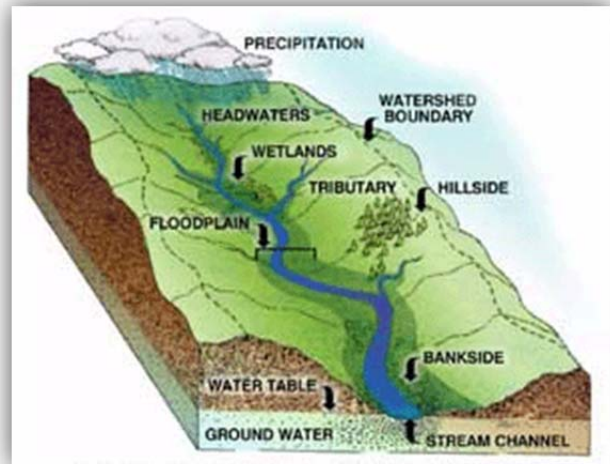


Chapter 1: Introduction

What is a Watershed?

A watershed or drainage basin is a delineation of land within which water collects and drains to a common place, such as a set of streams, rivers and eventually a larger body of water (Figure 1.1). For example, Figure 1.2 outlines the watershed for the Great Lakes, which encompasses 8 U.S. states and the Canadian province of Ontario. Rainfall and snow melt within these watershed lands will drain into the Great Lakes. The Niagara River Watershed, the territory for which this Watershed Management Plan is based, encompasses lands that drain to the Niagara River (just one part of the larger Great Lakes Watershed), and can be found within the Niagara River Watershed and Sub-watersheds Map on the following page.

Figure 1.1: Watershed Diagram



(Gualala River Watershed Blog)

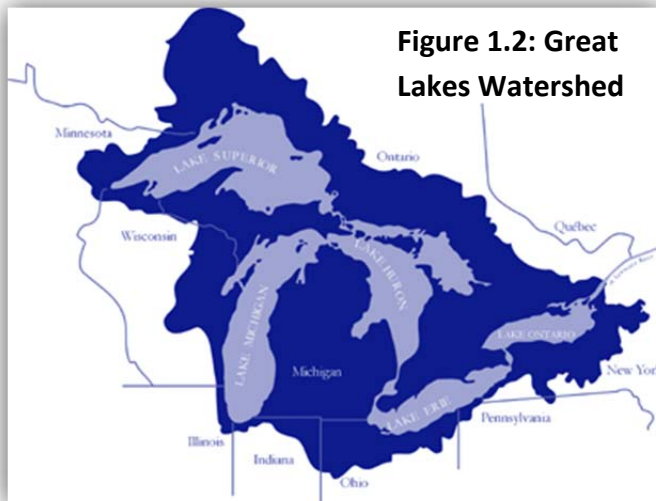


Figure 1.2: Great Lakes Watershed

(GreatLakes.net)

Each watershed can also be broken down into smaller delineations, such as sub-watersheds or sub-basins, and further more into catchments that identify lands where waters enter smaller order creeks and streams. In the Niagara River Watershed there are 11 sub-watersheds that outline areas of land that collect waters draining to the major tributaries of the Niagara River.

Defining the boundaries of a watershed is important to identify how water moves, and therefore plan for maintaining those waters as a resource. Water quality and quantity are affected by the lands over and under which they move, as such factors as soils, vegetation, development patterns and historic land uses influence what types of contaminants waters may pick up or how they are filtered and cleaned on their journey to a larger body of water. In addition, much of today's

research evaluating quantitative thresholds at which water quality and watershed conditions begin to degrade, utilize geographic parameters.

Purpose of a Watershed Plan

Water plays such an essential role in our lives, so essential that it's connected to everything in our world. We use it for drinking, cooking, agricultural irrigation, industrial processes, bathing, shipping, fishing and aquaculture, plus our recreational enjoyment. Its uses are many and also essential to our lives, lifestyles and economy. Water is also a finite resource. There is only so much water on the earth and we have little control over where that water moves and locates, as much of it is dependent upon our local geography, topography, and weather patterns. As a finite resource that is so interconnected with our livelihood and economies, it is vital that planning be conducted to properly manage its usage and all of the factors that affect its quality. For the Niagara River Watershed a multitude of planning efforts¹ have occurred over the last several decades to address various issues present in the watershed, but until now there hasn't been an overall Watershed Management Plan developed that looked at the watershed in its entirety.

Watershed management planning commonly involves: evaluating current water resources; identifying all of the contributing factors, issues and trends affecting our water resources; setting goals for improvement and outlining strategies to meet those goals; and finally, implementing the plan's strategies and tracking their progress and effectiveness (Figure 1.3). Ideally watershed management



Source: US EPA

planning is an on-going process that continually re-evaluates itself and reacts to the changing conditions of the watershed. Also essential to the planning and implementation process is the involvement of the watershed's citizens, municipalities, stakeholders and other organizations. Their role helps guide the planning process and ensures waters are managed in line with local values.

¹ The Niagara River Watershed Atlas is a full inventory of the planning documents, and other data and research undertaken for the Niagara River Watershed.

Planning Process and Methodology

The Niagara River Watershed Management Plan is a Phase I planning effort, meaning the planning process is being conducted at a preliminary level, or the 10,000 foot view. The plan focuses on assessing the current conditions, trends, and major contributors to water quality conditions in the watershed as outlined in the plan's chapters described below. The very beginning of the planning process involved the creation of the Niagara River Watershed Management Plan (Phase I) Atlas. The Atlas is a summary collection of existing data, information, maps, studies, reports and plans that were gathered and analyzed to help assess the physical, biological and ecological conditions of the watershed. The Atlas can be found as an accessory document to this Watershed Management Plan and is available online at Buffalo Niagara Riverkeeper's website².

Healthy Niagara Watershed Management Plan (Phase I) Components:

Chapter 2: Watershed Characterization. This chapter outlines the current context of the watershed, including its geographic setting, geology, topography, hydrology, climate and precipitation, and other related infrastructure influencing our waters.

Chapter 3: Population and Development. Building on the context of Chapter 2, this chapter outlines the current demographics and population trends in the watershed, as well as how land is utilized and how much of it is protected as these are major elements influencing our water resources.

Chapter 4: Water Quality. Reporting on the most current data and reports, this chapter outlines our water quality conditions and identifies the most significant impairments found in the watershed today.

Chapter 5: Ecology & Biology. Ecological health and biological indicators are another way of assessing the health of the overall watershed and identifying what factors are contributing to its decline. This chapter outlines the ecological resources found in the watershed and the important habitat assessment work conducted under the Niagara River Habitat Conservation Strategy.

Chapter 6: Assessment of Local Laws & Practices. Laws and practices governing how we utilize our land and resources in the watershed are also essential to understanding what

² www.bnriverkeeper.org

factors influence watershed health. This chapter looks at all of the regulatory and non-regulatory practices found in the watershed.

Chapter 7: Existing Federal Watershed Projects. This chapter outlines all of the current and recently completed water-related projects within the watershed, including those associated with infrastructure and research. State and local projects are also included in this inventory (where provided).

The remaining components of the Watershed Management Plan pull together all of the information from the preceding chapters listed above to outline the major findings of the watershed investigation, outline recommendations to address the major issues found, and identify the top 8 sub-watersheds that require a priority focus for future planning efforts. The remaining element of the plan includes a Phase II watershed management planning strategy to continue with this important work.

Chapter 8: Watershed Management Goals & Recommendations. This chapter outlines all of the findings from the preceding chapters of the report and identifies recommendations and universal actions to address the issues presented. The 11 sub-watersheds are also prioritized in this chapter according to the findings and the top 8 sub-watersheds are identified for future planning.

Chapter 9: Management Plan Phase II Strategy. This final chapter of the report outlines the immediate next steps needed for continued watershed management planning in the Niagara River watershed, including a structure for implementation, key stakeholders and implementation partners, and funding.

It should be noted that in addition to the completion of a Phase I Watershed Management Plan, the region's stakeholders and watershed management organizations ultimately desire a 9-element Watershed Management Plan for the Niagara Region. A 9-element plan is a watershed plan type/process developed by the U.S. EPA that allows those watersheds with a recognized plan to become eligible for federal funding resources for watershed restoration. Currently the Niagara River Watershed does not have a 9-element Watershed Management Plan and is not eligible for these federal resources. However the development of this Phase I Watershed Management Plan is a first step and will fulfill a portion of the 9-elements required for such a plan. As follow-up planning occurs for the Niagara River Watershed (Phase II and beyond), the Inter-municipal Coordinating Organization managing subsequent planning efforts will aim to fully complete a 9-element plan.

Advisory Committee & Public Involvement

The planning process for the Watershed Management Plan (Phase I) included involvement from a wide array of citizens, key individuals, organizations, and other entities in an advisory capacity. An Advisory Committee was established at the beginning of the planning process and their role included guiding the development of the *Niagara River Watershed Management Plan (Phase I) Atlas*, identifying watershed characterization content, reviewing the plan's draft chapters, findings and recommendations. Committee members also participated in the planning process by completing a survey on watershed issues, during Advisory Committee meetings, and through electronic email communications. A full list of Advisory Committee Members is provided in the Plan Acknowledgements.

In addition to contributions by the Advisory Committee, public involvement was encouraged throughout the planning process, including through two Public Informational Meetings. The initial Public Informational Meeting was held at the beginning of the planning process in November 2011 at the North Tonawanda Public Library and asked participants to break into small groups to discuss and identify the major positive and negative aspects of the watershed, as well as the future threats to watershed health as they see it. A final Public Information Meeting was held in December 2014 at the Anna M. Reinstein Public Library and provided participants with an in-depth review of the findings of the watershed's characterization, and update on the next steps in the planning process. Final draft recommendations were presented to the public via the Watershed Management Plan webpage. From both public meetings, public comments were taken into account and incorporated into the final Watershed Management Plan's characterization report, findings and recommendations.