

Section I.

Executive Summary



*Portage Creek near Bruin Lake,
Pinckney State Recreation Area.
credit: HRWC*

Portage Creek Watershed

Tucked in a corner of the Huron River watershed is Portage Creek (also called Hell Creek by residents) easily one of the region's prettiest and healthiest tributaries. The Portage Creek watershed covers 89 square miles of the Huron River watershed – roughly 10%. Parts of six townships, a village and four counties drain to Portage Creek – from upstream to downstream, in Ingham County, Village of Stockbridge and Stockbridge Township; in Jackson County, Waterloo Township; in Livingston County, Unadilla Township, and Putnam Township; and in Washtenaw County, Lyndon Township and Dexter Township.

The Portage Creek watershed is geologically unique in Michigan due to glacial activity during the Wisconsin period. Water retention in the wetlands, floodplains and lakes, as well as fast water drainage in the upland areas creates a multitude of different habitats. The varied glacial terrain allows for a wide variety of ecological communities within close proximity. This diversity of habitat types within a small area contributes largely to the diversity of plants and animals within this region.

Extensive state-owned lands are located within the watershed, such as the Pinckney and Waterloo State Recreation Areas, the Gregory State Game Area, and the Lakelands State Trail. These areas provide nearly 19,000 acres of public land for recreation and natural resource protection in the watershed and account for much of the lakes, wetlands, woodlands that cover one-third of the watershed. The protected natural areas contain some of the most diverse and rich native ecosystems remaining in the Portage Creek watershed, and southeastern Michigan.

As of 2000, nearly half of the land in the watershed was engaged in active farming operations, with most activity concentrated in the northern and western parts. One-tenth of the land is covered with grass or pasture, and may be the area most likely to be developed next. The remaining land has been converted from natural cover to residential, commercial, or industrial uses. The remaining buildable land in the watershed (i.e., wetlands and conservation and recreation lands not included) is nearly 28,600 acres, or half of the Portage Creek watershed. New residential development is the most common and widespread land use planned for this area, by far, with the majority being low densities of 1-5-acre lots.

Purpose of the Watershed Management Plan

The Portage Creek Watershed Management Plan assesses current conditions of freshwater resources, identifies current and future threats to those resources, sets goals for watershed management, and presents a robust strategy for implementation of management practices. The Portage Creek Watershed Advisory Group would like to see this plan become integrated into the future decisions of local governments, position communities to be eligible for state and federal implementation funds in order to address the priority needs identified in the plan, and foster stewardship of watershed resources at the local level. This effort arose from the recognition that a holistic, cross-jurisdictional approach is essential for the long-term health of this high quality watershed.

The Portage Creek watershed, unlike all of the other parts of the Huron River watershed, is *not* listed as impaired or threatened on the state's Integrated Report for 2010 and no Total Maximum Daily Loads (TMDLs) are scheduled for development.

Why "watershed management"?

If we manage activities on the land that drains to Portage Creek, we will protect and improve our local water resources. Almost every activity on the land has the potential to affect the quality and quantity of water in our waterways. Watershed planning brings together the people within the watershed to address those activities. Individuals working together can design a coordinated watershed management plan that builds upon the strengths of existing programs and resources, and addresses water quality and quantity concerns in an integrated, cost-effective manner.

Watershed Advisory Group

The watershed advisory group met quarterly over the course of the two-year planning phase to: receive project updates and provide information, resources, and feedback. Group members served as liaisons to their communities/agencies/ organizations/peers in order to increase local involvement and long-term participation. Participation was voluntary, but encouraged, to give the watershed plan a local focus and promote long-term local stewardship of the Portage Creek area.

Designated and Desired Uses

Designated uses are recognized uses of water established by state and federal water quality programs. In Michigan, the goal is to have all waters of the state meet all designated uses. It is important to note that not all of the uses listed below may be attainable, but they may serve as goals toward which the watershed can move. All surface waters of the State of Michigan are designated for and shall be protected for all of the following uses. Based on the available information collected during the development of this plan, all of the designated uses are fulfilled in the Portage Creek watershed.

The designated uses that apply to the Portage Creek watershed are in boldface:

- **Agriculture**
- **Industrial water supply**
- Public water supply at the point of intake
- Navigation
- **Warmwater fishery**
- **Other indigenous aquatic life and wildlife**
- **Partial body contact recreation**
- **Total body contact recreation between May 1 and October 31**
- **Coldwater fishery**

The residents of the watershed desire to use the surface waters in ways beyond the state designated uses. The following desired uses have been identified by the communities in the watershed over the course of the development of the watershed management plan:

- **Coordinated development**
Promote a balance of environmental and economic considerations through intentional community planning and coordinated development within and among the Portage Creek communities
- **Hydrologic functions of natural features**
Protect and enhance natural features related to water quantity and quality, including wetlands, floodplains, stream buffer zones, and stream channels that regulate the flow of stormwater runoff, protect against flooding, and reduce soil erosion and sedimentation (aka Green Infrastructure)
- **Natural areas, recreation and agricultural lands**
Protect and enhance priority natural habitat, recreational areas and trails, and agricultural lands from development in order to maintain their natural functions, preserve rural character, and enhance recreational opportunities for present and future generations

Prioritization of Threats, Sources and Causes

Various pollutants threaten the freshwater resources of the Huron River and its tributaries including Portage Creek, which could present challenges to maintaining the designated and desired uses if they are allowed to persist and increase. Analysis of existing data indicates that the Portage Creek watershed has areas of high-quality waters that require protection and medium-quality waters that require mitigation of existing threats to prevent future impairment. The sources and causes of those threats are

presented by subwatershed in Section IV. Watershed Conditions since land use and land cover vary throughout the watershed, and to provide better detail for management purposes.

The five categories of pollutants identified as threats to designated uses in the watershed are excess nutrients, altered hydrology, salt, organic compounds, and heavy metals, pathogens, and sediment. Excess nutrients threaten warmwater and coldwater fisheries, partial and total body contact recreation, and indigenous aquatic life and wildlife. Altered hydrology threatens the fisheries and other indigenous aquatic life and wildlife. Salt, organic compounds and heavy metals threaten agriculture, the fisheries, partial and total body contact recreation, and indigenous aquatic life and wildlife. Pathogens threaten partial and total body contact recreation. Sediment threatens the fisheries, other indigenous aquatic life and wildlife, and partial and total body contact recreation.

Goals and Objectives

The designated and desired uses for the Portage Creek watershed provide a basis from which to build long-term goals and objectives. Long-term goals describe the future condition of the watershed toward which the Portage Creek communities will work. Long-term goals are not expected to be met within the first five years of plan implementation, but are to be met at some time beyond then. The long-term goals have been developed on a watershed-wide basis. They are dually-based on creating the most effective solutions to address priority threats, sources and causes in the watershed, and to proactively protect the high quality elements that remain.

Goals for watershed management of Portage Creek, along with short-term (1-5 years) and long-term (5+ years) objectives, were developed by the Portage Creek Watershed Advisory Group with input from residents of the watershed communities. The long-term goals and objectives are presented in Table VI-A. Short-term objectives are presented for each goal, and will be partially or wholly fulfilled within five years of implementation of this plan. Long-term objectives are developed for some of the goals, and may be partially fulfilled during the first five years of plan implementation, but realistically will be fulfilled in subsequent implementation phases.

The goals and objectives are listed in priority order as determined in discussion with the Advisory Group. The Advisory Group determined that the combined actions implied by these goals and objectives would be the most effective way to address priority watershed threats and opportunities for protection.

Overall charge:

The Watershed Advisory Group recommends the ethic that growth or agricultural and natural area land conversion in the watershed not occur at the further expense of the environmental health of Portage Creek and its lakes, floodplains, wetlands, and groundwater.

Table I-A. Watershed Management Goals and Objectives for Portage Creek

Goal	Objective: Short-Term (1-5 yrs)	Uses Addressed
1. Protect and enhance natural features for a functioning water cycle, storm water treatment, and wildlife habitat	Enact policies in at least 3 townships to protect existing natural shoreline areas to maintain the existing natural vegetated buffer system along waterways	<p>Designated Uses: Agriculture; Industrial water supply; Warmwater fishery; Indigenous aquatic life and wildlife; Partial body contact recreation; Total body contact recreation; Public water supply</p> <p>Desired Uses: Green infrastructure; Natural and agricultural heritage; Coordinated community planning</p>
	Increase extent of contiguous protected land through state acquisition, land conservation practices, and Huron Bioserve project	
	Cap future total impervious area of subwatersheds at 10%	
	Objective: Long-Term (5+ yrs)	
	Restore a minimum of 10% of previously converted wetlands (500 acres), and maintain network of existing wetlands	
	Restore a minimum of 10% of stream buffers in priority subwatersheds (18,000 lineal feet)	
2. Reduce stream flow variability	Objective: Short-Term (1-5 yrs)	<p>Designated Uses: Warmwater fishery; Indigenous aquatic life and wildlife</p> <p>Desired Uses: All</p>
	Manage lake levels in response to natural flow fluctuations	
	Implement development standards that mimic pre-development hydrology in at least 3 communities, and prevent modification of the Portage Creek system by new developments and re-developments	
	Increase understanding of the Portage Creek system's flow regime through an established monitoring program	
	Objective: Long-Term (5+ yrs)	
	Restore a minimum of 10% of previously converted wetlands (500 acres), and maintain network of existing wetlands	
	Create more storage for floodwaters within the Portage Creek hydrologic system	

3. Maintain sensitive aquatic organisms in waterways in order to allow for clean and safe use of freshwater resources	Objective: Short-Term (1-5 yrs)	Designated Uses: All Desired Uses: All
	Improve aquatic insect community at Unadilla Road from “fair” to “good” by addressing upstream sediment sources	
	Maintain the “excellent” aquatic insect community at Dexter-Townhall Road by maintaining or improving current land management upstream	
	No increase in aquatic and terrestrial invasive species	
	Maintain and enhance native fisheries, especially cisco (lake herring) and other indicator species	
4. Reduce nonpoint pollutant source loading	Objective: Short-Term (1-5 yrs)	Designated Uses: All Desired Uses: All
	Minimize agricultural sources of nutrients, sediment and pathogens (target parameters: TSS, TDS, TP, NO ² +NO ³ , COD)	
	Minimize residential sources of nutrients, sediment and pathogens (target parameters: BOD, COD, TSS, TDS, TP, N, heavy metals)	
	Minimize transportation corridor sources of sediment, nutrients and salts, organic compounds, and heavy metals (target parameters: BOD, COD, TSS, TDS, TP, N, heavy metals)	
	Objective: Long-Term (5+ yrs)	
	Maintain or increase clarity in lakes	
	No increase in pollutants from nonpoint sources	
5. Expand monitoring and data collection for water quality, stream flow and biological indicators	Objective: Short-Term (1-5 yrs)	Designated Uses: All Desired Uses: All
	Implement an adaptive monitoring strategy that yields data to measure progress toward achievement of watershed management plan goals and objectives	
	Develop a comprehensive database, using best available and most appropriate technology, to serve the needs of the watershed	

	Produce periodic reports that synthesize data collected in the watershed to track progress	
6. Create an aware and involved public that protects the freshwater resources of the Portage Creek system	Objective: Short-Term (1-5 yrs)	Designated Uses: All
	Develop targeted educational programs to raise audience awareness and gain commitment to act on behalf of watershed resources	Desired Uses: All
	Increase responsible recreational use of waterways and lakes	
	Increase opportunities for public involvement in protecting watershed resources	
7. Make Portage Creek watershed a recreation destination in Michigan's Lower Peninsula	Objective: Short-Term (1-5 yrs)	Designated Uses: Warmwater fishery; Indigenous aquatic life and wildlife; Partial body contact recreation; Total body contact recreation
	Increase visitors to state lands and county parks during off-peak times	
	Attain <i>E. coli</i> bacteria counts at public beaches that meet state Water Quality Standards	
	Objective: Long-Term (5+ yrs)	Desired Uses: All
	Achieve coordinated management of Portage Creek for water-based recreation	
8. Secure broad and coordinated implementation of the Portage Creek Watershed Management Plan	Objective: Short-Term (1-5 yrs)	Designated Uses: All
	Gain involvement of at least 4 watershed communities in an intergovernmental effort to coordinate land use planning, protect watershed resources, reduce nonpoint source pollution, and manage storm water runoff	Desired Uses: All
	Establish financial and institutional arrangements to fulfill the watershed management plan	
	Increase public awareness of progress in implementing the watershed management plan	
	Objective: Long-Term (5+ yrs)	
	Assess implementation of the watershed management plan and revise as needed via the intergovernmental partnership	

Management Strategy

The Watershed Management Plan (WMP) recommends 17 management activities that will enable watershed partners to make progress towards meeting the goals and objectives for the Portage Creek watershed. The activities include specific practices to restore parts of the watershed previously degraded, such as replanting stream buffers and removing barriers to fish populations; to develop a coordinated monitoring system of the creek and lakes in order to track changes in water quality; and to start new initiatives such as increasing tourism/ecotourism by developing a campaign. A few management activities focus on programmatic change such as adopting new standards and policies for natural features protection, and forming a watershed group to carry on the efforts of the Watershed Management Plan.

Each of the recommended activities are presented in Table VII-F at the end of Section VII with details on management activity, activity goal, estimated costs, estimated pollutant reduction when available, responsible agent, and potential funding sources.

Plan Implementation, Coordination and Assessment

Implementation and coordination of the recommended activities and assessment of activity implementation are critical next steps of managing for the health of freshwater resources in the Portage Creek watershed. Section VII provides recommendations for measuring changes in the watershed including which quantitative and qualitative evaluation techniques to use and a plan for watershed monitoring and evaluation based on a suite of parameters.

Conclusions

The Portage Creek Watershed Management Plan has been created to provide a strong foundation and framework for protecting the freshwater resources of the Portage Creek system, and improving them where needed, for current and future generations of residents and visitors. The Plan is the jumping off point; it is not a means to itself. The next step of implementing the recommendations of this Plan will require the cooperation, patience, and persistence of many partners and stakeholders.

Many of the watershed partners have demonstrated an earnest desire to see this Plan through to action and real improvements in the watershed. Yet, other communities and entities in the watershed have not yet participated to any meaningful extent. They will need to be brought into the fray in order to make meaningful progress on reaching the goals and objectives laid out for the Portage Creek watershed.

The communities in this watershed will continue to face the challenges of balancing growth with natural resource protection. But the costs of maintaining the status quo and the benefits of long-term planning on a watershed scale will become increasingly apparent. Each community has a choice: to regard the Plan as merely an exercise to gain eligibility for state and federal funds, or to use the Plan as the tool for partnering with Portage Creek neighbors to protect the water and land that connects us all.