flow. There are also some scattered pockets of wetland soils throughout the Town, usually at the bottom of low-lying areas or depressions.

- **Prime Wetlands**

NH RSA 482-A:15. Defines prime wetlands as “[] any contiguous areas falling within the jurisdictional definitions of RSA 482-A:2, X and RSA 482-A:4 that, because of their size, unspoiled character, fragile condition, or other relevant factors, make them of substantial significance. A prime wetland shall be at least 2 acres in size, shall not consist of a water body only, shall have at least 4 primary wetland functions, one of which shall be wildlife habitat, and shall have a width of at least 50 feet at its narrowest point. The boundary of a prime wetland shall coincide, where present, with the upland edge of any wetland, as defined in RSA 482-A:2, X, that is part of the prime wetland.”

The proximity of these soils to low-lying areas or to surface waters constitutes supporting evidence for the sensitivity of these areas and their importance as wetlands. The amount and location of incoming run-off, slope, accessibility of natural drainage features, and seasonal wet conditions are all important points to consider in documenting the sensitivity of a particular wetland area. Though prime wetlands designation does not guarantee protection, it does ensure a more detailed review of the permit application and a closer scrutiny of the potential impacts of the proposed activity.

The Conservation Commission has worked with the University of New Hampshire to identify Prime Wetland areas, several of which have been officially designated by Town Meeting.

- **Vernal Pools**

Vernal or “spring” pools are essential for the life cycle of many invertebrates and amphibians. These temporary forested wetlands serve as a home to many of these species, which feed on nutrients in the pool. Pools can range in size from a few feet to several acres. Vernal pools are generally associated with forested wetlands, but can also be found within larger wetlands, such as oxbows in river floodplains or scrub-shrub wetlands. Most vernal pool animals do not live their entire lives in the pool but migrate in response to snow melt and early spring rains. The pools generally dry up by mid to late summer. Depending on the groundwater, some pools will refill in the autumn. Mole salamanders and wood frogs spend 90% of their lives in the surrounding uplands, perhaps as far as a quarter mile from the pool. Adults migrate to the pool for a few weeks to reproduce and surviving juveniles leave before the water dries.

Other organisms (e.g., snakes, turtles, insects, and birds) migrate from nearby wetlands to breed or feed in the productive pool waters. These animals return to more permanent wetlands. Other animals develop entirely in the pool and most survive the dry season. For example, fingernail clams and air-breathing snails burrow beneath the leaves that remain to await the return of water. Fairy shrimp deposit eggs in the dry pool that hatch after the pool refills.

The New Hampshire Fish and Game Department advocates identification of vernal pools as important wildlife habitat and wetlands of significance and provides guidance for their protection.¹

Goals developed for future natural resources protection should include the documentation of important vernal pools and the protection of these natural resources to help ensure the biodiversity of the area. The identification and mapping of vernal pools on site plans and subdivision plans will provide an opportunity to mitigate the impacts to these sensitive areas.

The only vernal pools noted in Pelham were in the eight Forest Management Plans prepared for the Town Forests. Although many pools may be known in the community, they are not recorded. The New Hampshire Fish and Game Department’s Non-Game and Endangered Wildlife Program collects information on any reptile and amphibians sighted. Volunteers equipped with field guides and report forms identify these creatures on warm, rainy nights in the spring. The Reptile and Amphibian Reporting Program (RAARP)², provides important baseline data for species in need of protection.

¹ NH Fish and Game Department, Nongame and Endangered Wildlife Program, *Identification and Documentation of Vernal Pools in New Hampshire*, 2001.

² www.wildlife.state.nh.us

- Peatlands

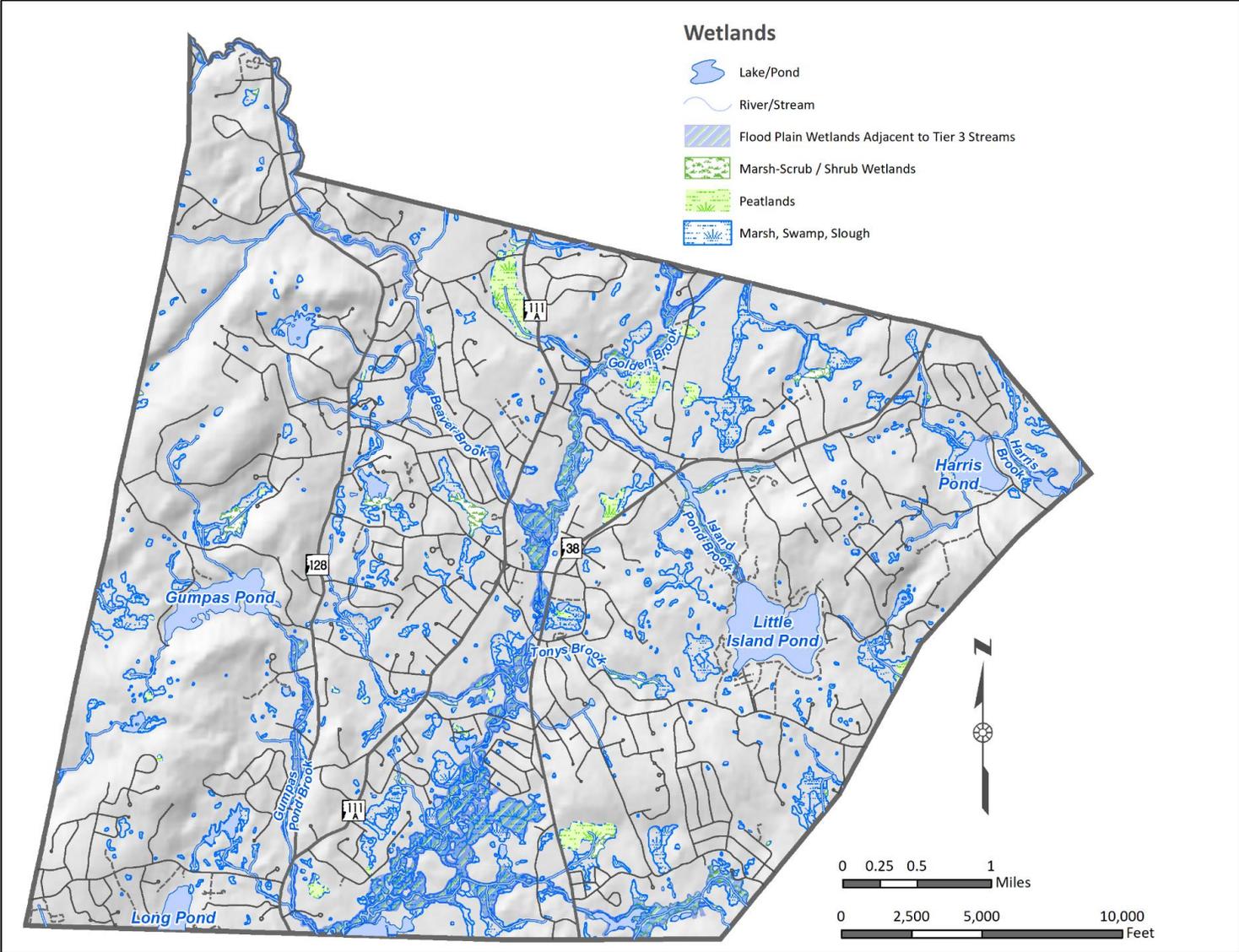
According to the International Peatland Society, “Peatlands are terrestrial wetland ecosystems in which waterlogged conditions prevent plant material from fully decomposing. Consequently, the production of organic matter exceeds its decomposition, which results in a net accumulation of peat. In cool climates, peatland vegetation is mostly made up of Sphagnum mosses, sedges and shrubs and are the primary builder of peat, whereas in warmer climates graminoids and woody vegetation provide most of the organic matter. Due to the process of peat accumulation, peatlands are carbon rich ecosystems that store and sequester more carbon than other types of terrestrial ecosystems.” Given the environmental importance of peatlands, protection of these critical areas should be enhanced.

Wetlands Conservation District Ordinance

Pelham has made significant strides in protecting wetlands including the designation of significant prime wetland areas and the acquisition of additional conservation land. However, the town’s Wetlands Conservation District has not been updated since 2005. The existing ordinance lacks defined buffer areas and has no specific provisions related to prime wetlands or vernal pools. The town should consider undertaking a comprehensive update of its Wetlands Conservation District to better reflect changing best practices, development patterns and emerging threats.

The Wetlands Conservation District is an overlay district that applies to wetland areas of “[] 2,000 square feet or more in size, or of any size if contiguous to surface waters such as lakes, ponds and streams, subjected to high water tables for extended periods of time, and all areas within fifty (50) feet of the edge of any wetlands, perennial stream or surface water body.” In general, new structures or buildings are prohibited along with any activity that would “result in a major alteration of the natural surface configuration by the addition of fill or by dredging...” Permitted uses are limited forestry, tree farming, agriculture, passive recreation, and conservation relate uses including trails. The Planning Board can issue a special permit to allow roads, utilities and wells, and other similar uses where necessary. All allowed uses must employ “best management practices”. Best Management Practices for a wider range of activities are provided by the NH Department of Environmental Services (NHDES) and are available online. In addition, septic system leachfields must be setback not less than 50 feet from Poorly Drained Soils and 75 feet from Very Poorly Drained Soils, ponds, streams, and year-round brooks. Overall, Pelham’s Wetlands Conservation Ordinance provides reasonably good protection for the town’s wetland areas, though it lacks buffer requirements which have become standard in many communities. Many communities also impose greater setbacks for septic systems from all wetlands or from surface waters. The Town may wish to consider adopting more stringent wetland and buffer requirements to enhance wetlands protections.

Map 3 - Wetlands



Surface Water

Surface water resources, including streams, lakes, and ponds, provide storm drainage, storage, groundwater recharge, wildlife habitat, water supplies, and active or passive recreation. The Town's major streams are Beaver Brook, Golden Brook, Island Pond Brook, and Gumpas Pond Brook. Over 35 miles of perennial streams flow through Pelham. Because of the extensive network they form and the interconnection between surface waters and groundwater, all the Town's surface waters are important.

Table 2
Perennial Streams in Pelham

Name Number	Total Length (in miles)	Miles in Pelham	Start Elevation (in feet)	End Elevation (in feet)	Stream Order	Feeder Streams (in miles)
Beaver Brook	26.8	9.8	300	60	4th	62.6
Two-a	1.2	1.2	310	170	2nd	0.75
Three-a	1.2	1.2	260	140	1st	0
Four-a	1.2	1.2	270	140	2nd	1.3
Five-a	0.6	0.6	170	140	1st	0
Golden Brook	5.8	1.3	180	130	3rd	11.2
Seven-a	2.4	2.1	185	140	1st	0.1
Harris Pond Brook		0.8	160	150	2nd	0.8
Eight-b	0.8	0.8	190	150	1st	0
Island Pond Brook	1.7	1.7	140	130	2nd	0.8
Bartlett Brook		0.4	170	160	1st	0
Thirteen-a	5.5	4.2	190	120	2nd	3.2
Thirteen-b	1.3	1.1	140	130	1st	0
Thirteen-c	1.4	1.3	190	130	1st	0
Thirteen-d	0.5	0.5	140	130	1st	0
Tony's Brook	0.9	0.9	150	130	1st	0
Fifteen-a	2.3	2.3	170	140	2nd	1.4
Gumpas Pond Brook	2.5	2.5	220	135	3rd	2.6
Eighteen-a	1.6	0.7	310	200	2nd	0
Nineteen-a	0.8	0.8	290	140	1st	0

Source: NRPC, Pelham Water Resources Management Plan, 1988.

Water quality classifications are established by the legislature. The classification represents the desired level of water quality for the stream and does not necessarily reflect actual conditions. All the streams in Pelham have a legislative water quality classification of B. This means they either meet the stated criteria or have a goal to achieve the fishable and swimmable criteria established under the Clean Water Act. Characteristics of Pelham's perennial streams are summarized in the table above and depicted on Map 3.

Pelham's lakes and ponds are also an important surface water resource, providing wildlife habitat, water supply, flood control, and outdoor recreational opportunities. In recent years, the New Hampshire Department of Environmental Services (NH DES) has conducted surface water quality testing of some prominent waterbodies in Pelham using their Watershed Assessment Summary Reports. These reports cover water quality issues such as harmful bacteria, levels of dissolved oxygen and phosphorus, and if the waterbody could be used safely as a potential drinking source. Below are summaries of the report cards for each prominent waterbody in Pelham. Nearly all the waterbodies in the reports were found to be good for potential drinking water supply and carried general advisories concerning fish consumption due to mercury. This advisory is fairly standard across the state and urges wild fish consumption to be limited by those who are sensitive to mercury poisoning.

According to the data collected by the Department of Environmental Services (DES) the ponds in Pelham appear to be reasonably healthy, though on-going monitoring is important to identify changes in water quality. Little Island Pond is classified as Oligotrophic. This is the highest lake classification with low biological production and nutrients. Gumpas, Harris, and Long Ponds are classified as Mesotrophic which is characterized by somewhat higher biological production and nutrients and less clear water. Biological production increases with increased lake fertilization. Biological production also increases with increased nutrient input due to runoff. The key nutrient in the eutrophication process or lake aging is the chemical phosphorus. The level of concern established by DES for phosphorus is 0.02 mg/L. Harris Pond was the only water body that exceeded the level of concern with a reading of 0.023 mg/L. Long Pond is a phosphorus water quality limited waterbody according to the EPA's 303(d) list.

Transparency, a measure of water clarity, is affected by the amount of algae and particulate matter within a water body. Transparency is measured with a 20-centimeter disk with alternating black and white quadrants called a Secchi disk. The disk is used to measure the depth that the disk can be seen below the water surface. The mean transparency of New Hampshire lakes is 3.7 meters (one-meter equals 3 ft. 4in.), which is in the "good" range. Little Island Pond (5.49 m or 18 ft.) had water clarity in the "exceptional" range. However, for Total Phosphorus, Little Island Pond was rated as Mesotrophic and for Dissolved Oxygen, it was rated as Eutrophic. These concerning findings indicate a need for heightened conservation efforts to control runoff and the impacts of substandard or failing septic systems. The other ponds were in the "good" range.

Table 3: Lakes and Ponds in Pelham

Name of Water	Size	Description
Gumpas Pond	Area: 89.9 acres	Class: Mesotrophic
Data collected in 1994	Shoreline: 2.7 miles Abundant vegetation	Max. Depth Sounded: 24 feet Secchi Disk: 5.36 meters
	Average Depth: Unknown	Elevation: 201
Harris Pond	Area: 45.7	Class: Mesotrophic
Data collected in 1994	Shoreline: 1.1 miles Abundant vegetation	Max. Depth Sounded: 22 feet Secchi Disk: 3.78 meters
	Average Depth: Unknown	Elevation: 152
Little Island Pond	Area: 159.24 acres	Class: Oligotrophic
Data collected in 1992	Shoreline: 4.8 miles Sparse vegetation	Max. Depth Sounded: 55 feet Secchi Disk: 5.49 meters
	Average Depth: Unknown	Elevation: 145
Long Pond	Area: 120.5	Class: Oligotrophic
Data collected in 1978	Shoreline: 3 miles Common vegetation	Max. Depth Sounded: 25 feet Secchi Disk: 4.39 meters
	Average Depth: 13 feet	Elevation: 151

Source: Survey Lake Data Summary, NH Department of Environmental Services, Retrieved 2021.

The Volunteer Lake Assessment Program (VLAP)³ was initiated in 1985 so the hundreds of lakes in the state could be more closely monitored. Lake residents and lake associations are trained by DES to sample the lake and to survey the surrounding watershed. Samples are also taken from the tributaries (streams flowing into the lake). Regular sampling of water quality data from the lake and the streams that enter it builds a strong set of baseline data. Such monitoring results in early detection of water quality changes, allowing DES to trace potential problems to their source. If the data gathered in VLAP reveals that there is a water quality problem in a particular waterbody, the data may be used to justify the need for the implementation of a more intensive watershed study through the NH Clean Lakes Program, the Federal Clean Lakes Program, or the Non-Point Source Local Watershed Initiatives Grant

³ <https://www.des.nh.gov/water/rivers-and-lakes/volunteer-assessment-programs>

Program. Long Pong is currently the only pond in Pelham that participates in VLAP. Efforts to include Little Island Pond, Harris and Gumpas ponds in the program would help ensure that water quality is monitored on a more regular basis.

The importance of surface water resources in the protection of water quality requires that they be treated with care in the land use planning process. Land areas adjacent to surface water resources can be protected by restricting their development from active use. These areas can be safely developed within a protective buffer to meet the community's needs for recreation and open space. It is highly recommended that monitoring continues on all the ponds in Pelham.

Buffers consisting of an herbaceous layer (groundcover/vines), understory plants consisting of shrubs, grasses, sedges, and trees ranging from 1 to 15 feet in height, and mature trees are recommended for maximum nutrient uptake and wildlife habitat. The State of New Hampshire has not adopted a standard buffer fifty-foot width. It is generally recommended in scientific literature that a minimum 100-foot buffer be used. There are many considerations when considering the width of buffers including but not limited to hydrology, topography, and the presence of threatened or rare and endangered species. The buffers will also provide protective greenways that minimize any land use impacts that may be created by permitted development. This not only protects the water quality, but also enhances the value of the surface water resources by allowing them to continue to support a community of wildlife within and around them. Consideration should be given to adopting a 100-foot buffer around great ponds and perennial streams.

To assist with its surface water conservation efforts, the Town should consider applying for Section 604(b) grant funding for Water Quality Planning projects. As noted on the NHDES website, grant funds can be used for conducting water quality planning, including:

1. Identifying the most cost effective and locally acceptable facility and nonpoint source (NPS) measures to meet and maintain water quality standards.
2. Developing an implementation plan to obtain State and local financial and regulatory commitments to implement water quality plans.
3. Determining the nature, extent and causes of water quality problems in the State.
4. Determining those publicly owned treatment works which should be constructed, taking into account the relative degree of effluent reduction attained and the consideration of alternatives to such construction.

Other eligible projects that address the above water quality concerns may include but are not limited to: developing corridor management plans for designated rivers, conducting monitoring to address specific water quality concerns; planning stormwater retrofits to address water quality impairments; green infrastructure projects that manage wet weather to maintain or restore natural hydrology; working with municipalities committed to adopting specific model ordinances and/or meeting regulations (MS4

Permits) to address priority water quality planning concerns; and/or developing watershed-based plans in accordance with EPA criteria requiring nine required elements (a) through (i) for watershed-based plans. Consider utilizing procured subcontractors for services such as modeling pollutant loads, running watershed and in-lake models to generate water quality goals, creating best management practice (BMP) prioritization and cost effectiveness tables, etc., if in-house capacity does not exist.

The grants are competitive, but NRPC has succeeded in securing funding in recent years for a watershed planning project for Robinson Pond in Hudson and to develop a Corridor Management Plan for the Souhegan River.

IV: Forests

Forests were the dominant landscape characteristic of New Hampshire after the retreat of the glaciers. Before colonization of New Hampshire, southern New Hampshire was 93% forested with the remaining 7% being marsh or ponds. By 1850, at the height of agricultural development in New Hampshire, only 20% was forest, while the remaining 80% of Hillsborough County was cleared for livestock grazing, growing livestock feed, and raising crops for home consumption. Agriculture began to decline during the 1860s with western migration and industrialization of the northeast. These fields slowly gave way to scrub trees and conifers generally took over the abandoned farmlands and meadows. Currently, the US Forest Service estimates that New Hampshire is approximately 83% forested.

Today, the greatest threats to Pelham's remaining forested areas, aside from development, are from invasive pest species. Most significant of these are the Hemlock Woolly Adelgid, an invasive, aphid-like insect that attacks hemlock trees, and the Emerald Ash Borer, a beetle from Asia. Ash Borer beetle larval feed on the tissue between the bark and sapwood that disrupts transport of nutrients and water in the tree, eventually causing the tree to die. Gypsy moths are also a threat to the health of area forests though the mortality rate from infestations is relatively low.

The loss of forested land can have many effects on the environment, making it important to strategize lands to preserve. Pelham has done considerable work in the past two decades to preserve major acreage as forested land providing large blocks of unfragmented habitat and areas for diverse forests to be maintained.

Forests are a critical component of the natural landscape, integral to local ecosystem health and sustainability. Numerous technical assistance and financial resources are available to help ensure that forests are conserved to the greatest extent possible. The Town should identify major forest stands experiencing disease or decline as well as evaluate the feasibility of adopting forest protection provisions for unique areas.

A forest block is an intact area of forest canopy without regard to ownership that is typically defined by traveled roadways, large water bodies, and non-forest land uses. According to the Society for the Protection of New Hampshire Forests, a 500-acre forest block can provide adequate habitat for many species, help protect water quality, allow for sustainable forest management, and offer opportunities for outdoor recreation.

Pelham has numerous designated town forests totaling approximately 2,161 acres that are scattered throughout the community. The Pelham Forestry Committee manages all town forests. Each site has a Forest Management Plan prepared by a professional forester. In addition, Pelham has adopted a Climate Adaptation Forest Management Plan and conducts regular resiliency assessments of its sites. The forestry program in Pelham adheres to the principles of sustainability described above. Forestry is considered not strictly from a timber dollar point of view but by a multiple approach that good forestry is good economic practice. The main goal of the forest management plans is to promote forest health, protect sensitive areas and improve wildlife habitat and recreational opportunities. Areas with numerous vernal pools and wetlands that do have outflows are left alone. Buffers of trees are left to maintain shade and to allow transient wetland species to be able to complete their life cycles during seasonal pooling of winter runoff. Forest management plans are reviewed and updated every 5-10 years, on an as-needed basis, or because of changes due to damage from wildfires or insect infestation. A public workshop is presented each time a management plan is revised, or harvests planned.

Pelham has done considerable work in the past two decades to preserve major acreage as forested land providing large blocks of unfragmented habitat and areas for diverse forests to be maintained. These efforts should continue.

Chapter V: Existing Conserved Lands

This chapter provides a brief overview of the Town’s existing conservation lands by type including maps, written description of key features, and a summary of any existing management plans, use restrictions, easements, and other similar features as well as land in *Current Use*. For a more detailed description of each conservation property, please refer to the 2022 NRI.

Table 4: Existing Conservation Land and Town Forests

Name of Conservation Area or Town Forest	Method of Acquisition	Reason for Acquisition	Managers	Deed Restrictions	Area	Notes
Wolven Park Conservation Area - 2002	Deed - Book 6670 Page 2800 - Plan 31880	Variety of habitat; rare species present; seller wants to establish wildlife refuge	Conservation Commission and Forestry Committee	Extensive deed restrictions including property shall be used and maintained by the Conservation Commission as a wildlife refuge; property shall be maintained in perpetuity as open space; no disturbance of soil; no changes in natural habitat	23 Acres	Small, intimate conservation area in an established, built out neighborhood; trails are approximately 1 mile long; wetlands bisect the property; rare plant species present and have been reported to NH Heritage Bureau; 4 car parking lot with little ability for expansion; very little area suitable for trails as proposed by "Trails for People and Wildlife" Manual.

Little Island Pond Conservation Area - 2003	Deed with LCHIP Grant - Book 6857 Page 0543 - Plan 32267	Property is in watershed of Little Island Pond; good variety of habitat types; contains stream and small areas of wetlands	Conservation Commission and Forestry Committee	Extensive LCHIP restrictions; land can only be used for non-building purposes; nature trails only; shall be managed in perpetuity by Conservation Commission	21 Acres	Small conservation area in a densely built out neighborhood next to Little Island Pond; trails approximately .75 mile long; no land suitable for trails; no parking lot
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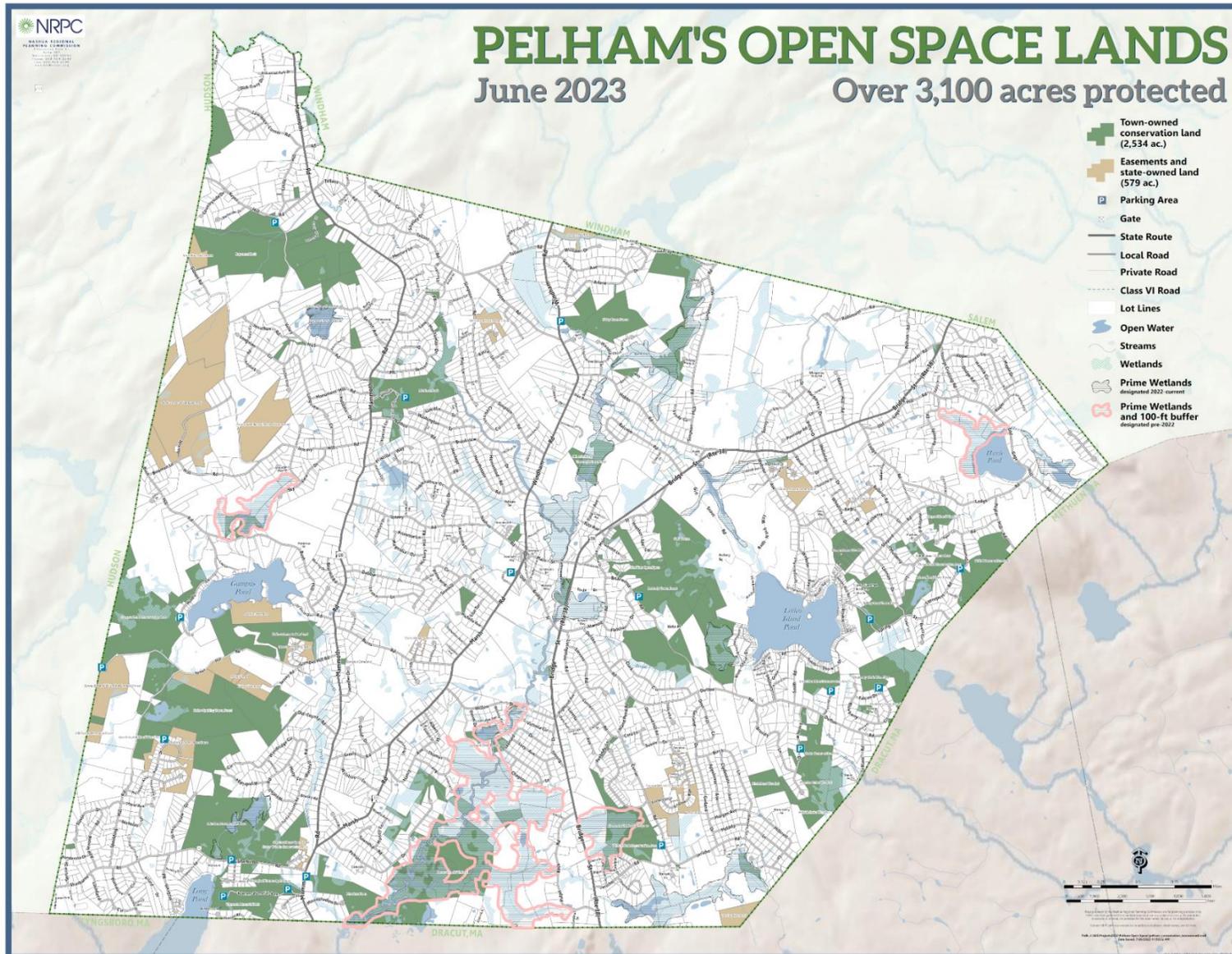
Little Island Pond Conservation Area - Conservation Easement - 2003	Deed with LCHIP Grant - Book 6857 Page 0543 - Plan 32267	Property is adjacent to 3 lots on Nature's Way	Conservation Commission	Extensive LCHIP restrictions; no motorized vehicles of any kind including motorcycles, OHRVs and snowmobiles; managed in perpetuity by Conservation Commission	1.7 acres	OHRVs prohibited from this area; no parking
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Gumpus Pond Conservation Area - 2004	Deed - Book 7303 Page 673	Large parcel adjacent to Musquash Swamp and Musquash Conservation Area in Hudson NH; adjacent to New England Forestry Foundation land in Pelham	Conservation Commission and Forestry Committee	Deed restrictions limiting property to non-building purposes; only nature trails; only foot bridges on wetland crossings; to be managed in perpetuity by the Conservation Commission	126 Acres	Large conservation area; 15 acres of early successional habitat; large beaver wetland complex; field habitat
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Calitri Family Conservation Area - 2004	Deed - Book 7304 Page 0649 - Plan 25348	Property is adjacent to developer donations and in the vicinity of existing town owned land	Conservation Commission and Forestry Committee	Deed restrictions limiting property to non-building purposes; only nature trails; only foot bridges on wetland crossings; to be managed in perpetuity by Conservation Commission	36 Acres	Large hill and steep environment
Costa Conservation Area - 2004	Deed - Book 7378 Page 1760	Acquisition pulls together outlying lots owned by the town to one contiguous area	Conservation Commission and Forestry Committee	Deed restrictions limiting property to non-building purposes; only nature trails; only foot bridges on wetland crossings; to be managed in perpetuity by the Conservation Commission	36 Acres	One lot sold by Selectmen to New England Power Co. in 2015; may be a use agreement in place
Merriam Conservation Area - 2004	Deed - Book 7607 Page 1756 - 12/27/2005		Conservation Commission and Forestry Committee	Property deeded to town acting through its Conservation Commission pursuant to RSA 36-A:4	116 Acres	
Donation Turtle Crossing Land - 2000	Deed - Book 6215 Page 1068 - 6/3/2000	Donation of land in connection with development	Conservation Commission and Forestry Committee	Donated as open space and shall forever be maintained in undeveloped condition; no construction; use limited to activities that do not interfere with or impact upon use as conservation land	24 acres	

Cutter Conservation Area - 2007	Deed - Book 7849 Page 0141 - 5/17/2007		Conservation Commission and Forestry Committee	Property deeded to town acting through its Conservation Commission pursuant to RSA 36-A:4	40 acres	
Moose Pond Town Forest - 2006	Deed - Book 7648 Page 1720 - Plan 31502 - 3/27/2006	Developer donation of small pond and related area	Forestry Committee	Land designated as "Spring Street Conservation Area" on Plan 31502	28 Acres	
Moeckel Road Town Forest - 2009	Deed - Book 8117 Page 0110 - 7/23/2009		Conservation Commission and Forestry Committee	Deeded to the town with no restrictions	32 Acres	
Ivers Town Forest - 2009	Deed - Book 8124 Page 0624 - 8/11/2009		Conservation Commission and Forestry Committee	Deeded to town acting through its Conservation Commission per RSA 36-A:4; subject to Notes on Plan 34512	21 Acres	
Cutler Spalding - 2011	Deed - Book 8296 Page 2473 - 2/24/2011		Conservation Commission and Forestry Committee	Deeded to the town with no restrictions		

Map 4 Pelham's Open Space Lands



Current Use Assessment

The current use assessment program, authorized by NH RSA 79-A, allows for reduced property assessments on parcels of field, forest, farm, and wetland of 10 acres or greater, on "natural preserve" land or recreation land of any size and on active farmland of any size with at least a \$2500 annual gross value of product. Applications to the program are conducted through the assessors or the selectmen and are due by April 15. Upon approval of the application and acceptance into the program the assessed valuation of the property will be lowered to the level prescribed by the program. Removal from the program or a change to a non-qualifying land use results in a 10% land use change tax based on the assessed full value at the time of the change and applied to that tax year.

Parcels less than 10 acres may qualify for a discretionary easement. The program requires the land holder to give the easement to the Town for a minimum time period of 10 years. During that time the landowner cannot develop, subdivide, or otherwise intensify the use of the tract. Application is done through the Planning Board in April who makes a recommendation to the selectmen on acceptance of the easement. Once accepted the easement is registered and early removal or a change in land use would result in a penalty, however, no penalty would result if the time contract were met.

VI: Conservation Priorities

Lands of Special Importance (From 2022 NRI)

As stated in the 2022 NRI, the Conservation Commission recognizes that all natural resources are important to maintaining a healthy environment, the Pelham Natural Resources Inventory has identified certain natural resources as priorities for conservation based in part on the existence of multiple overlapping features or co-occurrences of two or more important resources including relation to existing town-owned land, trails, surface waters, large forest blocks, open space, and other important resources. While prioritization should be an on-going process, the principal priority areas identified in the NRI remain priorities for conservation today. These are further described below.

Musquash Brook and Gumpas Pond Watersheds (From 2022 NRI)

These watersheds were chosen as a top regional priority for both the towns of Pelham and Hudson because of their significance in terms of water resources, wildlife habitat and the prevalence of large forest blocks on both sides of the town line. Though development pressures have increased, and some land has been lost to residential construction (most recently in Hudson), the area continues to contain a vast network of beaver ponds and wetlands and remains in a near natural condition. The New Hampshire Natural Heritage Inventory (NHI) has identified several plant and animal species in this region which are considered rare, threatened, or endangered in the state and the area includes highly ranked New Hampshire Fish & Game Habitat Tiers. In addition, this region

includes large areas of important farmland soils. The region was one of the first areas settled in Pelham and Hudson and features several old cellar holes, farm roads, stone walls, culverts and dams and other significant historical resources. The Musquash Pond Conservation area includes 416.5 acres owned by the Town of Hudson along with additional conserved land including 31-acres in Hudson owned by the Town of Pelham. Conserved land in this area in Pelham includes the Cutler Spalding Conservation Area (175 acres) and the Gumpas Pond Conservation Area (185 acres), and the Merriam Cutter Land (181 Acres) together with other smaller conserved parcels. Though a significant amount of land in this critical area is already under conservation, the acquisition of available parcels abutting existing conservation land should remain a priority.

Northeast Pelham Greenway (From 2022 NRI)

As with the Musquash Brook and Gumpas Pond Watersheds, this area also has the potential to create an inter-connected, inter-municipal conservation system or greenway stretching from Windham in the north, through Pelham, and into the Town of Dracut, Massachusetts to the south. As noted in the 2003 NRI, the area has fields, forests and wetlands that provide prime habitat for moose, deer and other animals and there are multiple Prime Wetlands within the area along with active and passive recreation lands. Though the area is somewhat fragmented, and development patterns impose challenges to connectivity, it also contains several significant conservation and recreation lands including the Peabody Town Forest (155 acres). The greenway could provide for trails and wildlife movement from the Pelham Fish and Game Land, the Helgemoe property, Pine Valley Golf Course, and other properties in the vicinity of Little Island Pond to the Peabody Town Forest and further south into Dracut via the powerlines. The powerlines provide field and brush habitat for a variety of animal and bird species and function well as a wildlife corridor.

Farmland

Pelham has few remaining active farms, however, conserving those that remain together with areas of important farmland soils should remain a conservation priority. To protect this valuable resource, the Town should continue to prioritize conservation of these resources including the acquisition of development rights or conservation easements that can conserve the resources while allowing for sustainable farming practices to continue into the future.

Concurrence Analysis

In order to assist in prioritizing sites for land conservation, a cooccurrence mapping exercise was undertaken based on the presence of the following characteristics:

Cooccurrence Layers

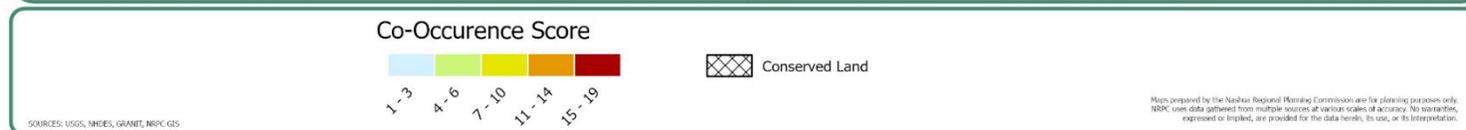
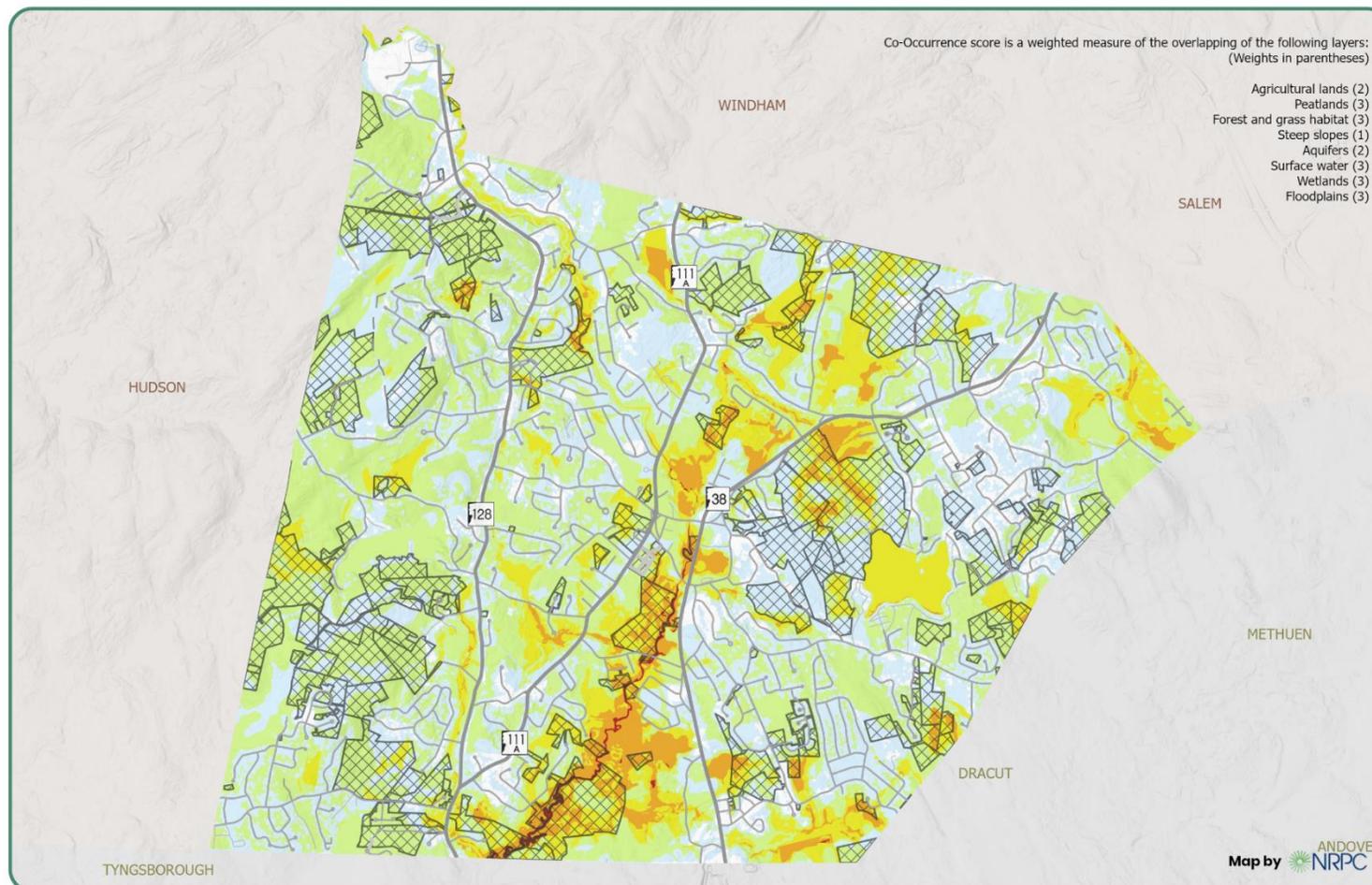
1. Farmland (active)
2. Aquifers
3. Floodplain
4. Forested areas
5. Grassland
6. Prime Farmland Soils
7. Important Wildlife Habitat Areas
8. Steep Slopes
9. Surface Water
10. Unfragmented Lands
11. Wetlands
12. Prime Wetlands

When the areas with the highest co-occurrence scores are viewed alongside the town's property maps, it is noteworthy that many of these priority conservation lands have no known protections. These properties include several large land holdings near or adjacent to Beaver Brook, the Girl Scout Camp on Little Island Pond, and other sites. It should be noted, however, that many of these high-scoring sites, especially those near Beaver Brook, contain extensive wetlands (including Prime Wetlands) that benefit from state, local and federal regulatory protections.

The results of this analysis are depicted on Map 5 on the following page. In addition to the criteria outlined above, adjacency to existing conservation land is also an important consideration.

Map 5 – Cooccurrence Analysis

Co-Occurrence Analysis



VII: Recommendations

Local Land Use Ordinances and Regulations

Local Land Use Regulations, including zoning, subdivision, and site plan regulations, are frontline tools available to the town for protecting its natural resources. Local regulations are a low-cost, effective mechanism for protecting dispersed resources such as wetlands, groundwater, surface waters and other important resources. The Town of Pelham has adopted a number of regulations providing direct protection for many of its natural resources while other regulations provide indirect benefits. While the existing regulations provide adequate protection for many of the Town's resources, some minor adjustments to the existing regulations would increase the level of protection afforded to the Town's natural resources. The following recommendations address proposed changes in the Town's zoning ordinances.

Wetlands: Pelham has made significant strides in protecting wetlands including the designation of significant prime wetland areas and the acquisition of additional conservation land. However, the town's Wetlands Conservation District has not been updated since 2005.

- The existing ordinance lacks defined buffer areas and has no specific provisions related to prime wetlands or vernal pools. The town should consider undertaking a comprehensive update of its Wetlands Conservation District to better reflect changing best practices, development patterns and emerging threats.
- Given the environmental importance of peatlands, protection of these critical areas should be enhanced.
- Consider amending the Wetland Conservation District to include a minimum 75-foot setback, measured horizontally, with a 50-foot vegetative buffer strip for all site developments from the edge of the wetland. A minimum 75-foot setback will decrease the velocity of the runoff and allow portions of the runoff to infiltrate into the ground before reaching the wetland. The 50-foot buffer strip will filter out contaminants, nutrients and sediments decreasing the negative impacts on the wetland and preserving its natural functions. Water quality will be enhanced and the lower degree of activity adjacent to the wetland will decrease the negative impacts of human activities on the wildlife.
- Consideration should be given to adopting a 100-foot buffer around great ponds, perennial streams, and vernal pools.
- Consideration should be given to increasing the existing 75-foot setback for new septic system installations, especially from great ponds and perennial streams.

Well Ordinance: The Town should consider increasing the existing 50-foot well setback to 75-feet from the nearest edge of any existing to proposed traveled way or rights-of-way.

Illicit Discharge Detection and Elimination Ordinance: The Illicit Discharge Detection and Elimination Ordinance should be amended to expand its applicability to the entire town rather than within urbanized areas only.

Subdivision/Site Plan Regulations:

- The Planning Board should consider regulating tree clearing on new developments to promote retaining undamaged trees or planting new trees as needed, especially in proposed residential developments. Leaving trees around residences reduces the need for air conditioning in the summer while reducing the area devoted to lawns and the resulting impacts of fertilizers, pesticides, and watering on the environment. Tree retention also maximizes carbon absorption.
- Encourage the use of innovative land use controls including conservation/open space development, growth boundaries, agricultural zoning, and transfer of development rights are techniques available to preserve open space and minimize the visual impact of new development on significant historic areas, open space, and scenic views. Natural Resources and Historic Resources Chapter, Master Plan
- Promote Tree Retention in Subdivisions and Commercial Developments. Regulate tree clearing on new development, to promote retaining undamaged trees or planting new trees as needed. Simply having mature hardwood trees on the south side of a house will reduce the winter heating costs and summer cooling costs by 10%. Leaving trees around residences also reduces the area devoted to lawns, and the impacts of fertilizers, pesticides, and watering. Trees also help residences blend into the landscape. Natural Resources Chapter, Master Plan
- Educate property owners about the benefits of tree retention. Conservation Commission
- The Conservation Commission, with the assistance of the Planning Board, should continually monitor development in the Town. This will allow an analysis of the cumulative impacts of growth and development on water quality and the other natural, historic, scenic, and agricultural resources of the community. Urban development increases the amount of impervious areas resulting in increased runoff and an increased potential for flooding and water contamination. In addition, development can reduce the amount of agricultural land remaining in a community and profoundly impact the scenic quality and character of the Town.

- The Planning Board should continue to use its powers of subdivision review and site plan review to assess the impact of proposed developments and to negotiate design changes with developers that would protect the Town's natural, scenic, historic, and agricultural resources.
- The Planning Board should continue to negotiate, through the subdivision and site plan review process, to obtain conservation and public access easements to parcels prior to development of a site, upon the request and input of the Conservation Commission. The conservation easements can be used to protect the natural, historic, and scenic resources contained on a site. The public access easement is necessary to allow public use of or passage across a site. This is a particularly important consideration along the Merrimack River for developing the greenbelt and for developing any additional trail systems.

Existing Master Plan Recommendations

The following recommendations are included in the Town's most recent adopted Master Plan. Though the Master Plan was adopted in 2008, many of these recommendations remain relevant today.

- The Pelham Fish and Game land, the golf course, Camp Runnels and the watershed of the pond, Little Island Pond Prime Wetland, and the surrounding uplands along with the Peabody Town Forest and the surrounding lands with powerline easements should be recognized as a greenway corridor and expanded so that movement of wildlife can continue to Dracut.
- Recommendation: Consideration is given to the protection of surface water and groundwater supplies within the Town's boundaries as they are the life-blood of the community. Groundwater supplies exist which are capable of supporting higher intensities of development. However, these must be protected from contamination in the absence of a municipal waste treatment system
- New development should be focused on large areas with slopes of less than fifteen percent, with consideration of the other factors which affect the development suitability of these areas.
- Consider an amendment to the Zoning Ordinance, subdivision, and site plan regulations to adopt a Slope Conservation Overlay District to protect the most severe slopes in Town from unsuitable development. Development of land with slopes greater than fifteen percent should be approached with extreme caution, giving consideration to the problems presented by these slopes. Active use or development of slopes greater than twenty-five percent should be avoided. As these areas are

best suited for open space, reserving them for that purpose will minimize the potential for erosion and allow for maximum absorption of surface water run-off thus protecting down-slope residents.

Recommendations from the 2022 NRI

Lands of Special Importance:

- Seek to acquire an additional 1,000 acres of land to achieve a goal of dedicating at least 25% of the land area of Pelham to conservation.
- Prioritize parcels with two or more co-occurring natural resource priority layers, especially adjacent to or in close proximity to existing conservation land.
- Pursue protection for existing farmland and undeveloped lands with Prime/State designated soils.

Town Forest Management

The following recommendations are intended to guide the management of all of Pelham's town forests generally. Specific recommendations can be found for each property in the individual forest management plans prepared for each site. Current forest management plans are available on the town's official website.

- Monitor all the properties regularly for wind damage, ice damage, fire, or disease, and take appropriate corrective actions as needed to ensure the continued health of forest blocks.
- Re-assess each property every 10 to 15 years or as needed and prepare updated 10-year management plans.
- Continually monitor the property for the presence of invasive plants.
- Implement control measures while invasive populations are low. Early detection and treatment are the cornerstone of successful and economical control.
- Maintain and encourage a diverse, vibrant, functioning, indigenous forest by maintaining all native forest components and functions. Retain and protect a portion of the large diameter and unique trees.
- Produce high quality saw timber in an environmentally responsible manner.
- Protect soil, water, nutrient and energy cycles, fragile habitats and conditions, rare plants, animals and exemplary natural communities.

- Maintain and improve wildlife habitat for a variety of mammals and birds.
- Maintain scenic beauty.
- Maintain open agricultural land.
- Maintain and enhance recreational opportunities.
- Replace missing or damaged signs as needed.
- Monitor, clear and widen hiking trails as needed.
- Protect cultural features. Maintain the current condition of these features wherever possible and enhance them if and when desirable. Make every attempt to minimize disturbance of historical features on the property when harvesting timber or constructing trails and roads.

Open Space Trail System

Pelham enjoys an extensive trail system including well-mapped and signed trails in most of its town forests and conservation lands. Continued maintenance and strategic improvements to these trail systems will be necessary to address the impacts of age, usage, erosion, and other impacts. As improvements are made and new trails are planned, it is important that best management practices are implemented.

- Consideration should be given to assessing existing trails for potential impacts to wildlife. Funded by the US Fish and Wildlife Service, the New Hampshire Fish and Game Department recently published [*Trails for People and Wildlife - A Guide to Planning Trails that allow People to Enjoy Nature and Wildlife to Thrive*](#). As noted on the NHFG website, the guide is:

“As new trails are planned or improvements to existing trail networks proposed, consideration should be given to using the Trails for People and Wildlife mapping tool to minimize adverse impacts to wildlife while maximizing outdoor recreational opportunities for the people of the town. In general, consideration should be given to minimizing trail use impacts to wildlife by:

 - Avoiding special habitat areas
 - Route trails along habitat edges
 - Routing trails away from wet areas

- Avoiding steep slopes
- Avoiding locations of rare species

Great Ponds

- Long Pong is currently the only pond in Pelham that participates in VLAP. Efforts to include Little Island Pond, Harris and Gumpas ponds in the program would help ensure that water quality is monitored on a more regular basis.
- Consideration should be given to adopting a 100-foot buffer around great ponds as noted above.
- To assist with its surface water conservation efforts, the Town should consider applying for Section 604(b) grant funding for Water Quality Planning projects. As noted on the NHDES website, grant funds can be used for conducting water quality planning.

Education

Education is important to the success of the Conservation Plan in general and essential to many of the individual components. The Town's citizens need to be aware of the immediate and cumulative impact of their action on the natural, scenic, historic, and agricultural resources of the community. In addition, the town meeting form of government makes it necessary for voters to be informed of resource related issues in order to gain their support of conservation efforts and for approval of regulations designed to protect and conserve the Town's resources. The primary responsibility for conservation education lies with the Conservation Commission. It is their job to see that the community is well informed about the conservation issues of the Town. The following recommendations are made to increase public education activities in the Town, thereby increasing public awareness of conservation issues and public support of conservation efforts.

- The Conservation Commission should provide materials on the website and in person if opportunities arise, to educate town residents on a variety of topics such as:
 - Protection of water resources and water conservation;
 - Impacts of non-point pollution on water quality and what can be done to decrease non-point pollution on an individual basis;
 - Conservation mechanisms available to private landowners and the benefits of the different alternatives;
 - Benefits of tree retention;

- The care and maintenance of septic systems.

In conjunction with the Library, Information and speakers on these topics can come from a variety of organizations such as the County Forester, the Natural Resources Conservation Service, the Society for the Protection of New Hampshire Forests, the Nature Conservancy, and the NH Audubon Society, to name only a few.

- The Conservation Commission should utilize social media to its fullest extent to educate and promote protection of key town assets and lands.
- Promote programs and organized activities to increase awareness and utilize existing trails, ponds, and rivers.
- The Conservation Commission should acquire and distribute habitat and animal guides from NH Fish and Game. This activity will get people interested in the recreational and conservation activities of the Town and provide additional support to the Conservation Commission.
- The Conservation Commission should serve as a resource and collaborate with local boards and committees such as the Planning Board, Zoning Board, Recreation Commission and Board of Selectmen, as well as the NH Association of Conservation Commissions and conservation commissions in surrounding towns.
- The Conservation Commission should maintain relevant materials and resources on the Town website. In addition, the Commission should look for opportunities to educate the public via social media and other media outlets.
- The Conservation Commission members should establish relationships with other conservation commissions by attending their regularly scheduled meetings, as well as routine regional meetings. Conduct outreach at schools and town events catered to families and children.