

Wetlands and Water Quality

How Wetlands Contribute to Water Quality
Raymond Wetlands Evaluation
Proposed Amendments to Zoning

Wetlands are important to our drinking water

Wetlands Retain Floodwater

They keep water in our watershed by linking groundwater to surface water

Wetlands Remove Surface Pollutants via:

Sediment trapping

Nutrient Removal

Chemical detoxification

Wetlands filter surface road runoff such as salt, oil and gas



Floodwater Retention

Wetlands collect surface runoff in storms and floods and slowly release it into the groundwater supply. The soils in wetlands are like sponges and the plants slow the movement of water so runoff can be absorbed.

This allows the water from storms and floods to stay within our aquifer.

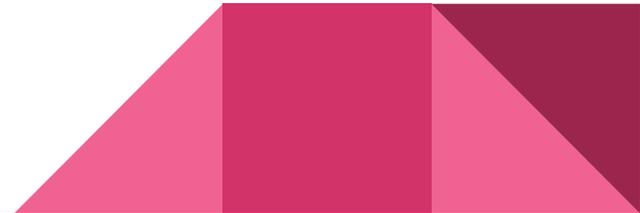


Sediment trapping and heavy metal removal

Wetlands provide vegetation that slows the speed of surface runoff or the overflow of streams and rivers.

The reduced speed of the water allows sediment and heavy metals such as lead and arsenic to bind to the roots of wetland plants. The sediment sits on the surface of the wetland.

This helps keep sediments and heavy metals out of our drinking water.



Nutrient Removal

Nitrogen and phosphorus from lawn and agricultural fertilizers as well as sewer and septic systems can stimulate excessive plant, algae and bacterial growth in water bodies and pathways. The bacteria and algae can create toxic chemicals.

Algae and bacteria can contaminate ground and well water.

Wetland plants can take up these nutrients and use them for growth. When the plants die the nutrients are recycled throughout the wetland.

Wetlands help keep water free from algae and bacteria.



Chemical Detoxification

The toxic chemicals that are created by certain types of algae and bacteria are trapped with settled soil particles and buried in sediments of the wetland.

There they can be converted into less harmful substances by biological processes, exposure to sunlight, or by being taken up and used by plants.

Wetlands help keep water free from toxic chemicals.



Filter Road Runoff

Wetlands filter grease, oil and salt from surface road runoff as plants slow the flow of water and allow particles to settle and bind onto the surface soil of the wetland.

Wetlands help keep groundwater free from grease, oil and road salt.



Raymond Wetlands Evaluation

In September, 2019, the Town of Raymond, New Hampshire's Conservation Commission announced its intentions to update the Town's wetland mapping and regulations to help ensure that there is an appropriate balance between sustaining the town's identity as a rural community, including its water resources and natural habitat, and maintaining property owners' reasonable use of their land.

Quote from:

[Wetlands Mapping and Evaluation Project - Prepared for the Town of Raymond Conservation Commission - DuBois & King 2020](#)



Focus on Drinking Water Quality

Wetlands were assessed using a variety of metrics designed to identify wetlands contributing the most value to the quality of drinking water in town.

Some of the metrics used were:

- Size of Wetland

- Proximity to Town Water Supplies

- % of Permeable Soils

A full accounting can be found in the [Wetlands Mapping and Evaluation Project.](#)



Priority Wetlands were Identified

Raymond is fortunate to have many, many wetlands within its borders.

However, 10 wetlands have been identified as [priority wetlands](#) for maintaining and promoting the quality of drinking water in Raymond.

In order to protect these valuable resources some amendments to zoning articles have been recommended.

Any projects already completed by homeowners under prior ordinances would be grandfathered in and not require changes.



Location of Priority Wetlands by Rank

Rank #1. Wetland 18 is 67.3 acres in size, and is located in the southeast portion of Town, between Fremont Road and Chester Road and west of Chester Road.

Rank #2. Wetland 3 is 38.0 acres in size, and is located in the northwest portion of Town, on the east side of Deerfield Road (Rt. 107) at the junction with Route 27.

Rank #3. Wetland 10 is 45.1 acres in size, and is located in the east-central portion of Town, east of Main Street, south of Epping Street, north of Rt. 101, and west of the Lamprey River.



Location of Priority Wetlands by Rank

Rank #4. Wetland 15 is 254.9 acres in size, and is located in the southeast portion of Town, southeast of Rt. 102 from its intersection with Hanson Road in Chester northeasterly to the intersection of the eastern boundary of the town at Lisa Avenue.

Rank #5. Wetland 9 is 107.3 acres in size, and is located in the east-central portion of Town, north of Epping Street, northeast of Main Street, and generally south of Rt. 107/27.

Rank #6. Wetland 8 is 36.8 acres in size, and is located in the central portion of Town. It is located along the Lamprey River and six contributing tributaries entering from the south, west and north.



Location of Priority Wetlands by Rank

Rank #7. Wetland 2 is 79.8 acres in size, and is located in the north-western portion of Town, at the intersection of Routes 27 and 107.

Rank #8. Wetland 6 is 36.8 acres in size, and is located in the east-central portion of Town, in southwest quadrant of the intersection of Route 101 and Freetown Road.

Rank #9A. Wetland 14 is 11.4 acres in size, and is located in the southeast portion of Town, on the east side of Route 107 and south of Lilac Court.

Rank #9B. Wetland 16 is 164.8 acres in size, and is located in the south-central portion of Town, along Branch road and west of Route 102.



Amendment #1: Zoning Warrant Articles

This is the current language

2.9.1 In recognition that the majority of drinking water supply sources come from groundwater; and further, that wetlands provide the chief source of groundwater recharge, all development shall result in no net loss of area or function of wetlands. This must be achieved within the same watershed of the proposed development area. In order of preference, no net loss shall be achieved utilizing the following approaches with input for the Raymond Conservation Commission:

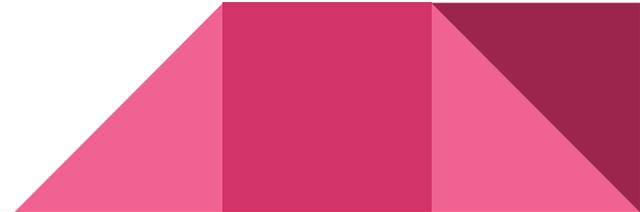
Zoning Amendment—These words are proposed to describe the benefits of wetland function as it relates to drinking water.

2.9.1 In recognition that the majority of drinking water supply sources come from groundwater; and further, that wetlands provide the chief source of groundwater recharge and serve to filter and enhance water quality, all development shall result in no net loss of area or function of wetlands. This must be achieved within the same watershed of the proposed development area. In order of preference, no net loss shall be achieved utilizing the following approaches with input from the Raymond Conservation Commission:

Amendment #2: Zoning Warrant Articles

This is proposed to be added as an additional purpose for Zone G - Conservation District. It would follow the current 8 purposes that are listed.

4.9.1.9 Maintain the health and water storage function of wetlands so that they may continue to support water quality and access to drinking water in Raymond.



Amendment #3

This is the current language

4.9.3.1. SHORELAND PROTECTION AREA: Is any area of land within seventy-five (75) feet of the seasonal high-water mark of any river, brook, stream, pond or lake as shown on the Water Resource Management Plan (3/2009). Also includes any area of land within seventy-five (75) feet of the high-water mark of any river, brook, stream, pond, or lake having flowing or standing water for six (6) months of the year not included in Water Resource Management Plan (3/2009).

Zoning amendment 3 proposes to amend the boundaries of the Shoreland Protection area to include any area within 100 feet of any priority wetland.

SHORELAND PROTECTION AREA: Is any area of land within seventy-five (75) feet of the seasonal high-water mark of any river, brook, stream, pond or lake as shown on the Water Resource Management Plan (3/2009). Also includes any area of land within seventy-five (75) feet of the high-water mark of any river, brook, stream, pond, or lake having flowing or standing water for six (6) months of the year not included in Water Resource Management Plan (3/2009). The Shoreland Protection Area also includes any area within 100 feet of any priority wetland, as shown on Map A.

Amendment #4

This is the current language and location of the article.

15.3.2. All lots containing Zone G land shall comply with the frontage and setback requirements of the underlying zone as set forth in Section 15.1.2 and Section 15.1.3, and shall have minimum wetland setbacks of 25 feet. (03/2010)

This is the proposed language and location.

15.1.4. All lots containing Zone G land shall comply with the frontage and setback requirements of the underlying zone as set forth in Section 15.1.2 and Section 15.1.3, and shall have a minimum setback from wetlands (as defined in article 13: Definitions) of 75 feet. For those wetlands identified on Map A (Priority Wetlands), Priority Wetlands, the setback shall be 100 feet.



References and Links

2020 Raymond Zoning Ordinance: [Raymond Zoning Ordinance](#)

Wetlands Best Management Practice Techniques For Avoidance and Minimization: US Environmental Protection Agency, NH Dept. for Environmental Services and New England Interstate Water Pollution Control Commission. [Wetlands Best Management Practice Techniques](#)

Wetlands Functions and Values: Vermont Agency of Natural Resources, Department of Environmental Conservation. [Wetlands Functions and Values](#)

Wetlands Mapping & Evaluation Project: Prepared for Town of Raymond Conservation Commission by DuBois and King, Inc. [Wetlands Mapping & Evaluation Project](#)

Wetlands and Water Quality: Brian K. Miller, Department of Forestry and Natural Resources Purdue University Cooperative Extension Services. [Wetlands and Water Quality](#)

