

## **NYS Source Water Protection Scorecard: Saw Kill Watershed August, 2018**

In 2016, Riverkeeper researched the drinking source water protection failures that preceded the contamination of the City of Newburgh's primary reservoir. As a part of this project, Riverkeeper developed the Drinking Source Water Protection Scorecard (available at [www.riverkeeper.org/water-quality/drinking-source-water-protection/](http://www.riverkeeper.org/water-quality/drinking-source-water-protection/)) to help other communities in New York State "audit" drinking source water protection programs and protect water resources.

### **Scorecard Report**

The Scorecard includes eight sections; each focuses on a specific element of drinking water protection:

1. Source Water Assessments
2. Source Water Protection Program
3. Watershed Planning
4. Land Use
5. Streams
6. Wetlands
7. Forests and Open Space
8. Other

Report information was compiled by the Saw Kill Watershed Community with guidance and information from Riverkeeper and NYS DEC Hudson River Estuary Program. All of the above eight sections were evaluated as part of this review as per the scorecard document attached to this report.

Like most watersheds, the Saw Kill does not correspond neatly to municipal boundaries. It includes portions of the towns of Red Hook, Milan, and Rhinebeck, and the Village of Red Hook. The largest portion of the watershed lies within the Town of Red Hook. For purposes of this scorecard, all water resources within the Saw Kill watershed are considered to be 'source waters.' This includes all small streams, ponds, wetlands, groundwater, and aquifers.

This scorecard focuses on land and water resources in the Saw Kill Watershed. However most, if not all, of the recommendations below will be applicable to the relatively small portions of other watersheds also found within the Town of Red Hook: Stony Creek Watershed, the Rhinebeck Kill Watershed, Mudder Kill Watershed and in several small tributaries of the Hudson (direct drainage).

### **Drinking water protection**

The Saw Kill watershed provides drinking water from a variety of sources:

- water from the Saw Kill (Bard College),
- municipal well systems/ aquifer (Village and Town of Red Hook),

- numerous individual privately owned wells throughout the rest of the watershed,
- downstream areas: the Saw Kill flows into the Hudson River, a drinking water supply for downstream communities (e.g. the “Hudson 7”—Towns of Esopus, Hyde Park, Lloyd, city and town of Poughkeepsie, town and village of Rhinebeck).

While municipal well (and stream) water is regularly tested and treated, individual wells are not. About 89% of Town of Red Hook’s residents rely on individual wells for drinking water. All of these drinking water sources are affected by water conditions throughout the watershed including wetlands and streams, land use, buffers, and water contaminants.

When we improve the quality of drinking water by using this scorecard approach and implementing recommendations that are part of the process, we also improve the health of the watershed and its ability to improve flood protection, habitat, recreation, property values, and public and ecological health. Watershed health can be described by looking at the condition of features that include buffers, floodplains, wetlands and streams, impervious surfaces, forests, ecosystems (habitat), dams and culverts, water use, and water quality. These features are described in the Saw Kill Watershed Community’s “State of the Saw Kill.” This scorecard looks at watershed features and conditions in terms of management and methods of protection. The SOSK provides information about the watershed; the scorecard (with the specific goal of protecting drinking water) addresses actions to protect watershed health.

## **Key Findings**

The initial score for the Saw Kill watershed is 27%, an approximation that indicates Red Hook is using 27% of the tools available to protect drinking water and preserve current and future water quality. This score can be improved through municipal action and collection of additional information from state or other sources.

Findings from scorecard review include:

- Source Water Assessments, which were developed by the New York State Department of Health to identify potential risks to public drinking water supplies, are old and out of date. Since their development, additional information, including mapping of aquifers and well recharge areas, have been developed that should inform these updates.
- Source Water Protection Plans are not in place for major public drinking water supplies, nor for private wells, which supply nearly four-fifths of Town residents.
- The Saw Kill Watershed Community’s efforts to develop a watershed characterization and watershed management plan, to assess water quality in the watershed, and to build an active engaged community focused on the creek and its watershed are important foundation elements of water protection for the Town of Red Hook.
- Many partners and resources are active in the preservation of open space in the Town of Red Hook. The Town’s Community Preservation Fund is a unique local resource for funding water resource protection. Winnakee Land Trust won a grant in the first round of a new state program under the Clean Water

Infrastructure Act to preserve lands important for source water protection. Scenic Hudson has preserved significant farm lands in the Town.

- The Saw Kill, despite being a source of drinking water, is designated by NYS as Class B, rather than Class A or AA. The best use of Class B waters is for swimming and other recreation, whereas the best use of Class A waters is for drinking water, and higher protections are afforded as a result.
- Waterbody Assessments in the state's Priority Waterbody List (PWL) rely on dated data, or no data at all. The data used to assess the Saw Kill dates to 1998, and Stony Creek 2002. Minor tributaries to the Hudson are "unassessed."

## Recommendations

The following recommendations for improving and protecting the Saw Kill Watershed's resources were derived from an analysis of each of the scorecard's eight sections (Source Water Assessments, Source Water Protection Program, Watershed Planning, Land Use, Streams, Wetlands, Forests and Open Space, "Other"). Implementation of these recommendations will improve protection for drinking water, water quality, water supply, and flood protection. Some of these improvements can be measured regularly and will raise the watershed's score as they are implemented. The recommendations from evaluating each of the eight scorecard sections are compiled into one list for this report because many of them address multiple scorecard sections.

A variety of resources (funding and information) are available to assist with addressing these recommendations. For example, the Town can use new tools that have been, or are being, developed by New York State, funding and technical assistance from the NYSDEC Hudson River Estuary Program, and may be able to take advantage of services offered by New York Rural Water Association (primarily available to towns of fewer than 10,000 people).

1. **Source Water Assessments.** Request the NYS Department of Health to update the Source Water Assessments under the DOH 1999 Source Water Protection Plan. This should include the following items which may require information/ collaboration from the Town:
  - A. List all potential water quality hazards (i.e. pollution discharges).
  - B. Evaluate aquifer and recharge maps for completeness, and update with new hydrogeologic information if necessary. (Source Water Assessments are based on an accurate understanding of the land area important to each drinking water source.)
  - C. Identify risks associated with climate change.
  - D. Use build-out analysis to assess future land use change risks based on current zoning.
  - E. Assess degree to which recommendations in 2007 Chazen report on Red Hook aquifer protection have been adopted.
  - F. Review all discharge limits and monitoring reports for SPDES-permitted facilities in the source water area.
  - G. Review local code for: existing water protection provisions (including wetlands, streams, buffers and steep slopes); provisions that address threats to water quality; specific changes needed to achieve watershed protection goals.
  - H. Assemble updated assessment materials with the watershed map and post them online.

2. **Water Resources Protection Action Agenda.** Compile a watershed or townwide “action agenda” as the context and basis for code changes/ ordinances
  - A. Use the following resources to compile this agenda: Source Water Assessment data, water quality data, buffer data, Saw Kill Watershed and Flood Mitigation Assessment, State Riparian Opportunity Assessment, Bard Water Lab data, and the SKWC State of the Saw Kill.
  - B. Identify clear goals for water resource protection, and identify watershed health indicators that can be measured and compiled annually to track progress (for example, extent of buffers; changes in water quality parameters including salt, nutrients, bacteria; habitat for native trout and eels; water withdrawals).
  - C. Prioritize specific actions for improvement of water resource protection (e.g. drinking water quality, water supply, and flood mitigation) using goals and indicators.
  - D. Complement and mutually reinforce the Saw Kill Watershed Community’s plan for managing and protecting watershed health (under development).
  - E. Identify funding sources to ensure that watershed protection actions can be implemented.
3. **Comprehensive Water Resources Protection Ordinance.** Using the Action Agenda, develop a comprehensive water resources protection ordinance or code for the Town of Red Hook that consolidates, updates, and adds provisions to existing code items dealing with water resource protection above and below ground. Include wetland and small stream protection, buffers and steep slopes, aquifers, water withdrawals, and water quality protection.
4. **Intermunicipal cooperation.** Collaborate with all entities within the Saw Kill watershed for water protection, including intermunicipal and public-private agreements to achieve water protection goals. Both the Saw Kill and Stony Creek Watersheds include headwaters in adjacent towns, and both the Villages of Red Hook and Tivoli rely on wells in the Town of Red Hook. Bard College’s water supply is near the mouth of the Saw Kill, and will rely on cooperation of several upstream municipalities to ensure its long term protection.
5. **Saw Kill Re-classification.** Petition Department of Environmental Conservation to re-classify the Saw Kill and its tributaries Class A or Class AA, recognizing the creek as a source of drinking water for Bard College.  
([https://www.dec.ny.gov/docs/water\\_pdf/reclassform.pdf](https://www.dec.ny.gov/docs/water_pdf/reclassform.pdf)).
6. **State -protected wetlands.** Work with DEC to ensure all state jurisdictional wetlands in the Saw Kill watershed are mapped and accurately classified.
7. **Water quality assessment.** Continue existing watershed water quality monitoring in collaboration with DEC and the Bard Water Lab. Identify and assess all surface waters in the Town listed in the state’s Priority Waterbodies List. Consider additional water quality testing that may include macroinvertebrate monitoring via the NYSDEC WAVE program, continued citizen monitoring efforts in collaboration with Bard Water Lab, and other projects.

8. **Land Trusts.** Collaborate with local land trusts to discuss water protection needs, and identify strategic forest and open space preservation areas that would help preserve water quality
9. **Improve watershed visibility.** To raise the profile of the watershed, help the community establish ownership of water resources. Install signs that identify watershed boundaries and key features, and name unnamed streams through historical research or community engagement.
10. **Wells and septic systems.** Participate in community-wide fundraising to address well-testing and septic system maintenance needs.

### Scorecard by Sections

The results from each scorecard section are explained below.

#### 1. Source Water Assessment

1. Source Water Assessment	YES	NO	UNSURE	N/A
1a. Does your water source have a <b>Source Water Assessment</b> ?	<input checked="" type="checkbox"/>			
1b. Does it include an <b>accurate and complete watershed map</b> defining your drinking water supply's watershed?	<input checked="" type="checkbox"/>			
1c. Does it accurately catalog <b>all potential hazards</b> ?		<input checked="" type="checkbox"/>		
1d. Does its land use assessment characterize the <b>risk from urban stormwater runoff</b> ?		<input checked="" type="checkbox"/>		
1e. Does its land use assessment characterize the <b>risk from agricultural runoff</b> ?		<input checked="" type="checkbox"/>		
1f. Is it <b>easily accessible to the public</b> ?		<input checked="" type="checkbox"/>		

Under the federal Safe Drinking Water Act, the NYS Department of Health is directed to conduct source water assessments for public water supplies. These assessments identify potential threats to drinking water quality. The Saw Kill watershed is a drinking water source (via individual wells, municipal wells, and the Saw Kill itself) for the Town of Red Hook, Village of Red Hook, and Bard College. Source Water Assessments for these entities are based on outdated land use information and need to be updated. A watershed map created by Hudsonia for the Saw Kill Watershed Community clearly displays water resources. Maps depicting aquifer and locations of both town and village wells and their recharge areas are also available.

## 2. Source Water Protection Program

2. Source Water Protection Program	YES	NO	UNSURE	N/A
2a. Does your water source have a <b>Source Water Protection Program</b> ?		<input checked="" type="checkbox"/>		
2b. Does it address <b>all potential threats</b> identified in the Source Water Assessment?		<input checked="" type="checkbox"/>		
2c. Are <b>priority projects</b> being implemented?		<input checked="" type="checkbox"/> *		
2d. Is there a <b>dedicated source of funding</b> for source water protection projects?		<input checked="" type="checkbox"/>		
2e. Are <b>one or more staff members</b> in your municipality dedicated to source water protection?		<input checked="" type="checkbox"/>		

\*Though priority projects haven't been identified, a recently awarded source water protection grant implemented by Winnakee Land Trust provides a plan for one area within the watershed.

Source water assessments form a basis for Source Water Protection Programs (i.e. Water Resources Protection). A comprehensive water resources protection plan would include all water (surface and ground) in the watershed because these resources are all connected. Drinking water source protection includes aquifer, Saw Kill, and all individual and municipal wells, wetlands and small streams.

## Section 3. Watershed Management Planning

3. Watershed Management Planning	YES	NO	UNSURE	N/A
3a. Is there a <b>comprehensive watershed management plan</b> that includes your source waters?		<input checked="" type="checkbox"/>		
3b. Does the plan include <b>specific prioritized projects</b> , including what agencies have authority to act, and potential funding sources?		<input checked="" type="checkbox"/>		
3c. Is there an <b>intermunicipal council</b> devoted to implementing the management plan?		<input checked="" type="checkbox"/>		
3d. Is there an <b>active citizens group</b> focused on protection/restoration of this watershed?	<input checked="" type="checkbox"/>			
3e. Is there a <b>dedicated source of funding</b> to implement management plan priorities?		<input checked="" type="checkbox"/>		

The Saw Kill Watershed Community, with grant funding support from the NYS DEC Hudson River Estuary Program, is collecting watershed information that will be used to describe the condition of the watershed, identify water protection issues, and develop a plan of action/management for watershed protection. In the Saw Kill watershed, a Watershed Management Plan and a Source Water Protection Plan cover similar issues. Although most of the above boxes are marked 'no,' significant efforts are currently underway to provide this planning.

## Section 4. Land Use

4. Land Use	YES	NO	UNSURE	N/A
4a. Do those who drink the water have jurisdiction over land use decision making in your source watershed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
4b. Has the Department of Health promulgated local Watershed Rules and Regulations?		<input checked="" type="checkbox"/>		
4c. Are Watershed Rules and Regulations complete and up to date?		<input checked="" type="checkbox"/>		
4d. Does your municipality have agreements with municipalities in your watershed related to drinking water protection?		<input checked="" type="checkbox"/>		
4e. Is your source watershed designated as a Sole, Primary or Principal Aquifer, a Critical Environmental Area or Special Planning District?		<input checked="" type="checkbox"/>		
4f. Do all municipalities in your watershed have local laws protecting streams, wetlands and steep slopes in your source water area?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		

Land use regulation is critical to protecting water quality. Communities control the land within their jurisdiction, and all contribute to oversight for the watershed's resources. In the above table, 4a and 4f are marked both yes and no. In the case of 4a, some, but not all, of the entities that depend on the watershed for drinking water have a say in land use decision making. In 4f, while current Town and Village land use regulations provide some protections, they are scattered throughout code; protection is non-comprehensive, incomplete, and requires updating.

## 5. Streams

5. Streams	YES	NO	UNSURE	N/A
5a. Are all streams accurately classified to protect drinking water (Class A)?		<input checked="" type="checkbox"/>		
5b. Are all pollution discharge permits written to protect drinking water use?			<input checked="" type="checkbox"/>	
5c. Are all pollution discharges in compliance with their permits?			<input checked="" type="checkbox"/>	
5d. Are special protections applied to your source waters?		<input checked="" type="checkbox"/>		

Although we are not aware of any permit violations, we cannot confirm that all discharges are in compliance. All waters in New York State are assigned a letter classification that denotes their best uses. The best uses of Class B waters are recreation and fishing; best uses of Class A include source of drinking water. The Saw Kill is classified as a B stream even though it is a source of drinking water for Bard College; a case could be made for reclassification as an A stream. Stream protection extends beyond the channel to include banks and buffers as well.

## 6. Wetlands

6. Wetlands	YES	NO	UNSURE	N/A
6a. Are wetlands <b>accurately mapped</b> in your watershed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
6b. Has DEC recently <b>updated freshwater wetlands maps</b> ?		<input type="checkbox"/>		
6c. Are <b>small wetlands</b> protected as being of "unusual local importance"?		<input type="checkbox"/>		
6d. Are <b>wetlands designated "Class I"</b> as part of drinking water supply?			<input type="checkbox"/>	

Wetlands shown on the Saw Kill Watershed map are based on DEC wetland maps, National Wetland Inventory maps, and soil survey maps. While these sources give us a good idea of wetland locations, they are still approximations in terms of wetland size and boundaries; and the maps do not include all wetlands. A determination of accurate wetland locations and boundaries still requires onsite wetland delineation in the field, as per US ACE and NYS DEC wetland delineation guidelines.

## 7. Forests and Open Space

7. Forests and Open Space	YES	NO	UNSURE	N/A
7a. Have <b>priority lands and forests</b> key to preserving water quality been identified for conservation?		<input type="checkbox"/>		
7b. Is there a <b>dedicated source of local funding</b> to preserve these lands?		<input type="checkbox"/>		
7c. Are priority projects <b>eligible for state funding</b> through inclusion in the NYS Open Space Conservation Plan?	<input checked="" type="checkbox"/>			
7d. Do <b>regional sources of open space conservation funding</b> prioritize protection of your source water area?				<input type="checkbox"/>

Forests throughout the watershed, and particularly along the edges of streams, lakes, and wetlands, filter water, reduce stormwater runoff, replenish groundwater, and are key to preserving long term water quality. Initial forest protection initiatives include the Town of Red Hook's current review of code changes to limit excessive logging operations, particularly in proximity to streams and wetlands, and parcel-specific protections initiated by Winnakee Land Trust and Scenic Hudson. However, the Saw Kill does not have a comprehensive, watershed-wide plan for protecting forested areas to preserve water quality.

## 8. Other

8. Other	YES	NO	UNSURE	N/A
8a. Is <b>water quality</b> monitored routinely in your watershed?	<input checked="" type="checkbox"/>			
8b. Are <b>stream assessments</b> accurate and up to date?			<input checked="" type="checkbox"/>	
8c. Do <b>signs</b> mark <b>source water</b> features and borders?		<input checked="" type="checkbox"/>		
8d. Are <b>stormwater discharges</b> in your watershed regulated?		<input checked="" type="checkbox"/>		
8e. Will you <b>share the results</b> of this scorecard?	<input checked="" type="checkbox"/>			

This section of the Scorecard focuses primarily on water quality monitoring, outreach and stormwater regulation.

### 8 a-b. Stream Assessments and Water Quality Monitoring

Saw Kill water quality is monitored monthly by Riverkeeper and through the combined efforts of the Bard Water Lab and citizen scientists (Saw Kill Watershed Community) who collect the samples and measure temperature, salinity, bacteria (coliforms), turbidity, heavy metals, nutrients. Macroinvertebrate assessment data from the Saw Kill was compiled by DEC (1998) and as a result of Red Hook students' past monitoring efforts. Stony Kill, a tributary of the Saw Kill, exhibits stressed conditions for aquatic life due to nutrients and toxicity.

8 c. There are no signs that mark watershed boundaries or key features of the Saw Kill.

8 d. Stormwater Regulation— the Saw Kill watershed is not an MS4 community and is not required by the NY State SPDES (State Pollution Discharge Elimination System) to implement a stormwater discharge management program.