

## **PART 7: SIGNIFICANT FINDINGS AND RECOMMENDATIONS**

### **7.1 Environmental Quality of the Watershed**

The Walnut Creek Watershed Environmental Quality Assessment identified activities that both encourage support of, and conflict with, sustaining public health and safety, economic stability and quality of life for Erie County citizens. The watershed resources provide local citizens with good air quality, safe drinking water, and an outstanding sport fishery. There is also available land for farming, public space and private use. The findings of this assessment; however, indicate that the health of the watershed is at risk.

The watershed has experienced significant residential and commercial growth over the past 25 years and further development is projected. This growth has stimulated the local economy and is seen by many as progress. Another important local economic aspect is agriculture. Farming is a mainstay of Pennsylvania's economy and remains a viable sector of Erie County's economy (Erie County Planning Erie County Natural and Historic Resources Plan, December 2003). These activities are critical to the economic stability of the Erie Region. But these same activities, if unmanaged, can conflict with environmental quality.

Land development has reduced the surface area for stormwater infiltration, condensed green space needed for evapotranspiration of stormwater by plants, and diminished the water absorption capacity of the soils. These factors amplify stormwater runoff rates, raise flooding potential, accelerate erosion and increase pollutant loading to the streams. Development also increases the demands of, and threats to, public water supplies. Some of the specific impacts of land development on the Walnut Creek watershed are summarized as follows:

**Water Supply:** The City of Erie Water Authority provides reliable, sustainable and good quality water from Lake Erie to most of the residents in the Walnut Creek watershed. Groundwater is used for 16 small public water supplies and numerous private water supplies. Regional groundwater data indicates some areas have elevated levels of nitrates and inorganic chemical concentrations in excess of U.S. Environmental Protection Agency Maximum Contaminant Limits. Groundwater quantity is limited and sources will not likely sustain progressive development. Several areas in Erie County cannot support well construction that meets Safe Drinking Water requirements. Potential sources of contamination have been identified within the watershed, but no documented Source Water Protection strategies are in place to protect groundwater supplies.

**Pathogenic Bacteria:** *E. coli* bacteria, an indicator of pathogens, have been found in high levels in Walnut Creek and its tributaries. The source of the bacteria is from both human and animal sources, and primarily associated with non-point source pollutants in stormwater. The in-stream levels of bacteria and the overall load to Lake Erie have not yet been determined.

**West Nile Virus:** Although no human cases of West Nile Virus have been reported within the watershed, the threat to public health exists. Since the inception of the West Nile Virus Control Program, there have been eleven positive mosquito samples--one

positive sample in 2000, three in 2002 and seven in 2006.

***Giant Hogweed:*** Giant Hogweed is a public health hazard because of its potential to cause severe skin irritation and blindness. Clusters of the plant have been found in the vicinity of the Millcreek Mall, near Hershey Road and at the mouth of Walnut Creek at Lake Erie. There may also be undiscovered populations in the watershed since the spread of Giant Hogweed is greatest in riparian areas.

***Potential Flooding:*** One of the biggest impacts of land development is an increased rate of stormwater runoff, which raises the potential for localized flooding. Stormwater management is handled by county-wide, watershed based planning focused on preventing problems associated with the quantity and quality of stormwater discharges. Although modern stormwater management practices are now being used in some communities with Municipal Separate Storm Sewer (MS4) permits, previous practices have left inadequate or no stormwater controls.

***Loss of Watershed Habitat:*** Walnut Creek and its tributaries have been notably impacted by stormwater runoff, stream channel modifications, stream encroachments and stream bank erosion. This has contributed to a net wetland loss, stream channel losses, and degraded riparian buffer zones. These conditions have also contributed to water pollution and a loss of habitat for fish, plants and terrestrial species, some of which are protected as threatened and endangered species.

***Water Quantity:*** Stream withdrawals can have a negative impact on the biological health of a stream. Water removal during low flow conditions can drain small pools where fish live. Conversely, during storm events Walnut Creek becomes very “flashy” causing accelerated erosion of the stream banks and scouring of the streambed. The actual impact of the rapid variation of flow on the stream structure and habitat is not fully understood. Additional flow and water quality monitoring is needed.

***Land Use:*** Land use can be directly correlated to stream health; unmanaged development often yields impaired streams. It is also well recognized that land use planning is necessary for economic stability, and public access to green space is essential to promote quality of life. The 2003 Erie County Comprehensive Plan identifies planning efforts needed to promote future development while preserving environmentally sensitive areas, establishing green space and conserving agricultural lands. While some municipalities have adopted local land use plans, the County Plan is non-binding and not promoted by all watershed municipalities.

There are agricultural operations within the watershed, mostly located in the headwaters of Walnut Creek and near Bear Run. No specific environmental impacts from farming were noted during the assessment, but the potential does exist. Without soil conservation plans fields and stream banks can be badly eroded, riparian buffers can be lost and wetlands filled. Stormwater runoff from agricultural operations can carry pollutants to surface water and groundwater. The conditions can result in a loss of farmable land, a land use worth preserving as noted in the 2003 Erie County Planning Erie County Natural and Historic Resources Plan.

## **7.2 Moving Forward**

Achieving environmental quality that supports public health and safety, economic stability and quality of life cannot be accomplished by one individual organization. Environmental protection and sustainability requires a combined effort of regulatory agencies, county planners, municipal decision makers, private business, volunteer groups, and most importantly, the citizens that live there. The community must support the efforts needed for environmental improvement.

Each party has its individual role, but all parties must work together to accomplish the goal of a healthy environment. To move towards that goal, each party must set an agenda of environmental improvement, take stock of its programs and align resources to forward the agenda. Collectively, the parties need to support mutual initiatives towards environmental improvement, provide checks and balances on mandated programs, and share information on known problems and improvements.

## **7.3 Drivers for Environmental Improvement**

A comprehensive watershed plan is needed for the Walnut Creek watershed. The plan should establish clear benchmarks for surface water quality based on Total Maximum Daily Load design. It should also define the target stream flow discharge during base flow and high flow conditions throughout the watershed. Planning efforts can establish a regional approach to provide for the future water supply needs of the community. It should also clearly identify land use practices that allows for growth while protecting the resources. All those who have a stake in the watershed must support improvement initiatives. Specifically:

- The Regional DEP office is encouraged to continue directing resources to promote Act 167 Stormwater Management Planning, move Act 537 Sewage Planning forward, and ensure MS4 permit compliance. It should also provide available funding and assistance to promote Source Water Protection strategies and implementation projects that preserve sensitive lands and improve water quality.
- Municipalities are encouraged to enact and enforce local policies and zoning that effectively address stormwater management, sewage management, preserve green spaces and environmentally sensitive lands, and support Source Water Protection programs.
- Partnerships should be established between regulatory agencies, municipalities, private enterprise, conservation groups and community members to collectively work towards watershed protection.
- Education is a key component of environmental improvement. The environmental condition of the watershed should be reported to the community with the challenge of taking individual action.
- Ongoing monitoring of the environmental quality of the watershed is necessary to identify whether actions towards improvement are effective or not, and be the basis for plan improvement.

## 7.4 Recommendations

Tables 7.1 through 7.4 identify the specific threats to resources found through the assessment along with recommendations for improvement. The threats have been prioritized as 1 (most significant) to 4 (less significant).

Implementing recommendations can best be accomplished through a partnership of stakeholders. The following is a partial list of partners needed to accomplish the recommendations:

- U.S. Environmental Protection Agency (EPA)
- U.S. Army Corps of Engineers (USACE)
- U.S. Geological Service (USGS)
- Department of Environmental Protection (DEP)
- Department of Conservation and Natural Resource (DCNR)
- Pennsylvania Fish and Boat Commission (F&BC)
- Pennsylvania Game Commission (PGC)
- Pennsylvania Department of Agriculture (PDA)
- Erie County Conservation District (ECCD)
- Erie County Planning Office (County Planning)
- Erie County Department of Health (ECDH)
- Fairview, Millcreek, McKane, Summit and Green Townships (Township)
- City of Erie Water Authority (Water Auth.)
- Science Consortium at Tom Ridge Environmental Education Center  
(Science Consortium)
- Pennsylvania Farm Bureau (PFB)
- Pennsylvania Rural Water Association (PRWA)
- Water Resources Education Network (WREN)
- Pennsylvania Sea Grant
- Sons of Lake Erie
- Local Business (Business)
- Conservation groups
- School Districts

**Table 7.1: Conditions Affecting Public Health and Safety**

<i>Target</i>	<i>Threat</i>	<i>Recommendation</i>	<i>Partners</i>	<i>Priority</i>
Public Water Supply	Potential contamination of Lake Erie water resources	Support existing Source Water Protection strategies	Water Auth., EPA, DEP, ECHD, Township PRWA, WREN	<b>2</b>
	Potential contamination of groundwater resources	Encourage Source Water Protection strategies for small public water supplies	DEP, ECHD, PRWA, WREN, Township	<b>2</b>
	Sustainable Public Water Supply	Regional water resource planning should be implemented for sustaining a good quality and reliable supply source	Water Auth., EPA, DEP, ECHD, Township	<b>1</b>
Private Water Supply	Potential contamination of private well resources	Provide outreach and education to residents to protect private wells from contamination	DEP, ECHD, ECCD, PRWA, WREN, Township	<b>2</b>
Human Health	West Nile Virus	Continue support of the Erie County Health Department's West Nile Virus surveillance program	DEP & ECHD	<b>1</b>
		Continue public outreach and education programs for West Nile Virus prevention	DEP, ECHD, ECCD, Township	<b>2</b>
	Pathogenic bacteria	Continue <i>E. coli</i> monitoring to identify problems from regulated sources	DEP, DCNR, ECHD, Science Consortium, Township	<b>1</b>
		Increase sewage treatment plant compliance monitoring during the summer months	DEP & ECHD	<b>3</b>

		Increase municipal Sewerage Planning Act 537 compliance, particularly focusing on studying needs areas in Fairview and Summit Townships	DEP, ECHD, Township	<b>2</b>
		Increase agricultural outreach activities promoting green riparian buffer zones, barnyard management and Nutrient Management Planning to minimize runoff	DEP, ECCD, PFB, Conservation groups	<b>3</b>
		Increase MS4 illicit discharge detection and elimination system compliance	DEP & Township	<b>2</b>
	Giant Hogweed	Increase public education efforts on recognizing Giant Hogweed and its hazards	PDA, DEP, ECHD, ECCD, Township, Conservation Groups	<b>2</b>
		Increase early detection efforts in the watershed to target rapid response control measures	PDA, DEP, ECHD, ECCD, Township, Conservation Groups	<b>2</b>
Public Safety	Potential flooding	Implement the Floodplain Management Program to revise and enforce ordinances that prevent floodplain obstruction and development	DEP, ECCD, Erie County Planning, Township	<b>2</b>
		Increase Chapter 105 compliance efforts to minimize stream encroachments	DEP & ECCD	<b>2</b>

**Table 7.2: Conditions Affecting Habitat And Biological Diversity**

<i>Target</i>	<i>Threat</i>	<i>Recommendation</i>	<i>Partners</i>	<i>Priority</i>
Water Quality	Urban stormwater runoff	Update the Erie County, Lake Erie Watershed Act 167 Plan to provide effective stormwater management to address both quality and quality control	DEP, County Planning	<b>1</b>
		Adopt and implement the updated Erie County, Lake Erie Watershed Act 167 plan by all watershed municipalities	DEP, Municipality	<b>1</b>
		Explore creating a Regional Stormwater Authority to govern ordinances, MS4 permit compliance, and stormwater	DEP, Municipality	<b>2</b>
		Expand MS4 public outreach to residential audiences concerning household NPS pollution.	DEP, ECCD, ECDH, Municipality, Conservation groups.	<b>3</b>
		Construct new, or retrofit existing, stormwater controls where discharges are contributing to known stream impacts	DEP, ECCD, Municipality, Business, Conservation groups	<b>1</b>
		Encourage design of post construction stormwater management structures that go beyond NPDES requirements for controlling the quantity of pollutants and the volume of stormwater runoff	DEP, ECCD, Municipality, Business	<b>2</b>
	Stormwater runoff from construction and earthmoving activities	Modify 102 permitting strategies in areas with stream impairments from urban stormwater runoff	DEP, ECCD	<b>1</b>
		Increased monitoring and compliance activities at 102 permitted stormwater construction activities	DEP, F&BC, ECCD, Municipality	<b>1</b>

		Expand MS4 public outreach to developers of new and redeveloped lands concerning E&S BMPs and PCSM	DEP, ECCD, Municipality, Business	<b>2</b>
		Expand outreach to contractors regarding E&S BMP construction and maintenance	DEP, ECCD, Municipality, Business	<b>2</b>
	Rural stormwater runoff	Increase public education about non-agricultural NPS pollution, such as fertilizers, household hazardous wastes, and waste disposal.	DEP, ECDH, ECCD, Municipality, Conservation groups	<b>4</b>
		Promote septic system inspection and maintenance agreements	DEP, ECDH, Municipality	<b>4</b>
	Agricultural stormwater runoff	Increase agricultural outreach activities promoting green riparian buffer zones, barnyard management and Nutrient Management Planning to minimize runoff	DEP, PFB, ECCD, Conservation groups	<b>3</b>
		Increase awareness of and promote No-till farming practices	DEP, PFB, ECCD, Conservation groups	<b>4</b>
Wetlands	Wetland Loss	Participate in the USACE's Great Lakes Habitat Initiative to inventory and protection of wetland habitats	USACE, DEP, F&BC, ECCD, ECDH	<b>4</b>
		Permitted wetland replacement should be done at the maximum rate feasible	DEP, ECCD	<b>1</b>
		Permitted wetland mitigation should only be done within the watershed	DEP, ECCD	<b>1</b>
		Increased enforcement of non-permitted wetland fills	DEP, ECCD	<b>2</b>
		Increase public awareness of the functions and values of wetlands	DEP, ECCD, Municipality, Conservation groups	<b>4</b>
Stream Channel	Bank erosion	Promote stream bank stabilization projects in areas with severe erosion	DEP, ECCD, Municipality, Conservation groups	<b>2</b>



	Channel modification	Encourage natural stream channel design to retrofit existing and in developing new stream mitigation projects	DEP, F&BC, ECCD Municipality, Business	<b>3</b>
	Stream encroachment	Increased enforcement of non-permitted stream encroachments	DEP, ECCD	<b>2</b>
Riparian Zone	Insufficient buffer area	Establish green riparian buffer zones in new land developments	DEP, PAF&BC, ECCD, Municipality, Business, Conservation groups	<b>3</b>
		Protect and re-establish green riparian buffer zones on farmlands through CREP	DEP, PGC, PFB, ECCD	<b>3</b>
		Increase public awareness of the functions and values of riparian buffer zones	DEP, PAF&BC, PGC, ECCD, Municipality, Conservation groups	<b>4</b>
		Promote urban and suburban reforestation	DEP, F&BC, ECCD, Municipality, Business, Conservation groups	<b>4</b>
		Promote conservation easements for riparian areas	DEP, F&BC, ECCD, Municipality, Business, Conservation groups	<b>3</b>

**Table 7.3: Conditions Water Use and Sustainability**

<i>Target</i>	<i>Threat</i>	<i>Recommendation</i>	<i>Partners</i>	<i>Priority</i>
Surface Water Quantity	Surface water withdrawal	Act 220 registration of surface water withdrawals	DEP	<b>4</b>
	Decreased base flow	Increase the area of pervious surfaces using stormwater BMPs at new development and redevelopment to allow groundwater recharge and provide for stream base flow	DEP, ECCD, Municipality, Business, Conservation groups	<b>1</b>
	Impervious surfaces increasing stormwater discharge rate	Update the Erie County, Lake Erie Watershed Act 167 Plan to provide effective stormwater management to address both quality and quality control, as noted above	DEP, County Planning	<b>1</b>
		Adopt and implement the updated Erie County, Lake Erie Watershed Act 167 plan by all watershed municipalities, as noted above	DEP, Municipality	<b>1</b>
		Install stream gage station to evaluate impacts of stormwater discharge and pollutant loading	EPA, USACE, USGS, DEP, F&BC, DCNR, ECCD, Municipality, Business, Conservation groups	<b>1</b>
Ground-water quantity	Impervious surfaces decreasing groundwater recharge	Update the Erie County, Lake Erie Watershed Act 167 Plan to provide effective stormwater management to address both quality and quality control, as noted above	DEP, County Planning	<b>1</b>
		Adopt and implement the updated Erie County, Lake Erie Watershed Act 167 plan by all watershed municipalities, as noted above	DEP, Municipality	<b>1</b>

**Table 7.4: Conditions Affecting Land Preservation**

<i>Target</i>	<i>Threat</i>	<i>Recommendation</i>	<i>Partners</i>	<i>Priority</i>
Public Green Space	Unplanned/unmanaged development	Implementation of 2003 Erie County Land Use Plan and local plans by municipalities to preserve green space	County Planning, municipality	<b>2</b>
		Support land acquisition and easements for green space conservation	DEP, ECCD, Municipality, Business, Conservation groups	<b>2</b>
		Promote green space in new land development	DEP, ECCD, Municipality, Business, Conservation groups	<b>3</b>
		Encourage public access to streams and green spaces	DEP, F&BC, ECCD, Municipality, Business, Conservation groups	<b>2</b>
Farmland	Unplanned/managed development	Promote and support farmland preservation through the Pennsylvania Purchase of Agricultural Conservations Easements (PACE)	ECCD, PFB, Municipality, Conservation groups	<b>2</b>
		Promote and support farmland preservation through the Pennsylvania Clean and Green Program	ECCD, PFB Municipality, Conservation groups	<b>2</b>
Environmentally Sensitive Areas	Unplanned/managed development	The Erie County Natural Resource Plan (2003) identifies local natural lands that are critical to community sustainability. The plan should be adopted by municipalities to preserve environmentally sensitive areas	County Planning, Municipality	<b>2</b>
		Evaluate Bear Run for protected use reclassification to <i>High Quality Waters</i>	DEP	<b>2</b>