Salem Open Space Plan Update 2025 - Data and Map Narrative

{Notes from RPC about additional context to be added or clarified. Adjustments made from data supplied from Salem will be added to the next mapping and data narrative draft.}

Contents

Map 1 – Salem Land Use

The predominant land use in Salem is residential, with 6,367.9 acres (38.4%) of the town's 16,569.4 acres. Forested land is the second largest land use, with 4261.3 acres, 35.7% of town.

Table 1 - Land Use

Land Use Category	2022 Acres	% of Town	2015 Acres	% of Town	2005 Acres	% of Town
Residential	6367.9	38.4	6043.6	36.4	5965.5	36.0
Forested	4261.3	25.7	4488.0	27.0	4839.1	29.2
Open Wetlands	1543.7	9.3	1539.8	9.2	1539.7	9.2
Industrial/Commercial	1486.1	8.9	1318.0	7.9	1249.5	7.5
Water	817.5	4.9	805.4	4.8	807.6	4.8
Transportation	759.0	4.5	731.2	4.4	615.1	3.7
Other/Idle	526.2	3.1	641.2	3.8	602.3	3.6
Playing Fields/Recreation*	231.3	1.3	406.2	2.4	402.0	2.4
Active Agriculture	193.3	1.1	239.6	1.4	247.8	1.4

Auxiliary Transportation	182.3	1.1	161.9	0.9	102.5	0.6
Mixed Urban	152.6	0.9	150.4	0.9	147.5	0.8
Utilities	33.5	0.2	29.3	0.1	29.9	0.1
Farmsteads	14.8	0.08	14.8	0.08	21.0	0.1
TOTAL	**16569.4**	**100**	**15659.4**	**100**	**16569.4**	**100**

*Note – Many playing fields were changed in 2015 to ensure that those in proximity to a school were classified as Education (Industrial/Commercial)

Map 2 – Topography

The highest point in Salem is the summit of Gordon's Hill at 380 feet above sea level, along the town's western border. The average elevation in town is 197 feet. Despite the low elevations, Salem was home to the former Spicket Hill Ski area located on Bridge Street, which had a vertical drop of 160 feet and just over 1,000 feet of run.

Map 3 – General Soils

Understanding the properties of soils is critical to managing and conserving our natural resources. The USDA Natural Resources Conservation Service (NRCS) studies and inventories soil resources across the country. Soil scientists determine what soils are present, where they are located and how they can be used. Soil surveys contain information in the form of detailed soils maps, data tables and text narratives that can be used to determine appropriate uses for the land. Soil surveys also contain predictions of soil behavior for selected land uses and highlight limitations and hazards inherent in the soil and the impact of selected land uses on the environment.

It is important to note that these soil survey maps are designed for general planning purposes and are not at a scale appropriate for site specific use. A site-specific soils map should be done by a licensed professional soil scientist wherever there are concerns about the capability of the land for development.

The most recently published edition of the Rockingham County Soil Survey was issued in 1994. Map 3 displays soil types in Salem.

Table 2 – Soil Types

Soil Type	Acres
Hinckley-Windsor-Canton	5563.0
Canton-Hollis-Chatfield	4943.2
Paxton-Woodbridge-Hollis	3287.7
Canton-Scituate-Montauk	2371.1
NHW	354.0

- Hinkley-Windsor-Canton soil - Very deep, excessively drained soils formed in glaciofluvial materials and sand outwash. This soil type occurs through the center of town from north to south.
- Canton-Hollis-Chatfield soil - Very deep, well drained soils formed in loamy mantle underlain by sandy till. This soil type occurs primarily in the northwest corner of town around the Arlington Mill reservoir and in a small section of the southwest corner of town near Pelham Road.
- Paxton-Woodbridge-Hollis soil - Well drained loamy soils formed in lodgment till. This soil type occurs in the western side of town on either side of I-93.
- Canton-Scituate-Montauk soil – Well and moderately drained soils formed in a thin mantle of till. This soil type occurs along the eastern edge of town.

Map 4 – Agricultural Soils

New Hampshire has experienced significant changes in land use patterns over the past few decades, particularly in the agricultural sector. Since 1980, there has been a notable reduction in active farmland, driven by factors such as urban development, economic challenges, and shifts in agricultural practices. Soil properties conducive to agricultural production, level, deep, and well drained, are also conducive to development. Map 4 displays agricultural soils in Salem.

Table 3 – Agricultural Soils

Soil Type	Acres	% of Town
Prime Farmland	1111.1	6.7
Farmland of Statewide Importance	1610.4	9.7
Farmland of Local Importance	2519.1	15.2
Total	**5240.6**	**31.6**

- Prime Farmland – Land defined by the US Department of Agriculture to have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It can be cultivated land, pastureland, forestland, or other land that is not urban or built-up land or water areas. Salem has 1111.1 acres of prime farmland scattered throughout town.
- Farmland of Statewide Importance – Land, in addition to prime farmland, that is of statewide importance to produce food, feed, fiber, forage, and oilseed crops. Criteria for defining and delineating this land are determined by the NH Department of Agriculture. Generally, these soils are nearly Prime Farmland that can economically produce high yields of crops when treated and managed according to acceptable farming methods. There are 1610.4 acres of farmland of statewide importance in Salem scattered throughout town.

- Farmland of Local Importance – This is land that is local important for food, feed, fiber, and forage production but is not categorized as prime farmland of farmland of statewide importance. Identification of these farmlands is determined by the Rockingham County Conservation District. Salem has 2519.1 acres of farmland of local importance scattered throughout town.

Map 5 – Surface Water and Wetlands

Wetlands, as defined by the Environmental Protection Agency, the NH Department of Environmental Services and the Salem Zoning Ordinance are those areas that are inundated or saturated by surface or groundwaters at a frequency and duration sufficient to support and that under normal circumstances do support a prevalence of vegetation adapted for life in saturated soil conditions. A wetland is defined by the three "H's": hydrophytes or wetland vegetation, hydrology and hydric soils. Map 5 displays surface water and wetlands in Salem.

Wetlands are an integral part of Salem's natural resources. They are important for removing excess nutrients and sediment from the water, slowing and storing floodwaters, promoting groundwater infiltration, and providing habitat for a variety of vegetation and animal life. In addition, wetlands provide recreational, educational and research opportunities. Wetlands are most often found along streams and adjacent to ponds and lakes. They can be found in clustered complexes that are of great value. Vernal pools are a special type of wetland that dry out completely in the summer and have no fish population.

There is a diversity of wetland types in Salem, including areas of open water with emergent vegetation such as cattails, forested wetlands, and scrub-shrub wetlands. The principal types of wetlands with standing water in the spring have been mapped from aerial photos by the National Wetlands Inventory (NWI) of the U.S. Fish and Wildlife Service. The NWI wetlands do not include all wetlands, particularly those that do not typically have standing water in the spring.

The types and acres of each wetland type in Salem are displayed on Map 5. The total area for NWI wetlands Salem is 2720.6 acres or 16.4% of the town's land and water area.

Table 4 – Wetland Soils

Wetland Soil Types	Acres	% of Town
Freshwater Forested/Shrub Wetland	1432.4	8.6
Lake	657.4	3.9
Freshwater Emergent Wetland	250.0	1.5
Riverine	198.8	1.1
Freshwater Pond	181.3	1.0
Other	0.8	0.004
TOTAL	**2720.6**	**16.4**

The Town of Salem has identified and mapped prime wetlands in town, per NH RSA 482-A:15. A wetland receives this designation because of its large size, unspoiled character, and ability to sustain populations of rare or threatened species plant and animal species. There are 38 prime wetland complexes located across town, encompassing 1337 acres. There are an additional 310 acres of wetland that are not designated as prime.

Map 5 also displays surface waters in Salem.

Table 5 – Surface Waterbodies

Surface Waterbody	Acres/Miles
Arlington Mill Reservoir	279.4 acres
Canobie Lake	150.6 acres
World End Pond	97.4 acres
Captain Pond	86.6 acres
Millville Lake	50.2 acres
Shadow Lake	14.6 acres
Taylors Reservoir	8.1 acres
Hedgehog Park Pond	7.6 acres
Spicket River	10.9 miles
Blank	9.6 miles
Policy Brook	5.1 miles
Porcupine Brook	4.6 miles
Hitty Titty Brook	2.2 miles
Providence Hill Brook	1.8 miles
Widow Harris Brook	1.7 miles
World End Brook	1.1 miles

Salem uses Canobie Lake and Arlington Pond as its primary surface water sources for drinking water, with Canobie Lake being the primary source from May through October and Arlington Pond during the colder winter months.

Map 6 – Groundwater Resources and Aquifers

Aquifers are concentrations of groundwater and those having medium to high potential to yield groundwater occur in southern New Hampshire as areas of alluvial deposits of sand and gravel or in bedrock fractures. The sand and gravel deposits are called “stratified drift aquifers” and typically yield more groundwater than bedrock fractures. The major source of recharge to these aquifers is through precipitation filtering directly down into the aquifer. A 1992 study by the U.S. Geological Survey identified stratified drift aquifers within Salem. Map 6 displays groundwater resources, including aquifers, public wells, and wellhead protection areas.

Aquifers are defined by their transmissivity, which is a measurement of the rate at which groundwater flows horizontally through an aquifer. The higher the transmissivity, the higher the capacity for water flow. Aquifers with a transmissivity range of 0 – 2000 encompass 5148.1 acres in Salem and underlie the center of town from north to south. There is one small aquifer, 8.1 acres, with a higher transmissivity range of 2000 – 4000 located north of Brady Avenue.

{ Add in narrative & table of Public Drinking Water Supply Wells}

Map 7 – FEMA Floodplains

Floodplains are areas of land adjacent to lakes, rivers, and streams that are prone to flooding. Map 7 displays the 100-year and 500-year floodplains in Salem. These terms refer to the probability of flooding occurring in these areas within a given year. The 100-year floodplain is an area that has a 1% chance of experiencing a flood in any given year. The 500-year floodplain is an area with a 0.2% chance of flooding in any given year. While less frequent than the 100-year floodplain events, floods in these areas can be more severe due to the higher volume of water.

Flood zones are geographical areas that FEMA has defined according to varying levels of flood risk. These zones are depicted on Salem's Flood Insurance Rate Map (FIRM). Flood Zone A are areas that are subject to inundation by a 100-year flood. Salem has 908.6 acres in Zone A. FEMA Flood Zone AE includes areas where analyses have been conducted to determine base flood elevations. Salem has 1512.5 acres in Zone AE. FEMA Flood Zone X500 is also known as the 500-year floodplain. Salem has 283.5 acres in Zone X500.

Table 6 – FEMA Flood Zones

FEMA Flood Zones	Acres
Zone A	908.6
Zone AE	1512.5
Zone X500	283.5
Total	**2704.6**

Map 8 – Wildlife Action Plan

The 2015 NH Fish and Game Wildlife Action Plan (WAP) identifies Species of Greatest Conservation Need (SGCN) and their habitats in New Hampshire. Each SGCN and habitat has a profile that includes information about the population, threats, and actions needed to conserve these features in New Hampshire. All wildlife species native to New Hampshire were eligible for identification as SGCN including game species, nongame species, fish and marine animals. A total of 169 species are identified in the Plan as SGCN, of which 27 species are listed as state endangered and 14 listed as state threatened. The plan identifies 27 distinct habitats that support common species and SGCN.

The WAP ranks habitats in three tiers:

- Highest Ranked in the State – includes the top 15% by area of each habitat.
- Highest Ranked in the Biological Region – compared the habitats within regions of that that have similar climate, geology, and other factors that influence biology. This tier includes the top 30% of each habitat, except the areas already within the Highest Ranked in the State.
- Supporting Landscapes- includes the top 50% of each habitat.

Map 8 displays the habitat tiers in Salem.

Table 7 – Wildlife Action Plan Habitat Tiers

Wildlife Action Plan Habitat Tiers	Acres
Tier 1 – Highest Ranked in State	77.4
Tier 2 – Highest Ranked in Biological Region	694.8
Tier 3 – Supporting Landscapes	1024.4
TOTAL	**1796.6**

Salem has 77.4 acres of Tier 1 habitat, the highest ranked habitat in the state. This land is in the southwest corner of town south of Brookdale Road and in three small patches south of Arlington Mill Reservoir. The town has 694.8 acres of Tier 2 habitat, the highest ranked in the biological region, in several locations. The largest areas are narrow swaths of land east of Lawrence Road. There are 1024.4 acres of Tier 3 habitat, supporting landscapes. This habitat is found in several locations, including World End Pond and Providence Hill Brook.

{Add in narrative regarding Salem's 2023 wildlife corridor planning efforts and story map. https://www.salemnh.gov/888/Wildlife-Corridor-ArcGIS-Storymap}

Map 9 – Unfragmented Land

Map 9 displays the locations of unfragmented lands in Salem. These blocks of undeveloped forestland, wetland, and fields are located throughout town and are unfragmented by development or public roads. Unfragmented land is valuable for many reasons, including:

- Provide essential forest interior habitat for species such as some songbirds that need to be distanced from human activity, pets, and the forest edge in order to survive.
- Provide habitat for mammals that have large home ranges and prefer to avoid human contact, such as bobcat, otter, and moose.
- Enable owners of large parcels of forestland to conduct timber harvests that are economically viable.
- Minimize conflicts that can arise when managed forests and farms are surrounded and interspersed with development.
- Offer opportunities for remote recreation, including hunting, hiking and snowmobiling, where landowners allow.

Conserving these unfragmented blocks and connections between other significant habitat areas is important if residents want to retain the species that need larger and diverse home ranges and territories. Note that some of these unfragmented lands extend into adjacent towns.

Map 10 – Open Space

Salem has 1597.2 acres of conservation land, 9.6% of the total land area in town.

{Add narrative regarding benefits of open space, reference to Salem existing open space map ---this will be drafted to lead into section regarding the prioritization from Salem planning documents}

{Maps 11 & 12 are likely to get put into the overview/opening section to proved context for the Open Space Plan. The watershed table will likely be placed in the surface water resources section.}

Map 11 – Aerial Photo

Map 11 is an aerial photo of Salem using 2021/2022 imaging.

Map 12 – Watersheds

Map 12 display watersheds in Salem. The Lower Spicket River watershed in the southeast part of town is the largest at 3144.2 acres.

Table 8 – Watersheds

Watersheds	Acres
Lower Spicket River	3144.2
Policy Brook	3065.7
Porcupine Brook	2498.7
Upper Spicket River	1348.5
Hittytitty Brook	1258.1
World End Brook	1144.7
Arlington Pond	1095.3

Widow Harris Brook	742.6
Canobie Lake	381.4
Captain Pond Brook	367.5
Captain Pond	332.7
Millville Pond	272.3
Inflow to Captain Pond Tributary	10.7
TOTAL	**16568.4**