

CHAPTER 12 – WATERSHED HEALTH

Williston lies within the 8,249 square mile Lake Champlain watershed. This watershed includes portions of Vermont, Quebec, and New York. Runoff from the town eventually finds its way into Lake Champlain by one of several paths, which are shown on Map 14 – Williston Watersheds. Williston’s watersheds are summarized below:

- The **Muddy Brook** runs along Williston’s western border forming the boundary to South Burlington. This 20.8 square mile watershed includes the **Sucker Brook** tributary and occupies approximately 6,300 acres in Williston. The Muddy Brook watershed includes the retail centers in Taft Corners and Maple Tree Place and a portion of the industrial/commercial facilities in the north-west corner of the town. The Muddy Brook fails State water quality standards for toxics, nutrients, and temperature for the last seven miles of the tributary.
- The **Allen Brook** originates above Mud Pond and flows northwest to join the Muddy Brook just before the confluence with the Winooski River. The Allen Brook watershed falls entirely within the town and is Williston’s largest watershed, encompassing roughly 6,900 acres. The Allen Brook watershed includes agricultural and forested lands, residential development and a portion of the industrial/commercial facilities near the confluence with Muddy Brook. This tributary currently fails State water quality standards for stormwater and *E. coli* from the headwaters down to Industrial Avenue.
- Several small tributaries flow directly into the **Winooski River**, draining approximately 5,400 acres in total.
- **Lake Iroquois** and the surrounding lands are part of the **LaPlatte River** watershed, ultimately draining into Shelburne Bay. Lake Iroquois drains into Patrick Brook, which joins the LaPlatte River in Hinesburg. This watershed includes about 1,100 acres in Williston.
- Finally, less than one hundred acres each of the **Johnnie Brook** and **Shelburne Pond** watersheds are within the town.

Vermont Agency of Natural Resources Watershed Management Division approaches watershed-specific management planning through a Tactical Planning Process. Basin planning is required by both federal and state law. Section 303(e) of the federal Clean Water Act (Public Law 92-500) requires that states engage in water quality planning. 40 CFR 130, in part, directs state agencies to prepare basin plans, to focus on priority issues and geographic areas, to identify priority point and nonpoint water quality problems, consider alternatives and recommend control solutions and funding sources. 10 V.S.A. §1253(d) provides that basin plans must be developed on a five-year rotational basis. The Winooski Basin Plan, which includes Williston’s surface waters, was last updated in 2012. For more information on Basin Planning, visit the Watershed Management Division website at http://www.watershedmanagement.vt.gov/planning/htm/pl_basins.htm.

Land development has well-documented impacts on the volume, velocity, and quality of surface runoff. Changes in these parameters have a direct impact on the stability of a stream’s channel; the health of the aquatic, wetland, and riparian communities associated with the stream; and the land uses along it. These impacts, along with State and Federal mandates, have propelled Williston into a major role in watershed management. This plan element adopts seven objectives to provide a policy basis for the town’s efforts to maintain and restore the health of its watersheds:

12.1 - Stormwater Management – This objective provides a basis in the comprehensive plan for Williston’s stormwater management plan.

12.2 - Stream Restoration – The town has completed major restoration efforts on the Sucker Brook and the Allen Brook, and is working to expand restoration efforts to Muddy Brook.

12.3 - Water Quality Monitoring - The town will continue to gather baseline water quality data for the Allen Brook and work to expand this effort to other streams in Williston as funding allows

12.4 - Lake Iroquois – This objective calls for Williston to develop partnerships with other organizations to identify and alleviate problem areas affecting the quality of the lake.

12.5 - Source Water Protection – This objective calls for Williston to work with water suppliers to protect public drinking water sources.

12.6 - Groundwater – This objective calls for Williston to work with the State to ensure that development does not result in groundwater supply deficiencies, or in groundwater contamination.

12.7 – Stewardship - The town will take an active leadership role in land stewardship efforts.

12.8 - Flood Resilience – The town will continue to develop and implement strategies to build flood resilience. This includes identifying areas vulnerable to flooding or fluvial erosion; designating those areas to be protected to mitigate risks to public safety, critical infrastructure, historic structures, and municipal investments; and encouraging flood emergency preparedness and response planning.

12.1 - Stormwater Management - The Town of Williston will continue to operate as a Municipal Small Separate Stormwater System (MS4) within the framework established by the Clean Water Act, under the General Permit for MS4s issued by the State of Vermont, and the State’s stormwater legislation.

12.1.1 Implement the Stormwater Management Plan. Williston updated the Stormwater Management Plan in 2013. That plan reflects the requirements of General Permit 3-9014 by explaining how the town will implement six minimum control measures: 1) Public Education and Outreach, 2) Public Participation, 3) Illicit Discharge Detection and Elimination, 4) Construction Site Runoff Control, 5) Post Construction Runoff Control, and 6) Pollution Prevention/Good Housekeeping. The Stormwater Management Plan and subsequent annual reports on its implementation can be found on the town’s website. The policies adopted here support Williston’s stormwater management efforts.

12.1.2 Continue to Participate Regionally to meet Minimum Control Measures 1 and 2. As of July 1st, 2016 The Regional Stormwater Education Program (RSEP) and Chittenden County Stream Team (CCST) have been consolidated into the Clean Water Advisory Committee (CWAC). The CWAC, formed under requirements put forth in the Vermont Water Quality Act (Act 64), is a collaborative effort of Williston, other Chittenden County municipalities, the Burlington International Airport, the Vermont Agency of Transportation, and the University of Vermont. The Chittenden County Regional Planning Commission coordinates the CWAC, which promotes public awareness of stormwater issues through an annual media campaign and educational programs.

The Clean Water Advisory Committee’s web site is www.smartwaterways.org. You may also link to this site from the town’s web page. A good general source of information on the hydrologic impacts of land development and stormwater management is the Center for Watershed Protection www.cwp.org.

12.1.3 Enforce and Strengthen Regulations that Limit the Impact of Land Development on Water Quality. Williston revised and strengthened stormwater and watershed protection regulations in 2009.

These regulations strengthened requirements for vegetated buffers between development activity and streams, lakes, and wetlands. They also set performance standards for runoff and erosion control during the construction and occupancy of developments. The town should continue to monitor and evaluate the effectiveness of these standards and consider utilizing new technologies and stormwater management strategies as they are developed. The town should continue to modify and develop standards to further minimize impervious cover limitations. Developing and codifying low impact development standards and ranking criteria can strengthen regulations and improve the development review process. The town should also develop a mechanism to enforce regulations and conditions of approval, such as by withholding the Certificate of Occupancy until compliance is reached.

12.1.4 Implement a Town-Administered Management Plan for Existing Residential Stormwater Facilities. In 2015, the town began implementing a stormwater utility program for managing stormwater across the entire town as part of the MS 4 Permit (see below). This new program calls for the town to work with the land owners of existing expired residential stormwater facilities to bring those facilities into compliance with the state’s current regulations. Once these facilities have been upgraded to the new standards, the town will take over the ongoing maintenance of these facilities. Only those facilities meeting the *Expired Permit Eligibility Requirements* as put forth in the Residential Expired Stormwater Permit Policy adopted by the Selectboard on May 18th, 2015 are eligible to be taken over by the town.

12.1.4.1 Implement the Allen Brook Flow Restoration Plan. As a Municipally Separate Storm Sewer (MS4) Community containing a stormwater impaired waterbody the Town of Williston is required to implement a flow restoration plan (FRP). The ultimate goal of an FRP is to identify stormwater treatment practices (including retrofits to existing systems) which when implemented will work towards removing an impaired waterbody from the States List of Impaired Waters.

To incentivize compliance with the FRP, the Town of Williston has offered to assume control of the expired residential stormwater permits in the Allen Brook Watershed as put forth in the Residential Expired Permit Policy (adopted 5/18/2015).

12.1.5 Plan and Implement Stormwater Improvements using Stormwater Program Funding. The Town of Williston adopted the Ordinance Regulating the Use of Public and Private Stormwater Systems on 4/21/2015 officially creating the town’s Stormwater Program. The fee-based Program was formed to facilitate the ongoing maintenance and upkeep of the town-wide stormwater drainage network, address increasingly stringent state and federal permitting requirements and to support local water quality initiatives.

The town has opted to generate the money needed to provide these services through the stormwater fee. The stormwater fee is based on the amount of a property’s impervious surfaces as the stormwater runoff generated from these surfaces flows through the public stormwater system, and therefore “places a demand” on the system. A property with a high amount of impervious surface generates more stormwater runoff, and therefore places a relatively high demand on the public stormwater system. So, a property that has a large amount of impervious area will have a higher stormwater fee than a property with less impervious surface. These fees, which contribute to a dedicated Stormwater Program budget, will be used to maintain and improve town-wide stormwater related infrastructure.

12.1.6 Regularly Update the Stormwater Management Plan. The Stormwater Management Plan was updated in 2013 to reflect Williston’s new watershed health regulations. Given the town’s active role in stream restoration, this update should be made part of an overall watershed health plan appended to the comprehensive plan.

12.1.7 Snow Management. The town should develop a regulation that subjects snow, including plowed snow, stored snow, and snow melt, to the same standards as stormwater. Landscaping plans and stormwater management plans for proposed development projects should continue to illustrate how snow will be managed on-site.

12.1.8 Address Stormwater Issues in Older Developments. Most development in Williston includes a State-permitted stormwater management system. A few older developments, including Williston Hills, Lamplite Acres, Oneida Acres, and Meadow Brook do not. Untreated stormwater from these subdivisions reaches receiving water bodies and accelerated runoff is causing erosion where it crosses steep slopes. To address these issues, in 2008, the town worked with affected landowners, the Winooski Natural Resources Conservation District, the Agency of Natural Resources, and other partners to successfully arrest the erosion of three major gullies in the Williston Hills development. In 2009, Public Works constructed a stormwater pond to detain stormwater runoff from the Meadow Brook development, generating offset credits in the process. In 2014 the town installed an infiltration trench and a series of check dams in the Oneida Acres neighborhood. In 2015 the town installed a bio-retention system off of Palmer Court and an infiltration trench with complimentary sub-surface storage in the Lamplite Acres neighborhood. The monitoring and maintenance of these sites should remain ongoing as well as efforts to address stormwater runoff problems in the other neighborhoods. Solving these issues through offset should always be explored.

12.1.9 Encourage Residents to Disconnect Roof Runoff. A relatively easy way to reduce the amount of stormwater that reaches our streams is to educate homeowners on the harmful effect of roof runoff. In 2015, through a partnership with RSEP and the Winooski River Natural Resources Conservation District, Williston was the host of the third annual Connecting the Drops (CTD). CTD raised awareness in Williston and Chittenden County on the importance of capturing and reusing roof top runoff through the use of rain barrels. Through CTD residents were able to attend rain barrel building workshops and a raffle for professionally painted rain barrels. Williston should consider developing a volunteer program to redirect rooftop downspouts in residential developments from pavement to lawn and continue to participate in programs that encourage the installation of rain barrels and rain gardens.

12.2 - Stream Restoration - The Town of Williston will continue to monitor the effects of the Sucker Brook restoration project, continue efforts to remove the Allen Brook from Vermont’s list of impaired waters, and begin efforts to restore the Muddy Brook.

The Allen Brook and the Muddy Brook both appear on the State 303(d) list of impaired waters. It is therefore Williston’s responsibility to restore these streams to their attainment levels. A large-scale restoration project was successfully completed along the Sucker Brook in 2008 and the Allen Brook in 2012. Planning efforts have just begun to address the toxics, nutrients, and temperature impairment on the Muddy Brook.

12.2.1 Monitor Ongoing or Completed Restoration Projects on the Sucker Brook. The Sucker Brook – a tributary to the Muddy Brook - changed course as a result of a storm approximately 20 years ago. The Sucker Brook abandoned a 30-foot waterfall to travel over easily-eroded glacial till. This erosion carved a large, unstable canyon, sending an estimated 30,000 cubic yards of sediment and 40,000 pounds of phosphorus downstream. From 2001 – 2008 the town successfully stabilized the Sucker Brook and monitoring of the restoration site will remain ongoing.

Data on the Sucker Brook can be found in:

Evan Fitzgerald, Fitzgerald Environmental Associates. *Sucker Brook Phase 1 and 2 Stream Geomorphic Assessment Summary*. October 11, 2007.

12.2.2 Continue Corridor Protection and Restoration Efforts on the Allen Brook. The Allen Brook appears on Vermont's 303(d) list for stormwater. The stormwater impairment is due to an overabundance of sediment, which is caused by accelerated surface runoff, flash flooding, and channel erosion associated with the urbanization and increased acreage of impervious surfaces within the watershed. To address this issue, Williston has developed a strategy of acquiring and reforesting portions of the riparian corridor along the Allen Brook and its tributaries. Wide, forested buffers will intercept, detain, and treat sheet flow to the Brook and its tributaries. Tributaries can also overflow into these buffers, attenuating peak flows into the Allen Brook without causing property damage. From 2004 - 2012 a substantial restoration project was completed on the Allen Brook. A comprehensive decision matrix was developed to assess 158 parcels along the Allen Brook and its tributaries to identify properties where restoration efforts were expected to have the greatest impact. Acquisitions or conservation easements on high priority parcels permanently protected 37 acres of land along the Allen Brook and its tributaries, and 18 acres within stream buffers were planted with native trees and shrubs. Steep and highly erosive stream banks were strategically cut back and gradually sloped in many locations, resulting in the removal of 228 cubic yards of sediment. The town will continue to expand this corridor protection strategy along additional privately owned and town owned parcels within the Allen Brook watershed. Monitoring the restoration sites will continue.

Data on the Allen Brook can be found in:

Vermont Department of Environmental Conservation, Water Quality Division. *Biological and Aquatic Life Use Attainment Assessment of Allen Brook*. February 11, 2004.

Lori Barg, Kari Dolan, Cully Hession, Chris Cianfrani, and Bob Kort. *Watershed Improvement Plan and Recommendations for a Total Maximum Daily Load (TMDL) for Sediment: Allen Brook, Williston, Vermont*. Vermont Department of Environmental Conservation, Water Quality Division March 30, 2003.

Evan Fitzgerald. *Allen Brook Watershed Departure Analysis and Project Identification Summary*. April 11, 2008

Vermont Department of Environmental Conservation, Water Quality Division. *Total Maximum Daily Load to Address Biological Impairment in Allen Brook (VT08-02), Chittenden County, Vermont*. September 2008.

12.2.3 Begin Efforts to Restore the Muddy Brook. The Muddy Brook also appears on the 303(d) list of impaired waters for toxics, nutrients, and temperature. The town has just begun efforts to identify specific problem areas in the watershed, such as the head-cut near Harvest Lane. The town should initiate dialog with South Burlington to plan for and fund targeted restoration projects.

Data on the Muddy Brook can be found in:

Evan Fitzgerald and Samuel Parker, Fitzgerald Environmental Associates. *Muddy Brook Phase 1 and 2 Stream Geomorphic Assessment Summary*. February 2, 2009.

12.3 - Water Quality Monitoring – The Town of Williston will continue to monitor the water quality of Williston's streams and use the data to inform mitigation efforts.

In 2007, the Planning Office was awarded a Vermont DEC LaRosa Partnership grant for the first time to begin baseline water quality monitoring along the Allen Brook. The monitoring parameters originally included nitrogen, phosphorous, and E. coli. Chloride and turbidity were added to this list in 2010.

12.3.1 Continue to Collect and Process Data. Water quality monitoring data currently exists for 2007 – 2015 (except for 2009, because the Larosa grant program was not available) for eight sites along the Allen Brook. The town will continue to collect data along the Allen Brook and should consider expanding the monitoring effort to include the Muddy Brook. These data will provide a valuable benchmark as restoration projects are completed and development pressure continues to increase in these impaired watersheds.

12.3.2 Analyze Existing Monitoring Data to Prioritize Implementation Efforts. The town should utilize assistance from University students and other partners to analyze the existing water quality monitoring data. The data analysis should identify specific problem areas, recommend remediation strategies, and fine-tune the location of the collection sites to optimize the sampling effort to the goals of the monitoring program.

12.3.3 Explore Technologies and Methods Available to Identify Sources of E. coli along the Allen Brook. Based on three years of monitoring data, the levels of E. coli in the Allen Brook have failed to meet both State and Federal standards at all eleven sampling sites. The town should begin to explore technologies and methods available to identify sources of E. coli to allow the Town to target and mitigate these pollution sources prior to the release of the Total Maximum Daily Load (TMDL) guidance for the Brook.

12.4 Lake Iroquois – The town will participate in partnerships to improve the Lake Iroquois ecosystem.

The Vermont Agency of Natural Resources has classified Lake Iroquois as eutrophic, meaning that the Lake's waters are rich in nutrients (i.e. phosphorous, nitrogen) that promote the proliferation of plant life, especially algae, which in turn reduces the dissolved oxygen content that fish and other aquatic species rely on for survival. Furthermore, the elevated nutrient levels in the Lake have contributed to the spread of the invasive aquatic plant, Eurasian Watermilfoil (*Myriophyllum spicatum*). Studies done on the Lake by lay monitors (volunteers) and by the State since 1979 indicate that Lake Iroquois has one of the highest average levels of phosphorus of all the lakes in the State. In a survey conducted during the summer of 2010 by volunteers of the Lake Iroquois Association and staff of the State Department of Environmental Conservation, ten areas of concern were identified along the lakeshore as potential input points for nutrients and stormwater.

A second concern is pollution. The Public Works Department monitors E. coli at the designated swimming area at the northern end of the lake and results to-date has been below the State and federal limits; however, lakeside residents are concerned that the aging septic systems surrounding the lake will lead to E. coli and nutrient problems in the future. The expense of new alternative septic systems on shore land property, particularly for seasonal residents, is exorbitant. Incentives and assistance should be considered to promote acceptable solutions.

Lake Iroquois is surrounded by over 90 camps, many of which were within the former 150-foot shoreline buffer. Most of the camps are seasonal but a few have been converted to year-round residences. To better address the issue of non-conforming structures on the Lake Iroquois shoreline and to attain consistency with the recently passed state Shoreland Protection Act, in 2014 Williston developed and incorporated a Lake Iroquois Shoreland Protection Area (LISPA) into the Bylaw. LISPA includes all lands within 250 feet of the mean high-water level of the lake, and establishes standards for land clearings, amount of impervious

surface, and location of buildings consistent with newly adopted state standards. Applications for town permits are now required to provide documentation of compliance with Vermont Shoreland Protection requirements in 10 V.S.A. § 1441-1545

12.4.1 Support the Efforts of the Lake Iroquois Association. While the Lake Iroquois Recreation District (LIRD) primarily manages the recreational uses surrounding the lake, the Lake Iroquois Association (LIA) has become the advocate for habitat rehabilitation and water quality improvement. The LIA is a 501(c)(3) non-profit corporation whose sole purpose is to maintain and enhance the Lake Iroquois ecosystem. The LIA aims to encourage and guide appropriate public uses of the lake and its watershed for the purpose of protecting and preserving the lake's overall well-being. These goals are achieved through monitoring, preventive and management initiatives, research, education, advocacy and other actions, involving the cooperative efforts of property owners, Town, State and Federal officials, and other interested parties. The LIA is a non-regulatory group with a vested interest in the lake's health. The town should support the efforts of the LIA in any way possible, through direct funding and in-kind contributions, to help them achieve their mission to restore the lake.

What is the Lake Iroquois Recreation District? The 157-acres that make-up the northern portion of Lake Iroquois is not owned by the town but is rather owned and operated by the Lake Iroquois Recreation District (LIRD). The LIRD is a Union Municipal District made up of 4 towns: Richmond, Williston, Hinesburg and St. George. Each community appoints a representative to serve on the Board of Commissioners for varied terms. The District primarily manages seasonal permits for recreational use (non-motorized boating, swimming, parking, etc.). The Board usually meets once per month and the Williston's Director of Public Works serves as the staff person for the Board.

The town should also establish a cooperative link with the other three towns within the lake's watershed to consider establishing plans, objectives and actions that complement each other.

12.5 Source Water Protection - The Town of Williston will help protect both water quality and quantity in drinking water Source Protection Areas by referring development proposals to any applicable water suppliers.

Williston residents and businesses receive their drinking water from one of three sources: a private well, which is managed by the landowner; the Lake Iroquois Source Protection Area, which is supplied by the Champlain Water District (CWD); or the Porterwood Source Protection Area, which is supplied by the Williston Fire District #1 (FD1). Williston's two Source Protection Areas (SPAs) are shown on Map 14. Water suppliers who manage SPAs are responsible for developing and updating Source Protection Plans (SPPs), which are designed to maintain the integrity of the SPA. These Plans must comply with State and Federal Rules governing water supply protection. This section of the plan calls for Williston to ensure that all development activities within the designated SPAs are consistent with the SPPs; therefore, development proposals within SPAs will be referred to their water suppliers for comment prior to the issuance of a permit.

12.5.1 Refer Development Proposals Within the Lake Iroquois Source Protection Area to the Champlain Water District. Since 1995, the Champlain Water District (CWD) has implemented a Source Protection Plan (SPP) to protect the Source Protection Area (SPA) for Lake Champlain's Shelburne Bay, which provides drinking water to approximately 68,000 people in Chittenden County, including parts of Williston. The SPA includes Shelburne Bay and the LaPlatte River watershed, which feeds the bay. Since Lake Iroquois is located at the headwaters of the LaPlatte River, this waterbody is included in the SPA and therefore development in and around the lake falls within the purview of the CWD.

As stated in the SPP, the town will forward any significant development projects, such as those that disturb one acre or greater within the Lake Iroquois watershed and especially those within the lake's

250-foot buffer, to the CWD for comment prior to issuing any permits. However, as stated in Chapter 29 of Williston's *Unified Development Bylaw*, CWD review may be sought at the discretion of the planning Administrator regardless of project size.

To learn more about the LaPlatte Watershed as a source water area see: Highland Geographic, Inc. *Shelburne Bay Subwatersheds Source Assessment Delineation Mapping: Summary Report*. Champlain Water District. 2004. The Champlain Water District's web site is <http://www.cwd-h2o.org/>.

12.5.2 Refer Development Proposals Within the Porterwood Source Protection Area to Williston Fire District #1. Williston Fire District #1 (FD1) supplies drinking water to the Porterwood neighborhood, which serves over 70 homes. FD1 protects and maintains the water quality and quantity of the Porterwood Source Protection Area (SPA) by implementing a Source Protection Plan (SPP) and updating that Plan every three years.

The town will forward development projects within the Porterwood SPA to FD1 for comment prior to issuing any permits. The town should coordinate with FD1 to better define what type of development projects are appropriate or exempt from FD1 review.

12.6 Groundwater – The Town of Williston will work with the State to help protect both groundwater quality and quantity.

Groundwater in Williston is protected under the jurisdiction of the Vermont Department of Environmental Conservation Drinking Water and Groundwater Protection Division. The Regional Office Program issues water/wastewater permits (WW Permits) for soil-based wastewater systems with flows of less than 6500 gallons per day, for potable water supplies (water supplies that are not public water supplies), and for municipal water and sewer connections.

The Vermont Wastewater System and Potable Water Supply Rules (adopted June 30, 2007) supersede existing municipal ordinances and zoning bylaws that regulate potable water supplies and wastewater systems. Municipalities may continue to have ordinances and/or bylaws that:

- (1) only regulate the use and/or operation of municipally owned water and/or sewage treatment plants;
- (2) require submission of copies of plans and documents used to obtain a state permit under these Rules to the municipality;
- (3) require a certificate of occupancy that is based on full compliance with a state permit issued under these Rules;
- (4) require notice of, and have the option to observe, any soil testing such as the digging of test pits; and
- (5) require time of sale inspections.

Similar to the objectives outlined under **12.5 Source Water Protection**, but in light of its limited authority to regulate water supplies and wastewater systems, Williston will work with the Vermont Department of Environmental Conservation to further the goals of protecting groundwater quality and quantity.

12.6.1 Continue to Refer to Hydrogeologic Studies. The Vermont Geological Survey (VGS) conducted a basic hydrogeologic study of selected areas in 2005. The results include well-yield data and cross-sections showing the depth and yield of wells in relation to the depth of surficial materials and known

geologic features. The VGS also completed an in-depth study of groundwater resources throughout the entire town in 2008. A poster presentation titled *Groundwater Resources in the Town of Williston; Northeast Vermont* contains valuable information regarding bedrock and surficial geology, well yield and depth information, and an evaluation of bedrock aquifer recharge potential. Williston will continue to work with VGS to make effective use of this information.

12.6.2 Develop and Adopt a Protocol for Measuring Adequate Water Supply. The town will use the extensive data compiled by the VGS to help provide sound information regarding specific instances of proposed development. The town will advocate for the Water Supply Division of the Vermont Department of Environmental Conservation to develop and adopt a protocol for measuring adequate water supply where nearby well-log data and VGS research indicate historical low yields. A protocol for benchmark testing of existing wells should also be developed as a tool for monitoring water quantity impacts before and after development.

12.6.3 Require compliance with State Wastewater System and Potable Water Supply Rules. Williston currently requires applicants for new development to submit plans for an on-site wastewater disposal system and a copy of their Wastewater and Water Supply (WW) Permit to the town prior to obtaining a Zoning Permit. To ensure that a wastewater system has been installed as designed, as-built plans must be filed with the Zoning Administrator prior to issuance of a certificate of compliance. The town should maintain this requirement.

12.7 Stewardship – While State and Federal government entities are ultimately responsible for protecting our local waterways, the Town of Williston will strive to keep those waterways free and clear of contamination.

Quality of life is linked to a healthy environment. In recognizing this mainstay, the town will strive to become a sustainable community of citizens and businesses motivated to conserve and enhance natural resources through policies, programs, and outreach activities. The town’s stewardship objective is intended to create long-term environmental benefits and to conserve natural resources.

12.7.1 Develop and Adopt a Protocol for Addressing Potentially Hazardous Land Use Activities. The goal of this policy is to address potentially hazardous land use activities that are currently exempted from the Town’s zoning regulations. Where an existing land use contributes to watershed contamination and poses a potential risk or potential of becoming a public nuisance, the town should develop a strategy to identify that risk and encourage the landowner or operator to develop, implement, and monitor best management practices to assure good stewardship and reduce risk of contamination.

12.7.2 Develop Appropriate Land Use Regulations Where Contamination is Present. The Commerce Street plume is a documented Superfund site where groundwater has been contaminated with volatile organic compounds (VOCs) including tetrachloroethylene (or perchloroethylene, PCE) and trichloroethylene (TCE). Cadmium and chromium have also been detected in the groundwater plume. The town should continue to work with the Environmental Protection Agency (EPA) to understand the evolution of the plume, and in this case or others where significant contamination is present, the town should consider land use regulations that address the existing conditions to provide flexibility in determining appropriate uses for these parcels. In the case of the Commerce Street Plume, this is addressed by land use Policy 3.7.3.

12.7.3 Provide Incentives and Increase Education for Water Conservation. The town should take a proactive role in demonstrating to homeowners, the business community, and developers that water conservation strategies can save money and protect this limited resource. This could be achieved by developing a means to incentivize and enforce the use of water saving technologies in development and

redevelopment projects. Since Williston does not have a building or plumbing code, compliance to an incentives program would likely best be measured prior to the issuance of a Certificate of Compliance. The town should also develop education and outreach materials that address water conservation and provide them to the public in hard copy or on the town website.

12.7.4 Continue to Omit Wetlands, Rivers, and Buffers from Density Calculations. In 2008, the Conservation Commission, Planning Commission, and Selectboard supported and adopted a policy to omit wetlands, rivers, and watershed protection buffers from density calculations for new development projects. As a result, developable landscapes are no longer subject to proposals that inherently overburden the landscape's natural capacity to overcome stormwater and pollution loading. This practice is a true demonstration of stewardship and should continue to guide development projects in Williston.

12.7.5 Discourage the Use of Phosphorous Fertilizer. Phosphorous pollution is the number one threat to the health and stability of Lake Champlain. The primary sources of phosphorous are from fecal matter, fertilizers and soil erosion. For many years now the town has committed to using phosphorous-free fertilizers on town-owned land in an effort to minimize the amount of phosphorous that enters our waterways. In 2012, Vermont banned the use of phosphorus fertilizer on lawns. The town should at minimum expand upon this stewardship role and develop an educational program that deters the indiscriminant use of phosphorous fertilizers and educates homeowners on alternative lawn and yard care practices.

12.8 Flood Resilience – The Town of Williston has developed strategies to build flood resilience. This includes identifying areas vulnerable to flooding or fluvial erosion; designating those areas to be protected to mitigate risks to public safety, critical infrastructure, historic structures, and municipal investments; locating new development in safer areas; using sound stormwater management techniques to reduce flooding; conserving floodplains and upland forested areas that attenuate flooding; and encouraging flood emergency preparedness and response planning. The town will continue to implement these strategies.

12.8.1: Avoid development and protect land in particularly vulnerable areas such as floodplains and river corridors. Williston's regulations include "watershed protection buffers" for all streams, ponds, lakes and for certain wetlands. These include:

- A shoreline buffer of at least 150 feet for all ponds and lakes exceeding an area of a half-acre;
- A shoreline buffer of 250 feet for Lake Iroquois;
- A buffer of at least 150 feet for the Allen Brook, Muddy Brook, Sucker Brook and Winooski River;
- A 50-foot buffer for all unnamed streams;
- A 50-foot buffer around all Class 2 Wetlands and certain Class 3 Wetlands, and
- Special Flood Hazard Areas

Table 1 and Figure 1 at the end of this chapter further clarify town and state designated protection buffers. The town's regulations stipulate that land within these buffers shall remain undeveloped and in native vegetation. In total, the watershed protection areas generally provide greater protection than the statewide river corridors recently published by Vermont Agency of Natural Resources, and very little land area is within the river corridors that are not already under the town's watershed protection buffers (see Map 14 – Watershed Protection Buffers). Nonetheless, to assure consistency with State statute and with surrounding towns, the town should consider incorporating the ANR river corridors into the flood hazard protection standards in the Bylaw. Similar to the Special Flood Hazard Areas

discussed in WDB Chapter 28, the River Corridors could become part of the watershed protection buffers.

12.8.2 New development shall be planned for and encouraged in areas that are less vulnerable to future flooding events. Williston Development Bylaws Chapter 28 regulates development in Special Flood Hazard Areas (SFHA). All new development, with minor exceptions, is prohibited in the SFHA. The town should consider the incorporation of river corridors into WDB Chapter 28, in order to assure consistency with State statute and with surrounding towns, and to ensure that the town retains the maximum level of Emergency Relief Assistance Funding.

12.8.3 Where development already exists in vulnerable areas, measures shall be taken to protect people, buildings and facilities to reduce future flooding risk. Under the standards of Williston Development Bylaws Chapter 28, any permitted development including nonconforming uses and structures currently located in the SFHA must be reasonably safe from flooding and designed to prevent floatation, collapse or lateral movement during the occurrence of the base flood. This includes, using materials resistant to flood damage and using construction practices that minimize flood damage; protecting utilities from flood damage, flood proofing basements, and protecting water supply and wastewater systems. These standards could be strengthened by adopting river corridors into the Bylaw’s flood protection areas.

12.8.4 Stormwater management techniques shall be used to slow spread and sink floodwater. Williston has an aggressive and detailed stormwater management program, outlined in Section 12.1 of this chapter. It should be noted that stormwater treatment standards required under Vermont law are designed to capture 90% of the annual storm events and to safely “pass” a 100-year storm event, meaning that even well-designed stormwater infrastructure won’t prevent flooding in an extreme event.

12.8.5 The protection and restoration of floodplains and upland forested areas that attenuate and moderate flooding and fluvial erosion should be encouraged. As outlined in Section 12.2 of this chapter, Williston has completed several major restoration projects on the Sucker Brook and the Allen Brook. The town will continue to monitor these projects and begin efforts to restore the Muddy Brook. The town has implemented a comprehensive strategy, using regulatory and non-regulatory tools, to conserve natural resource assets across all areas of town. Using its Environmental Reserve Fund and leveraging other funding, the town has conserved over 1791 acres, including many forested upland areas.

12.8.6 Support flood emergency preparedness and response planning. Williston has adopted and regularly updates a Local Emergency Response Plan to support emergency operations during disasters. To further prepare for emergencies, Williston works with the Local Emergency Planning Committee to conduct and participate in trainings and exercises. Williston has also adopted an All-Hazards Mitigation Plan that identifies flooding as a significant hazard. As part of the development of the plan, a risk and vulnerability assessment was conducted that discusses the level of risk and identifies particular areas or facilities in town that are most vulnerable. The heart of the plan is the development of specific mitigation strategies to reduce the loss of life and property damages from flooding.

Table 1: Watershed and Flood Protection Areas

Category	Name	Definition/Purpose	Distance (ft.)	Jurisdiction
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Watershed Protection Area	Lake Iroquois Shoreland Protection Area	All land located within 250 feet of the mean water level of Lake Iroquois, all development must comply with the Vermont Lake Shoreland Protection Standards.	250	Town/State
	Lakes and Ponds	Buffer of at least 150 feet above the ordinary high-water mark of all lakes and ponds with an area greater than half-acre (except for Lake Iroquois), must remain undeveloped.	150	Town
	Named Streams	Buffer of at least 150 feet above the ordinary high-water mark of the Allen Brook, Muddy Brook, Sucker Brook, and the Winooski River, which must remain undeveloped.	150	Town
	Other Streams	Buffer of at least 50 feet above the ordinary high-water mark of all perennial or intermittent unnamed streams, which must remain undeveloped.	50	Town
	Class 2 Wetlands	Buffer of at least 50 feet above the delineated boundary of any Class 2 wetland. Class 2 wetlands are protected by Town Bylaw, State Law and Federal Law.	50	State/Town/Federal - Army Corps of Engineers (ACOE)
	Class 3 Wetlands	The DRB may, upon recommendation of the Conservation Commission, require a buffer above Class 3 wetlands that have important functional values. Class 3 wetlands are generally not protected by State Law, but are regulated by the Army Corps of Engineers.	varies	Town/Federal (ACOE)

* Refer to illustrations below.

Category	Name	Definition/Purpose	Distance (ft.)	Jurisdiction
Flood Protection	Special Flood Hazard Area	All lands identified as Special Flood Hazard Areas (SFHA) on the most current flood insurance maps and studies published by the Federal Emergency Management Agency (FEMA). SFHAs include	varies	Federal (FEMA)

		area of floodplain subject to a one percent (1%) chance of flooding in any given year.		
	Fluvial Erosion Hazard Area*	Fluvial Erosion Hazard Areas (FEH) have been delineated for some communities based on studies of particular stream and river reaches. An FEH, otherwise referred to as River Corridor Protection Area (RCPA), delineates the extent of the meander belt.	varies	State
	River Corridor*	A River Corridor includes the meander belt and the area to maintain a riparian buffer. The Statewide River Corridor (SRC) includes rivers and streams with watersheds over two square miles. For small streams, with watersheds less than two square miles, the extent of the River Corridor is measured on the ground as fifty (50) feet from the top of the stream bank. The SRC was developed using map-based data on watershed catchments, stream gradient, reference channel width, meander belt widths, valley walls, and major transportation features.	varies	State

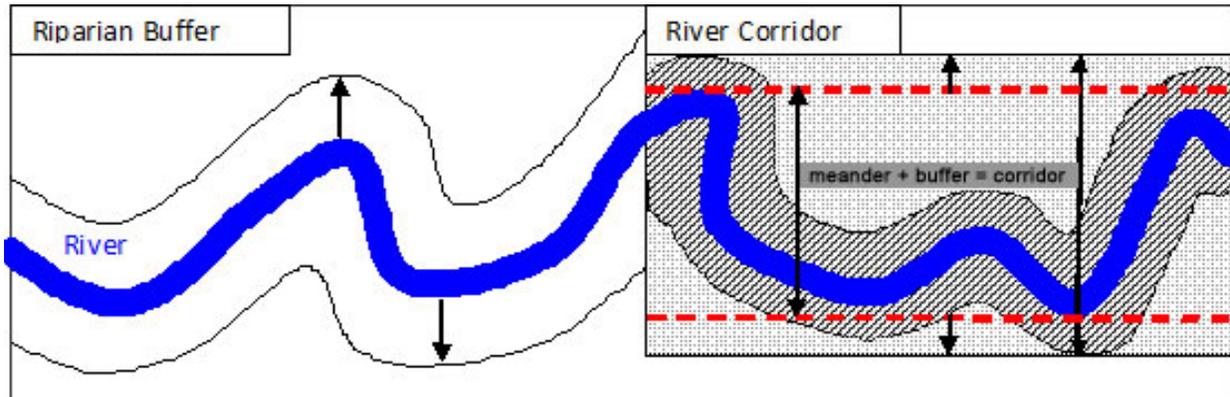


Figure 1: Comparing a buffer setback to a river corridor. Source: Adapted from Ohio DNR, Rainwater and Land Development Manual, 2006.