

Walnut Creek Watershed Environmental Quality Assessment Report

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**Bridging the Gap Between
Environmental Quality and
Community Development**



Pennsylvania Department of Environmental Protection

**Walnut Creek Watershed
Environmental Quality Assessment
Draft Full Report**

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FOREWORD

Looking outward, it's not easy to see how natural and social interactions occur within a watershed, but a holistic view shows the interrelatedness of human actions and the environment. A healthy watershed is a dynamic system of water, land, air and the biota that live there. Citizens of the watershed rely on this system for the resources needed to ensure public health and safety, sustain economic stability and promote a good quality of life. A proper balance between human activities and the effects on the environment is critical to sustain the resources that we rely upon.

The Walnut Creek watershed has diverse land uses. The headwaters still remain fairly undeveloped and support farming and a rural community. The lower reaches are urbanized with commercial, light-industrial and residential uses. The watershed provides the habitat for various forms of wildlife, including several threatened and endangered animal and plant species. Its wetlands not only provide natural flood control, but also act as a huge water filter for the stream and Lake Erie. The streams are home to a diverse fish population, including natural reproducing brown and rainbow trout.

One of the most acclaimed resources of the Walnut Creek watershed is the renowned steelhead fishery. Each fall and spring steelhead trout migrate from Lake Erie up tributary streams to spawn. The steelhead run provides a great sport fishery, luring fisherman from all over the world. Not only is this a great pastime for the locals, it is a huge source of revenue for the community. According to a recent study by the Pennsylvanian Fish and Boat Commission, the steelhead fishery in Erie County generates an estimated \$10.68 million in local business supporting 219 jobs (Murry, 2004).

The activities of the people living in the watershed can actually threaten the very system they rely upon. Sewage, solid waste and air pollution are all products of our culture. Vehicle transportation through the watershed and the presence of stored chemical materials create potential sources of contamination. Land development changes the natural flow of stormwater and runoff can carry pollutants to the groundwater and surface waters. Further, overuse of a resource can threaten its viability. These threats cannot be eliminated in a developed and growing community, but they can be effectively managed and controlled.

Assessing the watershed can show sustainability of resources, potential sources of contamination and the overall health of its natural systems. The results give regulatory agencies information needed to take an introspective look at its control programs and determine if the desired outcomes are being achieved. Results can be used by local decision makers to decide what factors must be considered with future land use planning. And assessment results can stimulate community action that promotes wise use and care of the watershed resources.

ACKNOWLEDGEMENTS

The assessment team spent countless hours in the field and conducting research on the Walnut Creek watershed, to whom a very special thanks is offered.

Judy Taylor also deserves special recognition for her work with editing, formatting and publishing the report. A thanks also goes out to the staff at the Erie County Conservation District, the Erie County Department of Health, the Science Consortium and the Tom Ridge Environmental Education Center and Pennsylvania Sea Grant for the information they provided.

And most importantly, thanks to the community members who provided input and comments on the report. It is the community who will ultimately drive environmental improvement in the watershed.

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Department of Environmental Protection
Northwest Regional Office
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PART 1—INTRODUCTION

1.1 Background

The Walnut Creek Watershed is arguably one of the best steelhead fisheries in the Great Lakes region, bringing in millions of dollars to the Erie community each year. It is tributary to Lake Erie, one of the nation's biggest freshwater resources providing public drinking water, recreation opportunities and commerce to northwestern Pennsylvania. This great resource gets significant pressure from urban stormwater runoff, commercial and residential development, and agricultural activities. For these reasons, in 2006 Walnut Creek was selected as the priority watershed for DEP's Northwest Region.

The Department's Watershed Management Program completed a year-long, comprehensive, watershed-based assessment to determine if the environmental conditions in the watershed are supporting public health and safety, economic stability, and quality of life for Erie County residents. The study involved a detailed look at the environmental quality of the watershed and an assessment of actual and potential impacts on its resources. The assessment included a detailed look at:

- Features and physical characteristics of the watershed
- Watershed uses
- Actual and potential pollutants to the watershed
- Efforts in place for resource conservation and environmental stewardship

This report provides a description of the overall environmental quality of the watershed and identifies actual and potential pollutant sources. The impacts on the environmental quality have been quantified, and, where possible, suggestions for abating environmental conflicts are offered. Where the health of the Walnut Creek watershed was found to be impaired, drivers for improvement are identified and recommendations on moving forward are offered.

The assessment is viewed as only the first step for environmental improvement. The findings of the report show the shortcomings of environmental initiatives, whether regulatory based, community based or individual activities. It identifies needs areas and where resources should be focused for improvement. This report can be part of the foundation to make informed environmental planning decisions to ensure public health and safety, provide for economic stability, and to promote a good quality of life for the watershed residents.

1.2 Scope and Purpose of the Assessment

The scope of the assessment was focused to characterize the health of the watershed and identify actual and potential impacts to the watershed resources. The assessment involved collecting and compiling data to determine the environmental quality of the watershed and to identify specific activities that affect it. The assessment included a detailed look at:

1. Data Standards: Evaluating Department accepted standards for data collection and defining specific data standards, sampling and analysis protocols, and Standard Operating Procedures to be used in the assessment.
2. Features and physical characteristics of the watershed: Characterizing and mapping the physical features of the watershed, including: watershed boundaries, surface water designations and uses, overall geology, hydrogeology, topography, and soils.
3. Public water supplies and source water protection activities: Identifying all public water supplies within the watershed and reviewing related Source Water Assessment Reports to evaluate susceptibility of the public water supplies to pollution and to identify potential threats. Researching and identifying any Source Water Protection activities being implemented within the watershed.
4. Surface water quality and stream use attainment: Sampling surface waters to determine if streams within the watershed are meeting Water Quality Standards as defined in Chapter 93 of the Department's regulations. Conducting surface water sampling on Walnut Creek and its tributaries at established sampling stations, for specified parameters, during cold weather low flow, cold weather high flow, warm weather low flow, and warm weather high flow conditions.
5. Groundwater quality: Evaluating ground water quality from existing USGS stations and public water supply sources. Where possible, collect groundwater quality data and compare the results to maximum contaminant levels (MCLs) to determine if the available groundwater sources are suitable for public drinking water supplies.
6. Surface water and groundwater quantity: Identifying surface water withdrawals authorized by Water Allocation permits and Act 220 registrations issued by the Department, and, where possible, any unregulated withdrawals. Investigating actual or potential impacts of the withdrawals on the watercourse. Measuring stream flows on Walnut Creek to define a model to calculate stream flows. Evaluating the influence of stormwater runoff on stream quantity and quality. Using available data, map groundwater resources and flow directions.

7. Compliance with regulatory programs: Identifying Department permitted activities within the watershed and completing a compliance evaluation. The review includes:

- Public Water Supplies
- Injection wells
- Air Quality permits
- Mining operations
- NDPES discharges (SEW, IW, MS4, SW and CAFO)
- 102/105 permits
- Landfills
- HSCA/NPL/TRI sites
- Regulated Storage Tanks
- Oil & Gas operations
- Act 167 Stormwater Management Planning
- Act 537 Sewage Planning

8. Land use and planning activities: Mapping the various land uses within the watershed including: political subdivisions, zoning, cover type, and economic use. Identifying any lands restricted or protected by government action, conservancies, or easement programs.
9. Biological health and diversity: Assessing the biological conditions of Walnut Creek and its tributaries through aquatic surveys of the benthos and fish species at established sampling stations. Identifying endangered aquatic and terrestrial species through a PNDI search. Completing a desktop survey using National Wetland Inventory (NWI) maps and existing 105 permits to identify wetlands within the watershed. Conducting a corridor assessment of the Walnut Creek stream channel to identify areas of accelerated erosion, channel modification and illegal water withdrawals or discharges.
10. Potential pollutants to the surface waters and groundwater: Identifying areas and/or activities that have the potential for pollution to the watershed, such as: large agricultural operations, industrial and commercial activities, un-sewered residential areas, major transportation corridors and residential activities.
11. Efforts in place for conservation and education: Comparing compatibility and continuity of Department programs with the activities of other federal, state and local agencies. Listing activities and efforts in place for stewardship and managing environmental resources within the watershed, such as, agricultural conservation programs, education programs and any other stewardship programs done by local agencies or private groups.
12. Data analysis and summary: Compiling, validating and summarizing data for conclusions and recommendations.

The Walnut Creek Watershed Environmental Quality assessment was conducted from April 2006 – December 2006. DEP staff conducted fieldwork and collaborated with federal, state, and local agencies to collect and compile related information. The study used only DEP accepted/approved protocols and Standard Operating Procedures. Data standards were established to select available literature, existing studies, reports and fieldwork to define environmental conditions. The impacts on the environmental quality have been quantified, and, where possible, suggestions for abating environmental conflicts are offered.

Public participation was a key component of the assessment process. The best information about the conditions of the watershed often comes from individuals that live and work there. The draft *Walnut Creek Watershed Environmental Quality Assessment Report* was shared with interested parties to solicit feedback. Comments on the draft report were considered and revisions made where appropriate. The final *Walnut Creek Watershed Environmental Quality Assessment Report* is being distributed to the watershed community through scheduled meetings and is available electronically on DEP's webpage.

1.3 Data Standards and Quality Assurance

The assessment involved collecting and compiling data from various sources to determine the environmental quality of the Walnut Creek watershed and to identify the specific activities and conditions that affect it. To assure that the findings are accurate and valid, specific standards were established for the assessment.

The study used only DEP accepted/approved protocols and procedures to collect information on the environmental conditions. The data standards defined how to select available literature, existing studies and reports, sampling and analysis protocols, and specific Standard Operating Procedures to be used in the assessment.

Field sample collection and measurements were conducted by DEP staff using approved protocols for sample collection, analysis, macroinvertebrate collection and fish surveys. Specific protocols and policies used for sample collection, handling and analysis are referenced in the particular section of the report.

The DEP *Locational Data Policy* was used as the standard for collecting locational information with measurements taken in decimal degrees. GIS information was obtained from gNet and PASDA. All GIS-based mapping work was done using ArcMap 9.0 and 9.2.

The evaluation of permit compliance was accomplished using DEP's Environment Facility Application Compliance Tracking System (eFACTS). In some cases file reviews, follow-up inspections and interviews were completed as part of the compliance review.

Other resources used included relevant data collected by other government agencies and scholarly literature and reports. Where appropriate, references are provided, including geospatial data sources. Most geospatial data used to generate maps included in this report were provided from public and government sources. Metadata for this information is available upon request by contacting the *Department of Environmental Protection, Northwest Regional Office's Watershed Management Program*.

The information included in the assessment report is comprehensive, but does not include all available data concerning the conditions of the watershed. Certain conditions or sources may exist that are unknown or unavailable to the Department. This report should not be considered an all-inclusive source of information on the Walnut Creek watershed. It does provide a thorough evaluation of the watershed based on accepted protocols for data collection.