Review of Land Use Planning Documents

Swanzey, New Hampshire

with respect to

Wildlife Habitat and Natural Resource Protection

Prepared for
Swanzey Conservation Commission



Prepared by

Moosewood Ecological

Innovative Conservation Solutions for New England

November 2024

Review of Land Use Planning Documents

Swanzey, New Hampshire

with respect to

Wildlife Habitat and Natural Resource Protection

Prepared for
Swanzey Conservation Commission

Laura Deming, Ph.D. candidate
Wildlife Biologist

With contributions from

Jeffry Littleton, M.S.
Principal Ecologist

Steven Lamonde, M.S.
Ecologist / Project Manager

Jaime McGuigan, M.S. candidate
Ecologist

Moosewood Ecological LLC
PO Box 9
Chesterfield, NH 03443
603-831-1980

Cover Photograph: Floodplain forest along the Ashuelot River. Photo by N. Marchessault

Purpose of Review

The purpose of this review is to evaluate how Swanzey's land use regulations recognize and protect wildlife habitat and other natural resources, to identify gaps or inconsistencies in goals and objectives, and to provide recommendations for potential revisions and additions to these documents that would strengthen protection of these resources.

Process of Review

Moosewood Ecological staff reviewed the Master Plan, Zoning Ordinance, Site Plan Review Regulations, and Subdivision Regulations with respect to protection of wildlife habitat and other natural resources. This review identified strengths of the current documents and potential revisions to consider during the next update of these documents.

This review process adhered to the framework identified in "Addressing Wildlife Habitat and Natural Resource Protection in Municipal Land Use Documents: Ideas for New Hampshire Municipalities," a planning resource created by the New Hampshire Fish and Game Department, New Hampshire Audubon and The Jordan Institute in 2007. This approach focuses on 25 topics that relate to wildlife habitat, natural resources and rural character.

This report provides a summary of findings, itemizes the strengths of each document with respect to habitat and natural resources protection, and lists potential revisions for future consideration by the Planning Board. Planning Board members may find useful information in the New Hampshire Innovative Land Use Planning Techniques: A Handbook for Sustainable Development, which contains innovative land use regulations authorized in state law and model ordinances on many topics. The New Hampshire Office of Business and Economic Affairs also provides guidance specific to master plans. Legal review of proposed revisions is always advisable.

Master Plan (2022)

The Town of Swanzey's Master Plan was updated in 2022, building on the foundation of the original plan completed in 1979 and subsequent revisions in 1990 and 2003. Although not a legal document, the master plan provides the legal basis for zoning and other land use regulations. The current master plan includes chapters on population and housing, transportation, natural resources, community facilities, historic and recreational resources, economic development, land use, and an implementation plan. Additionally, the current master plan includes the following documents as appendices: A. Swanzey Master Plan Community Survey Results, B: Town of Swanzey Zoning Map (Figure 1), C: Town of Swanzey Natural Resources Inventory Phase I & Phase II, D: A Plan for the Protection of Open Space, Town of Swanzey, E: Source Water Protection Plan for Swanzey, New Hampshire, and F: Ashuelot River Corridor Management Plan. These appendices provide essential information on critical resources that can guide many of the objectives and actions listed in the implementation section of the master plan.

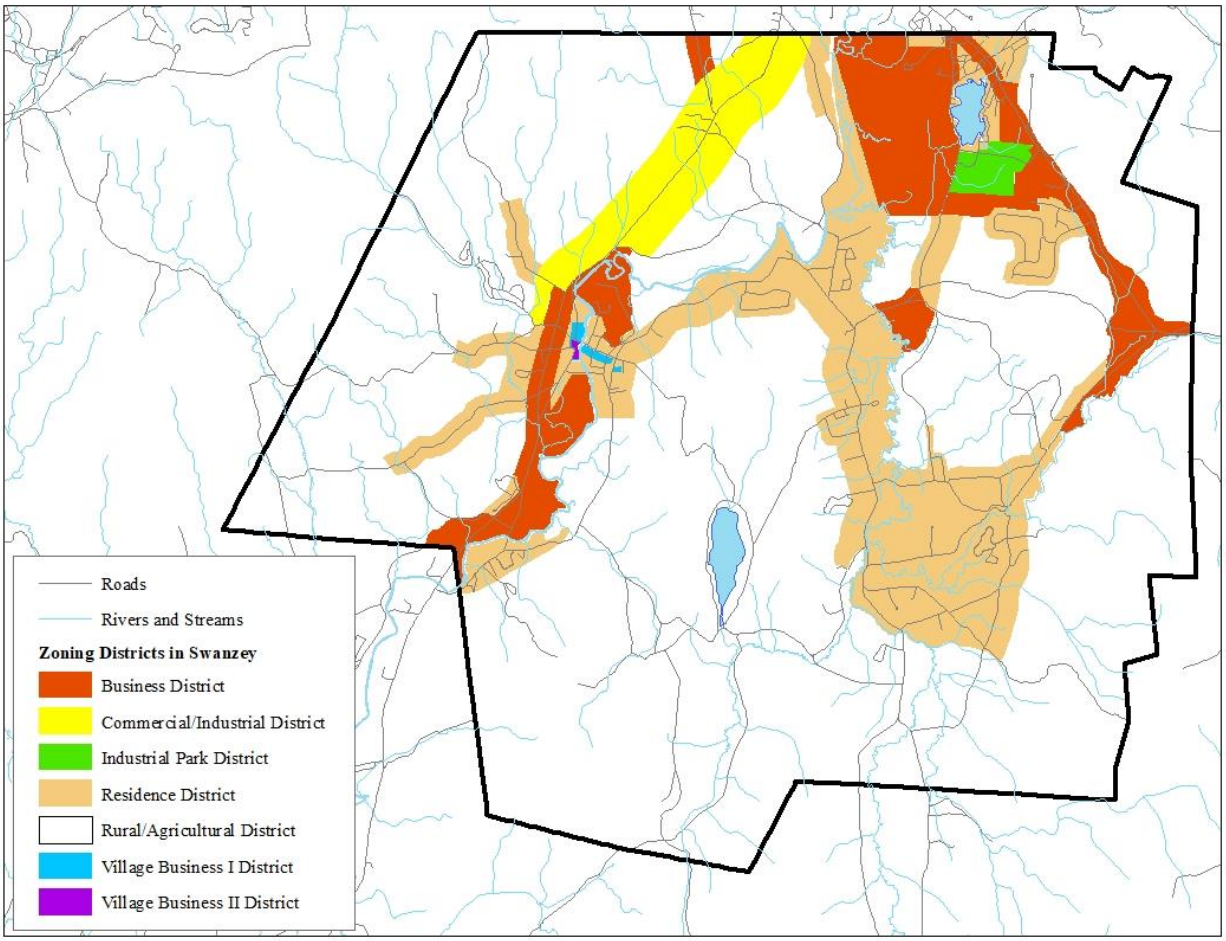


Figure 1. Swanzey zoning map.

Zoning Ordinance (2023)

The Swanzey Zoning Ordinance, updated in 2023, defines how land in specific geographic zones within the town can be used. The zoning ordinance describes several districts identified for specific purposes, such as the Rural/Agricultural District, Village Business District, and Commercial/Industrial District, which encompass areas most suited for those types of development. Other districts include the Shorelands Protection District, Flood Plain District, and Wetlands District, which identify areas less suitable for development due to sensitive natural resources and/or natural hazard risks. Zoning regulations for each district guide development and land use activities in a manner that minimizes impacts to community character and the natural environment.

Site Plan Review Regulations (2023)

The Town of Swanzey Site Plan Review Regulations provide for the safe and attractive development or change or expansion of use of tracts for nonresidential uses or multi-family dwelling units and guards against conditions that would cause damage or risk to individuals, the community, or the natural environment. Regulations address issues such as drainage, flood

risk, and avoiding damage to natural resources, and are crafted to align with the Swanzey's Zoning Ordinance and Master Plan.

Subdivision Regulations (1991)

Swanzey's Subdivision Regulations, adopted in 1991, guide the subdivision of land for residential lots. These regulations address minimum lot sizes, mandatory setback distances from roads and other property lines, protection of significant natural features, and minimizing impacts on the community and the natural environment. These regulations are crafted to align with the Swanzey's Zoning Ordinance, Master Plan, and Site Plan Review Regulations.

Large-scale perspective

Many aspects of planning incorporate regional concerns, such as travel corridors, population trends, housing needs, and areas of economic growth and opportunity. Equally important, but often overlooked, is the need for large-scale evaluation and planning in natural resource protection and management. For example, effective protection of water quality, wildlife, and wildlife habitat requires landscape-level assessment and planning. Streams and rivers are best protected when hydrologic connectivity is maintained along their drainages, and both water quality and flood mitigation is most effective when evaluated at a watershed-level. Conservation lands are most effective at protecting wildlife when they are connected across the landscape by naturally vegetated corridors. Consideration of watershed-level assessment and planning, connectivity, and landscape perspective is listed in several places in the following sections, but may be useful in many more aspects of land use planning.

Master Plan

Population and Housing (pp 6-19)

Strengths:

- Considers innovative approaches to increase housing options such as in-fill. development, mixed use housing, and adaptive reuse of existing structures. (Objective 1, Action 3)

Potential changes:

- Objective 1: Revise to clarify that "reduce regulatory barriers" does not translate to weakening or removing land use regulations that protect natural resources.
- Action 4: clarify that this approach is to expand currently developed areas.
- Add an objective to promote energy efficiency in both new and existing housing. For new housing, this should include design, materials, and performance.

Transportation (pp 20-43)

Strengths:

- Includes several action items to improve walkability of village centers, improve options and safety for pedestrians and bicyclists. (Objective 2, Actions 1-7)

- Promotes increasing transportation options for seniors and the general public to reduce use of single-occupancy vehicles. (Objective 3, Actions 1-3, 6)

Potential changes:

- Add an objective to reduce or minimize impervious surfaces, especially in aquifer recharge areas and flood-prone areas. Areas to consider are sidewalks, parking areas, and certain roads.

Natural Resources (pp 44-56)

Strengths:

- Recognizes that Swanzey residents value the Town's rural character and the natural environment and the need to protect natural resources.
- Recognizes that climate change will continue to affect weather events, flooding frequency and severity, spreading of disease and invasive species, and have devastating impacts on crops, natural communities and wildlife, and people.
- Adopted floodplain regulations (incorporated into the Zoning Ordinance) to allow participation in FEMA's Flood Insurance Program.
- Developed a Hazard Mitigation Plan to address erosion problems.
- Adopted a 125-ft setback for primary structures from all 4th order and higher streams and several other waterbodies.
- Commissioned and adopted a Source Water Protection Plan (Master Plan App. E) to address water quality protection.
- Adopted a Wetlands Conservation District as part of the Zoning Ordinance that prohibits development and land uses that would destroy or degrade wetlands functions and values. This District includes a 125-foot setback for leach fields and dry wells.
- Commissioned and adopted a Natural Resources Inventory (Master Plan App. C) of the Town's natural environment.
- Developed and adopted an Open Space Protection Plan to identify areas in Town with especially important natural resources.
- Adopted the Ashuelot River Corridor Management Plan (Master Plan App. F) to guide management and protection of natural and cultural resources along the river.
- Contracted with Meadowsend Timberlands to produce management plans for the two Town Forests.
- Adopted Conservation residential subdivision regulations (now part of the Zoning Ordinance) to promote protection of large blocks of forest and agricultural lands.

Potential Changes

- Add objectives and action items to address climate change impacts. These should be integrated into any updates of Floodplain Regulations and the Hazard Mitigation Plan.
- Emphasize floodplain values for water quality, flood mitigation, and wildlife habitat in the text of the Natural Resources Chapter.
- Add objective and action items to address floodplain protection.

- Consider establishing an upland buffer ordinance, which requires a naturally vegetated area around a wetland or waterbody (including streams), which setbacks do not necessarily require. See Figures 2 and 3.
- Consider the inclusion of other flood prone areas extending beyond the floodplain based on climate change predictions (Figures 4 and 5).
- Develop and implement an outreach campaign based on the Source Water Protection Plan to raise awareness of threats to water supplies.
- Add objective and action items to address recommendations in the Ashuelot River Corridor Management Plan.
- Add objective and action items to address recommendations in the Hazard Mitigation Plan.
- Add objective and action items to address the Stormwater Management Plan outlined in the Source Water Protection Plan.
- Integrate information from the Natural Resources Inventories into revisions of the Open Space Plan and land conservation goals.
- Integrate information from the Natural Resources Inventories into the next revision of the Master Plan to expand on values of floodplains, wetlands, groundwater, connectivity of streams, natural communities, and other significant natural resources.
- Review zoning ordinances to encourage protection of working farms and agricultural lands, and to promote opportunities and incentives for existing and future agricultural businesses.

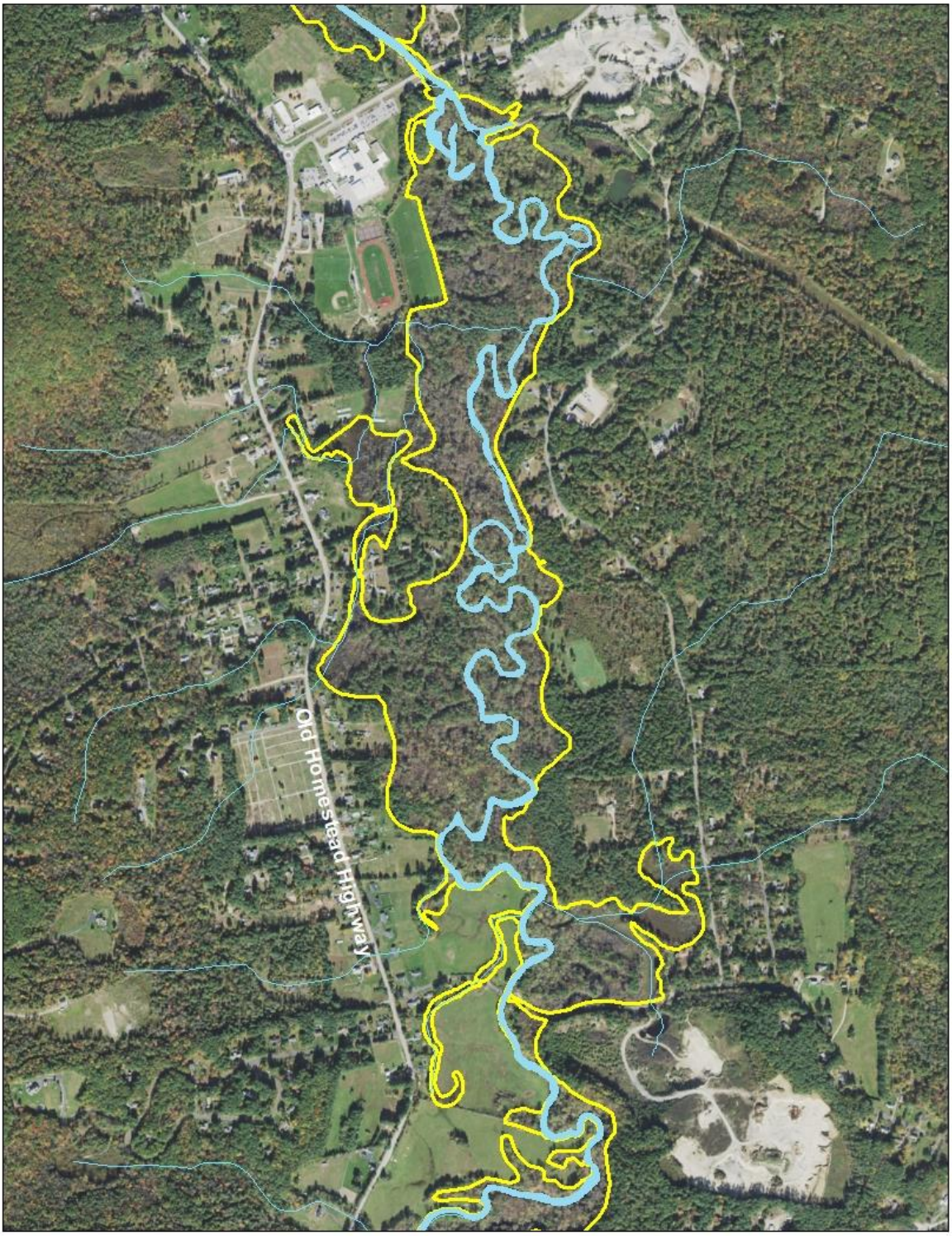


Figure 2. This large wetland complex (yellow outline) is associated with the South Branch Ashuelot River east of Old Homestead Highway. This image provides an example where ecosystem health, wildlife habitat, aquifer recharge, and water quality has been compromised due to the loss of a naturally vegetated wetland buffer. Due to its large size, this wetland complex functions well at floodwater storage, but continued encroachment of the current wetland buffer can diminish this essential ecological functional value.

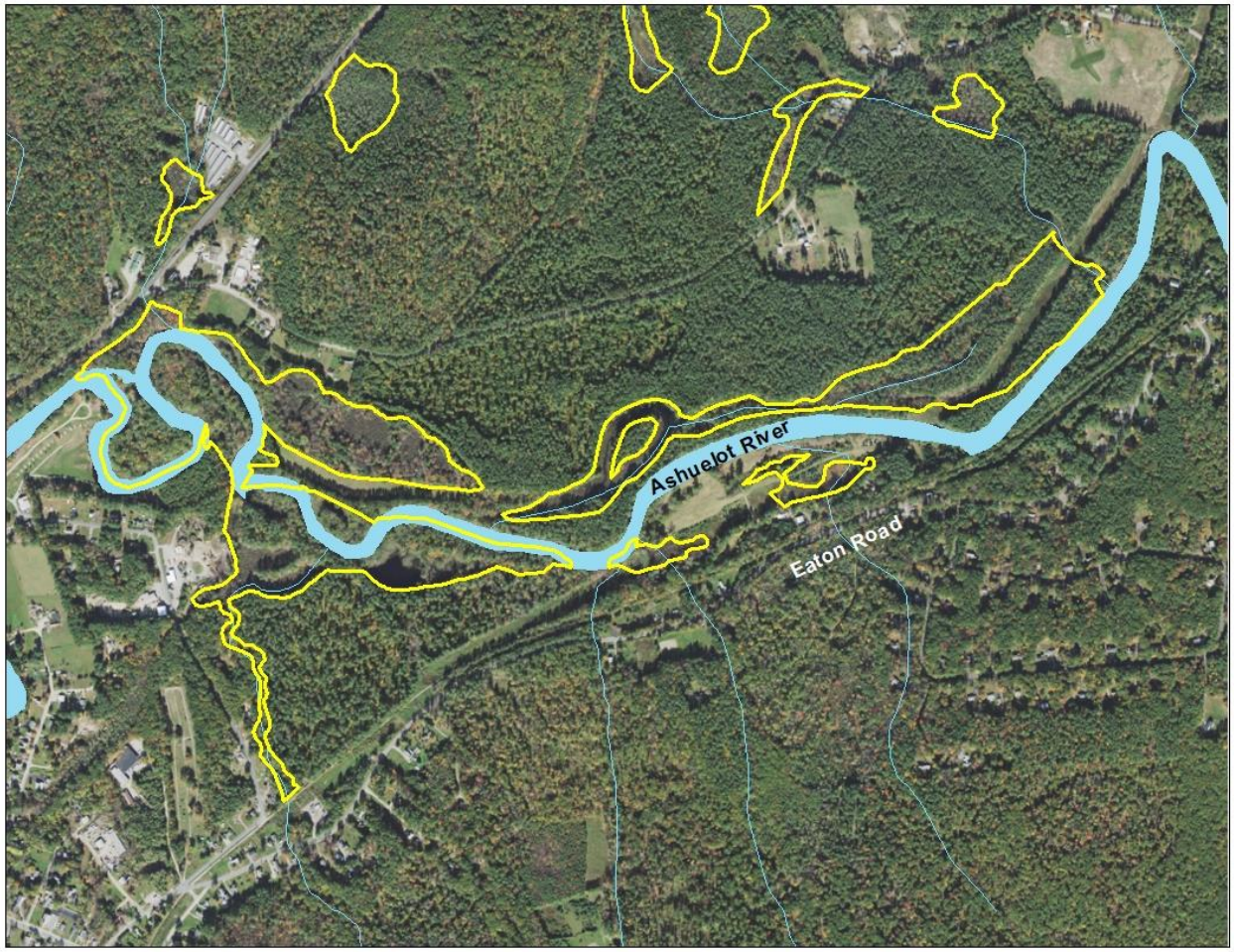


Figure 3. These wetlands (yellow outline) associated with the Ashuelot River located just north of Eaton Road provide good examples where ecosystem health, wildlife habitat, aquifer recharge, flood control, and water quality have been retained as a result of a mostly intact vegetated buffer.

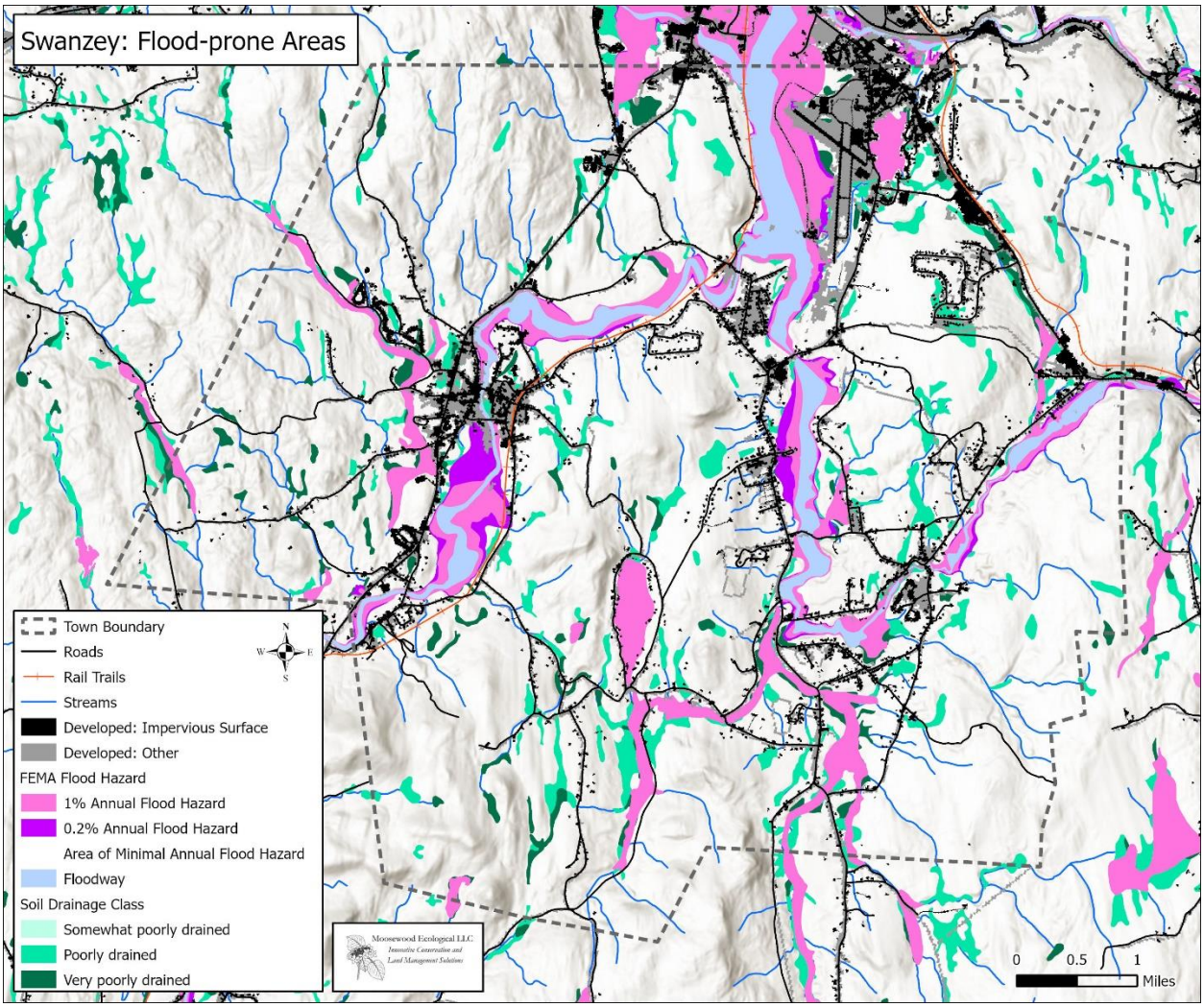


Figure 4. This map demonstrates the extent of the flood prone areas in Swanzey as mapped by the Federal Emergency Management Administration (FEMA). This shows the extent of current floodplain protection regulations. Additional areas outside of FEMA's flood hazards should also be considered that include recent patterns of flooding and projections based on climate change models.

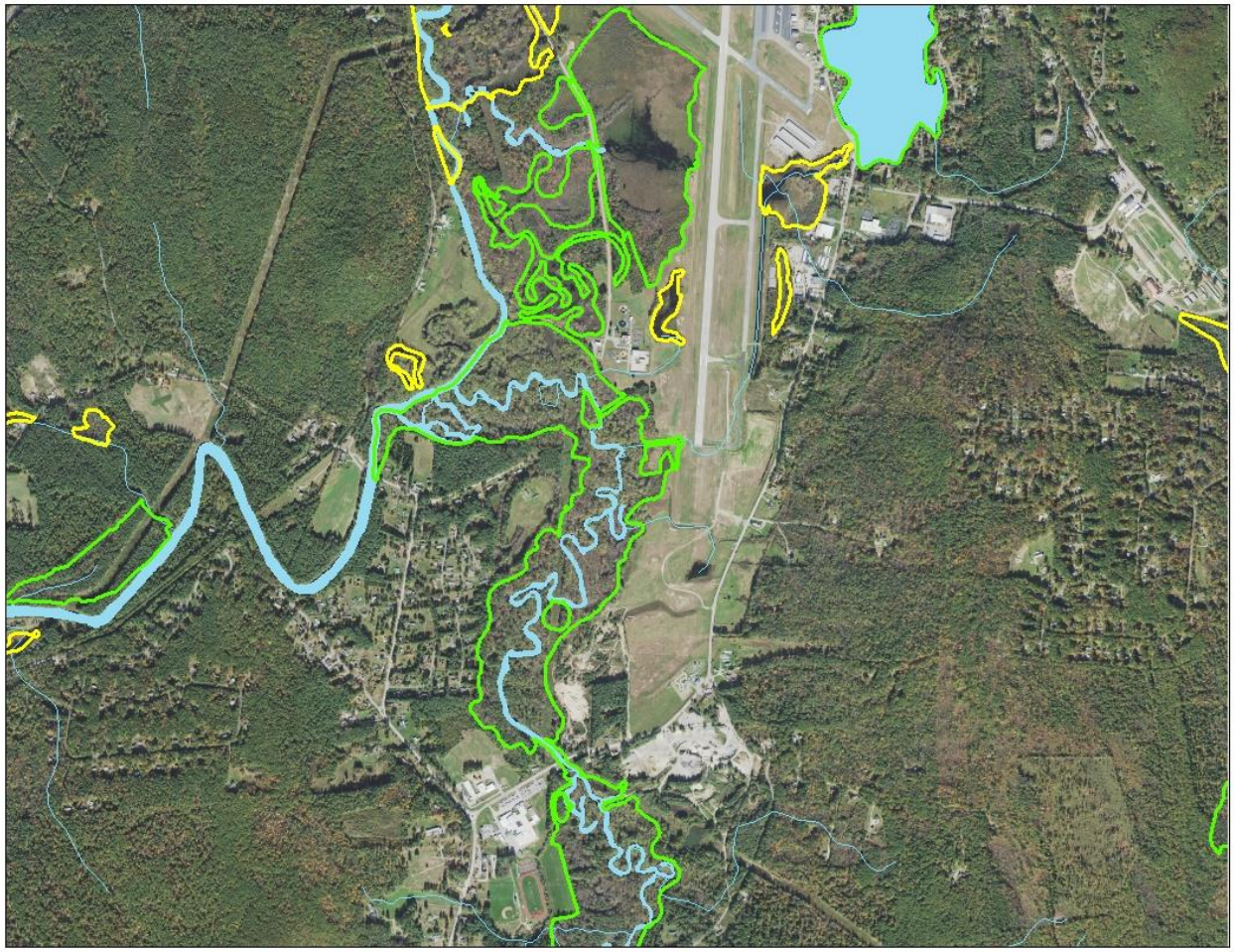


Figure 5. These complexes of interconnected wetlands (green outline) next to the Keene Airport, in association with the confluence of the Ashuelot River and South Branch Ashuelot River, provide examples of some of the highest ranked wetlands for flood storage in Swanzey. Further protection of these types of wetlands and their naturally vegetated wetland buffers are important for ensuring the retention of floodwaters, as well as maintaining water quality, wildlife habitat, and good drinking water resources. Other wetlands are shown in yellow outline.

Community Facilities (pp 57-68)

Strengths:

- Recognizes the highly productive stratified drift aquifer as a critical source of drinking water.
- Describes public water supplies.

Potential changes:

- Incorporate information from the Source Water Protection Plan into the next revision of the Master Plan Community Facilities chapter.
- Review new EPA standards for PFA's in drinking water supplies to guide decisions about existing or future regulations related to protection of water quality and aquifer recharge areas.

- Consider establishing a community solar installation to provide for residents or businesses who can't afford or otherwise install their own solar array.
- Plan and design community facilities such as schools, health centers, shopping centers, and recreational facilities near village centers to minimize roads and promote walkability and increase access by seniors and the general public.
- Design and build new community facilities to be energy efficient to minimize environmental impacts and energy costs.
- Promote energy efficiency in repairs or remodeling of existing community facilities.

Historic and Recreational Resources (pp 69-76)
Strengths:

- Includes an action to support the Conservation Commission in its monitoring of wetlands and open spaces on town-owned property.

Potential Changes:

- Consider opportunities to collaborate with the Conservation Commission on outreach efforts to educate the public about wetlands, wildlife habitat, and other significant natural resources.

Economic Development (pp 77-86)
Strengths:

- Promotes economic development that builds on local resources such as existing infrastructure, historic, cultural, and natural resources, etc.
- Has established districts for certain types of development, including two village districts to concentrate development to support surrounding residential areas.
- Has Site Plan Review regulations for traffic, circulation, landscaping and screening, lighting, architectural design, and stormwater drainage.

Potential Changes:

- Add objective and action items to promote use of native vegetation and prohibit use of invasive plants for landscaping.
- Integrate with objectives and action items listed in the Community Facilities chapter.

Land Use (pp 87-97)
Strengths:

- Promotes creating new land use regulations to better protect unfragmented lands and natural resources based on information in the Natural Resources Inventory, as well as areas with steep slopes or large wetlands. (Objective 1, Action 2)
- Promotes innovative land use controls to facilitate development to meet the Town's needs better than traditional zoning. (Objective 1, Action 7)
- Promotes compact development. (Objective 1)

- Promotes neighborhood-serving commercial uses within village centers. (Objective 3, Action 3).
- Recognizes the recently completed Natural Resources Inventory as a logical source to guide land use regulations.

Potential Changes:

- Include connectivity in land conservation goals. This includes hydrologic connectivity along streams and rivers, among wetlands, between conservation lands, and known and potential wildlife migration routes.
- Include floodplains and important agricultural and forest lands as priorities for conservation.
- Reconsider development along Routes 10 and 12 in areas that are important aquifer recharge lands. See Objective 3, Action 2 to focus development along these routes. Figure 6 demonstrates the extent of the Swanzey's aquifers and where current or future land uses may not be compatible with groundwater protection and recharge. Figure 7 provides an example of a large wetland complex that is significant for groundwater recharge; however, the surface water quality that recharges the underlying aquifer may be compromised due to the loss of the naturally vegetated buffer.
- Reword Objective 3, Action 2: Review and update land use regulations to facilitate commercial and industrial development along the Route 10 and Route 12 corridors. *Instead:* Review existing and planned development along the Route 10 and Route 12 corridors in light of the aquifer, groundwater recharge areas, known and potential contamination sites (based on the Source Water Protection Plan), and recent and projected flooding events.

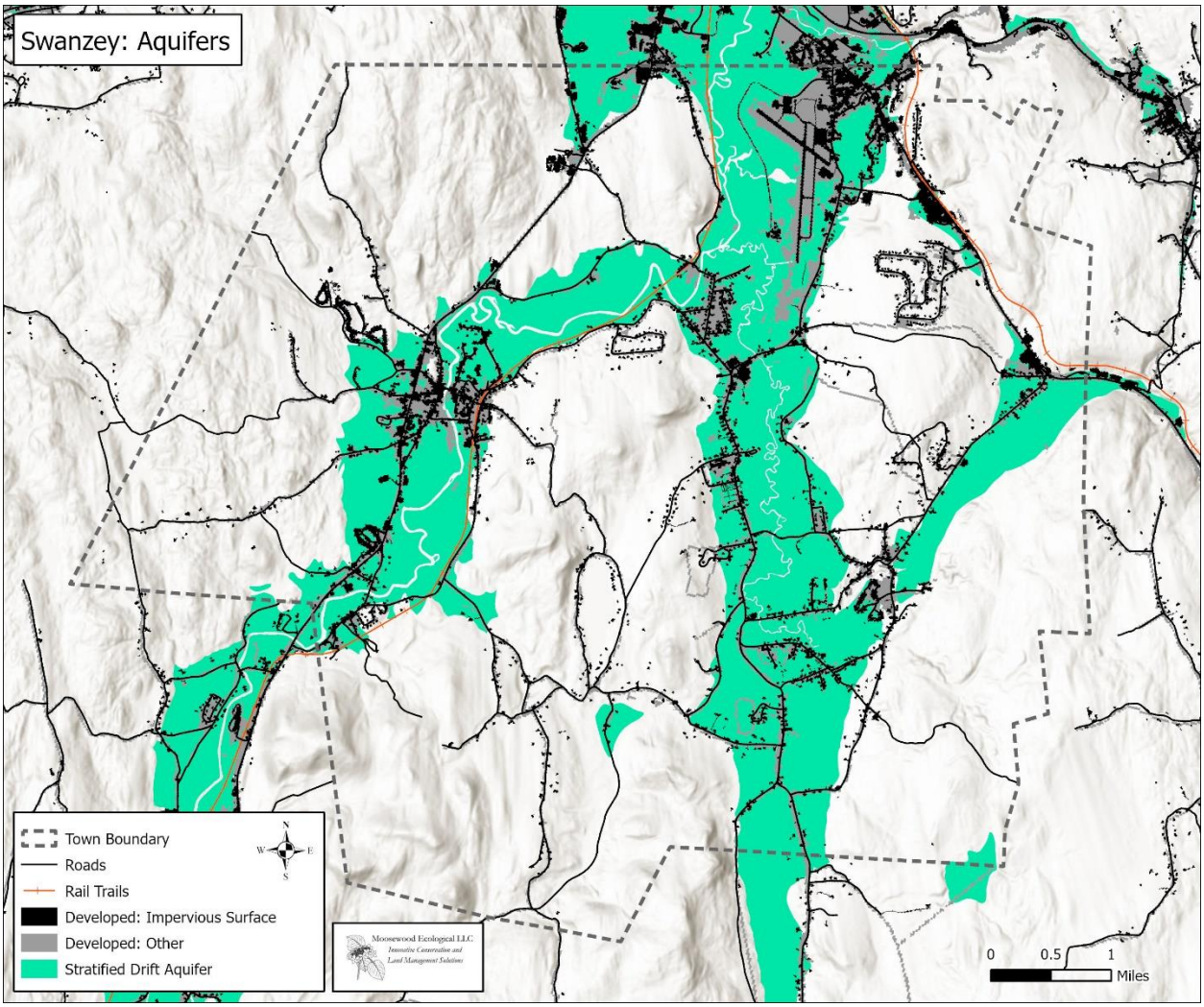


Figure 6. Stratified drift aquifers in Swanzey. This map demonstrates where current land use is associated with Swanzey's groundwater resources. Many of the developed areas, including roads, are comprised of impervious surfaces that prevent direct infiltration of water into the aquifers and typically channel stormwater into drains leading to wetlands and other aquatic ecosystems.

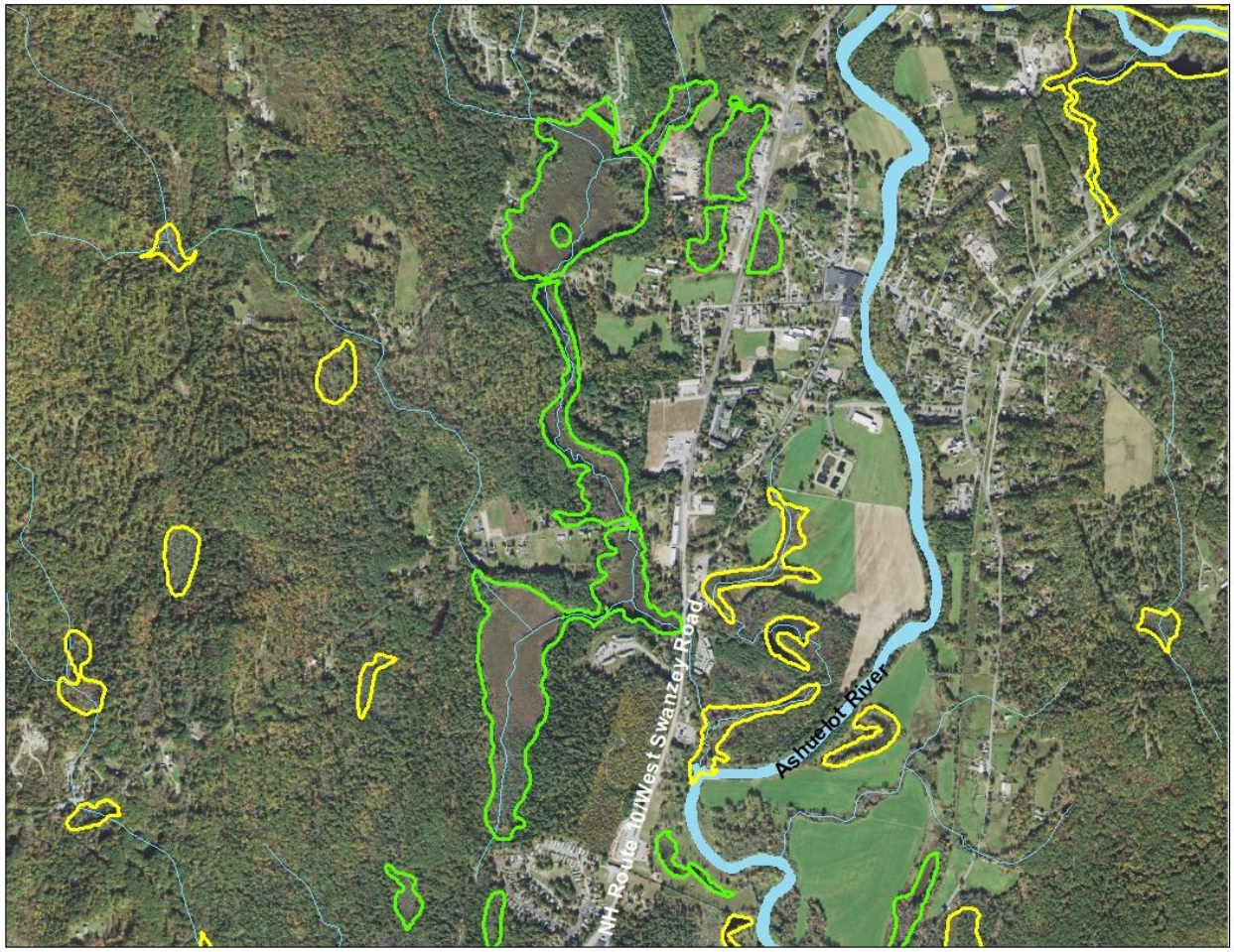


Figure 7. These large wetland complex and smaller wetlands (green outline) represent some of Swanzey's most significant areas for groundwater recharge of the underlying stratified drift aquifer. However, the lack of a contiguous, naturally vegetated wetland buffer and surrounding land uses may significantly impact the water quality, including drinking water resources. Other wetlands are noted in yellow outline.

<u>Implementation Plan</u> (pp 98-110)

Strengths:

- Very organized, thorough and easy to read.
- Includes a general timeline for each action item (listed under the "when" category), who is leading the effort, and potential funding sources.

Potential Changes:

- Consider a more detailed timeline to keep track of what action items are being worked on, which have been completed, and which have not been started.

Zoning Ordinance

Strengths:

- Includes Shorelands Protection District, Flood Plain District, and Wetlands Conservation District to protect these resources.
- The Wetlands Conservation District includes a provision stipulating that no leach field or dry well may be located closer than 125 feet to any designated wetland.
- Encourages developers to follow Conservation Residential Subdivision regulations.
- Includes a provision that in all cases where the Wetlands Conservation District is superimposed over another zoning district in the Town of Swanzey, that district whose regulations are more restrictive shall apply.
- Stipulates that wetland areas and steep slopes will not be used to satisfy minimum lot area and setback requirements.

Potential changes:

- Reconsider allowed uses within the Wetlands District. The following currently permitted uses are incompatible with protecting wetlands: forestry and tree farming, agriculture, construction or reconstruction of fences, footbridges, catwalks, wharfs and structures that enhance the site as wildlife habitat, parks and recreation, trails, open spaces, alteration of the surface configuration of the land by filling or dredging, and construction of streets, roads and other access ways, and pipelines, powerlines and other transmission lines.
- Promote Best Management Practices for forestry and agriculture.
- Consider guidelines for a wetlands ordinance in the Innovative Land Use Planning Techniques Handbook (https://www.nheconomy.com/getmedia/f44aebd8-fb3b-4b60-8a7d-1e1f6c58b449/ilupt-chpt-2-4-ord-only_1.doc).
- Consider the adoption of groundwater/aquifer protection.
- Consider the adoption of land use regulations in flood prone areas that promotes floodwater storage and reduces erosion risk, such as proper culvert sizing associated with new roadways that are based on current drainage patterns and increased rainfall events and intensity.

Site Plan Review Regulations

Strengths:

- Optional Preliminary Conceptual Consultation.
- Optional Design Review Phase.
- Submission requirements include natural features such as streams, marshes, lakes, ponds, ledge outcroppings, and wetlands.
- Required plans for erosion control and stormwater drainage in certain situations.

- Option for Planning Board to require an impact analysis for potential impacts to community facilities and the environment.
- Option for the Planning Board, if it is expected that a proposed use may cause damage to an underlying Aquifer or Wellhead Protection Area, to require 1. reports from a professional engineer or qualified groundwater consultant to assess potential damage and 2. Stormwater management and pollution prevention plans.
- Lighting requirements limit excess illumination, glare or any type of moving or flickering lights.
- Landscaping requirements encourage use of native plants, integrating existing trees and vegetation, and planting species that provide wildlife habitat.
- Prohibits development in Flood Hazard Areas except by Special Exemption.

Potential Changes:

- Include in Purpose and Intent the need to avoid adverse environmental impacts.
- Consider requiring streetlights and parking lot lights to shine down to reduce excess glare and avoid attracting migratory birds.
- Prohibit use of invasive plants for all landscaping and encourage use of native species.
- Consider encouraging energy efficiency for all new buildings (and renovations of existing buildings), including design, materials, and performance.
- Consider incorporating bird-friendly building techniques to minimize bird mortality from collisions, especially in 1st through 4th floor windows, which are most likely to reflect vegetation. These techniques are in alignment with energy efficiency standards.

Subdivision Regulations

Strengths:

- Excludes sites that pose health or safety risks due to fire, flood, poor drainage, excessive slope, or other hazardous conditions.
- Requirement that lands being subdivided for residential, commercial, or industrial subdivision purposes have either adequate characteristics and capacity for sanitary sewage disposal or be connected to a municipal sewerage system.
- Provision to exclude sites that pose risks to health, safety, or prosperity due to lack of water supply, drainage, transportation, schools, fire protection, or other public services or that would necessitate the excessive expenditure of public funds for the supply of such services.
- Prohibits underground storage tanks, except for water storage, to be located within 125 feet from any wetland, well, or other water supply.
- Optional preapplication review.
- Board may require additional reports or studies on various topics, including environmental impacts.

- Application plats must show any water courses, ponds, standing water, rock ledges, stone walls, location of ground water, percolation tests and test results, soil mapping types, slopes and boundaries, deed restrictions, and open space to be preserved.
- Requires drainage and erosion control plans and state-approved septic plan.

Potential Changes:

- Include preservation of rural character and protection of natural resources in the purpose.
- Consider requiring Pre-application Review in rural districts or for greenfield development.
- Consider adopting Lot Size Averaging regulations (see Lot Size Averaging chapter in Innovative Land Use Planning Techniques Handbook).
- Consider excluding wetlands, floodplains, and steep slopes from open space calculations.
- Consider increasing the design storm frequency for storm drainage systems in road design standards to 25 years to conform to Erosion and Sediment Control regulations.
- Consider requiring sloped (“Cape Cod”) curbing where closed drainage is installed in rural locations to reduce amphibian mortality.
- Consider revising Landscaping and Planting standards to specifically encourage retention of natural vegetation where practical and prohibit use of invasive plants.
- Consider limiting driveway length /residential setback in areas of extensive forest to reduce wildfire hazards.
- Consider illumination restrictions to prevent light pollution.