INTRODUCTION

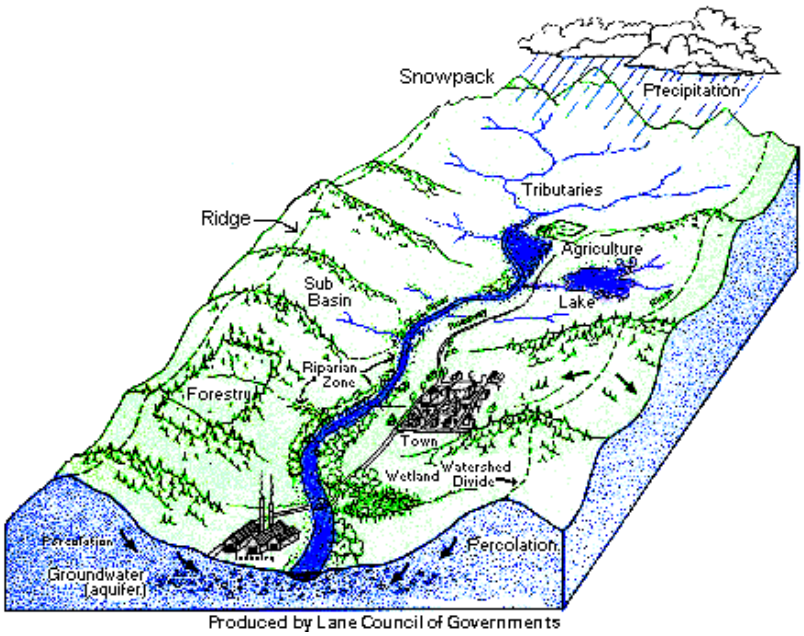
1.1 Purpose of the Schoharie Creek Management Plan

The Schoharie Creek Management Plan was designed as a comprehensive review of stream characteristics, data, maps and presents recommended management strategies. The management strategies consist of measures that can be taken individually and collectively to reduce the flood risks associated with living in the Schoharie valley, improve the ecology of the stream and floodplain, while protecting the stream's many resource values. Ultimately, the plan is meant to assist watershed municipalities and residents in planning for a sustainable future for their property, infrastructure, water and biological resources. Ensuring the health of the watershed's environmental resources will also help to secure a future of prosperous economic growth and a good quality of life for watershed residents.

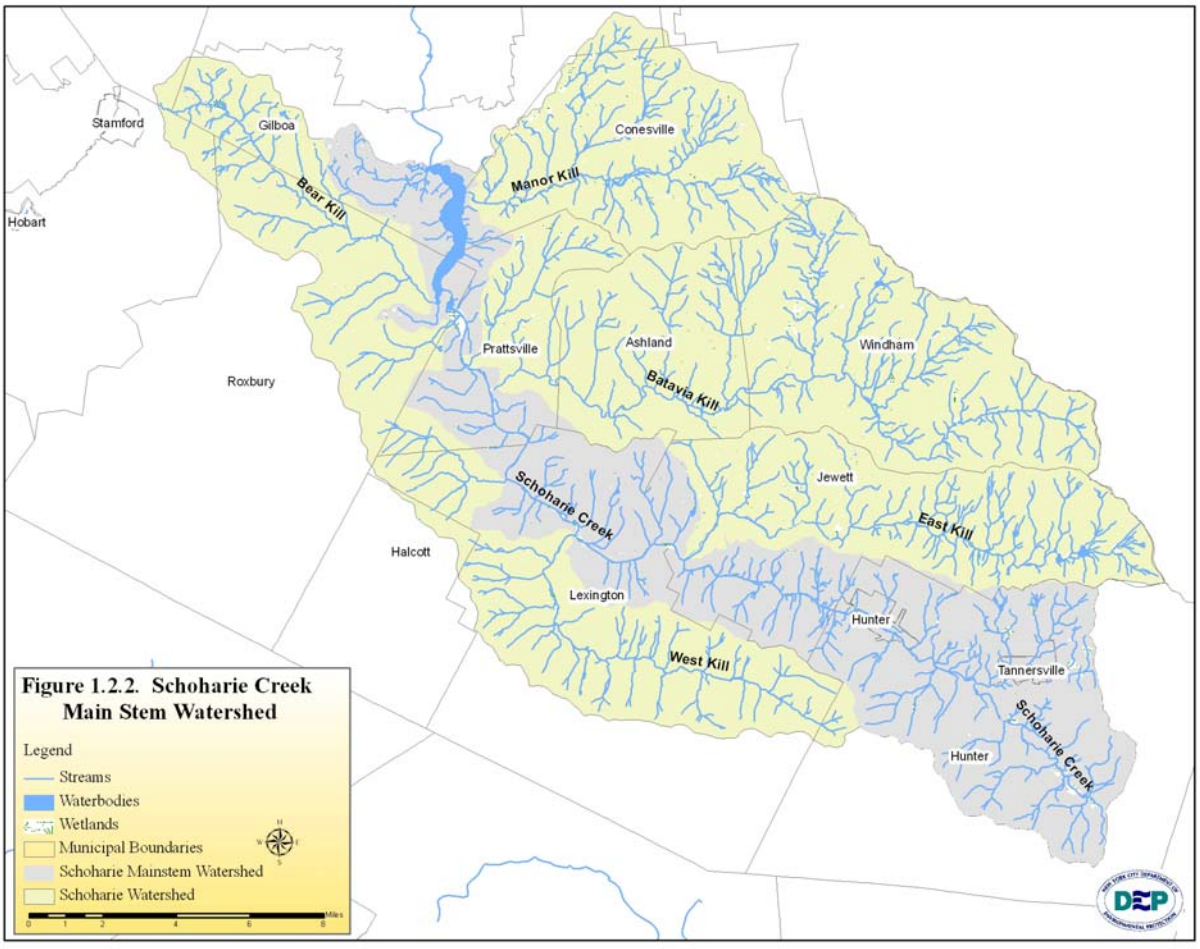
1.2 Schoharie Creek and its Watershed

A watershed can be defined as the land area that water flows across (surface water), and under (groundwater), on its way to a stream, river, or lake (Figure 1.2.1). Watersheds vary in size, from the Atlantic Ocean, to the Hudson River, to the Schoharie Creek, down to small tributaries that drain into the Schoharie Creek. Basically, a watershed is an area of land that drains to a single outlet. Everyone lives in a watershed.

Figure 1.2.1. Example of a Watershed (Graphic Produced by Lane Council of Governments, 2003)



The New York City Watershed portion of the Schoharie Creek main stem, located in Greene County, NY drains approximately 93 square miles (59,519 acres) in eight Greene County municipalities, not including direct drainage to the reservoir (Figure 1.2.2). The main stem watershed was the specific project area for the 2006 stream feature analysis, but many of the management plan sections were written for the entire Schoharie Basin since the tributaries (Batavia Kill, West Kill, East Kill, etc.) drain into the Schoharie. Figure 1.2.2 differentiates between the Schoharie main stem watershed (grey) and Schoharie basin watershed (yellow). The main stem of the Creek begins in the eastern portion of the Town of Hunter and flows northwest, entering the Schoharie Reservoir near the Prattsville/Roxbury border (Figure 1.2.2). Through its path, the main stem Schoharie drains large sections of Prattsville, Lexington, Jewett, Hunter, and the Villages of Hunter and Tannersville, and smaller sections of Ashland and Windham (Figure 1.2.2). The overall New York City Watershed portion of the Schoharie basin encompasses approximately 315 square miles, primarily in Greene County.



1.3 How are we all connected to the Schoharie Creek and Why should I care?

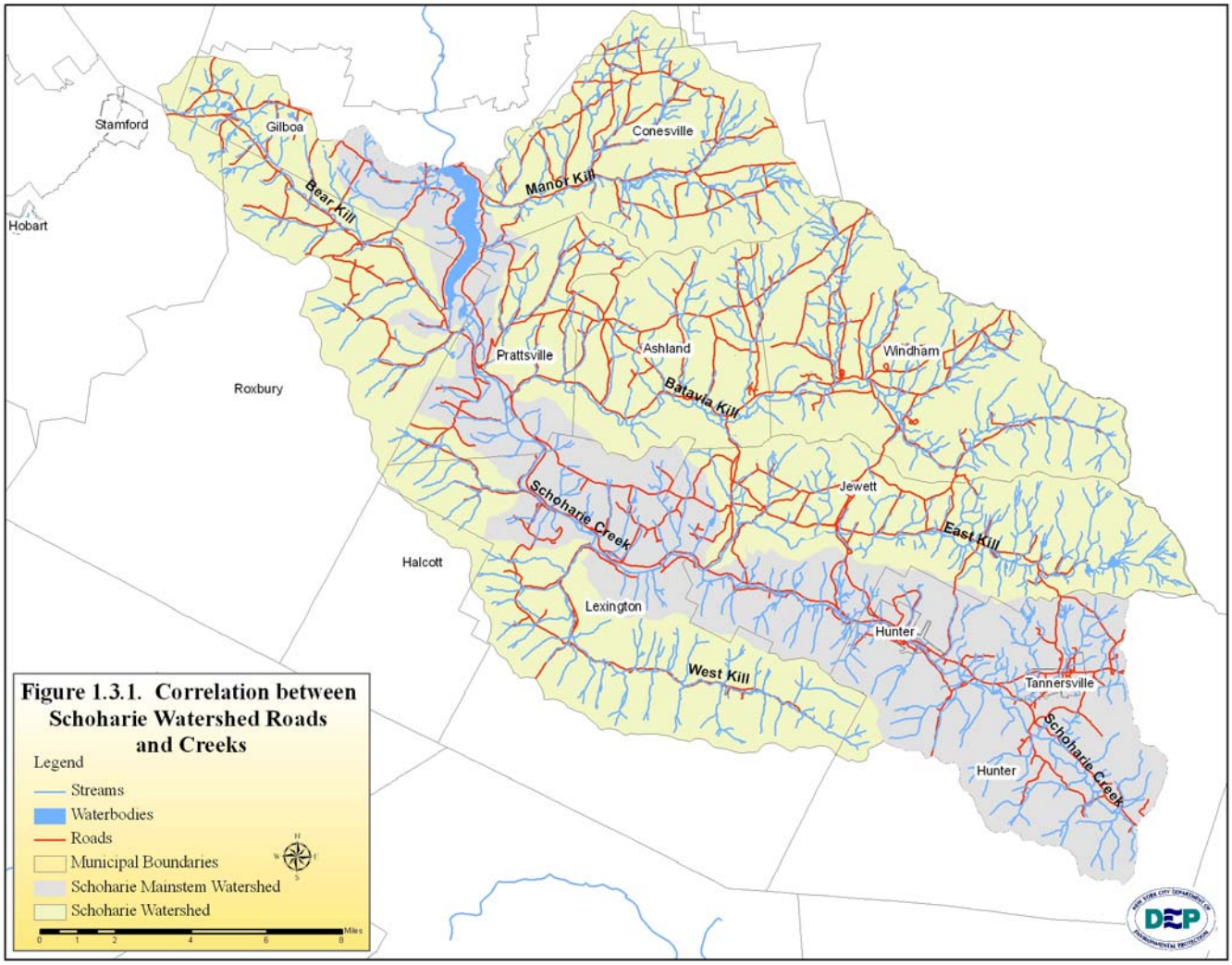
Wherever you live in the watershed, what you do at your home and its surroundings can have a direct impact on your neighbor's water resources. As Schoharie Watershed land uses evolved over the last 200 years, the natural water balance was altered. Particularly in the flatter valley bottoms, natural forest cover and wetlands were replaced initially with farms, and more recently with roads, culverts, driveways, parking lots and buildings. These hard surfaces, or impervious surfaces, increase the amount of rainfall that flows over land and reduce the amount of rainfall that percolates into the soil or is consumed by plants and trees. Increasing the amount of rainfall that runs off the land can lead to increased flooding, and as water flows over these paved surfaces, it collects soil, animal wastes, salt, fertilizers, oils, and other pollutants. In many areas of the Catskills, this increase in runoff can also dramatically increase stream turbidity levels due to the widespread presence of clay and silt. These fine clay and silt particles become easily suspended by water once disturbed and can travel long distances before settling out.

Increased impervious surfaces can also lead to increased encroachment on the stream to protect the infrastructure and property associated with the impervious surfaces. This encroachment can exacerbate flooding, erosion and stream instability. The historical deforestation of the valley decreased soil permeability and increased runoff, but reforestation over the past several decades has helped to alleviate many of the deforestation-related issues. Today, the primary cause of stream instability and runoff is development. It doesn't matter if your house does not border a stream or river, local rainwater flows down the street into a culvert. The culverts often carry this runoff from your property directly to the nearest body of water, taking dirt and pollutants along with it. Therefore, we should all strive to infiltrate rain water into the ground on our property.

Since being settled by the Dutch in the early 1700s, generations have managed the streams of the Catskills. Over the past several centuries of settlement they learned how to harness the Schoharie's power, but also to keep out of its way during floods. The creek has been bermed, revetted and intentionally redirected in some of its reaches to allow for streamside land uses. Due to the steepness of the Schoharie Valley many roads have been built on the gentler slopes adjacent to the stream (Figure 1.3.1). There are approximately 498

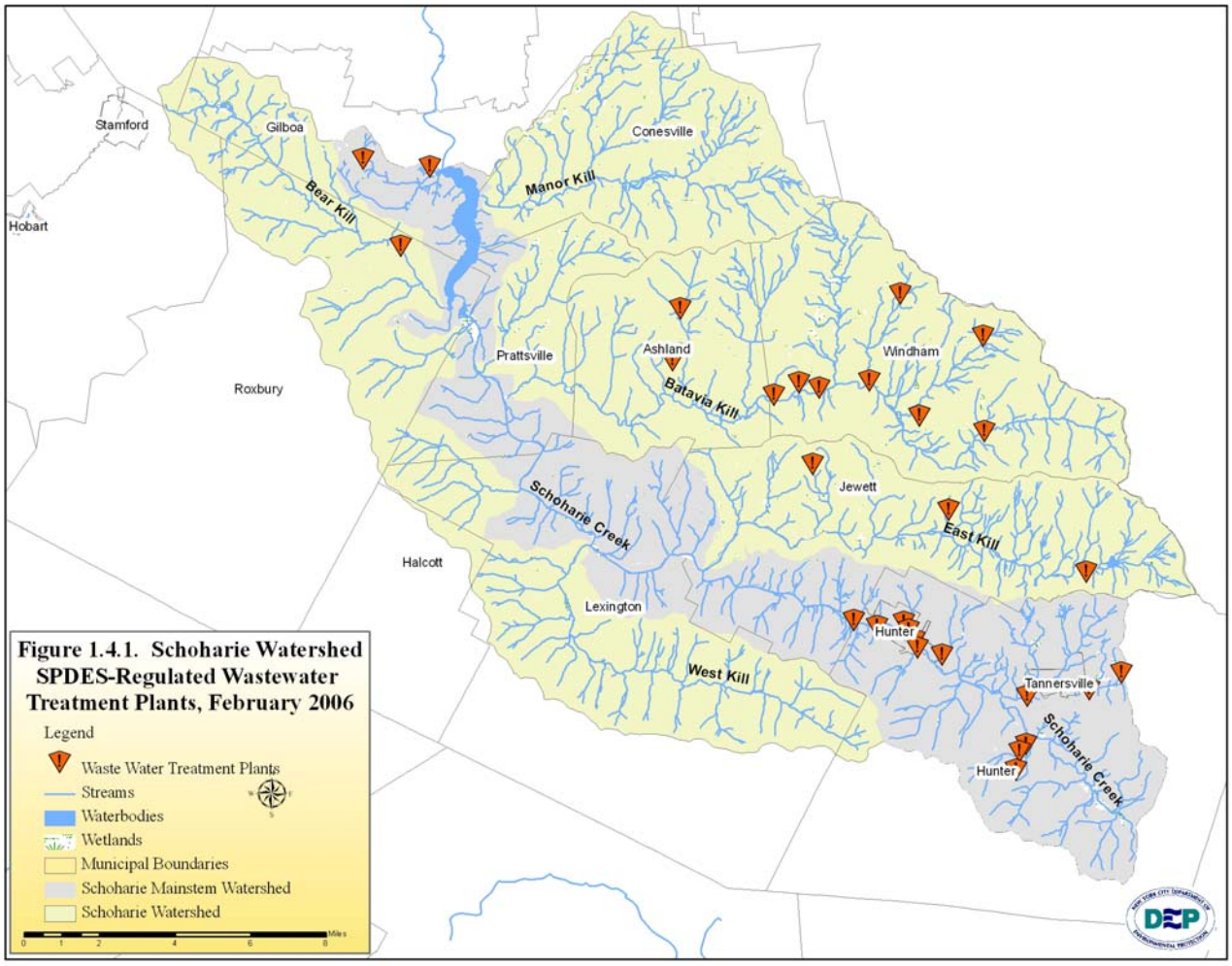
miles of road in the watershed. These hardened road embankments have edged in on the creek at many narrow points in the valley, and bridges have acted to further constrict the creek. Floodplains and streamside wetlands have been filled, diversions created to sluice water into floodplain ponds and pastures and lawns cleared along its banks and terraces. All of these activities have an impact on the Schoharie Creek that reverberate throughout the system. These reverberations become most obvious during flood events that cause the loss of property and infrastructure, but can also be seen during low flow periods when the stream is over-wide and shallow, unable to support a vibrant coldwater fishery in affected segments.

In order to meet both surface and groundwater planning needs, both quality and quantity, a comprehensive watershed approach is required to document the magnitude of potential impairments, and involve watershed stakeholders in recommending strategies for remediation and management.



1.4 What are the primary concerns in the Schoharie Creek Watershed and what is the role of Stream Management?

To understand the threats to the Schoharie Creek we must differentiate between point and nonpoint source pollutants. Point sources of pollution can usually be traced to a specific source or pipe that is discharging effluent to a receiving water body (i.e. sewage or industry discharges). The State Pollution Discharge Elimination System (SPDES) permitting program was designed to address point source pollution (Figure 1.4.1). In 1972 approximately 2000 miles of New York's streams and rivers were impaired by point sources of pollution (NYSDEC, 1996). However, by regulating and cleaning up industrial and sewage discharges, the number of stream and river miles impaired by point source pollutants was reduced to approximately 300 miles by 1996 (NYSDEC, 1996).



The primary sources of pollutants in the Schoharie watershed are from nonpoint sources. Nonpoint source pollutants arise from a number of sources rather than just one (i.e. parking lot runoff, stormwater, septic system effluent, agriculture or construction runoff) (Figure 1.4.2). Impacts from nonpoint source pollution threaten the quality of the recreational fishery and drinking water supply of the Schoharie watershed's streams, reservoirs and ponds. Water supply wells and wildlife in watershed communities could also be negatively affected.

Figure 1.4.2. Anything dumped into the storm drain may eventually end up in the local stream, lake, or wetland (University of Wisconsin, 1999).

The stream management plan is an attractive tool for the coordination of management activities in the Schoharie Creek. In past years, efforts to manage the stream have been relatively uncoordinated. Landowners manage their own stream banks and floodplains, highway superintendents manage road embankments, culverts and bridges, and power companies clear their rights-of-ways. When there are major problems, federal agencies such as the Natural Resources Conservation Service (NRCS) or Federal Emergency Management Agency (FEMA) bring their resources to bear to try to address the immediate needs. The New York State Department of Environmental Conservation requires a permit for certain activities in or near streams, and the U.S. Army Corps of Engineers have a similar permitting program. Each of these regulators have their own objectives, their own knowledge or area of expertise, and their own ideas about what needs to be done to keep the stream healthy. No entity, however, holds responsibility for coordinating all of these isolated efforts. In some cases, the results of these uncoordinated management activities aggravate other areas along the stream.

Streams are dynamic systems and what one person does on their own stream bank can create significant effects –good or bad– upstream or downstream. While we maintain individual rights to use our own land as we think best, we also have an individual responsibility to act as good stewards for the health of the stream, while protecting the welfare of our neighbors. Streams are in many ways a community resource, and cannot be effectively managed without a coordinated effort. It is because we recognize the many

benefits streams contribute to our community's quality of life, and also the many risks they pose, that we need to coordinate decision-making around the goals we identify collectively for the stream. This plan presents the background information and framework necessary for this coordinated effort.

In recent decades, advances have been made in the science of stream form and function (see Section 3.2, Introduction to Stream Processes). As part of the process of developing this plan, assessments and inventories of the condition of the stream were undertaken, and the results of those assessments are described in this Plan. As such, the Plan documents baseline conditions in the Schoharie Creek, and future managers can measure future conditions against these baselines to determine trends.

1.5 Past, Current, and Future Activities

The Schoharie Management Planning Process has benefited from the experiences and outcomes of similar projects on the Batavia Kill, Stony Clove and West Kill. The Batavia Kill (GCSWCD, 2003), Stony Clove (GCSWCD, 2005) and West Kill (GCSWCD, 2005) management plans were designed to guide local residents and municipalities towards addressing stream management activities on a system-wide basis through the employment of natural channel design principles. Several stream restoration projects were completed in the basins. These past experiences and projects should help bolster the efforts within the Schoharie Creek. Ideally, these efforts will be combined into a Schoharie basin-wide planning and restoration effort under the auspices of a locally-based planning committee.

1.6 Goals for this Management Plan

There are six primary goals for the management plan:

1. Document risks and outline a plan to reduce damage to private property and public infrastructure - roads, bridges and utility lines – from floodwaters and stream erosion;

2. Summarize known information and outline a plan to protect and improve water quality, and identify any research gaps and recommend strategies to fill gaps;

3. Document current conditions and outline a plan to protect and enhance the integrity of stream and floodplain ecosystems, protect the unique communities of plants and animals that inhabit the stream and floodplains and encourage recreational opportunities;

4. Promote economic development through increased promotion of local streams, thus making the link between economic prosperity and stream health more apparent;

5. Develop an education and outreach strategy for the Schoharie watershed that promotes a stream stewardship ethic within the basin and raises awareness of the importance of water resources;

6. Provide a strategy for coordination of management activities among the various stakeholders, to ensure no one of the above goals is achieved at the expense of another.

References

NYSDEC. 1996. New York State Water Quality 1996. New York State Department of Environmental Conservation Division of Water, Albany, N.Y.: 2 p.