

**APPENDIX A. HURON RIVER WATERSHED TMDL
PROGRAM FACT SHEET**

April 2005

Huron River Watershed TMDL Program

Where is the Huron River watershed?

The Huron River is located in north central Ohio along the Lake Erie shoreline. The mainstem of the river is approximately 60 miles long and drains 403 square miles or 261,000 acres. Land use in the watershed is mostly agriculture, with 74 percent cropland, 15 percent forest and 11 percent urban or other use.

There are three cities, Willard, Norwalk and Huron, and 10 villages in the Huron watershed. The state manages two wildlife areas within the watershed, Willard Marsh Wildlife Area and Milan Wildlife Area. The upstream segments of the river and the Marsh Run subwatershed are characterized by dark, highly erodible "muck" soils and vegetable crop production. The Megginson Creek, Slate Run and Frink Run subwatersheds are dotted with sinkholes, a geological formation that makes ground water highly susceptible to contamination from surface runoff.

How did Ohio EPA collect water quality data?

Comprehensive biological, chemical, and physical data were collected by Ohio EPA scientists in 1998 and 2002 along 220 miles of the Huron River and its tributaries. Samples from 63 sites were evaluated, including monitoring the abundance and diversity of fish and aquatic insect communities, measuring the physical habitat of the stream and adjacent land use, and analysis of water samples to determine the chemical quality of the water and sediments.

The conditions of the watershed were compared with state water quality

goals to determine which stream segments are impaired, and how much needs to be done to restore good stream habitat and water quality. There is an emphasis on protection of public drinking water supplies for several communities in the watershed. This evaluation is done as part of Ohio EPA's Total Maximum Daily Load (TMDL) program.

How does your stream "measure up?"

Citizens in Norwalk and Monroeville get their drinking water from the East Branch Huron River and the West Branch Huron River, respectively.

All streams are designated Warm Water Habitat (the water will support plant and animal species accustomed to warm water), including the lake-affected lower 10 miles of the river. Of the 220 miles evaluated, 140 meet the quality level of their use designation. Eighty-three percent of the impaired streams are in areas that drain less than 20 square miles.

Several streams are being re-evaluated for a possible change to Modified Warm Water Habitat due to persistent habitat or channel modification. They include an upstream

segment of Clayton Ditch, tributary to Frink Run, portions of Marsh Run, tributary to Marsh Run and Shiloh Ditch.

Is the Huron River polluted?

Yes and no. Much of the Huron River and its two major branches have good water quality and populations of fish and other aquatic life.

The Huron River upstream from lake-affected area meets the water quality standards, as do the West Branch Huron River from Monroeville to the mouth and the East Branch Huron River from Bronson Township to the mouth.

Other streams that are meeting water quality standards include Rattlesnake Creek, Village Creek, Walnut Creek, upper Slate Run, Frink Run, Megginson Creek, Seymour Creek, Cole Creek, tributaries to Cole Creek and Norwalk Creek and Clayton Ditch.

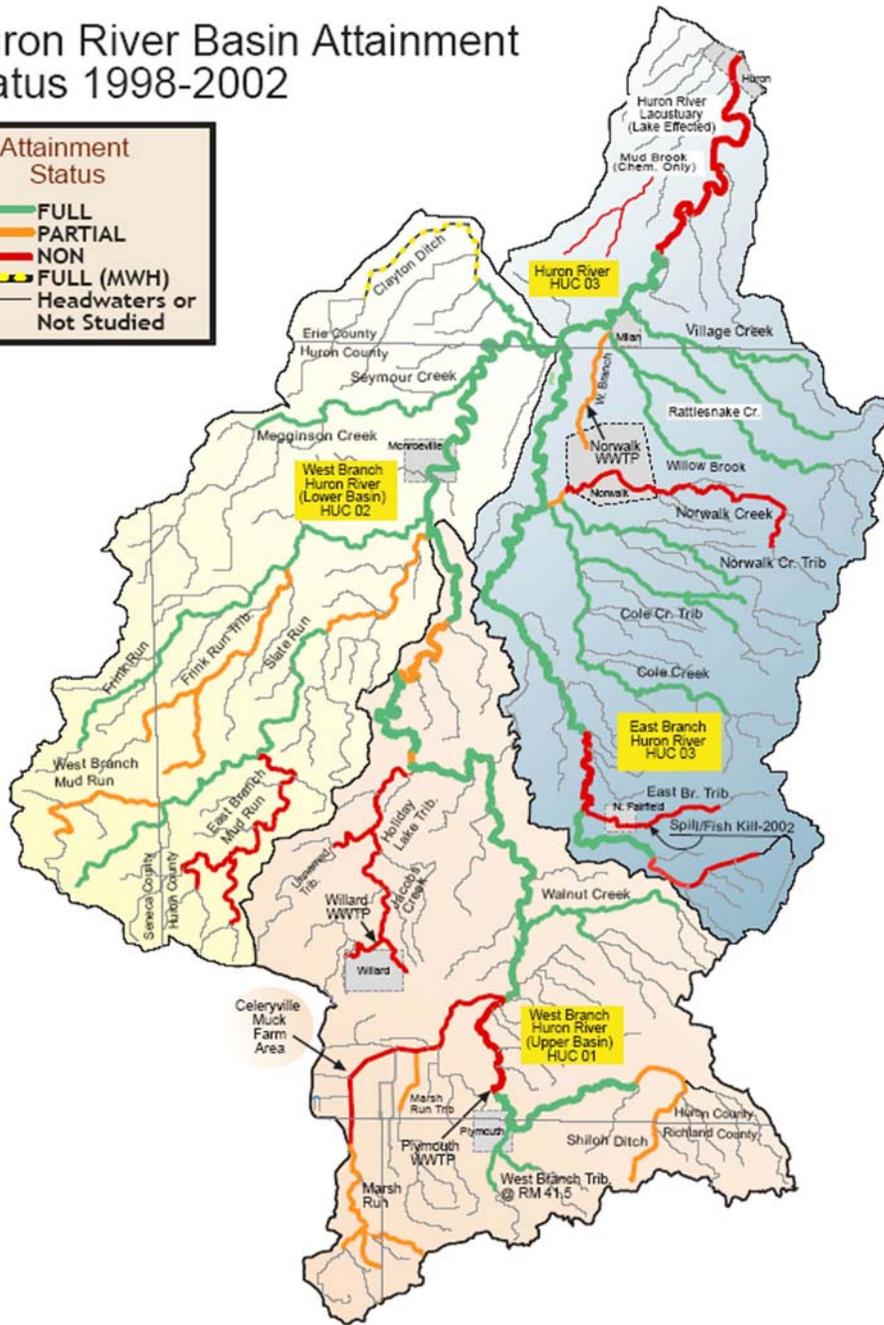
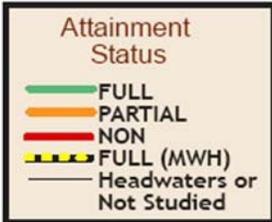
Some areas of the watershed do not currently meet water quality standards. The West Branch Rattlesnake Creek and Norwalk Creek near Norwalk, Jacobs Creek near Willard, West Branch Huron River near Plymouth, the headwaters of Mud Brook and its tributaries south of Huron and the mouth of the Huron River are impaired by municipal sewage.

Communities with combined sanitary and storm sewer systems may have untreated human and industrial waste overflowing to the river during heavy rainstorms. Fuel leaks and pesticide spills have been a problem in Jacobs Creek and the tributary to East Branch Huron River near North Fairfield, respectively. Rapid development along the US 250 corridor north of the Ohio Turnpike resulted in a high number of package plants (pre-manufactured



Huron River Watershed TMDL Program

Huron River Basin Attainment Status 1998-2002



Map of Huron River Watershed

wastewater treatment facilities for small communities or individual property), some seasonal and poorly maintained, discharging to the low flowing headwaters of Mud Brook.

The lower 10 miles of the Huron River are impaired by excessive nutrients and siltation deposits from upstream, and are further degraded by harbor and marina development.

What else degrades the Huron River?

Many small streams and the headwater segments of the three main rivers (East Branch, West Branch and Mainstem of the Huron) are impaired by physical changes to the land. Stream channelization, tiles and loss of floodplains and streamside vegetation have impaired portions of the East Branch Huron River, West Branch Huron River, Mud Run, Shiloh Ditch, Marsh Run and tributaries to Marsh Run and Frink Run.

When streams are widened and deepened for agricultural drainage, they contribute excess soil to the stream which destroys habitat for fish and other aquatic life. Soil carried through ditches degrades the Huron Harbor and Lake Erie.

When trees are removed from along the stream banks, the lack of shade allows the water temperature to increase, decreasing the amount of dissolved oxygen for aquatic organisms. This is made worse by manure runoff and untreated sewage flowing from failing home septic systems.

Huron River Watershed TMDL Program

Excessive nutrients or siltation from agricultural lands also contributed to impairment in many of the same streams, including the headwaters of the two Huron River branches, Mud Run, Shiloh Ditch, Marsh Run, upper Norwalk Creek and tributaries to Marsh and Frink Run.

Lack of water in the small headwater streams, especially in the summer, makes it hard for pollutants to be absorbed and treated by the natural stream biology. Natural drought, along with drainage tiles and crop irrigation withdrawals, contribute to uneven water flow in the streams. While recognizing the value and function of drainage in an agricultural watershed, it should be noted that low water makes it harder for these small streams to support good aquatic communities.

Drought conditions in 2002 contributed to impairment in Slate Run, East Branch Huron River headwaters and segments of West Branch Huron River. The Holiday Lakes Tributary is impaired by a dam, which results in low concentrations of dissolved oxygen and is a barrier to fish movement.

What is being done to improve the water resource?

The community is taking steps toward reducing pollution in the Huron River basin. In the late 1980s, large municipal wastewater treatment plants modernized and water quality improved as a result.

Many conservation measures such as no-till farming, crop residue manage-

ment (leaving soybean stubble and corn husks on the field after harvest), planting winter cover crops, and creating buffer strips (small areas or strips of land in permanent vegetation) have been adopted to reduce soil erosion.

The TMDL program identifies measures to reduce pollution further. Some actions are already occurring. Two previous state/federal grants provided cost share for agricultural conservation practices, home septic system replacements, livestock exclusion fencing and farm chemical containment structures in targeted areas of the watershed. Programs funded through the U.S. Department of Agriculture have helped provide animal waste storage facilities and additional erosion control buffer practices.

The City of Norwalk is required to address combined sewer overflow events by developing a long-term plan to control combined storm water and sewage overflows to the streams during rainfall. The Huron Basin wastewater treatment plant in Erie County is working to eliminate sewage bypasses and reduce discharge of ammonia by July 2006.

How much pollution load must be reduced?

Due to the large percentage of land in crop production in Ohio's agricultural watersheds, including the Huron River, sediment and excessive nutrients are the most pervasive pollutants that need to be controlled. Improvements in stream habitat and reductions in organic

enrichment are also needed in the Huron River watershed. Estimates of the existing pollutant load of sediment and nutrients (nitrate+nitrite and phosphorus) show that reductions are needed throughout the watershed in order to alleviate water quality impairments. (See Table 1) While the results in Table 1 show overall percentage reductions are necessary for these large watershed areas, the need for reductions in some of the small drainage areas severely impacted by agriculture is even greater.

What additional steps must be taken to reduce pollutant loads?

To reduce pollutant loadings and the severity of their impact, Ohio EPA recommends an approach that directs resources to improve the overall habitat and physical stability of streams throughout the watershed. Traditional best management practices and land management measures such as riparian buffer initiatives, agricultural conservation practices, and manure management plans should be targeted at the stream segments most vulnerable to erosion during high-flow storm events. Recommendations also include better management of urban storm water, sanitary waste from unsewered communities, septic systems, and agricultural drainage, and a number of loan and grant opportunities that support conservation and water quality-related improvements.

Table 1: Percentage Reductions Needed to Meet Water Quality Targets

Assessment Unit	Pollutant		
	Sediment	Nitrite+Nitrate	Phosphorus
Upper West Branch Huron River	49%	31%	25%
Lower West Branch Huron River	49%	27%	43%
East Branch Huron River and Huron River Mainstem	65%	32%	5%

APPENDIX B. CAUSES AND SOURCES OF IMPAIRMENT IN THE HURON River Watershed

Table B-1. Causes and Sources of Impairment in the Huron River Watershed

Water Body Segment [WBID] ¹ Upper - Lower RM (length)	Survey Year(s) Causes of Impairment ²	Survey Year(s) Sources of Impairment ²	Aquatic Life Use ³ (Existing or Recommended)	Miles of Attainment <u>1998</u> <u>2002</u>			
				Full	Partial	Non	Not Assessed
HUC 041000012 010 WEST BRANCH HURON RIVER (UPPER BASIN; HEADWATERS TO SLATE RUN)							
West Branch Huron River Headwaters to Marsh Run [OH84 20] RM 53.2 - RM 35.84 (17.36)	<u>1998 / 2002</u> H / H Organic Enrich./DO - / H Siltation M / M Nutrients - / M Habitat alteration - / M Flow alteration	<u>1998 / 2002</u> H / H Municipal point source - / M Agricultural Runoff - / M Channelization	WWH	<u>14.80</u> 9.36	<u>0.46</u> 4.0	<u>2.1</u> 4.0	<u>0.0</u> 0.0
West Branch Huron River Marsh Run to Slate Run [OH84 18] RM 35.84 - RM 10.52 (25.32)	<u>1998 / 2002</u> H / - Organic Enrich./DO H / H Habitat alteration M / - Nutrients - / M Flow alteration	<u>1998 / 2002</u> H / - Municipal point source H / H Channelization M / - Agricultural runoff - / M Natural	WWH	<u>18.18</u> 22.82	<u>7.14</u> 2.50	<u>0.0</u> 0.0	<u>0.0</u> 0.0
Shiloh Ditch (aka, Trib. to West Br. Huron (RM 48.05) [OH84 20.1] RM 3.55 - RM 0.0	<u>2002</u> H Siltation M Habitat alteration	<u>2002</u> H Agriculture M Channelization	MWH	0.0	2.0	0.0	1.55
Marsh Run [OH84 16] RM 11.0.0 - RM 0.0 (11.0)	<u>1998 / 2002</u> H / H Nutrients M / H Habitat alteration - / M Unknown toxicity - / M Siltation	<u>1998 / 2002</u> H / H Agricultural runoff M / H Channelization	WWH, MWH	<u>0.0</u> 0.0	<u>0.0</u> 3.0	<u>5.0</u> 5.0	<u>6.0</u> 3.0
Trib. to Marsh Run (RM 3.12) [OH84 19.1] RM 6.87 - RM 0.0 (6.87)	<u>2002</u> H Nutrients M Habitat alteration	<u>2002</u> H Agricultural runoff M Channelization	MWH	0.0	2.0	0.0	4.87

Huron River Watershed TMDLs

Table B-1. Causes and Sources of Impairment in the Huron River Watershed

Water Body Segment [WBID] ¹ Upper - Lower RM (length)	Survey Year(s) Causes of Impairment ²	Survey Year(s) Sources of Impairment ²	Aquatic Life Use ³ (Existing or Recommended)	Miles of Attainment 1998 2002			
				Full	Partial	Non	Not Assessed
Jacobs Creek (including East and West Branches) [OH84 21] RM 2.1 - RM 0.0 (2.1)	1998 H Oil and grease H Nutrients M Habitat alteration M Siltation	1998 H Waste storage/tank leaks H Channelization (development related) M Urban runoff M Municipal point source M-S Natural	WWH	0.0	0.0	2.1	0.0
Holiday Lake Trib. (aka Trib. to W. Branch Huron (RM 23.09) [OH84 18.2] RM 3.0 - RM 0.0 (3.0)	1998 H Flow alteration M Nutrients M Siltation	1998 H Upstream Impoundment M Flow regulation/modification	WWH	0.0	0.0	3.0	0.0
Unnamed Trib. to Holiday Lake Trib. (RM 2.8/23.09) [OH84 18.21] RM 7.35 - RM 0.0 (7.35)	1998 M Siltation M Flow alteration M Other inorganics	1998 M Upstream Impoundment M Unknown	WWH	0.0	0.0	1.0	6.35
HUC 041000012 020 WEST BRANCH HURON RIVER (LOWER BASIN; SLATE RUN TO EAST BRANCH HURON RIVER)							
West Branch Mud Run [OH84 16] RM 2.0 - RM 0.0 (2.0)	1998 H Habitat alteration M Nutrients M Organic Enrich./DO	1998 H Channelization M Agricultural runoff	WWH	0.0	5.0	0.0	5.2
East Branch Mud Run [OH84 15] RM 10.2 - RM 0.0 (10.2)	1998 H Habitat alteration M Siltation M Nutrients	1998 H Channelization M Agricultural runoff	WWH	0.0	0.0	5.0	5.2

Table B-1. Causes and Sources of Impairment in the Huron River Watershed

Water Body Segment [WBID] ¹ Upper - Lower RM (length)	Survey Year(s) Causes of Impairment ²	Survey Year(s) Sources of Impairment ²	Aquatic Life Use ³ (Existing or Recommended)	Miles of Attainment			
				1998	2002	1998	2002
				Full	Partial	Non	Not Assessed
Trib. to Frink Run (RM 5.83) [OH84 11.1] RM 9.46 - RM 0.0 (9.46)	2002 H Nutrients M Habitat alteration M Siltation	2002 H Agriculture M Channelization	MWH	0.0	4.0	0.0	5.46
Slate Run [OH84 14] RM 19.5 - RM 0.00 (19.50)	1998 / 2002 H / H Natural limits M / - Habitat alteration	1998 / 2002 H / H Natural - / M Agricultural runoff M / - Dredging (Ag. related)	WWH	<u>15.4</u> 0.0	<u>4.1</u> 0.0	<u>0.0</u> 4.1	<u>0.0</u> 15.4
HUC 04100012 030 HURON RIVER, EAST BRANCH HURON RIVER, LAKE ERIE TRIBS. (EAST OF SAWMILL CR. TO WEST OF HURON R.)							
East Branch Huron River (Headwaters to Norwalk Cr.) [OH84 07] RM 30.64 - RM 6.28 (24.36)	1998 / 2002 - / H Flow alteration - / H Pesticides H / M Habitat alteration M / - Siltation S / M Nutrients	1998 / 2002 - / H Spills H / H Agricultural runoff M / M Channelization - / M Riparian removal - / M Natural (drought)	WWH	<u>0.0</u> 17.36	<u>24.36</u> 0.0	<u>0.0</u> 7.0	<u>0.0</u> 0.0
East Branch Huron River (Norwalk Cr. to Huron R.) [OH84 04] RM 6.28 - RM 0.0 (6.28)	1998 (Partia)/ 2002 (Full) H / - Habitat alteration M / - Siltation	1998 (Partia)/ 2002 (Full) H / - Agricultural Runoff M / - Channelization	WWH	<u>1.5</u> 6.28	<u>4.78</u> 0.0	<u>0.0</u> 0.0	<u>0.0</u> 0.0
Trib. to E. Br. Huron R. @ 19.98 [OH84 7.1] RM 5.95 - RM 0.0 (5.95)	2002 H Pesticides M Nutrients	2002 H Spills M Agricultural runoff	WWH	0.0	0.0	1.0	4.95
Norwalk Creek [OH84 05] RM 11.43 - RM 0.0 (11.43)	1998 H Nutrients M Habitat alteration	1998 H Agricultural runoff M Urban Runoff/Storm Sewers M Combined Sewer Overflows	WWH	0.0	0.2	7.8	3.43

Table B-1. Causes and Sources of Impairment in the Huron River Watershed

Water Body Segment [WBID] ¹ Upper - Lower RM (length)	Survey Year(s) Causes of Impairment ²	Survey Year(s) Sources of Impairment ²	Aquatic Life Use ³ (Existing or Recommended)	Miles of Attainment			
				1998	2002		
				Full	Partial	Non	Not Assessed
Huron River [OH84 01] RM 14.70 - RM 0.00 (14.70)	1998 H Siltation M Nutrients M Habitat alteration	1998 H Agriculture runoff M Channelization M Municipal point sources M-S Marinas	WWH	4.9 2.0	0.0	9.8	0.0 12.7
West Branch Rattlesnake Creek [OH84 3.1] RM 4.80 - RM 0.0 (4.80)	1998 H Habitat alteration H Unknown M Siltation M Nutrients M Metals	1998 H Channelization (development related) H Municipal Point Source M Agriculture runoff	WWH	0.0	6.5	0.0	0.0
Mud Brook [OH 84 02] RM 6.50 - RM 0.0 (6.50)	1998 (Chem. Sampling) H Ammonia M Nutrients	1998 (Chem. Sampling) H Small Package Plants	WWH	0.0	0.0	(Chem.) 3.0	3.5

¹ WBID =Waterbody ID. These codes are consistent with the WBIDs associated with segments that were listed on the 1998 303(d) list.

² The significance of Causes and Sources identified during a biological assessment is indicated: **H** = high, **M** = moderate, **S** = small. Causes and sources based on water quality data only are not ranked.

³ An aquatic life use designation is provided here if a biological assessment in 1998 or 2002 supports either the existing use or the proposed use change. NA =No Assessment: there has been no recent biological assessment to support an aquatic life use designation on this segment.

**APPENDIX C. APPLICATION OF THE SOIL WATER
ASSESSMENT TOOL (SWAT) TO THE
HURON RIVER WATERSHED, OHIO IN
SUPPORT OF TOTAL MAXIMUM DAILY
LOAD (TMDL) DEVELOPMENT**

**Application of the Soil Water Assessment Tool
(SWAT) to the Huron River Watershed, Ohio in
Support of Total Maximum Daily Load (TMDL)
Development**

Prepared for:

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April 1, 2005

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1.0 Introduction

The Soil Water Assessment Tool (SWAT) model was developed by the Agricultural Research Service, the main research agency within the U.S. Department of Agriculture. The model predicts the impact of land management practices on water, sediment and agricultural chemical yields in large complex watersheds with varying soils, land use, and management conditions over long periods of time. SWAT can analyze large watersheds and river basins (greater than 100 square miles) by subdividing the area into homogeneous subwatersheds. The model uses a daily time step, and can perform continuous simulation for a period of one to 100 years. SWAT simulates hydrology, pesticide and nutrient cycling, erosion and sediment transport. SWAT was applied to the Huron River watershed in Ohio (Figure 1), to support the development of total maximum daily loads (TMDLs) for nutrients and sediments. Typical views of the Huron River are provided below. This report provides an overview of the model, a description of the modeling process, and summarizes modeling results.



West Branch Huron River near confluence with East Branch Huron River.



East Branch Huron River.



Huron River downstream of East Branch/West Branch confluence.



Huron River downstream near Lake Erie.

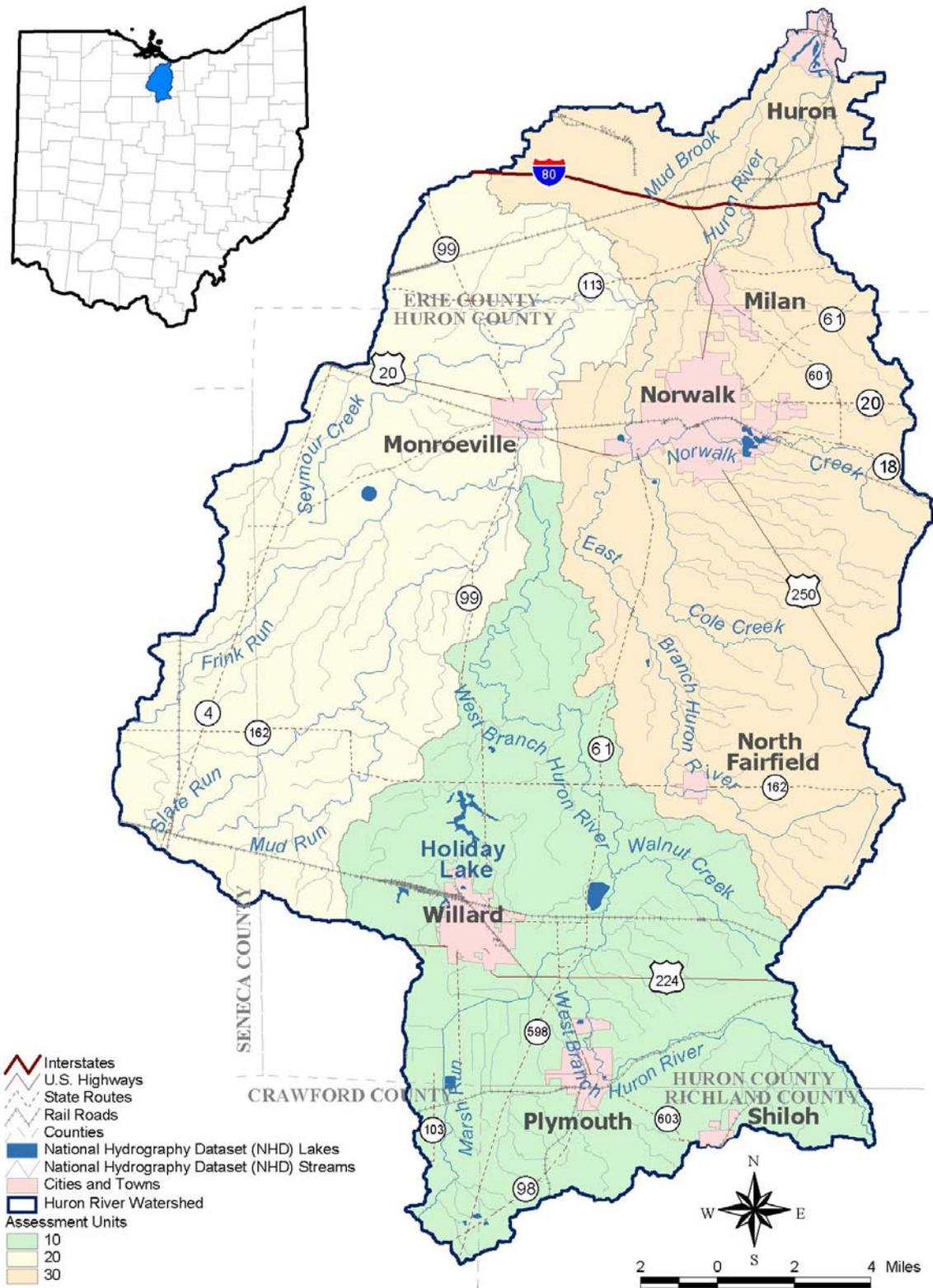


Figure 1. Location of the Huron River watershed.

2.0 Description of the Model and Model Setup

This section of the report describes SWAT and its setup for the Huron River watershed.

2.1 Hydrology

The hydrology component of SWAT is based on the water balance equation. A distributed curve number is generated for the computation of overland flow runoff volume, given by the standard Soil Conservation Service (SCS, now the Natural Resources Conservation Service (NRCS)) runoff equation (USDA, 1986). The curve number method is empirically based and relates runoff potential to land use and soil characteristics. The curve number method combines infiltration losses, depression storage, and interception into a potential maximum storage parameter called S. Runoff depth is given by the following set of empirical relationships:

$$Q = \frac{(P - 0.2S)^2}{P + 0.8S}$$

where Q is the accumulated runoff depth or rainfall excess (inches), P is the accumulated precipitation (inches), and S is a maximum soil water retention parameter given by

$$S = \frac{1000}{CN} - 10$$

where CN is known as the curve number.

The equation above indicates that precipitation, P, must exceed 0.2S before any runoff is generated. Furthermore, this equation yields a depth of runoff. To calculate runoff volume, the computed depth must be multiplied by area.

The curve number indicates the runoff potential of an area for the combination of land use characteristics and soil type. Higher curve numbers translate into greater runoff and increased erosion. Curve numbers are a function of hydrologic soil group, vegetation, land use, cultivation practice, and antecedent moisture conditions. The NRCS has classified more than 4000 soils into four hydrologic soil groups according to their minimum infiltration rate for bare soil after prolonged wetting. The characteristics associated with each hydrologic soil group are given in Table 1. The amount of moisture present in the soil is known to affect the volume and the rate of runoff. Consequently, the NRCS developed three antecedent soil moisture conditions:

- dryer antecedent conditions (Condition I) reflect soils that are dry but not to the wilting point.
- wetter conditions (Condition III) characterize soils that have experienced heavy rainfall, light rainfall and low temperatures within the last five days (saturated soils).
- Condition II is the average condition.

Curve numbers for each of the three conditions are found in Table 2.

Table 1. Characteristics of Hydrologic Soil Groups.

Soil Group	Characteristics	Minimum Infiltration Capacity (in./hr)
A	Sandy, deep, well drained soils; deep loess; aggregated silty soils	0.30-0.45
B	Sandy loams, shallow loess, moderately deep and moderately well drained soils	0.15-0.30
C	Clay loam soils, shallow sandy loams with a low permeability horizon impeding drainage (soils with a high clay content), soils low in organic content	0.05-0.15
D	Heavy clay soils with swelling potential (heavy plastic clays), water-logged soils, certain saline soils, or shallow soils over an impermeable layer	0.00-0.05

Source: NRCS, 1972

Table 2. Curve Number Adjustments from Antecedent Moisture Conditions I,II, and III.

CN for Antecedent Moisture Condition II	CN for Antecedent Moisture Condition I	CN for Antecedent Moisture Condition III
100	100	100
95	87	99
90	78	98
85	70	97
80	63	94
75	57	91
70	51	87
65	45	83
60	40	79
55	35	75
50	31	70
45	27	65
40	23	60
35	19	55
30	15	50
25	12	45
20	9	39
15	7	33
10	4	26
5	2	17
0	0	0

Source: NRCS, 1972

Curve numbers in SWAT are updated daily as a function of initial soil moisture storage. A soils database is used to obtain information on soil type, texture, depth, and hydrologic classification. In SWAT, soil profiles can be divided into 10 layers. Infiltration, defined in SWAT as precipitation minus runoff, moves into the soil profile where it is routed through the soil layers. A storage routing flow coefficient is used to predict flow through each soil layer, with flow occurring when a layer exceeds field capacity. When water percolates past the bottom layer, it enters the shallow aquifer zone (Arnold et al., 1993). Channel transmission loss and pond/reservoir seepage replenish the shallow aquifer while it interacts directly with the stream. Flow to the deep aquifer system is effectively lost and cannot return to the stream (Arnold et al., 1993). Based on surface runoff calculated using the runoff equation, excess surface runoff not lost to other functions makes its way to the channels where it is routed downstream. Figure 2 displays the pathways for water movement within SWAT.

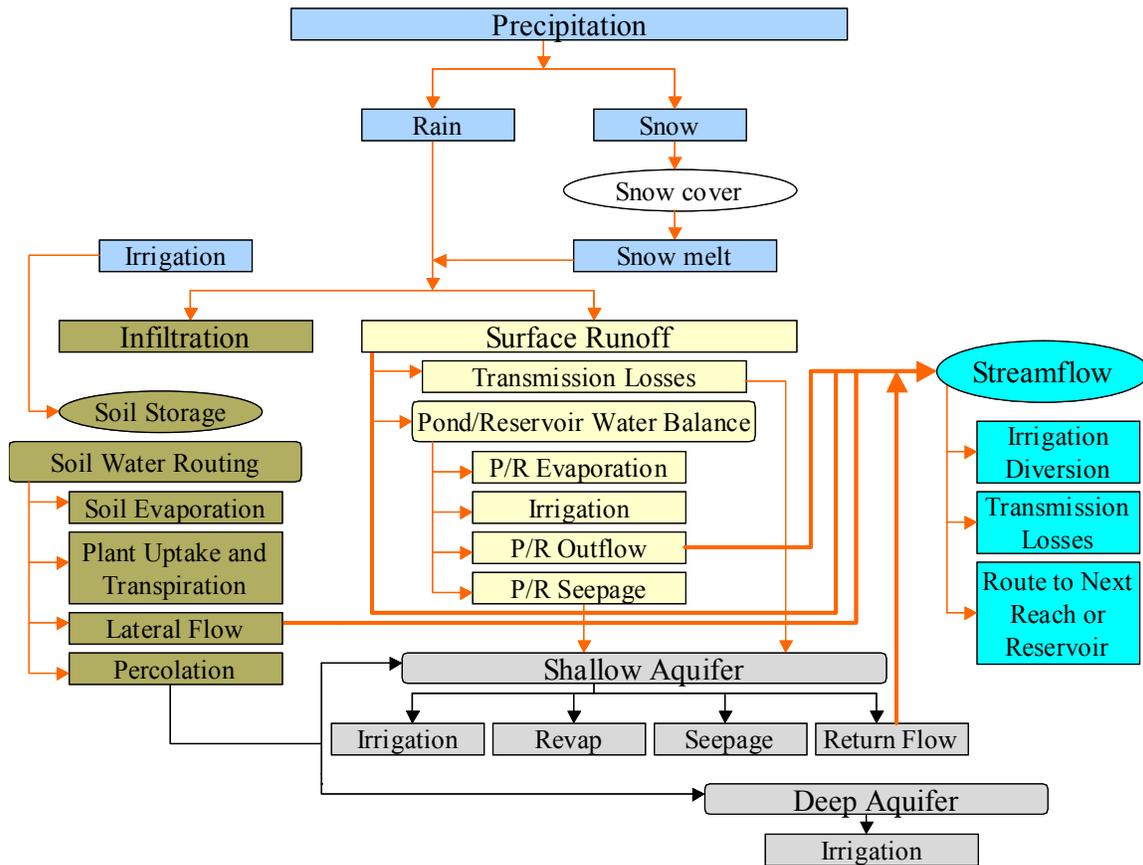


Figure 2. Pathways for water movement within SWAT.

An important consideration in modeling the hydrology of the Huron River watershed is that agricultural land in the basin is tiled, as many of the soils are naturally poorly drained. The presence of tile drains has altered the natural hydrology of the area. Precipitation is routed to the streams through the tiles, rather than running over the land surface, which results in a shorter time-of-travel, less erosion, and less ability for pollutants to be naturally filtered through the process of groundwater infiltration.

It is not feasible to simulate individual tile drain systems at the large basin scale with currently available watershed scale models, and neither the location nor the total density of tile drainage is known throughout the basin. Furthermore, the SWAT model has limited routines for the explicit representation of tile.

To address these factors SWAT's tiling option was used for subwatersheds estimated to have a significant presence of tile drains (as determined from the site visit and the soils data presented in Figure 5). In addition, several model parameters were adjusted to simulate the effects of tiling on watershed hydrology. For example, the storage routing flow coefficient within SWAT was adjusted during model calibration to address the effects of tiling. These adjustments, in combination with other calibration activities, resulted in acceptable performance of the model as measured by recommended modeling criteria (see below).

2.2 Upland Erosion

Another important model parameter obtained from the soils database is the Universal Soil Loss Equation (USLE) erodibility factor, k . The erodibility factor is an empirically derived unitless value reflecting a soil's inherent erodibility. The USLE is used in SWAT to estimate initial soil detachment and upland erosion. Sediment yield used for in-stream transport is determined from the Modified Universal Soil Loss Equation (MUSLE) (Arnold, 1992). For sediment routing in SWAT, deposition calculation is based on fall velocities of various sediment sizes. Rates of channel degradation are determined from Bagnold's (1977) stream power equation. Stream power is a useful index for describing the erosive capacity of streams, and has been related to the shape of the longitudinal profile, channel pattern, the development of bed forms, and sediment transport. As stream slopes become steeper and/or velocities increase, stream power increases as does stream erosivity.

Sediment size is estimated from the primary particle size distribution (Foster et al., 1980) for soils that the SWAT model obtains from the State Soil Geographic (STATSGO)(USDA, 1995) database. Stream power is also accounted for in the sediment routing routine, and is used for calculation of re-entrainment of loose and deposited material in the system until all of the material has been removed.

2.3 Description of the ArcView-SWAT Interface

An ArcView interface for SWAT (DiLuzio et al., 2001) was employed to efficiently derive and build the input files for the SWAT modeling of the Huron River watershed. The interface requires digital elevation data (DEM), land use/land cover, soils, and meteorological data. Thirty-meter DEM data representing 7.5 minute U.S. Geological Survey (USGS) quadrangles were downloaded from GEOCommunity <www.geocomm.com>, the current distribution center for USGS DEM. Watershed and subbasin delineation is based on a DEM of the watershed coupled with a "burn-in" of EPA's National Hydrography Dataset spatial database of stream reaches. This approach ensures that the subbasins conform to topography while requiring that catalogued stream segments connect in the proper order and direction.

The interface allows a user to select multiple subbasin outlets, thereby defining multiple subbasins for modeling analysis purposes. The interface then uses the DEM to calculate the upstream area, defined by the total number of up-slope cells, which could contribute flow to each point, thus defining the area of each subbasin. For the Huron River watershed, the USGS 14-digit Hydrologic Unit Code (HUC) served as the basis for subbasin definition. Additional subbasins were delineated to obtain model output at key locations (e.g., sampling stations). This resulted in a total of 28 subbasins as shown in Figure 3 (not all subbasins are labeled due to their small size).

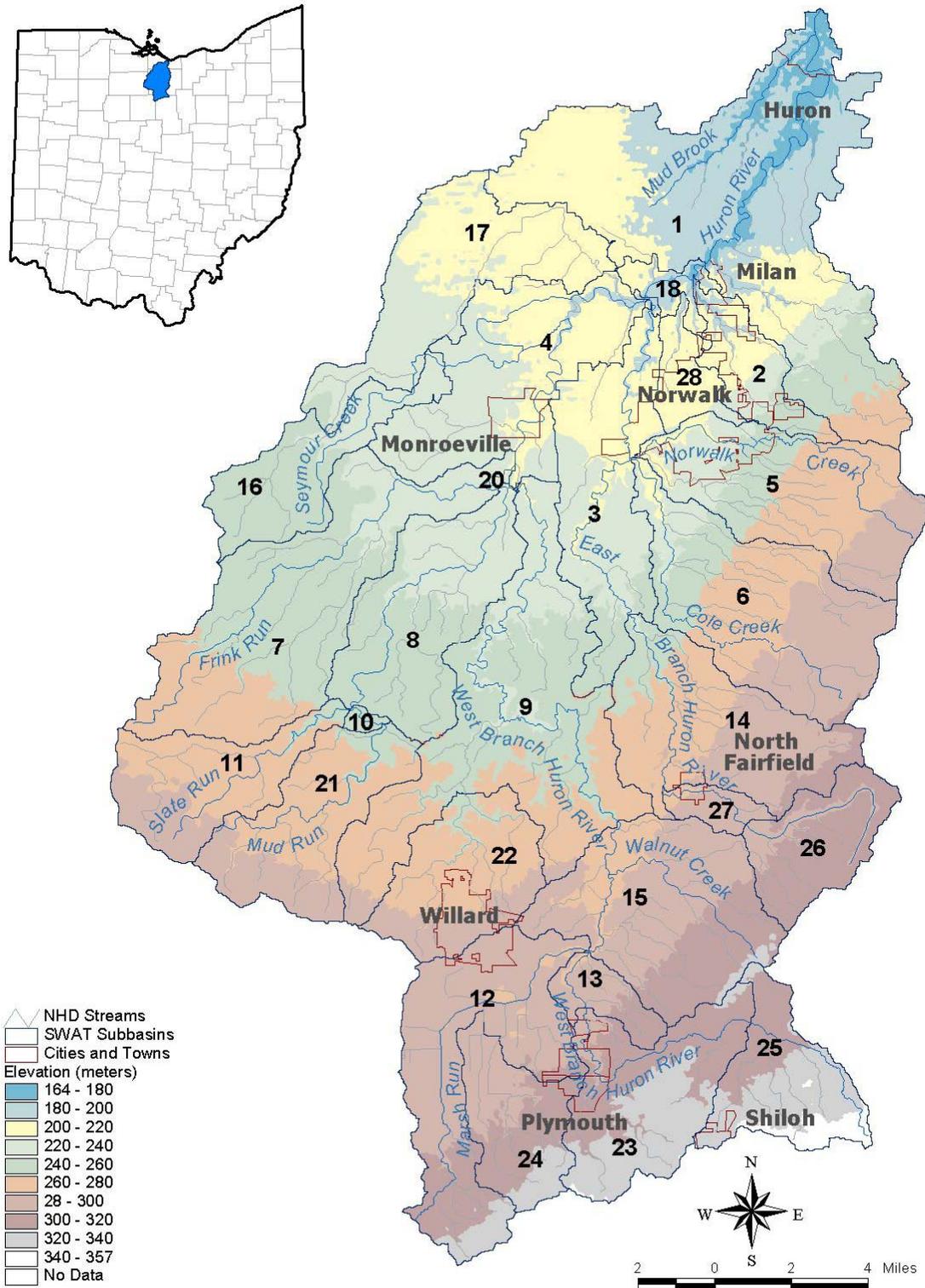


Figure 3. Topography and SWAT delineated subbasins within the Huron River watershed.

After computing watershed topographic parameters for each subbasin, the interface uses land cover and soils data in an overlay process to assign soil parameters and SCS curve numbers. General soils data and

map unit delineations for the United States are provided as part of the State Soil Geographic (STATSGO) database (USDA, 1995). The STATSGO data set was created to provide a general understanding of soils data to be used with large-scale analyses. Small, site-specific analyses with the STATSGO data are not appropriate. GIS coverages provide accurate locations for the soil map units at a scale of 1:250,000 (USDA, 1995). A map unit is composed of several soil series having similar properties. Identification fields in the GIS coverages can be linked to a database that provides information on chemical and physical soil characteristics. Table 3 lists the map unit names and their respective K-factors and hydrologic soil groups, while the distribution of STATSGO map units in the basin is provided in Figure 4.

Table 3. STATSGO Map Units and Associated Soil Characteristics in the Huron River Watershed.

MUID	Map Unit Name	Area (acres)	Area (hectares)	Percent of Watershed	K-factor	Hydrologic Soil Group
OH001	Lenawee-Colwood-Lenawee Variant (OH001)	6,018.20	2,435.50	2.29	0.2486	B/D
OH008	Kibbie-Tuscola-Galen (OH008)	33,602.90	13,598.60	12.81	0.239	B
OH011	Lenawee-Del Rey-Kibbie (OH011)	2,265.30	916.7	0.86	0.3475	B/D
OH012	Milford-Luray-Tiro (OH012)	27.4	11.1	0.01	0.3484	C
OH022	Blount-Pewamo-Glynwood (OH022)	20,810.00	8,421.50	7.93	0.372	C
OH024	Castalia-Millsdale-Milton (OH024)	1373.5	555.8	0.52	0.3784	C
OH041	Tiro-Pandora-Bennington (OH041)	117.5	47.6	0.04	0.3665	C
OH061	Allis-Urban Land-Prout Variant (OH061)	4,908.30	1,986.30	1.87	0.3748	D
OH062	Jimtown-Bogart-Mahoning (OH062)	8,614.20	3,486.10	3.28	0.3338	C
OH063	Bennington-Cardington-Orrville (OH063)	86,139.70	34,859.60	32.84	0.3952	C
OH065	Pewamo-Bennington-Medway (OH065)	19,555.60	7,913.90	7.45	0.3199	C/D
OH066	Bennington-Pewamo-Cardington (OH066)	1,015.00	410.7	0.39	0.3448	C
OH072	Chili-Urban Land-Carlisle (OH072)	1,587.50	642.4	0.6	0.3191	B
OH079	Bennington-Condit-Cardington (OH079)	76,359.70	30,901.70	29.10	0.4104	C

Two soil attributes important in SWAT modeling applications are hydrologic soil groups and the USLE k-factor. The distribution of hydrologic soil groups and the USLE k-factor within the Huron River watershed are displayed in Figures 5 and 6, respectively. Figure 5 indicates that moderately well drained B-soils characterize the downstream portion of the basin from about Norwalk north to Lake Erie. Most of the rest of the watershed is dominated by C- and D-soils, characterized by moderately low to low infiltration capacities.

The USLE K-factor represents the inherent erodibility of a given soil, and typically range from 0.2 (low erodibility) to 0.67 (highly erosive). Figure 6 illustrates that USLE K-factors (for surface layers) within the Huron River watershed range from 0.24 to 0.41, which represent low to moderately erosive soils. The headwaters (southern) portion of the watershed is underlain by moderately erosive soils, while the downstream (northern) portions of the basin are underlain by soils with lower erodibility.

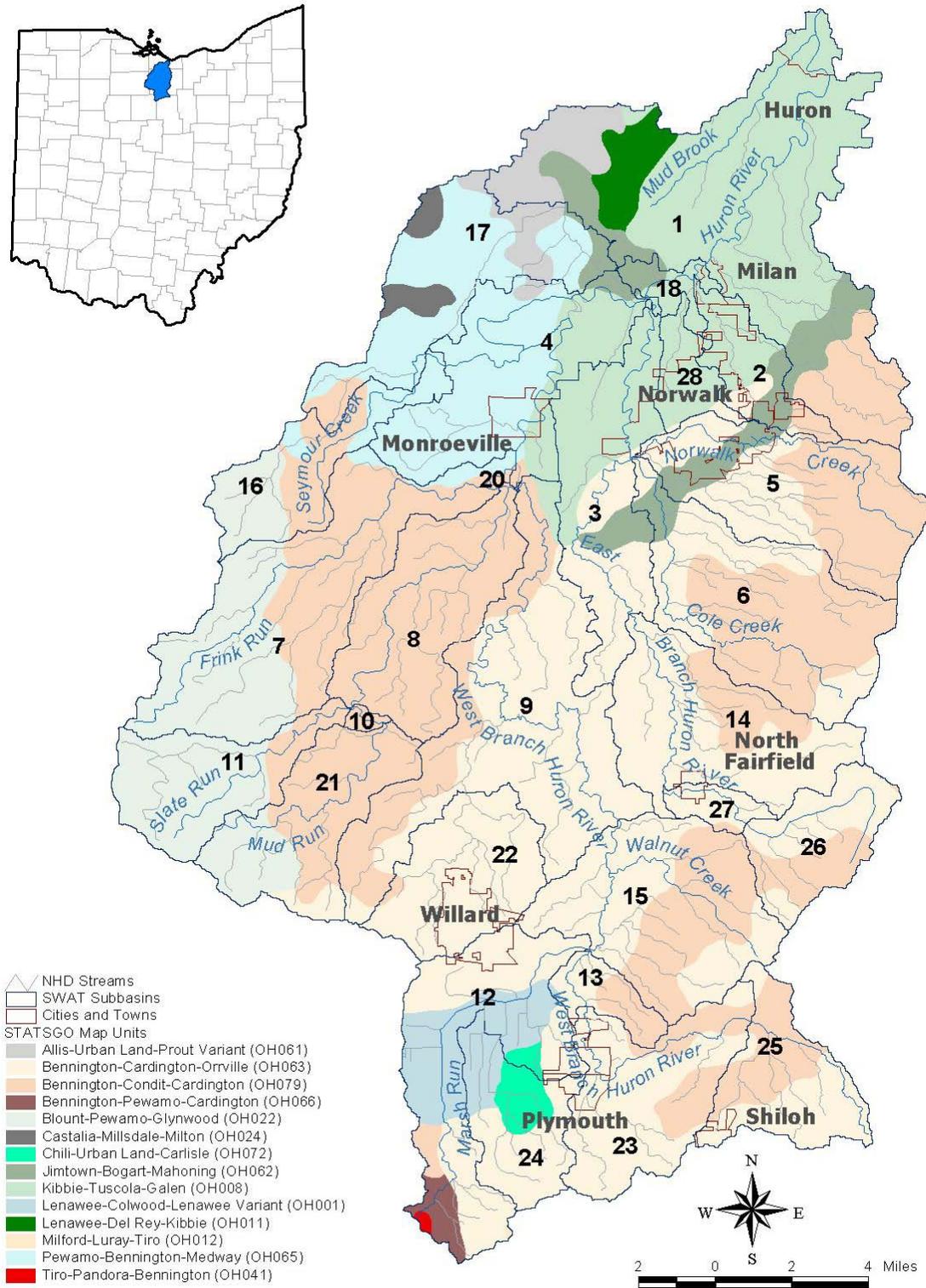


Figure 4. STATSGO map units within the Huron River watershed.

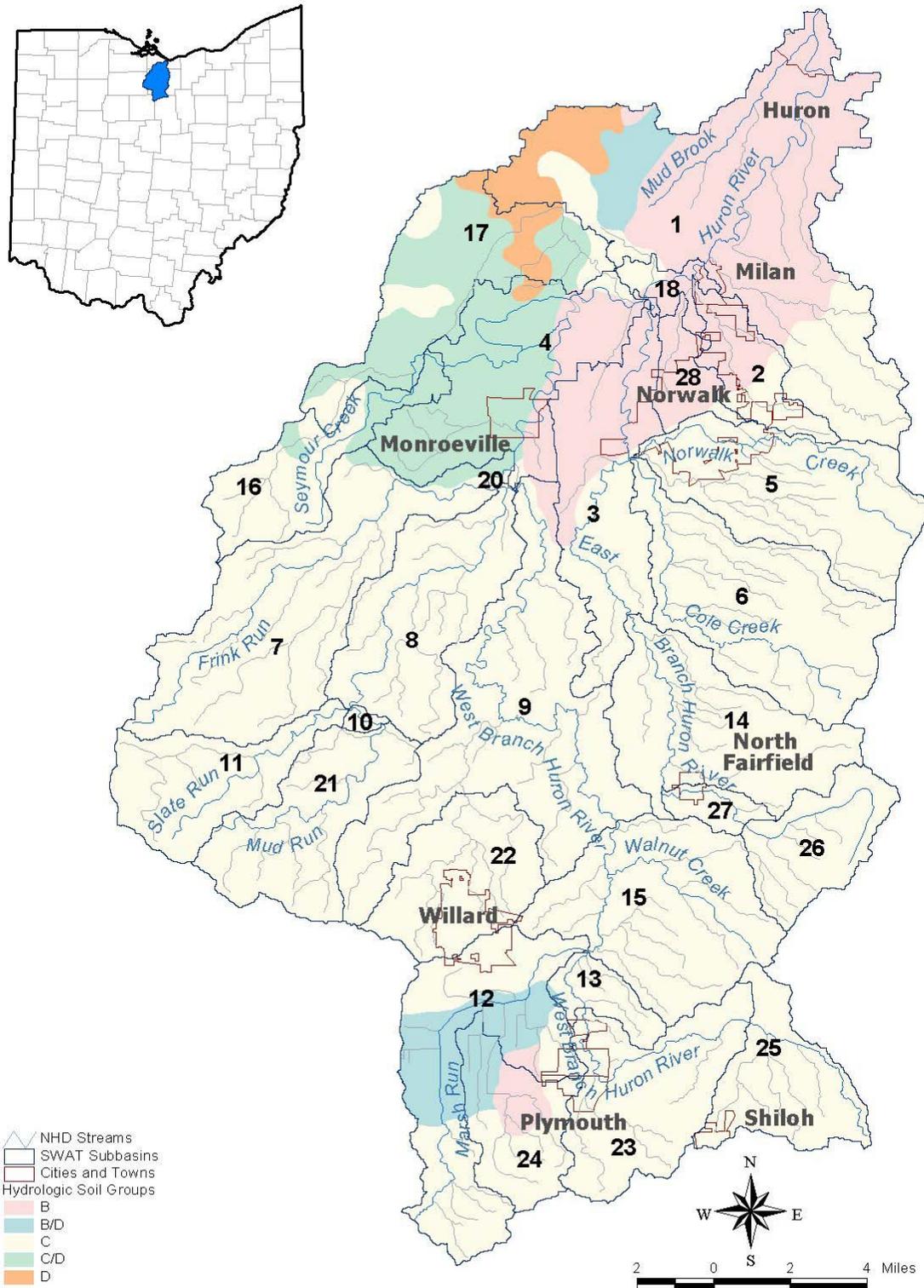


Figure 5. Distribution of hydrologic soil groups within the Huron River watershed.

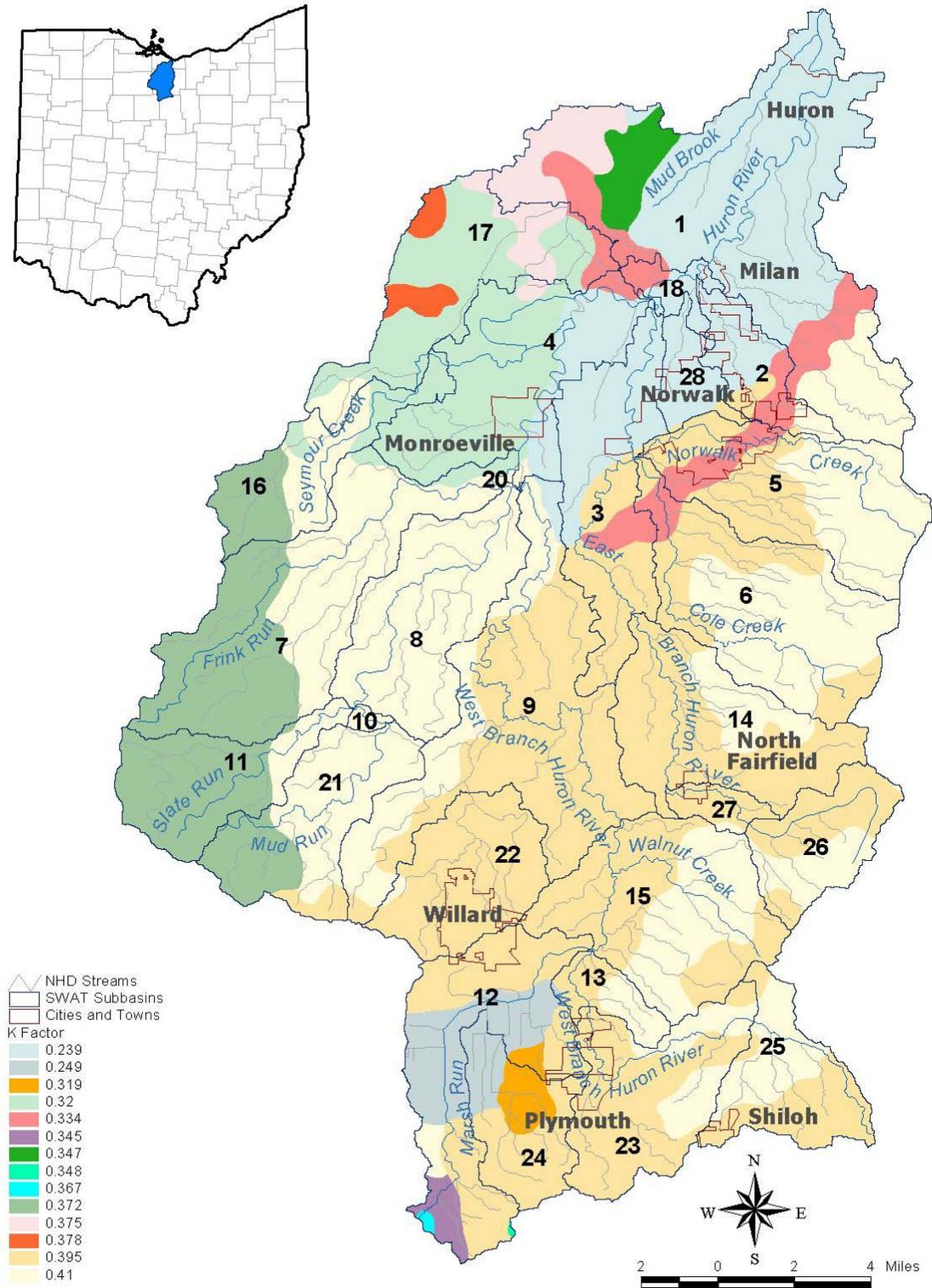


Figure 6. Distribution of the USLE k-factor within the Huron River watershed.

The land cover for the Huron River watershed was extracted from the Multi-Resolution Land Characterization (MRLC) database for the state of Ohio (MRLC, 1992). This spatial database was derived from satellite imagery taken during the early 1990s and is the most current detailed land use data known to be available for the watershed. Each 30-meter (98-foot by 98-foot) pixel contained within the satellite image is classified according to its reflective characteristics. The MRLC land cover data must be reclassified to equal land cover and land use classes used by the SWAT2000 model. The MRLC land use and land cover distribution in the watershed is shown in Figure 7. A summary of the land use and land cover characteristics of the watershed is provided in Table 4. Table 5 lists SWAT land use classification and the SCS curve numbers used to represent the Huron River watershed.

Figure 7 and Table 4 show that row crops (corn, soybean, and a smaller proportion of vegetable crops) are by far the most dominant land use in the watershed, representing nearly 62 percent of the total land use. It is assumed that for modeling purposes corn and soybean crops are rotated on an annual basis. Pasture is the second largest land use, representing 18 percent of the total watershed. Additionally, deciduous forest and low intensity residential use account for nearly 16 and 1 percent, respectively, of the land cover and land uses in the watershed. All other land use classes represent less than 1 percent of total land use/land cover in the watershed.

The SWAT user may decide whether or not to use multiple hydrologic response units (HRUs) in the modeling application. An HRU is a combination of land use/land cover and soil characteristics, and represents areas of similar hydrologic response. If multiple HRUs are not employed, the interface will use the dominant land use and soil characteristic for each subwatershed. To model multiple HRUs, the user must determine a threshold level used to eliminate minor land uses in each subbasin. Land uses that cover a percentage of the subbasin area less than the threshold level are eliminated and the area of those land uses is reapportioned so that 100 percent of the land area in the subbasin is included in the model simulation.

The ArcView SWAT interface user's manual suggests that a 20 percent land use threshold and a 10 percent soil threshold are adequate for most modeling applications. For the Huron River watershed, a two percent land use threshold and a five percent soil threshold were employed. These threshold values resulted in a detailed land use and soil SWAT database, containing many HRUs, which in turn represent a very heterogeneous watershed.

Several USLE parameters are used in AVSWAT, including the K-factor, length-slope factor, C-factor, and the P-factor. The K-factor and length-slope factors were derived from the STATSGO soils database and topographic data, respectively, and are automatically determined in AVSWAT. For the Huron River watershed, C-factors for corn, soybean, and alfalfa were based on the SWAT default values of 0.20, 0.20, and 0.01, respectively. The SWAT default P-factor value was reduced to 0.5 to reflect the use of conservation tillage practices employed within the watershed.

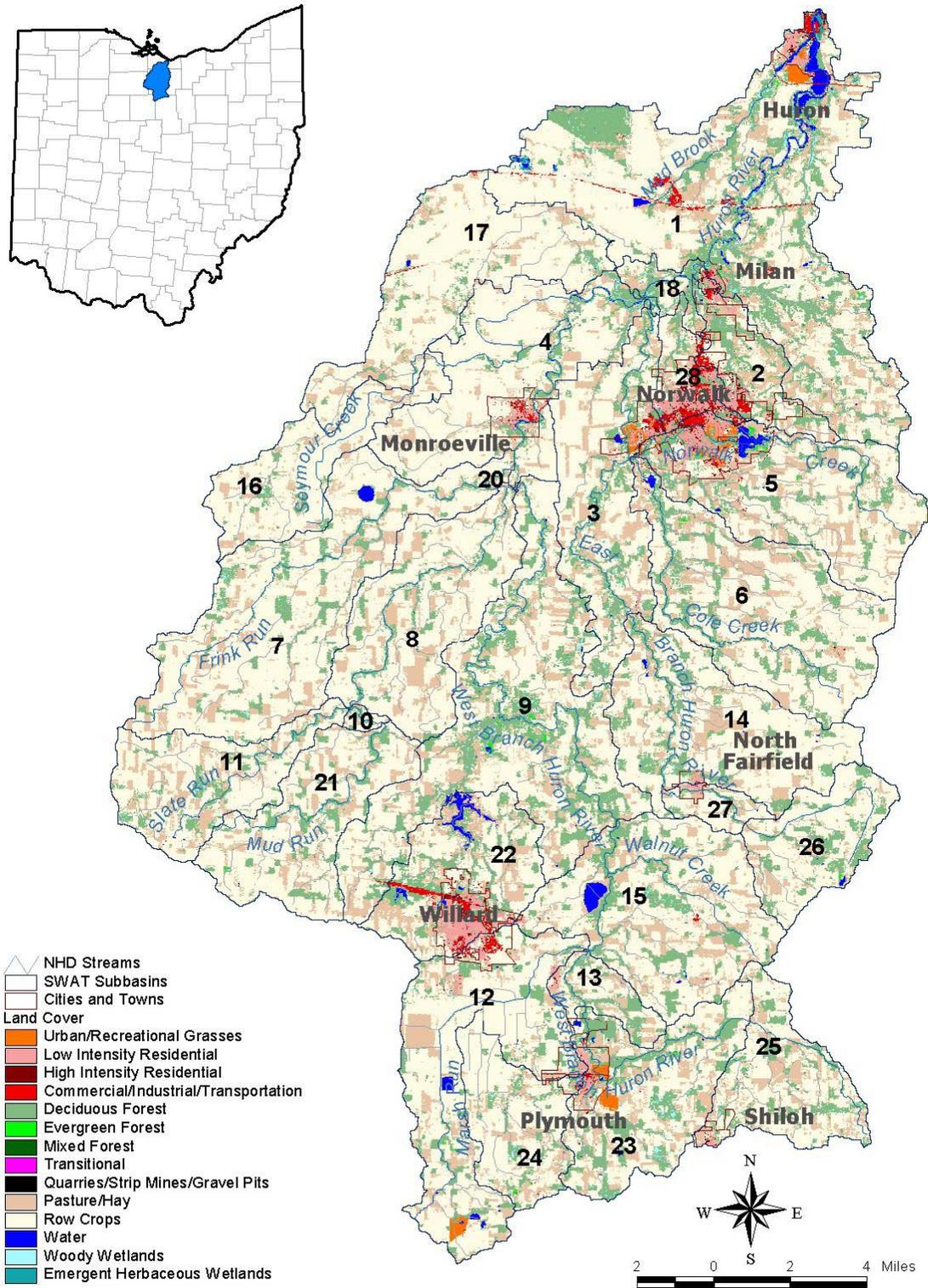


Figure 7. MRLC, 1992, Land use and land cover in the Huron River watershed.

Table 4. Land Use/Land Cover Derived from the MRLC, 1992, Database for the Huron River Watershed.

MRLC Description	SWAT Land Use Code	Area (ac)	Area (ha)	Percent of Watershed
Water	WATR	1,899.4	768.7	0.7
Low Intensity Residential	URLD	3,449.0	1,395.7	1.3
High Intensity Residential	URHD	685.3	277.3	0.3
Commercial/Industrial/Transportation	UCOM	1,736.0	702.5	0.7
Quarries/Strip Mines/Gravel Pits	ROCK	0.2	0.1	<0.1
Transitional	URMD	0.7	0.3	<0.1
Deciduous Forest	FRSD	41,258.3	16,696.7	15.7
Evergreen Forest	FRSE	397.9	161.0	0.2
Mixed Forest	FRST	26.6	10.8	<0.1
Pasture/Hay	ALFA	48,114.7	19,471.4	18.3
Row Crops	AGRR	162,157.7	65,623.0	61.8
Urban/Recreational Grasses	BLUG	784.1	317.3	0.3
Woody Wetlands	WETF	1,192.6	482.6	0.5
Emergent Herbaceous Wetlands	WETN	591.2	239.3	0.2
	Total	262,293.9	106,146.7	100

Table 5. SCS Curve Numbers (CN-II) for Land Use and Land Cover in the Huron River Watershed.

SWAT Land Use/Land Cover Classification	SCS Curve Numbers for Land Use and Hydrologic Soil Group			
	A	B	C	D
Low Intensity Urban Residential	46	65	77	82
Medium Intensity Urban Residential	31	59	72	79
High Intensity Urban Residential	63	77	85	88
Urban Commercial	89	92	94	96
Deciduous Forest	45	66	77	83
Evergreen Forest	25	55	70	77
Mixed Forest	36	60	73	79
Corn	67	77	83	87
Soybean	67	78	85	89
Alfalfa	31	59	72	79
Grasslands	31	59	72	79
Forested Wetlands	45	66	77	83
Non-forested Wetlands	49	69	79	84
Water	100	100	100	100

2.4 Meteorological Data

SWAT2000 requires daily precipitation, temperature, relative humidity, solar radiation, and wind speed data. These parameters may be given in a site-specific, user-specified file, estimated using a climate simulator, or a combination of the two. The interface will search and find the station closest to the mean center of each subbasin, and assign that station's meteorological parameters to the subbasin. Daily precipitation and temperature data were obtained from the National Climatic Data Center (NCDC) for the Norwalk Waste Water Treatment Plant (ID 6118) station (see Figure 8). Daily data are available for the period January 1, 1900 through December 31, 2002. Relative humidity, solar radiation and wind speed were simulated using a climate simulator available in SWAT2000. The climate simulator uses historical data collected from surrounding National Weather Service sites to estimate parameters. It is believed that these stations are adequate for estimating relative humidity, solar radiation, and wind speed for the Huron River watershed.

2.5 Reservoir Impact on Hydrology and Water Quality

Downstream flows in the Huron River watershed are affected by Holiday Lake and the Norwalk Reservoirs 1, 2, and 3 (see Figure 1). The volume of water releases from Holiday Lake impacts streamflow in the West Branch of the Huron River, while the Norwalk Reservoirs affect flow in the East Branch of the Huron River. Holiday Lake is privately owned, and data specific to the lake are unavailable. However, it is estimated that the surface area of the lake is approximately 200 acres. The Norwalk Reservoirs have a combined surface area of 159 acres and are maintained by the Ohio Division of Wildlife.

The daily volume of released water for the reservoirs was not available for input to the model and was therefore estimated based on the size of the reservoirs, their drainage areas, and downstream flow monitoring results. The daily flow volumes were also adjusted during the model calibration process.

2.6 Point Sources

Sediment, nutrient, and flow contributions from a number of point sources in the Huron River watershed were incorporated in the SWAT model. The required SWAT inputs include average monthly flow and average monthly loadings for sediment/total suspended solids, organic nitrogen, organic phosphorus, nitrate, soluble phosphorus, ammonia, and nitrite. Data for all of the facilities in the watershed were acquired from the Ohio EPA Surface Water Information System (SWIMS) database. Average monthly loads for SWAT point source inputs were calculated by multiplying the reported monthly concentration, discharge, and a conversion factor. In instances where average concentrations for a certain parameter were not available from SWIMS, the average concentration for that parameter from similar facilities in the watershed were used. Table 6 lists the permitted National Pollutant Discharge Elimination System (NPDES) facilities found within the Huron River watershed.

Table 6. Permitted NPDES Facilities Located within the Huron River Watershed.

OEPA Permit	USEPA Permit	Facility Name	Type	Stream
2IJ00005	OH0001422	Huron Lime Company	Industry	Huron River
2IF00013	OH0000621	Glidden Co	Industry	Huron River
2PC00001	OH0020125	Huron Basin WWTP	WWTP	Huron River
2PR00091	OH0119466	Huron River Valley Resort	WWTP	Huron River
2PR00069	OH0111481	Huron River Estates Subdivision	WWTP	Huron River
2PY00040	OH0126900	Alpine Trail MHP	WWTP	Huron River
2PB00037	OH0022641	Milan WWTP	WWTP	Huron River
2IA00002	OH0000345	CertainTeed Corp - Avery Plant	Industry	Mud Brook
2IN00137	OH0011597	Erie Co Landfill	Industry	Mud Brook
2PR00059	OH0095443	Comfort Inn Motel	WWTP	Mud Brook
2PR00093	OH0119482	Milan Travel Park	WWTP	Mud Brook Trib (5.60)
2PS00006	OH0095516	Lake Erie Manufacturers Outlet Mall	WWTP	Mud Brook Trib (5.99)
2PR00073	OH0116301	Hampton Inn	WWTP	Mud Brook Trib (5.60)
2PR00087	OH0119423	Homestead Inn Restaurant	WWTP	Mud Brook Trib (5.09)
2PT00010	OH0102393	Ehove Joint Vocational School	WWTP	Mud Brook Trib (5.99)
2PR00060	OH0102474	Days Inn Motel	WWTP	Mud Brook Trib (5.60)
2PR00058	OH0095362	Super 8 Motel	WWTP	Mud Brook
2IN00001	OH0053007	Freudenberg - NOK	Industry	Mud Brook Trib (2.74)
2PR00174	OH0130567	Berlin Milan Local Schools (Edison High School)	WWTP	Huron River Trib
2IY00050	OH0031763	Milan WTP	Industry	Village Ck
2IR00006	OH0053104	Clevite Elastomers-Milan	Industry	Brewery Ck (trib to Huron River)
2PY00053	OH0130494	Will-O-Brook MHP	WWTP	Willow Brook (trib to Rattlesnake Ck)
2PD00024	OH0052604	Norwalk WWTP	WWTP	W Br Rattlesnake Ck
2PG00116	OH0135526	Huron Co Airport	WWTP	Huron River Trib
2PR00152	OH0126942	Norwalk Elks Lodge #730	WWTP	North Ck (trib to Norwalk Ck Trib)
2PT00041	OH0132411	Christie Lane School & Workshop	WWTP	Norwalk Ck
2PP00043	OH0122335	ODOT Dist 3 Norwalk Garage	WWTP	Cole Ck Trib
2PY00054	OH0130532	Meadowbrook Mobile Estates (MHP)	WWTP	Cole Ck Trib
2PY00031	OH0126420	Fieldcrest MHP	WWTP	Cole Ck

OEPA Permit	USEPA Permit	Facility Name	Type	Stream
2IN00182	OH0122718	BP Oil Co Norwalk Bulk Plant	Industry	Ditch to SS to E Br Huron River
2PR00053	OH0058947	Consolidated Stores - Big Lots #34	WWTP	East Branch Huron River Tributary
2PR00183	OH0132501	Norwalk American Legion Post 41	WWTP	East Branch Huron River
2IG00023	OH0078298	Marathon Ashland Pipeline LLC - Bellevue Terminal	Industry	Megginson Creek
2PB00004	OH0020095	Monroeville WWTP	WWTP	West Branch Huron River
2PT00013	OH0119512	Willard City Schools (New Haven Elementary Sch)	WWTP	West Branch Huron River
2PD00005	OH0028118	Willard WWTP	WWTP	West Branch Jacobs Creek
2IT00001	OH0000116	CSX Transportation - Willard Yard	Industry	West Branch Jacobs Creek
2IN00135	OH0111376	Huron Co Landfill	Industry	Gully to West Branch Huron River
2PY00030	OH0125750	Coble Village MHP	WWTP	Marsh Run Tributary
2PB00014	OH0027065	Plymouth WWTP	WWTP	West Branch Huron River

2.7 Agricultural Practices and Fertilizer Applications

Several assumptions had to be made regarding agricultural practices in the watershed to provide appropriate input to the model. These assumptions are summarized below and were based on personal observations made during a site visit, discussions with a local co-op service, and SWAT default values.

- Conservation tillage is widely practiced throughout the watershed
- Annual crop rotation occurs between corn and soybean
- Alfalfa remains infield for a three year period.
- Fertilizer applications typically occur in the spring (April) and are applied to corn and soybean
- Alfalfa fertilizer application occurs in the initial year of planting only.

Fertilizer application rates in the Huron River watershed SWAT model were based on the *Tri-State Fertilizer Recommendations for Corn, Soybeans, Wheat, and Alfalfa* report (Vitosh, 2002) as well as discussions with the Sunrise Co-op (Tom Ruffing, personal communications, October 19, 2004). Table 7 presents the applications rates for nitrogen and phosphorus for the three major crops cultivated in the watershed. The application rates presented in the table reflect the recommended values to produce a potential crop yield equal to approximately 160 to 180 bu/acre for corn, 60 to 70 bu/acre for soybeans, and 5 tons/acre for alfalfa. It is understood that application rates can vary significantly from field to field and year-to-year and the rates shown in Table 7 are therefore meant to represent typical practices solely for the purposes of watershed-scale modeling.

Table 7. SWAT fertilizer Application Rates in kg/ha (lb/ac in parentheses).

Crop	N	P ₂ O ₅
Corn	242 (216)	84 (75)
Soy	0 (0)	62 (55)
Alfalfa	17 (15)	129 (115)

3.0 Model Calibration

This section of the report presents the process that was used to calibrate the model both for hydrology and water quality. Modeling results are also summarized.

3.1 Hydrology

After initially configuring SWAT, model calibration was performed. Calibration refers to the adjustment or fine-tuning of modeling parameters to reproduce observations. The calibration was performed for different SWAT subbasins at multiple locations throughout the watershed. This approach ensured that landscape heterogeneities were represented. Upon completion of the calibration at selected locations, a calibrated dataset containing parameter values for each modeled land use and pollutant was developed.

Calibration was completed by comparing time-series model results to monitoring data. Output from the watershed model is in the form of daily average flow and daily average concentrations for the modeled pollutants for each of the subwatersheds. Key considerations in the hydrology calibration were the overall water balance, the high-flow to low-flow distribution, storm flows, and seasonal variation. Two criteria for goodness of fit were used for calibration: graphical comparison and the relative error method. Graphical comparisons are extremely useful for judging the results of model calibration; time-variable plots of observed versus modeled flow provide insight into the model's representation of storm hydrographs, baseflow recession, time distributions, and other pertinent factors often overlooked by statistical comparisons. The model's accuracy was primarily assessed through interpretation of the time-variable plots. The relative error method was used to support the goodness of fit evaluation through a quantitative comparison. A small relative error indicates a better goodness of fit for calibration.

Hydrology was the first model component calibrated, and it involved a comparison of observed data from an in-stream USGS flow gauging station to modeled in-stream flow and an adjustment of key hydrologic parameters. Among the modeling parameters that proved to be most sensitive were those governing the partitioning of precipitation between surface and groundwater flows, possibly because of the presence of tiling. The specific parameters were the threshold depth of the shallow aquifer before evaporation can occur and the groundwater revaporation coefficient.

The SWAT model was run to simulate streamflow conditions during the 1990 to 2002 time period. This time period corresponds to the most recent data available at the USGS Huron River stream gage at Milan, Ohio (ID 0419000) (see Figure 8 for location). Available daily mean flow data at this station cover the periods April 1, 1950 to September 30, 1981, and October 1, 1987 through September 30, 2002. SWAT was allowed to “spin up” or reach equilibrium^a during the first year of the model run; consequently hydrologic calibration was performed for the period 1991 to 2002.

^a The SWAT model calculates and updates a variety of watershed conditions (e.g., soil moisture) on a daily basis during each model run. Since these conditions must be specified based on limited data for the first day of the model run, the first few months of the modeling output are often discarded. This approach is referred to as allowing the model to “spin up” or reach equilibrium.

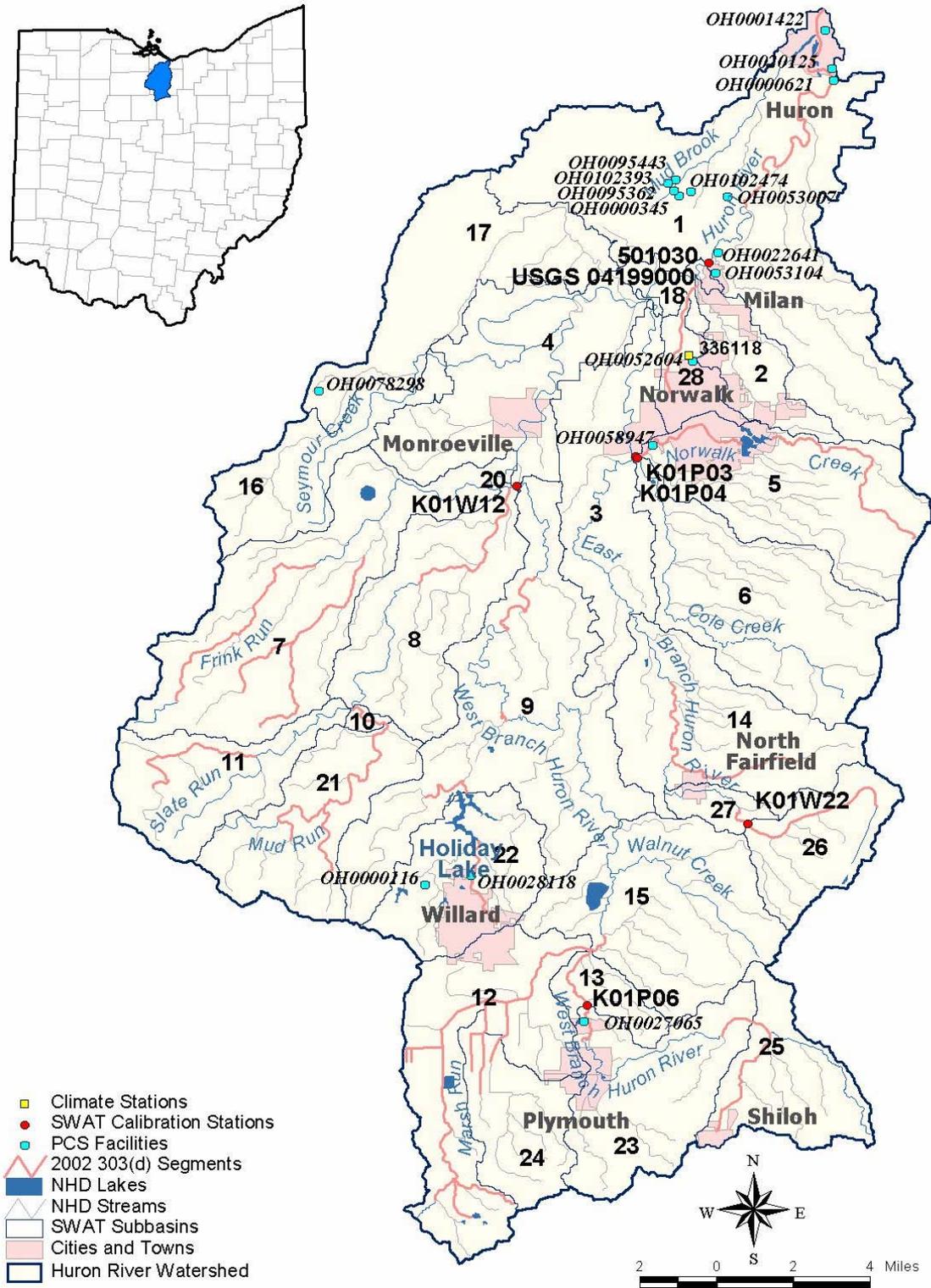


Figure 8. Climate station, model calibration stations, and major NPDES facility locations within the Huron River watershed.

Figure 9 shows a comparison of the observed versus simulated average monthly stream flow for the calibration period, and displays a good level of agreement ($R^2 = 0.86$). A comparison between observed and simulated average weekly streamflow is presented in Figure 10. The relationship between observed and simulated flow is not as good as average monthly flow ($R^2 = 0.67$) but is still considered acceptable.

Graphical comparisons of observed versus simulated mean monthly streamflow are presented in Figures 11, 12, and 13. These figures show a reasonable level of agreement between observed and simulated mean monthly streamflow. Additionally, an observed versus simulated flow duration analysis is presented in Figure 14. With the exception of the very lowest flows, the model adequately describes flow variability within the Huron River watershed.

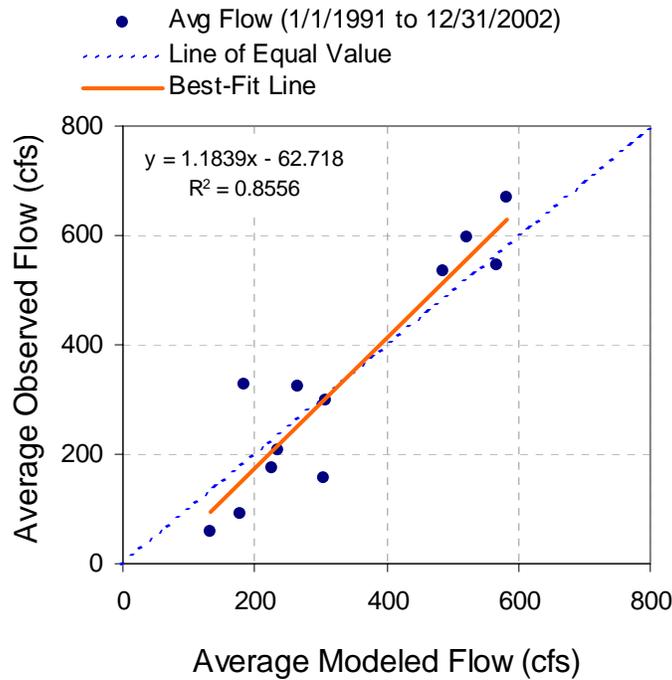


Figure 9. Composite (average monthly) hydrologic calibration results, 1991 to 2002.

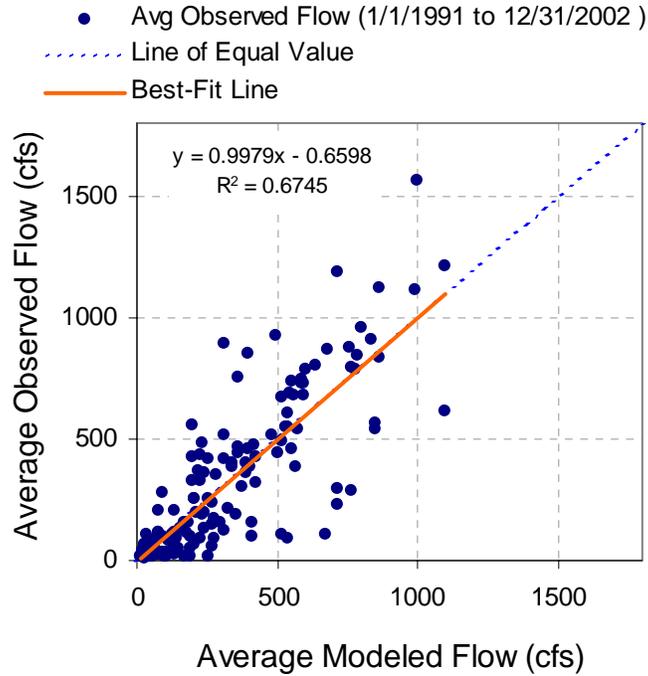


Figure 10. Composite (average weekly) hydrologic calibration results, 1991 to 2002.

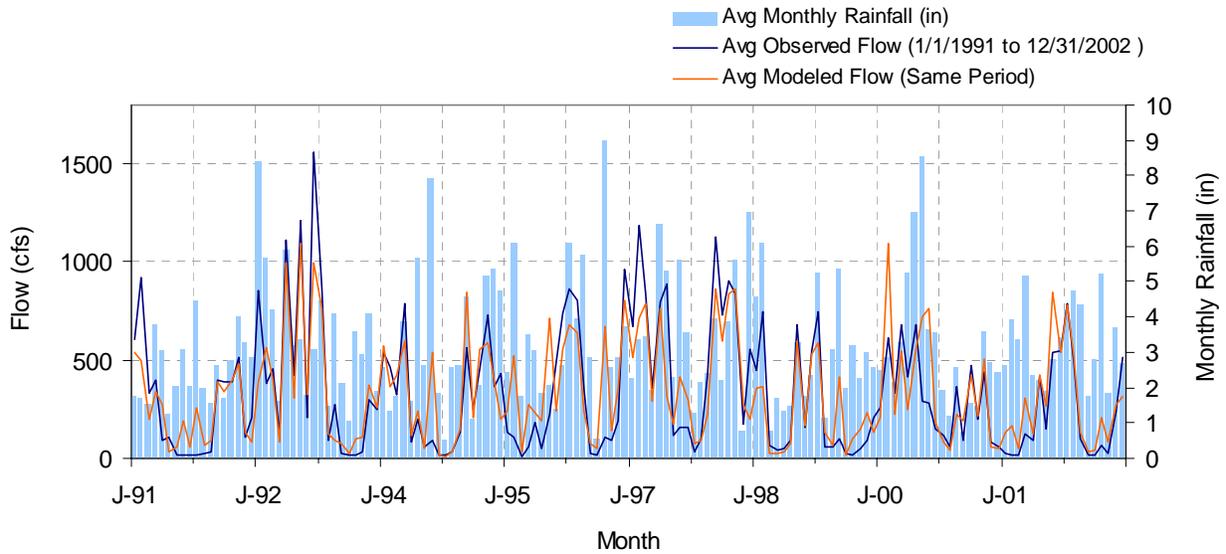


Figure 11. Time series hydrologic calibration results, 1991 to 2002.

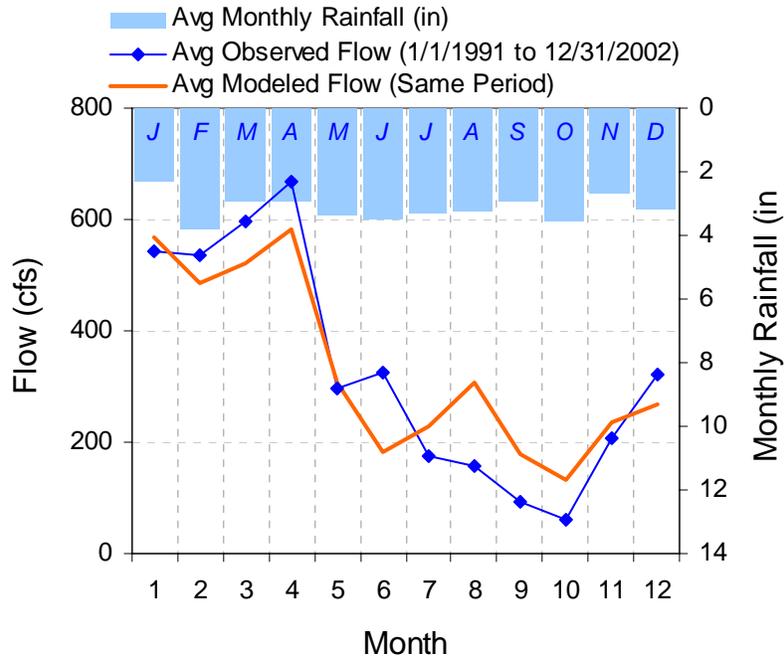


Figure 12. Observed versus simulated mean monthly streamflow, 1991 to 2002.

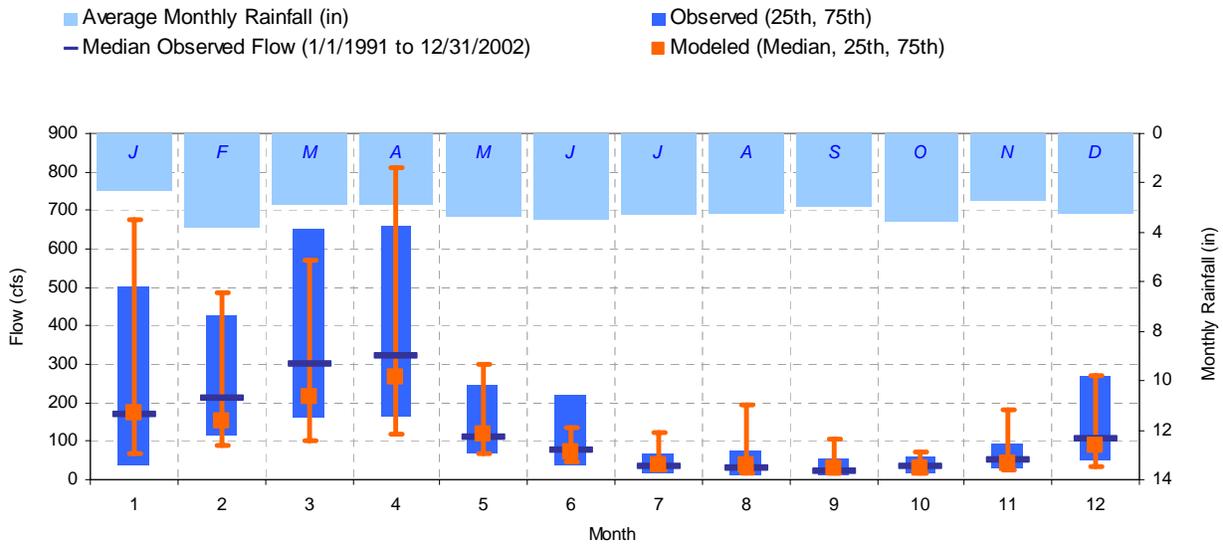


Figure 13. Observed versus simulated 25th percentile, 75th percentile, and median monthly streamflow, 1991 to 2002.

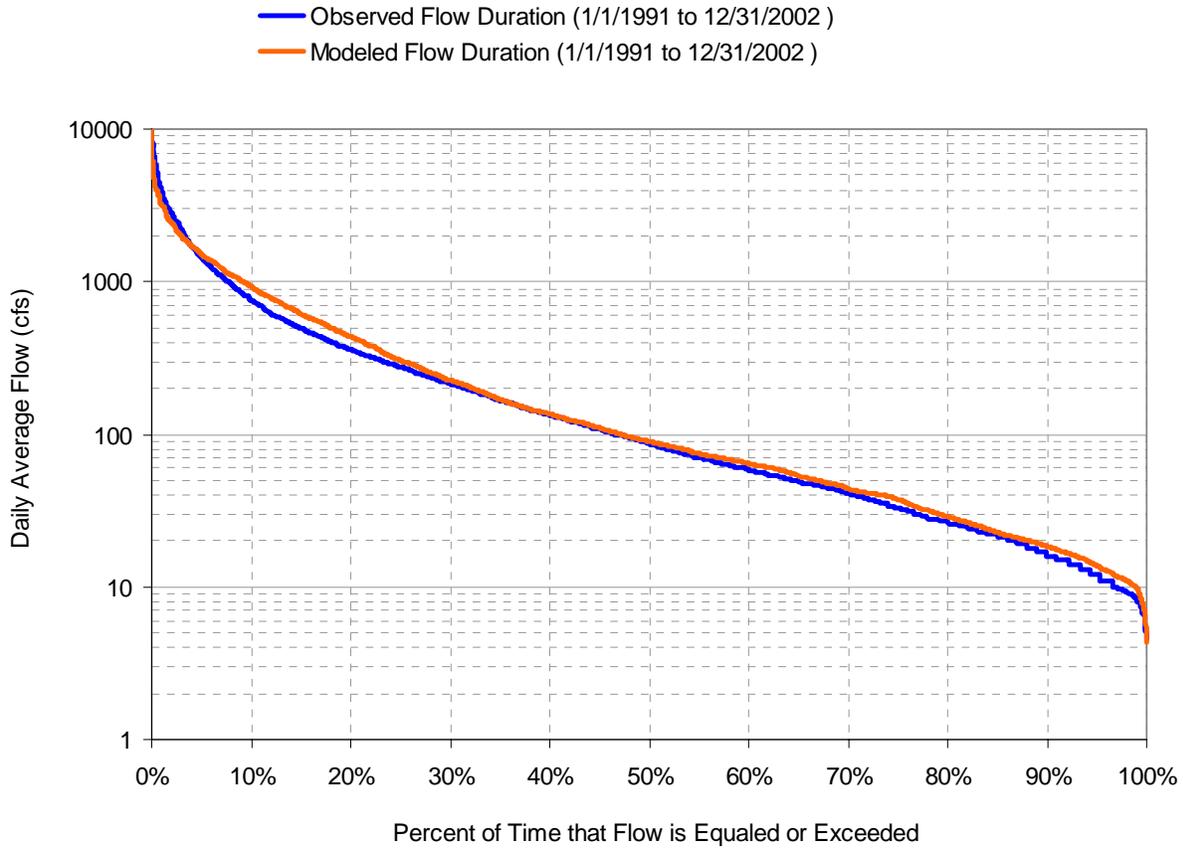


Figure 14. Observed versus simulated flow duration, 1991 to 2002.

Seasonal and annual differences between observed and simulated stream flows for the calibration time period are summarized in Table 8. Error statistics are also presented and compared to criteria recommended for the Hydrologic Simulation Program in Fortran (HSFP) model (a watershed model comparable to SWAT). Errors are determined by comparing simulated flow values to observed flow values for various time periods (e.g., for the highest flow periods) using the following equation:

$$RelativeError = \frac{SimulatedValue - ObservedValue}{ObservedValue} \times 100$$

A goal of the calibration process is to reduce the relative error to less than the recommended criteria for as many flow categories as possible. The table shows that simulated flow for the twelve-year period agrees well with observed stream flow data. The simulated total flow volume is within 1 percent of the observed total flow volume and fall, winter, and spring seasonal volumes are within 20 percent. The greatest errors occur in simulated seasonal summer volumes and summer storm volumes, which are over-predicted. This could be due to over-representation of summer rainfall (i.e., isolated rainfall events in the Norwalk area are applied basin-wide).

In general, the hydrologic calibration appears adequate in that it reflects the total water yield, annual variability, and magnitude of individual storm events in the basin. All recommended criteria are met with the exception of summer flow volumes.

Table 8. Huron River Watershed Calibration Results for the Simulation Period January 1, 1991 to December 31, 2002. Units shown are inches.

Total Simulated In-stream Flow:	12.17 in	Total Observed In-stream Flow:	12.09 in
Total of highest 10% flows:	6.88 in	Total of Observed highest 10% flows:	7.48 in
Total of lowest 50% flows:	0.75 in	Total of Observed Lowest 50% flows:	0.69 in
Simulated Summer Flow Volume:	2.19 in	Observed Summer Flow Volume:	1.31 in
Simulated Fall Flow Volume:	1.95 in	Observed Fall Flow Volume:	1.81 in
Simulated Winter Flow Volume:	4.76 in	Observed Winter Flow Volume:	5.06 in
Simulated Spring Flow Volume:	3.27 in	Observed Spring Flow Volume:	3.92 in
Total Simulated Storm Volume:	9.42 in	Total Observed Storm Volume:	8.61 in
Simulated Summer Storm Volume:	1.88 in	Observed Summer Storm Volume:	1.01 in
<i>Errors (Simulated-Observed)</i>		<i>Recommended Criteria¹</i>	
Error in total volume:	0.65	±10	
Error in 50% lowest flows:	8.14	±10	
Error in 10% highest flows:	-8.61	±15	
Seasonal volume error - Summer:	40.35	±30	
Seasonal volume error - Fall:	7.44	±30	
Seasonal volume error - Winter:	-6.32	±30	
Seasonal volume error - Spring:	-19.91	±30	
Error in storm volumes:	8.61	±20	
Error in summer storm volumes:	46.26	±50	

¹ Recommended criteria are from Lumb et al., 1994.

3.2 Water Quality

After hydrology was sufficiently calibrated, water quality calibration was performed. Modeled versus observed in-stream concentrations were directly compared during model calibration. The water quality calibration consisted of executing the watershed model, comparing water quality time series output to available water quality observation data, and adjusting pollutant loading and in-stream water quality parameters within a reasonable range. The objective was to best simulate the observed data for individual samples, as well as to obtain modeling output with ranges (i.e., minimum and maximums) similar to the observed data.

Adjusted water quality parameters within the model included USLE P and C factors, instream decay rates, and denitrification coefficients. Water quality calibration adequacy was primarily assessed through review of time-series plots. Looking at a time series plot of modeled versus observed data provides more insight into the nature of the system and is more useful in water quality calibration than a statistical comparison. Flow (or rainfall) and water quality can be compared simultaneously, and thus can provide

insight into conditions during the monitoring period (dry period versus storm event). The response of the model to storm events can be studied and compared to observations (data permitting). Ensuring that the storm events are represented within the range of the data over time is the most practical and meaningful means of assessing the quality of a calibration. Furthermore, due to the relative lack of water quality monitoring data, it was not possible to make statistical comparisons of the predicted and observed data.

Water quality calibration involved the examination of observed and predicted data at five calibration sites, as shown in Figure 8. These five sites correspond to the following Ohio EPA water quality monitoring stations:

- Station 501030 is on the main stem of the Huron River and drains most of the watershed.
- Station K01W12 drains a large portion of the West Branch Huron River
- Station K01W22 drains a headwaters portion of the East Branch Huron River.
- Station K01P06 drains a headwaters portion of the West Branch Huron River.
- Station K01P04 drains the Cole Creek subwatershed.

Water quality samples have been collected approximately monthly at Station 501030 for the period January 1991 to November 2003. Water quality samples at the other stations are limited to the periods January 1997 to August 1998 and June 2002 to September 2002.

SWAT water quality modeling results are presented graphically for the five calibration sites in Figure 15 to Figure 29. The graphs compare observed versus simulated daily total suspended solids (TSS), nitrite+nitrate (NO₂+NO₃), and total phosphorus (TP) concentrations for the period January 1, 1997 to December 31, 2002.

A visual inspection of the calibration graphs indicate that the model provides a reasonable description of the significant water quality processes occurring throughout the watershed. Results at Station 501030 are the most significant because this station has the most observed data and represents the largest drainage area. Observed pollutant concentrations at this station are within the range of simulated concentrations and most seasonal trends are reproduced. Storm effects also appear to be reasonably simulated by the model, although some errors result from the model not predicting high observed TP concentrations.

The model does not perform as well for the stations representing smaller drainage areas but is still considered adequate. In general, the model simulates a greater range in concentrations than is reflected in the observed data, especially for TSS. Several maximum simulated nutrient concentrations also appear unreasonable (e.g., maximum nitrite+nitrate concentration of 59.8 mg/L at Station K01W22). This could be due to the model overestimating erosion and other loading processes in these smaller subwatersheds, but could also indicate that sampling has not occurred immediately after storm events in these areas and thus the observed data underestimates peak concentrations.

In sum, the model appears to perform better at the stations draining the largest drainage areas (i.e., Stations 501030 and K01W12) and has some limitations as applied to the smaller areas. The results are considered acceptable because the TMDL is primarily based on the model output for each of the three large Assessment Units.

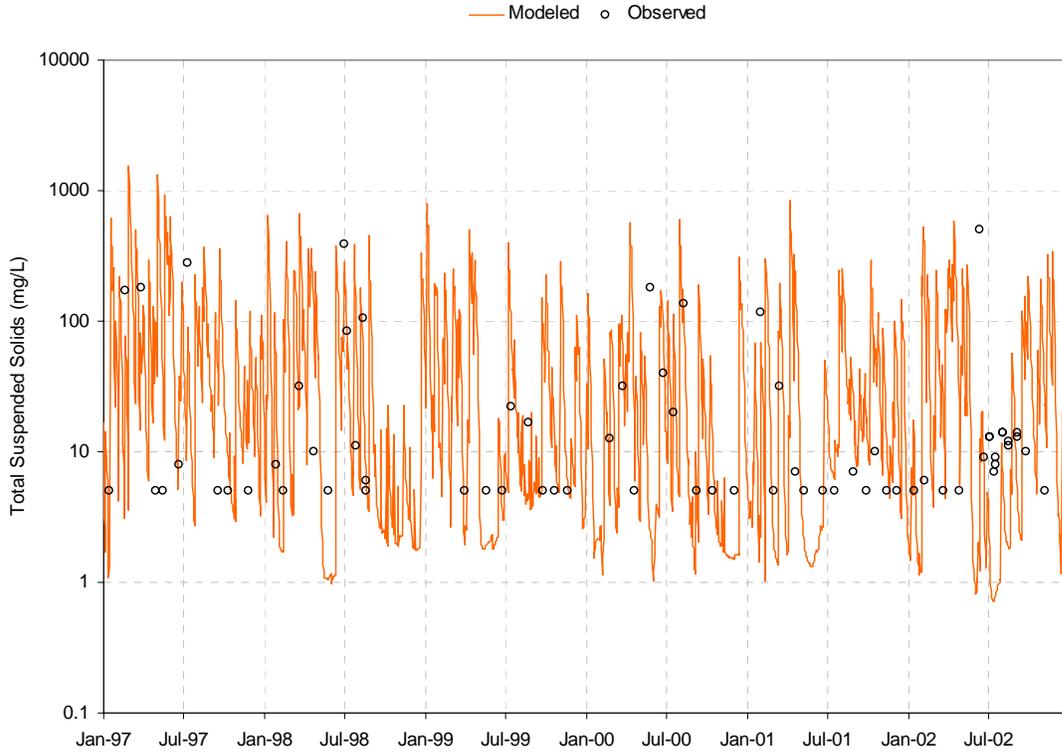


Figure 15. Observed versus simulated total suspended solids at station 501030. Note that many observed TSS values are at the detection limit of 5 mg/L.

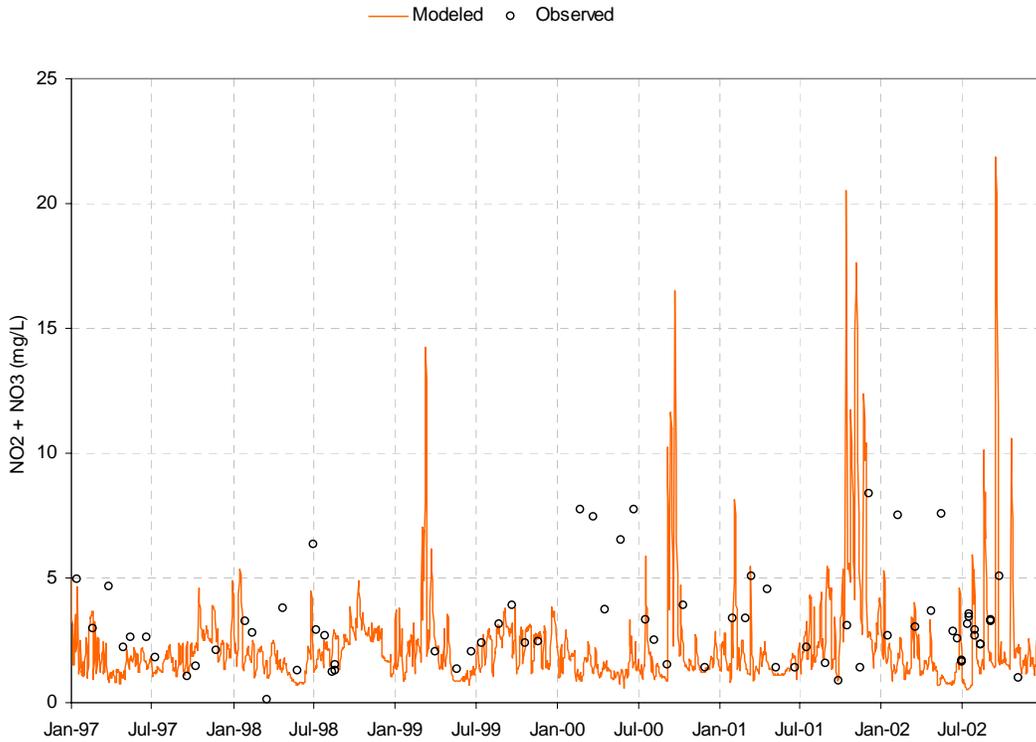


Figure 16. Observed versus simulated nitrite+nitrate at station 501030.

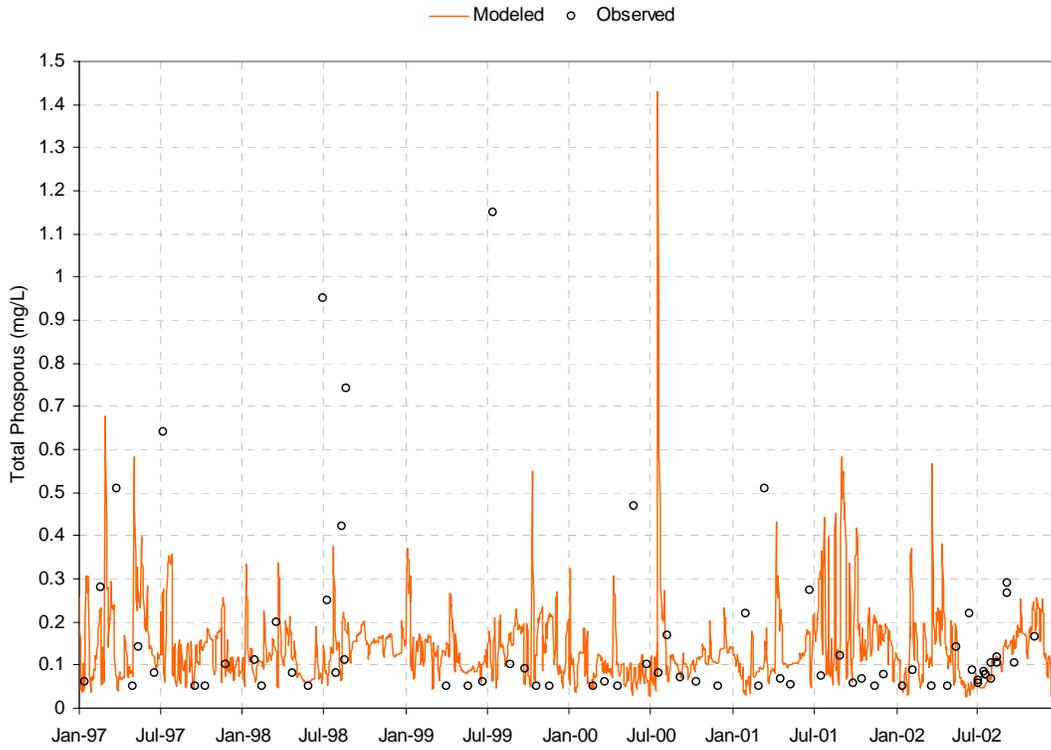


Figure 17. Observed versus simulated total phosphorus at station 501030.

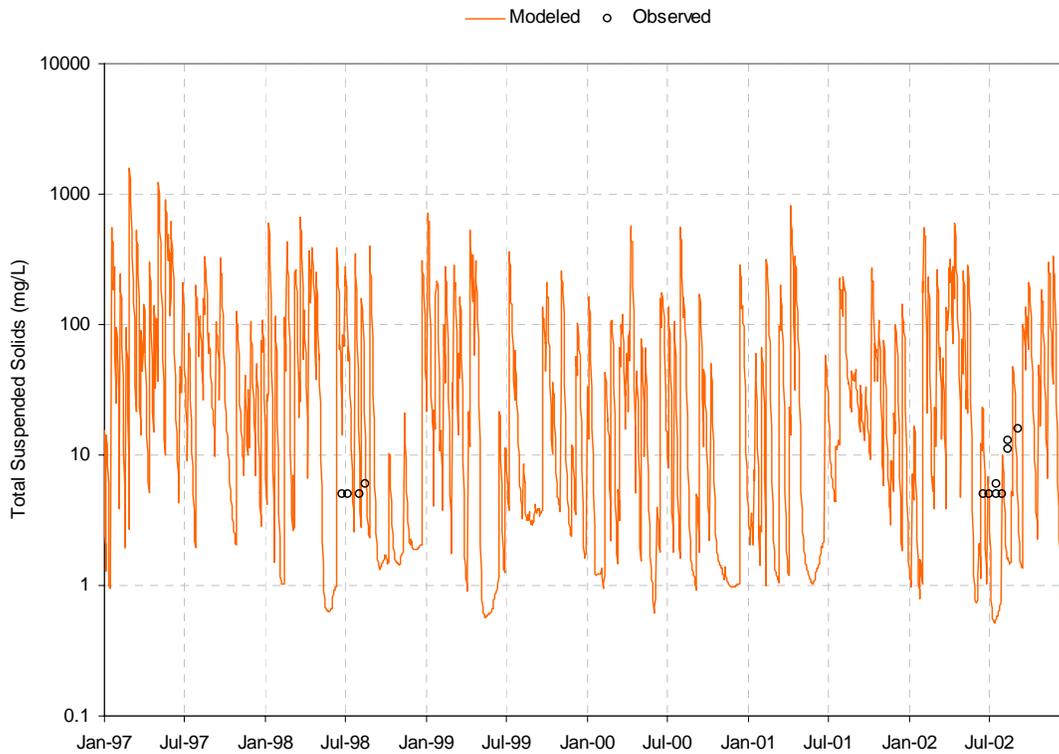


Figure 18. Observed versus simulated total suspended solids at station K01W12.

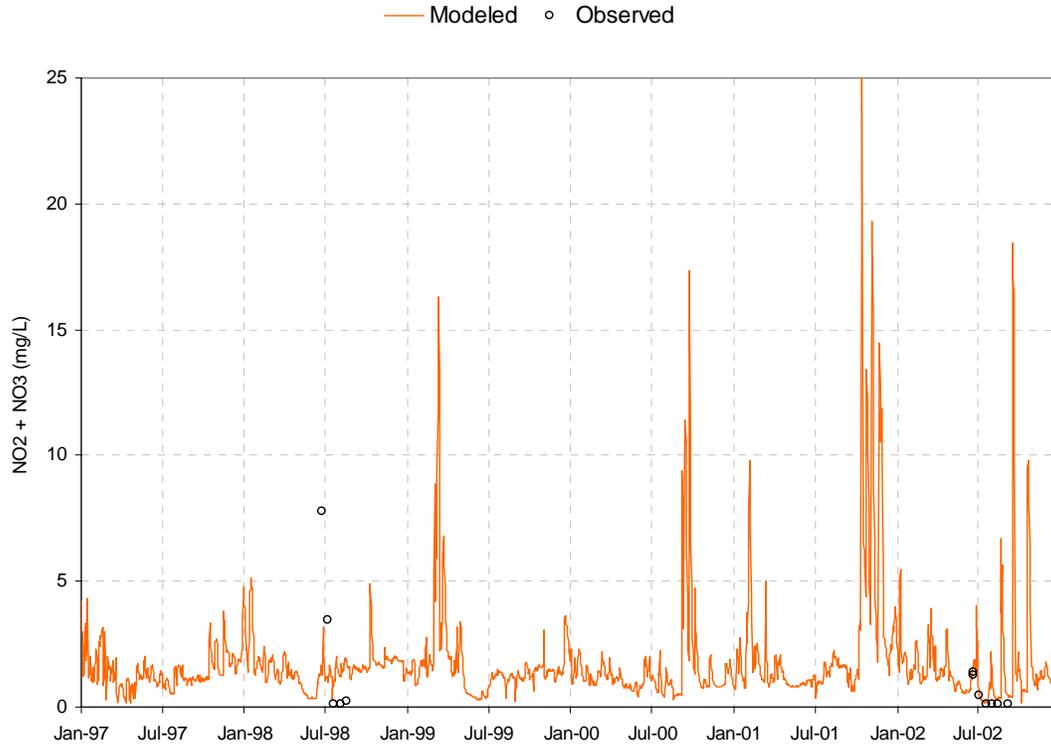


Figure 19. Observed versus simulated nitrite + nitrate at station K01W12.

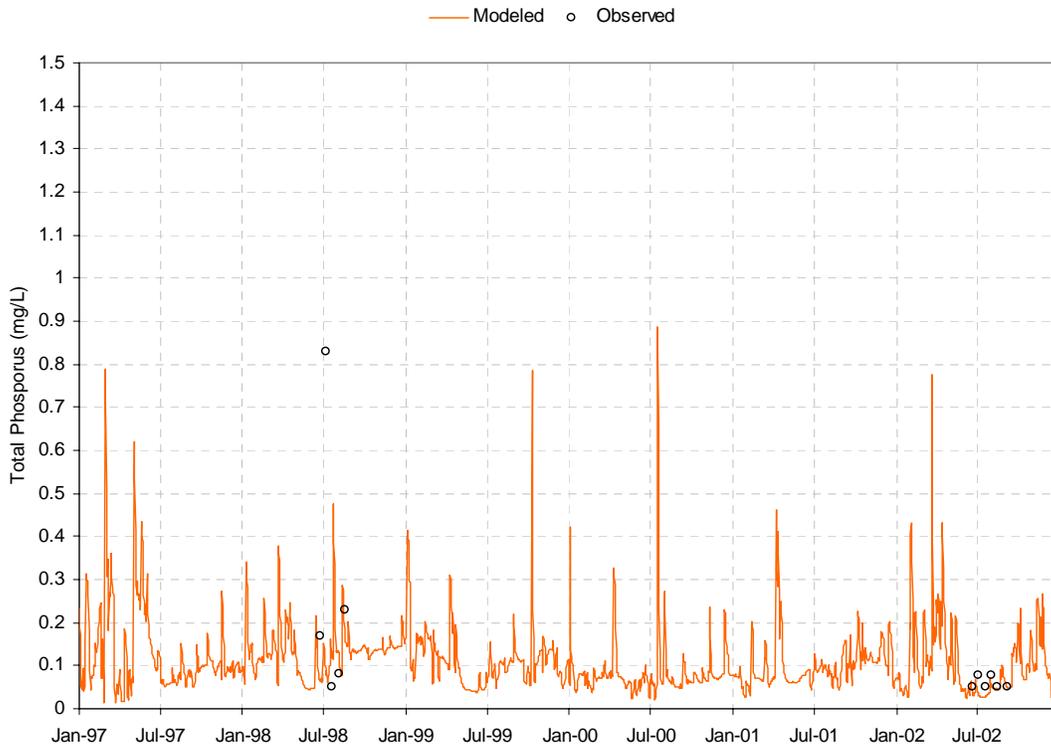


Figure 20. Observed versus simulated total phosphorus at station K01W12.

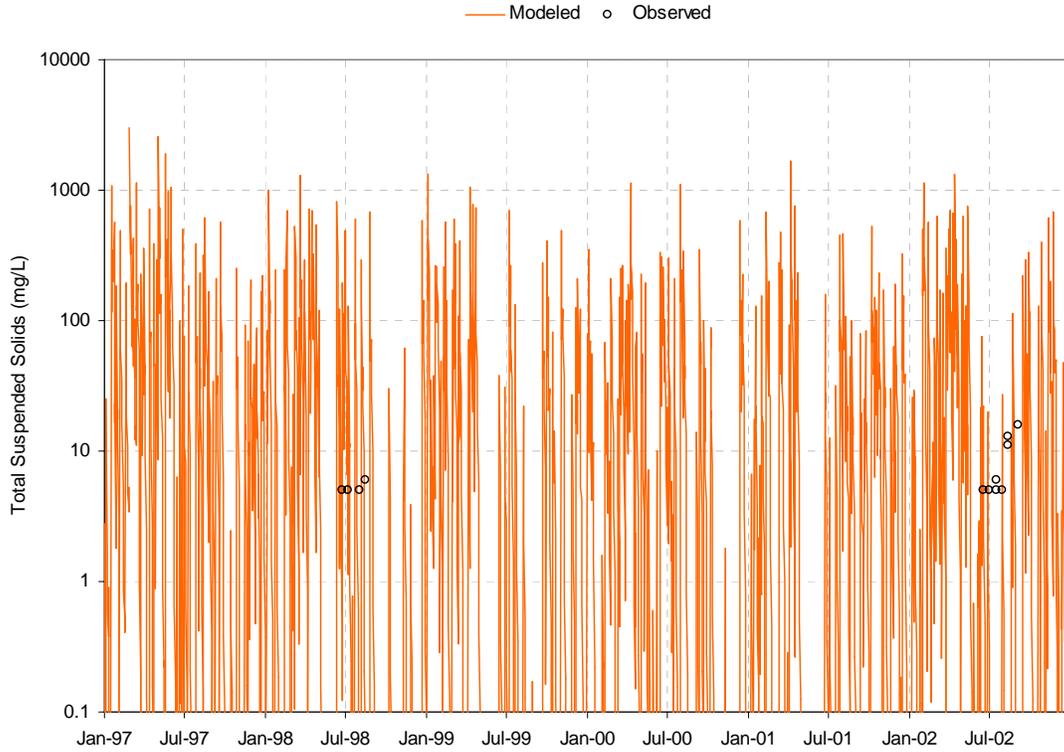


Figure 21. Observed versus simulated total suspended solids at station K01W22.

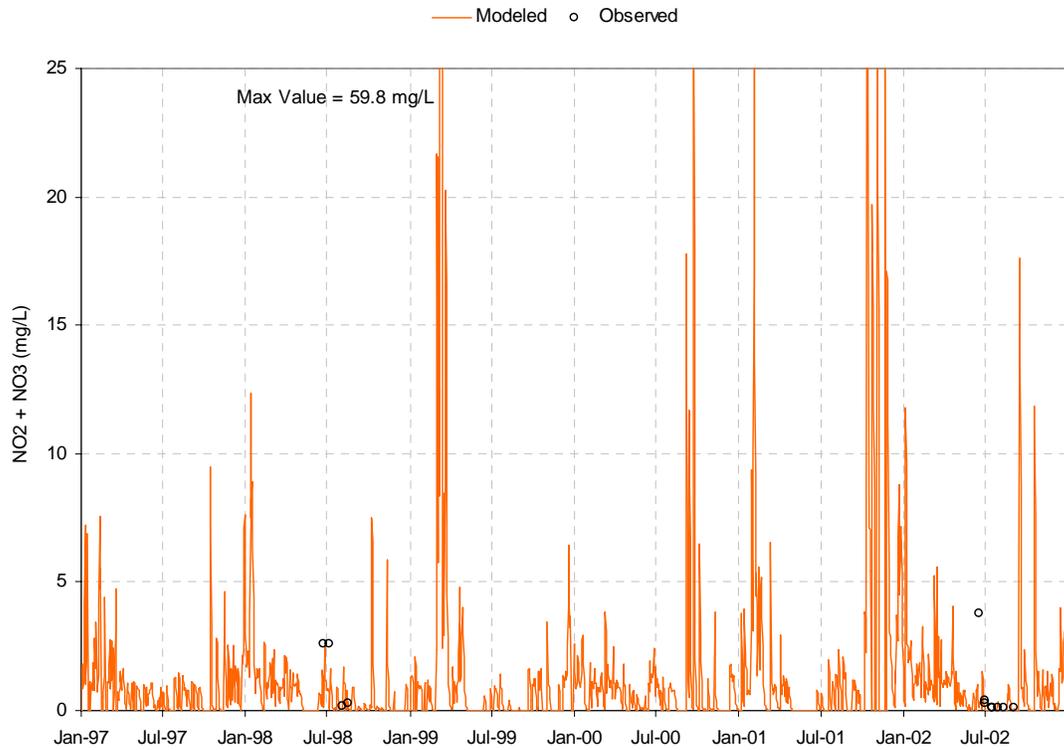


Figure 22. Observed versus simulated nitrite + nitrate at station K01W22.

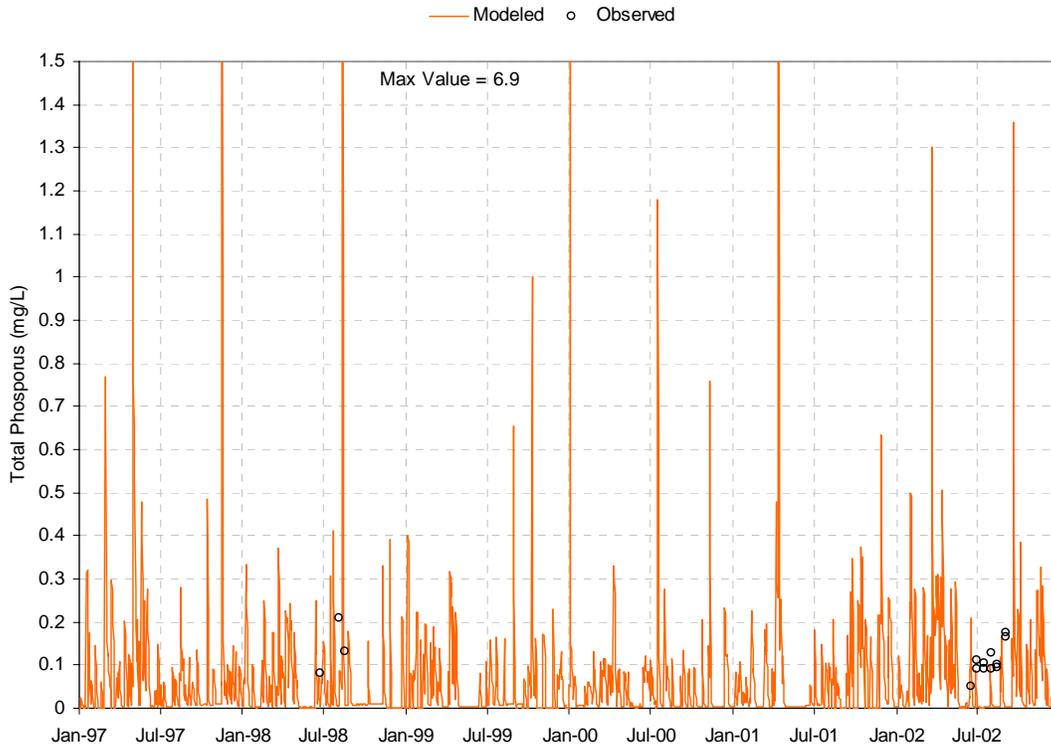


Figure 23. Observed versus simulated total phosphorus at station K01W22.

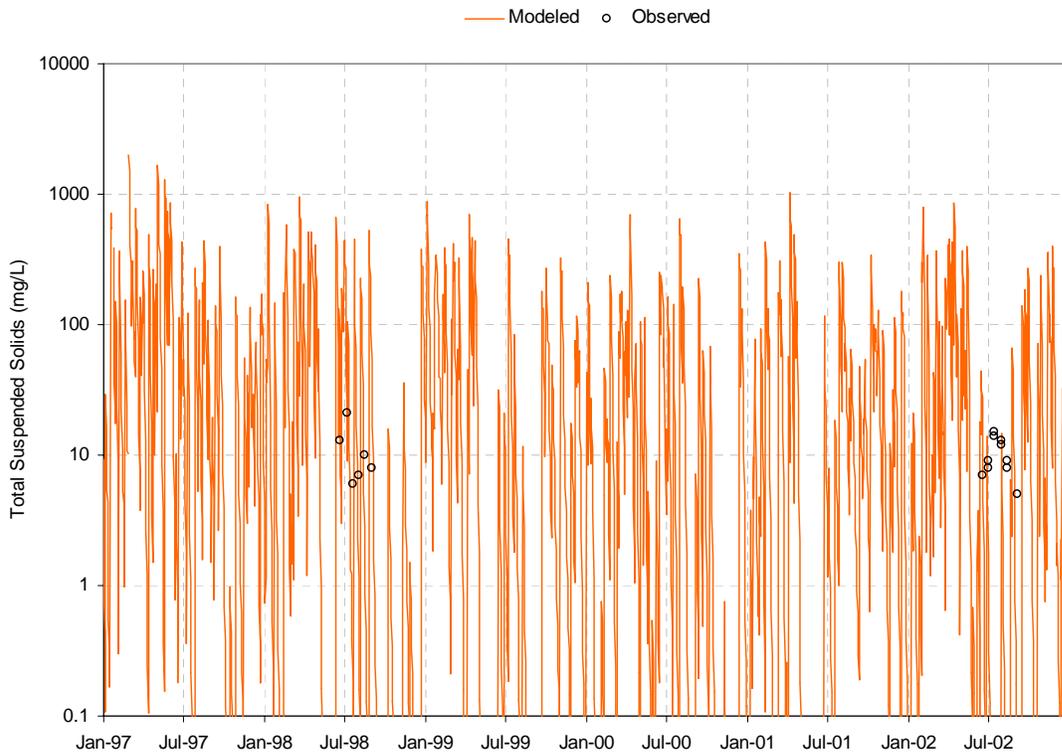


Figure 24. Observed versus simulated total suspended solids at station K01PO6.

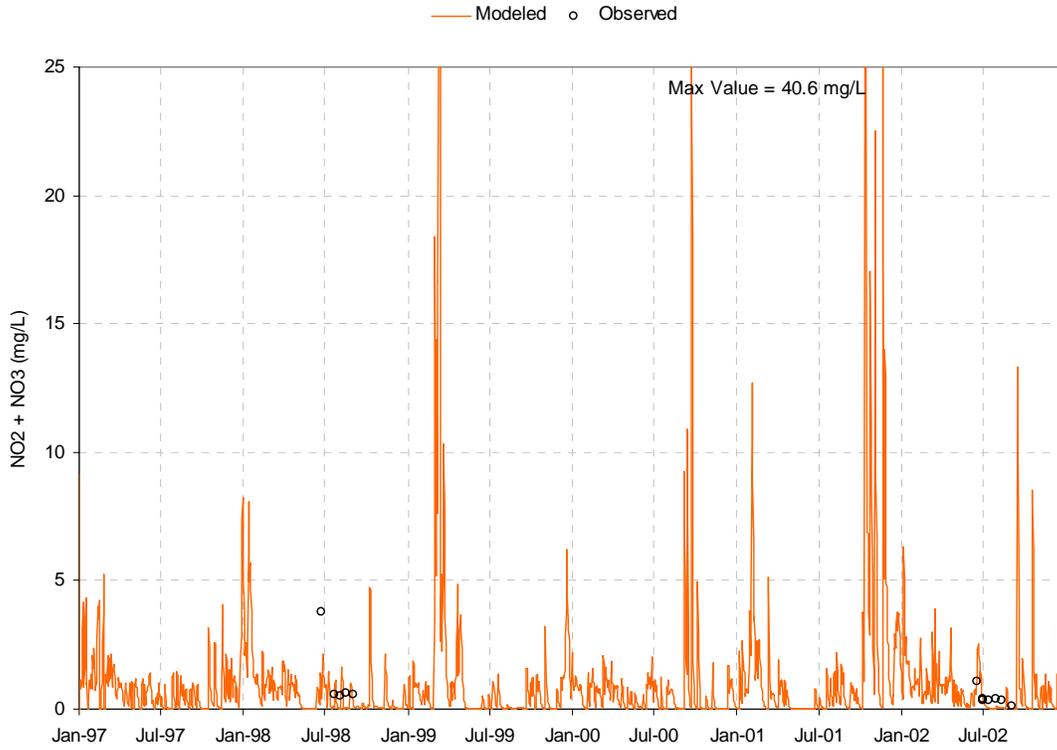


Figure 25. Observed versus simulated nitrite + nitrate at station K01PO6.

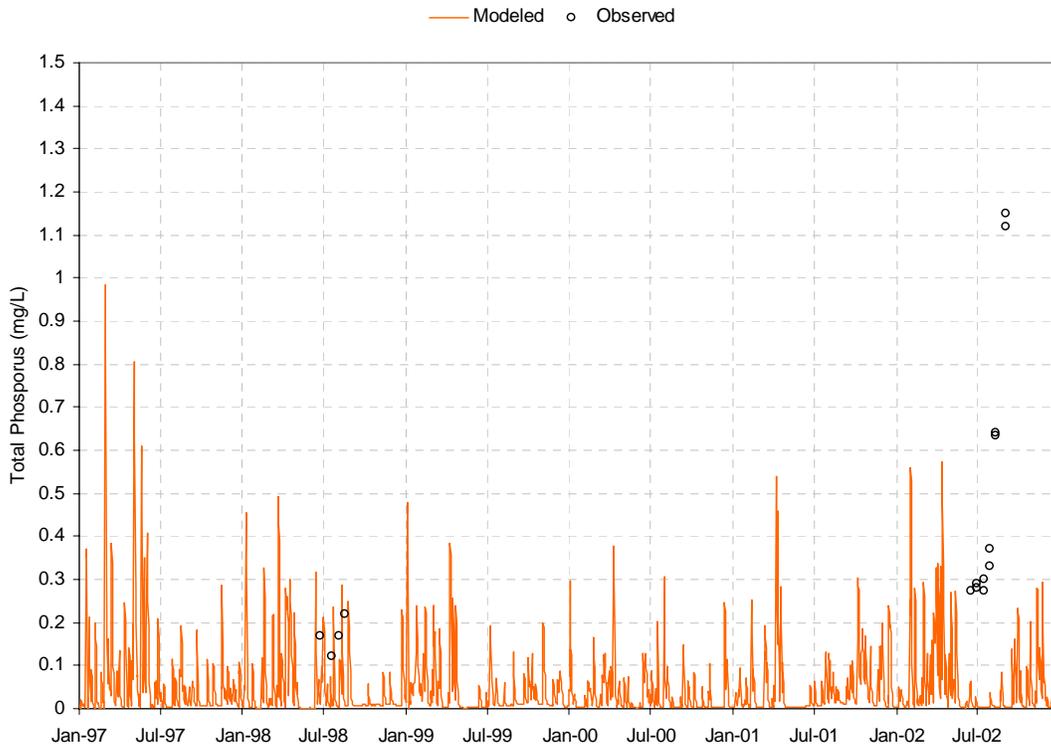


Figure 26. Observed versus simulated total phosphorus at station K01PO6.

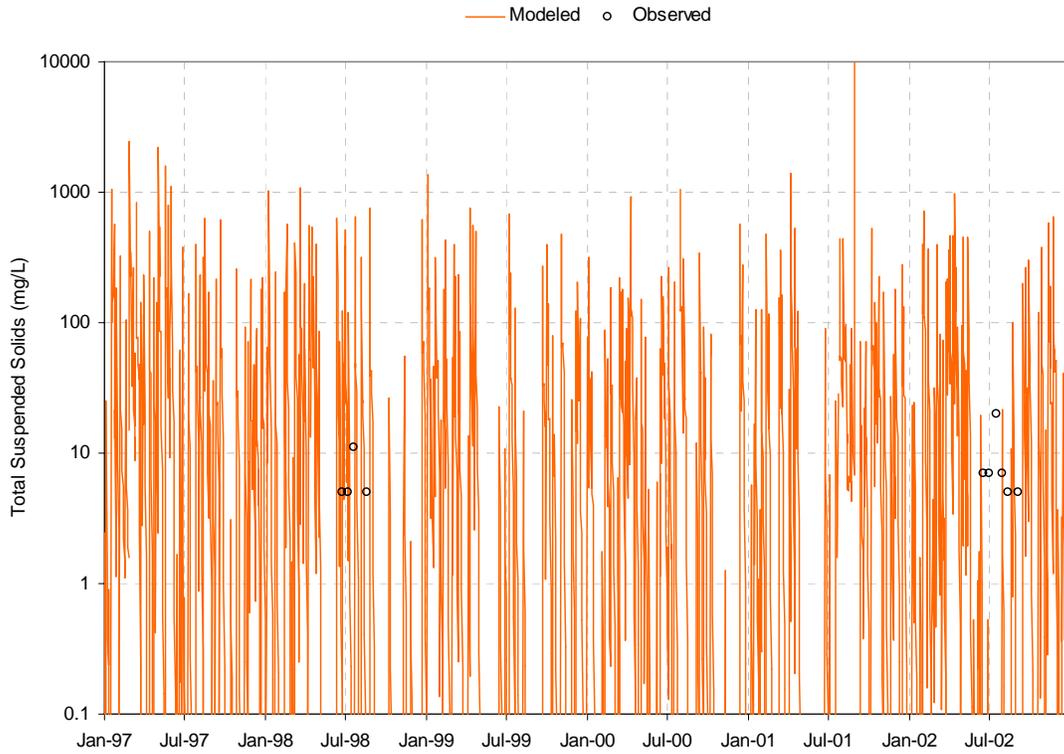


Figure 27. Observed versus simulated total suspended solids at station K01PO4.

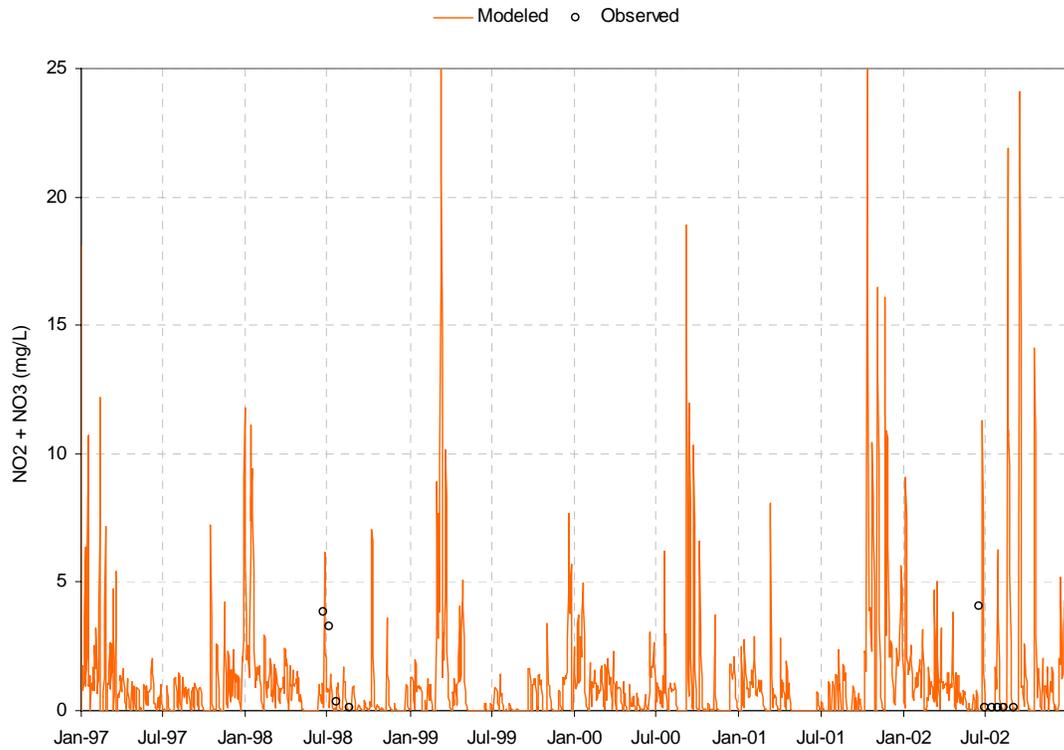


Figure 28. Observed versus simulated nitrite + nitrate at station K01PO4.

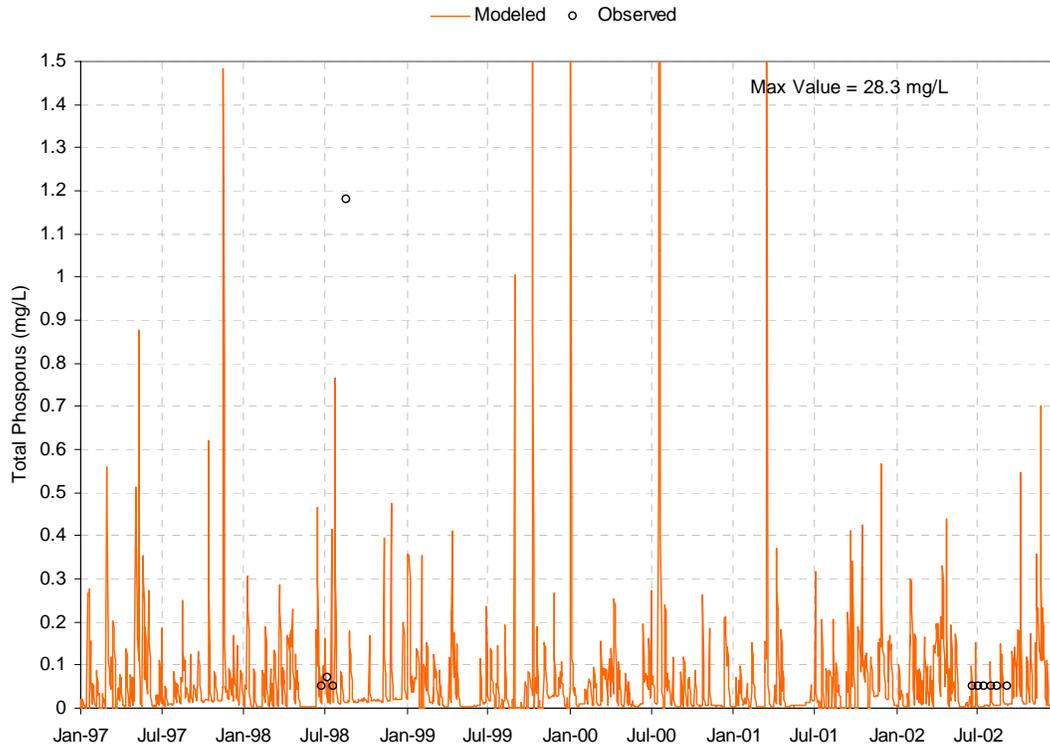


Figure 29. Observed versus simulated total phosphorus at station K01PO4.

4.0 Model Scenario Results

Several modeling scenarios were run following calibration to provide supporting information for TMDL development purposes. These modeling scenarios assess the degree to which various implementation measures are predicted to improve water quality. The following scenarios were assessed:

- Increased use of reduced tillage measures throughout the watershed
- Implementation of additional filter strips on approximately 90 miles of streams running through agricultural areas. The effectiveness of the filter strips at reducing pollutant loads was based on literature values (Dillaha et al., 1989). (90 miles represents approximately 25 percent of all the stream miles estimated to drain through agricultural land uses. The total length of stream miles is based on both named and unnamed streams).
- 10 percent reduction in fertilizer use throughout the watershed
- 25 percent reduction in fertilizer use throughout the watershed
- TP permit limits of 1.0 mg/L for all wastewater treatment plants
- TP permit limits of 0.5 mg/L for all wastewater treatment plants
- Combinations of the above

The model was run for each of the above scenarios and the resulting water quality at the most downstream point in each Assessment Unit was compared to the TMDL targets. The NO₂+NO₃ and TP targets were provided by OEPA and are based on the guidance document *Association Between Nutrients, Habitat, and the Aquatic Biota in Ohio Rivers and Streams* (OEPA, 1999). The targets used for the Huron River TMDL are presented in Table 9.

Table 9. Nutrient targets applied for the Huron River scenario results.

Assessment Unit	Watershed Size	TP Target (mg/L)	NO ₂ +NO ₃ (mg/L)
10	Wadable	0.11	1.5
20	Wadable	0.11	1.5
30	Small Rivers	0.17	1.5

OEPA does not have numeric targets for TSS and no statewide recommendations have been published. A preliminary TSS target was therefore selected by evaluating data from reference sites within the same ecoregions as the Huron River watershed. The Huron River watershed spans portions of the Huron/Erie Lake Plain (approximately 30 percent of watershed) and Eastern Corn Belt Plains (70 percent of watershed) ecoregions. The 90th percentiles of reference sites draining between 200 and 1000 square miles within these ecoregions are (OEPA, 1999):

- Huron/Erie Lake Plain: 75.2 mg/L
- Eastern Corn Belt Plains: 62.00 mg/L

The weighted average for these values (66 mg/L) was used as the target to calculate the necessary TSS reductions.

The TP, NO₂+NO₃, and TSS targets are applied as monthly median values (e.g., the modeled median monthly NO₂+NO₃ concentration should not exceed 1.5 mg/L). The results of each of the scenarios are summarized in Table 10 to Table 12 and presented graphically in Figure 30 to Figure 38. The tables present the existing loads for each scenario calculated from the median monthly loads. The median monthly loads are used to be consistent with the target concentrations, which are applied as median monthly values.

The target condition loads were calculated by first determining an “allowable load” for each month. The “allowable load” was calculated by multiplying the median flow for each month by the target concentrations. The target conditions load was then defined as the lesser of the “existing load” or the “allowable load” for each month. This approach ensures that the target loads represent conditions where the target concentrations are always met while not allowing existing conditions to degrade. Monthly loads from the model were estimated for the period January 1, 1997 to December 31, 2002 and the annual average loads are presented in Table 10 to Table 12. The monthly results are presented graphically in Figure 30 to Figure 38.

It should be noted that the target reductions based upon the modeling report are not directly comparable to the deviation from target results presented in the main TMDL report in Chapter 3. The modeling results are based on simulated conditions at the most downstream point of each assessment unit whereas the main report evaluates observed data for individual subwatersheds. Since some of the subwatersheds comprising the assessment units have different hydrological characteristics (e.g., smaller headwaters compared to larger stream segments) there are different target values for phosphorus. Therefore, the modeling results were compared to the target value of 0.11 mg/l for AUs 010 and 020 which have more headwater characteristics, and 0.17 mg/L for AU 030 which drains the entire watershed. In this manner the necessary reductions are more representative for each assessment unit.

The results of the modeling indicate that the combination of the filter strip and tillage reduction scenario will result in reducing TSS loads below the annual average target condition in AU 10 and 20; however, this scenario does not quite reduce TSS loads below the target condition in AU 30.

None of the modeled scenarios result in meeting the NO₂+NO₃ target. However, this is primarily due to the fact that SWAT is limited in its ability to simulate the types of best management practices (BMPs) that might best address NO₂+NO₃ loads. For example, controlled drainage is defined as the management, control, and/or regulation of soil-water conditions in the profile of agricultural soils and has been shown to reduce nitrogen loadings by up to 50 percent (Agricultural Drainage Management Coalition, 2004). This level of reduction is more than what is identified as necessary in Table 11. Therefore, even though the needed load reductions were not directly simulated by SWAT, they are believed to be feasible because they are within the range of effectiveness reported in the literature (Drury et al., 1996; Gilliam et al., 1979; Skaggs et al., 1994).

Table 12 indicates that either of the “combined scenarios” for AU 10 will result in achieving the target load reductions while several of the scenarios are predicted to result in achieving the target load reductions in AU 30. The modeled scenarios are not predicted to achieve sufficient reductions to meet the total phosphorus target for AU 20.

Table 10. Scenario Results for TSS.

Scenario	AU 10		AU 20		AU 30	
	Load (1000kg/yr)	% Reduction	Load (1000kg/yr)	% Reduction	Load (1000kg/yr)	% Reduction
Existing Conditions	3,740	--	6,190	--	9,100	--
Target Conditions	1,890	49%	3,150	49%	3,170	65%
Tillage Reduction	2,270	39%	3,740	40%	5,490	40%
Filter Strips	3,110	17%	5,140	17%	7,550	17%
Combined Reduction	1,900	49%	3,110	50%	4,580	50%

Table 11. Scenario Results for NO₂+NO₃.

Scenario	AU 10		AU 20		AU 30	
	Load (kg/yr)	% Reduction	Load (kg/yr)	% Reduction	Load (kg/yr)	% Reduction
Existing Conditions	85,710	--	145,040	--	246,240	--
Target Conditions	59,130	31%	105,420	27%	166,410	32%
Fertilizer Reduction (10%)	85,470	<1%	146,210	<1%	244,460	<1%
Fertilizer Reduction (25%)	81,480	5%	140,420	3%	241,890	2%

Table 12. Scenario Results for TP.

Scenario	AU 10		AU 20		AU 30	
	Load (kg/yr)	% Reduction	Load (kg/yr)	% Reduction	Load (kg/yr)	% Reduction
Existing Conditions	5,620	--	8,040	--	12,520	--
Target Conditions	4,210	25%	4,620	43%	11,870	5%
Fertilizer Reduction (10%)	5,580	1%	7,890	2%	12,410	1%
Fertilizer Reduction (25%)	5,510	2%	7,860	2%	12,220	2%
Tillage Reduction	4,370	22%	6,150	24%	10,200	19%
Filter Strips	4,780	15%	6,830	15%	10,640	15%
Permit Limit of 1.0 mg/L for all NPDES Facilities	5,210	7%	7,680	4%	11,820	6%
Permit Limit of 0.5 mg/L for all NPDES Facilities	5,100	9%	7,580	6%	11,200	11%
Combined Scenarios with 1.0 mg/L Limit	3,530	37%	5,190	35%	8,840	29%
Combined Scenarios with 0.5 mg/L Limit	3,420	39%	5,090	37%	8,220	34%

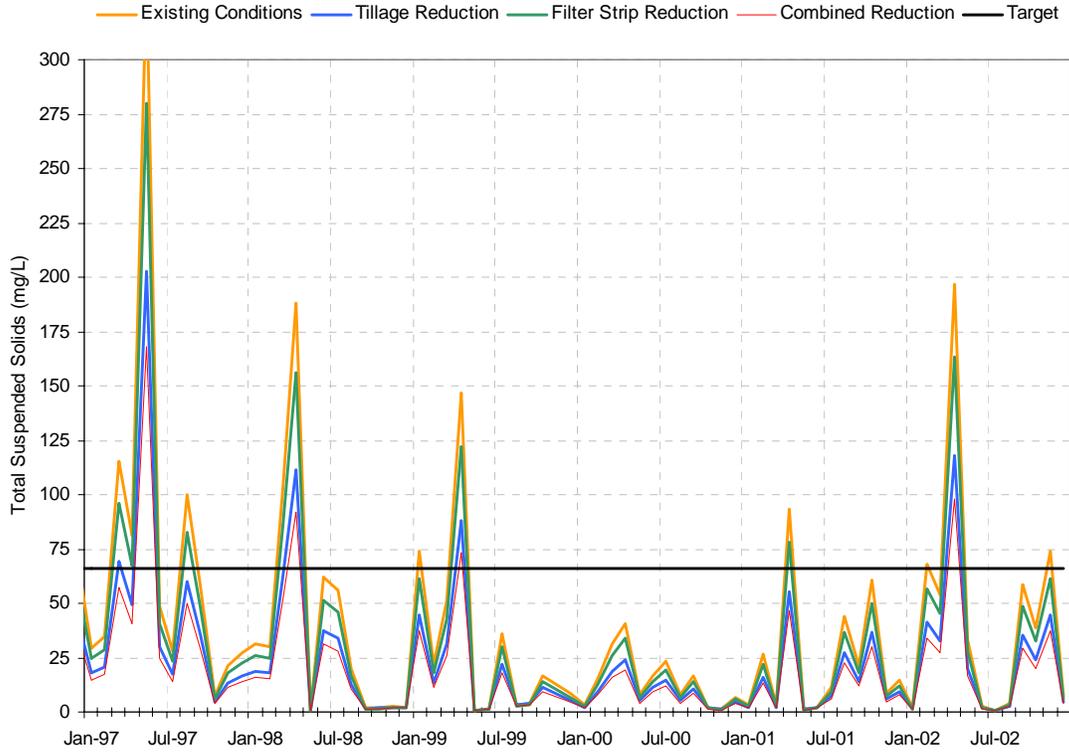


Figure 30. Scenario results for total suspended solids in Assessment Unit 10.

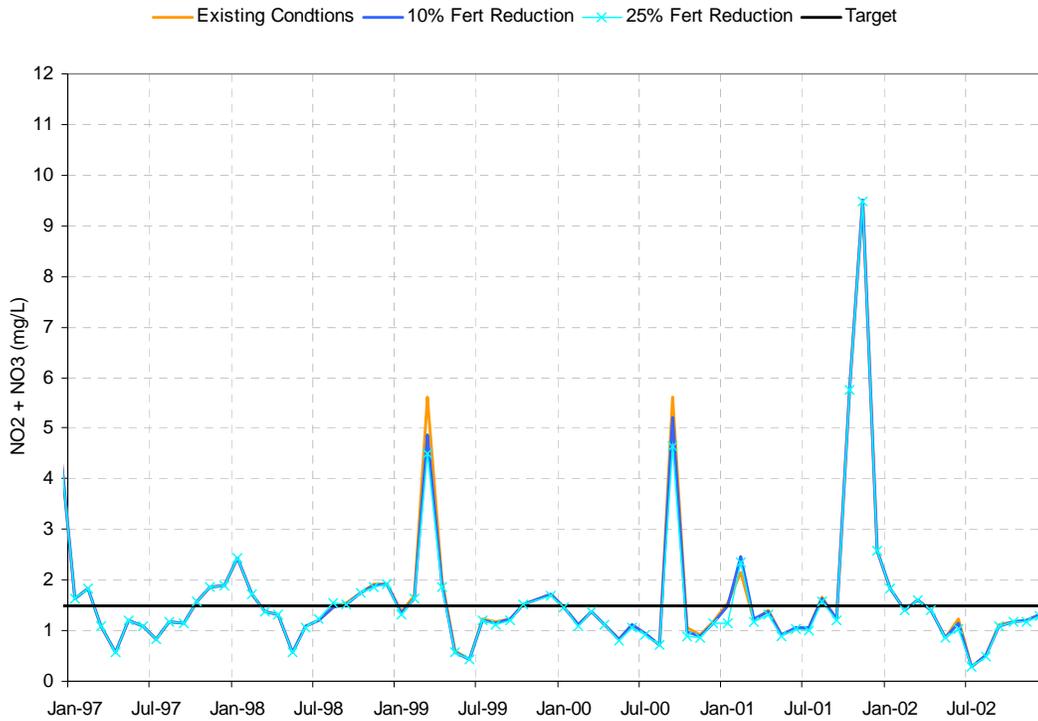


Figure 31. Scenario results for NO₂+NO₃ in Assessment Unit 10.

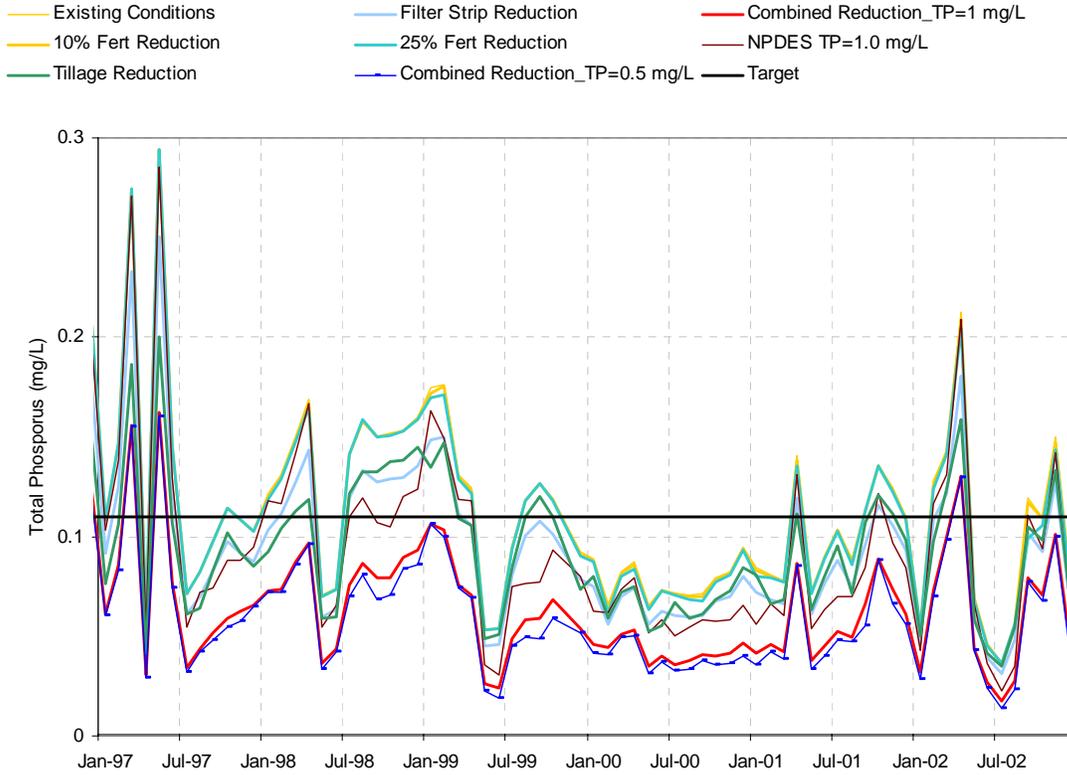


Figure 32. Scenario results for TP in Assessment Unit 10.

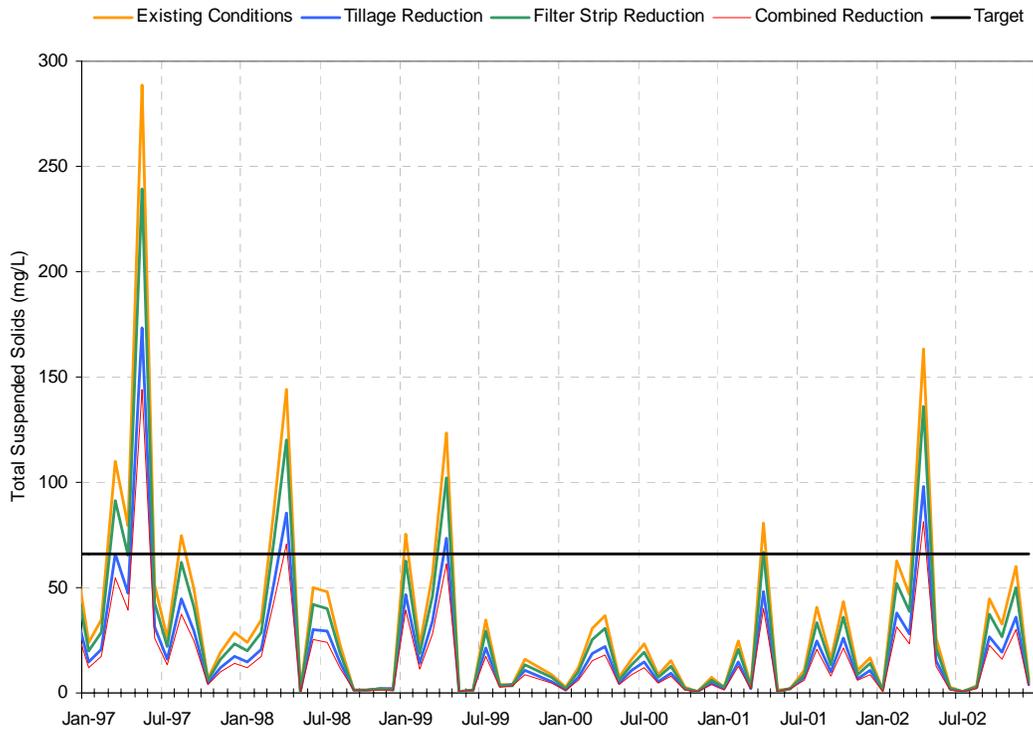


Figure 33. Scenario results for total suspended solids in Assessment Unit 20.

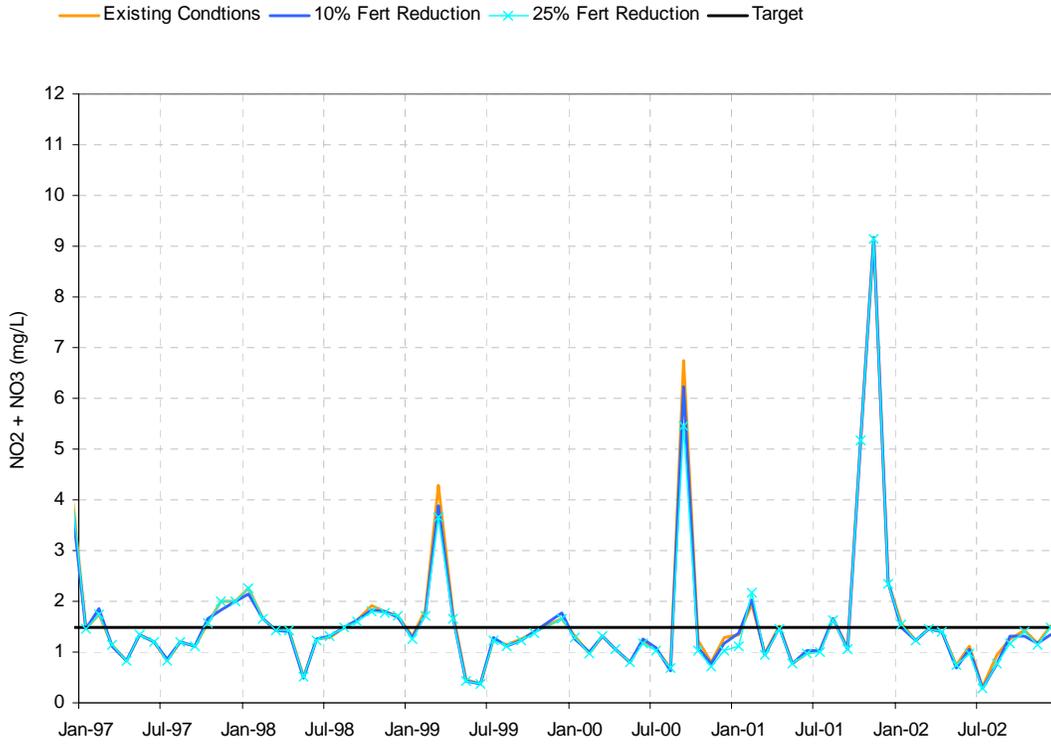


Figure 34. Scenario results for NO2+NO3 in Assessment Unit 20.

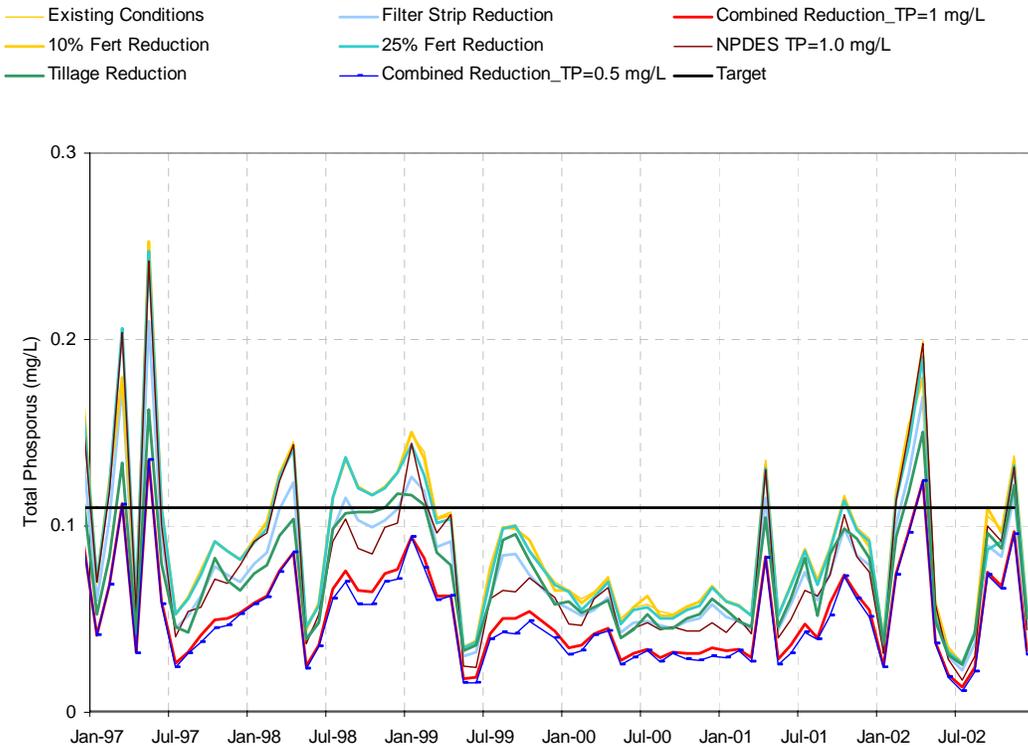


Figure 35. Scenario results for TP in Assessment Unit 20.

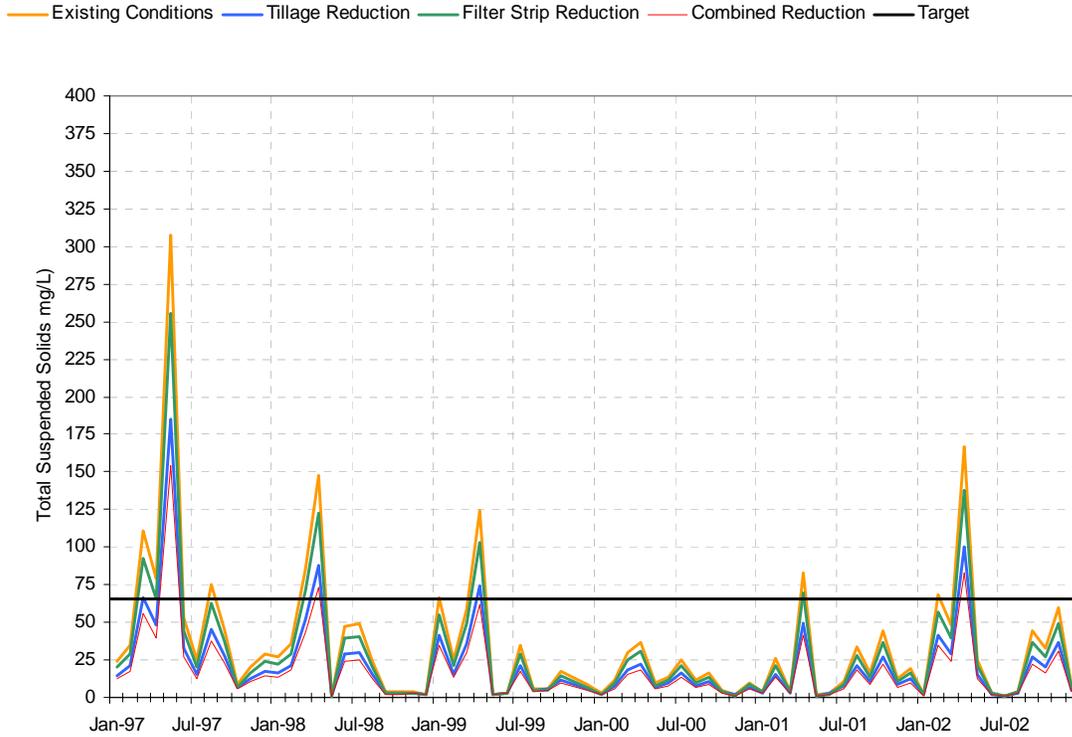


Figure 36. Scenario results for total suspended solids in Assessment Unit 30.

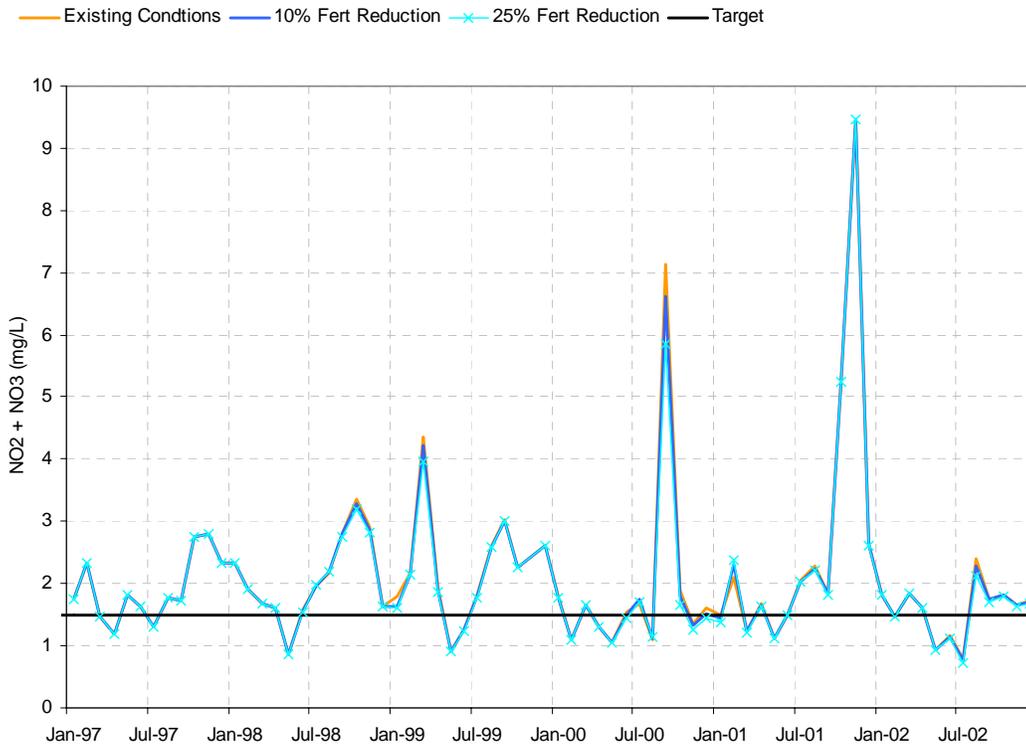


Figure 37. Scenario results for NO₂+NO₃ in Assessment Unit 30.

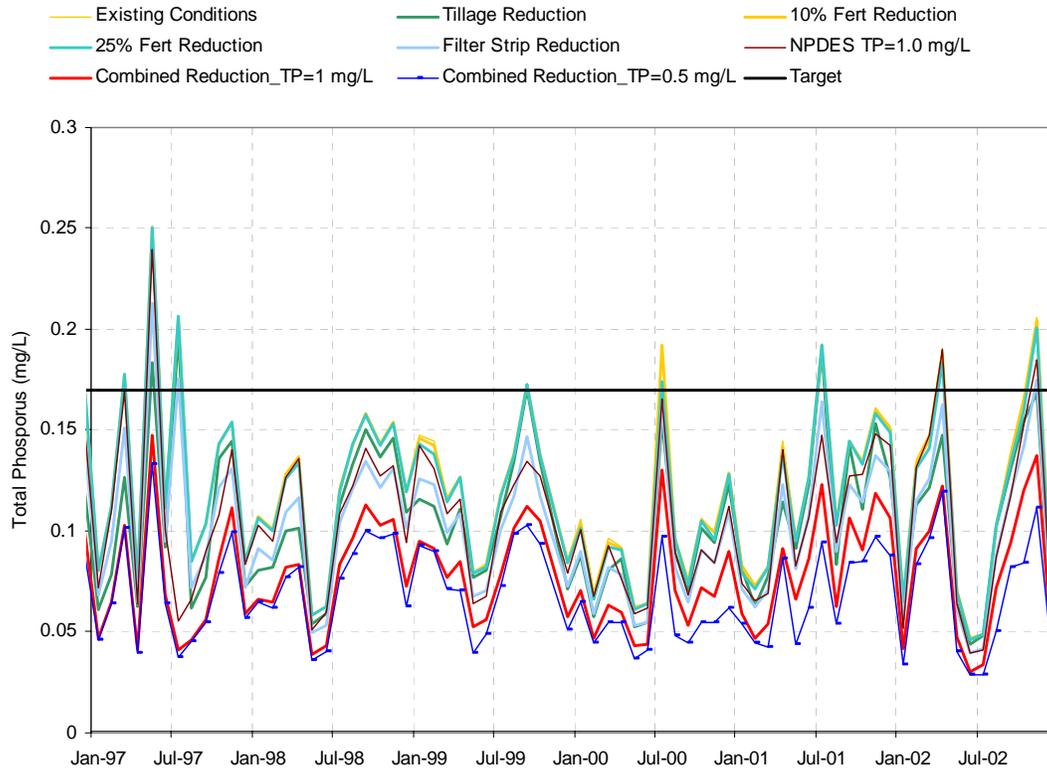


Figure 38. Scenario results for TP in Assessment Unit 30.

4.1 Comparison to Load Duration Curve Results

To further assess the performance of the SWAT model, the necessary reductions identified by SWAT were compared to reductions calculated using a load duration curve. A load duration curve is created as follows:

- 1) A flow duration curve for the stream gage site of interest is developed. This is done by generating a flow frequency table and plotting the data points.
- 2) The flow curve is translated into a load duration (TMDL) curve. To accomplish this, the flow value is multiplied by the TMDL target and by a conversion factor. The resulting points are graphed.
- 3) A water quality sample is converted to a load by multiplying the water quality sample concentration by the average daily flow on the day the sample was collected. Then, the load is plotted on the TMDL graph.
- 4) Points plotting above the curve represent exceedances from the target and the permissible loading function. Those plotting below the curve represent compliance with the target.
- 5) The area beneath the TMDL curve is the loading capacity of the stream. The difference between this area and the area representing the current loading conditions is the load that must be reduced to meet water quality standards.

Load duration curves are useful because they provide an independent estimate of the reductions that are necessary to meet TMDL targets. The extent of the impairment can also be visually assessed based on the number of loads that are above or below the allowable loading curve and whether the target is typically exceeded during low or high flows.

Attachment A provides the results of a load duration curve analysis for the Huron River at the Milan USGS gage. The results suggest that the NO₂+NO₃ target is typically exceeded during all flow periods whereas the TSS and TP targets are typically only exceeded during high flows. The magnitude of the necessary load reductions for all pollutants agree reasonably well with the SWAT results.

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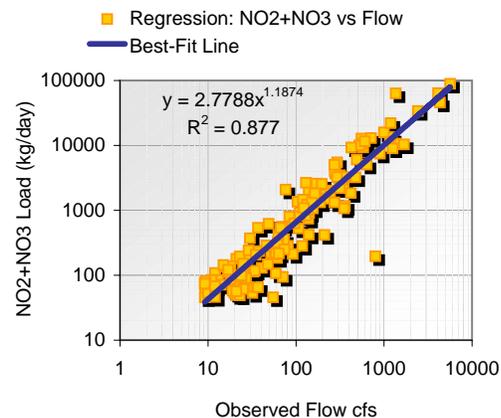
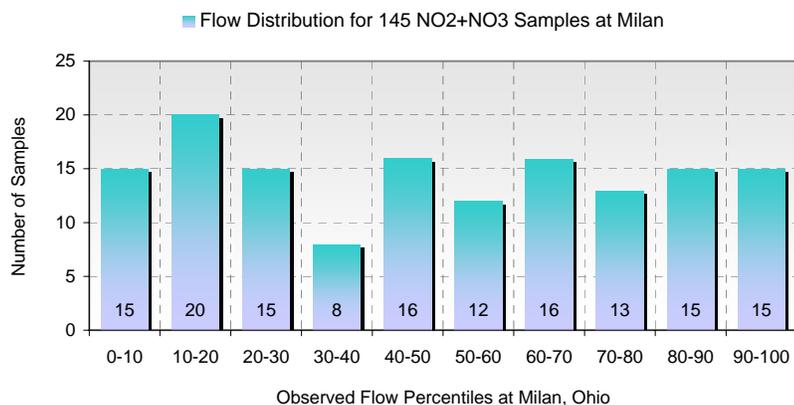
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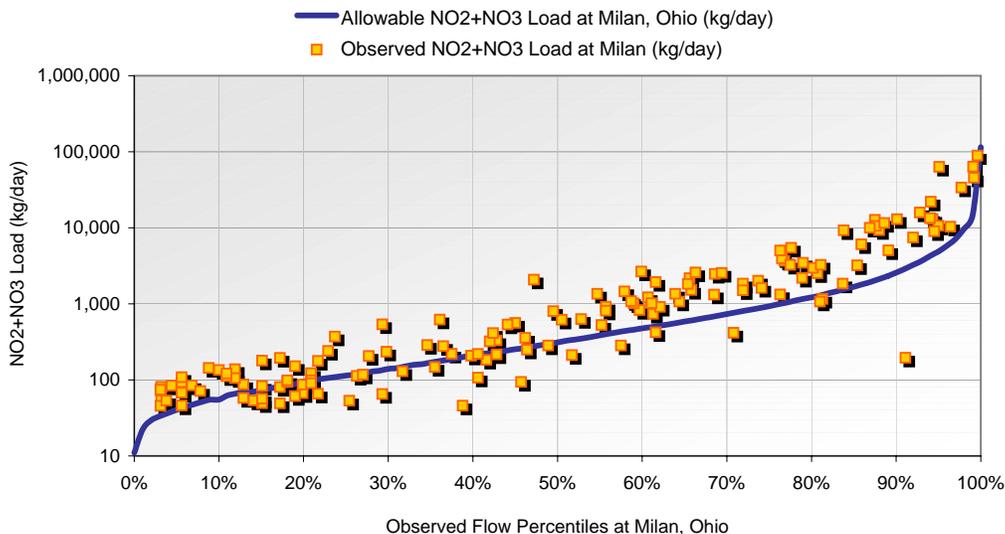
Attachment A – Results of Load Duration Curve Analysis

[1: NO2+NO3 at Milan (mg/L)] -vs- [1: Flow at Milan, Ohio cfs]

1. Data Assessment and Trend Confirmation



2. Load Duration Analysis

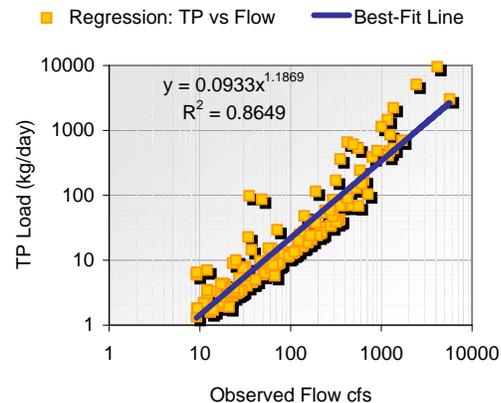
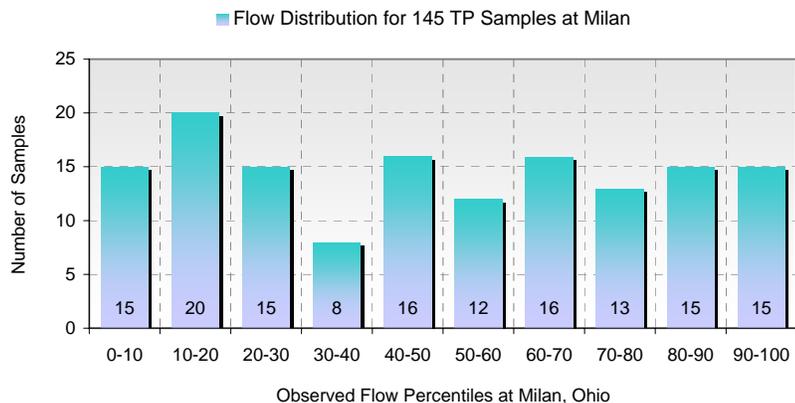


3. Estimated TMDL Load Reductions by Percentile Range

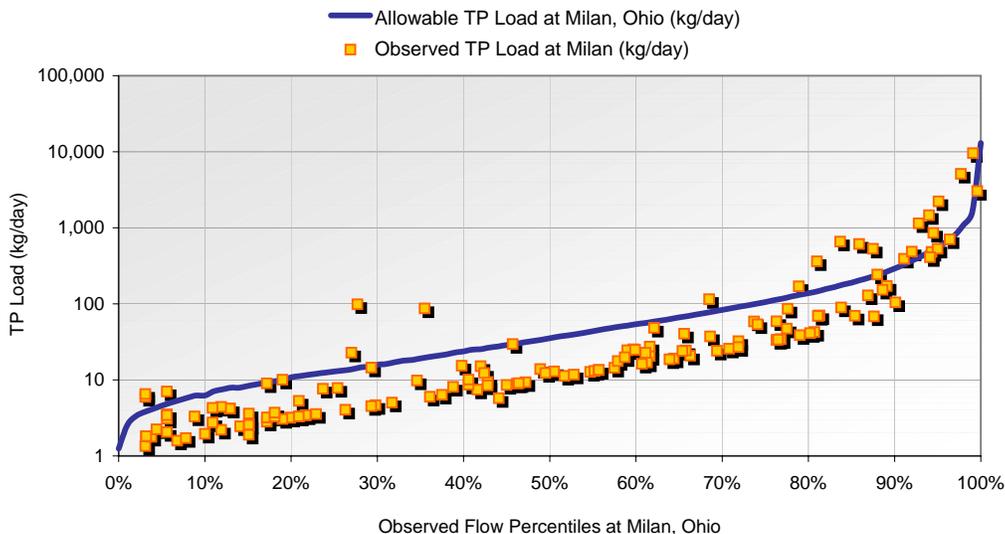
Flow Percentile Ranges	145-Sample Distribution	Median Observed Flow cfs	Allowable Load (kg/day)	Observed Load (kg/day)	Estimated Reduction (%)
0-10	15	11.00	40	73	44.8%
10-20	20	20.00	73	96	23.8%
20-30	15	31.00	114	113	0.0%
30-40	8	46.00	169	227	25.7%
40-50	16	69.00	253	302	16.1%
50-60	12	105.00	385	820	53.0%
60-70	16	160.00	587	1,438	59.2%
70-80	13	253.00	928	2,189	57.6%
80-90	15	455.65	1,672	5,042	66.8%
90-100	15	1,330.00	4,881	13,396	63.6%

[2: TP at Milan (mg/L)] -vs- [1: Flow at Milan, Ohio cfs]

1. Data Assessment and Trend Confirmation



2. Load Duration Analysis

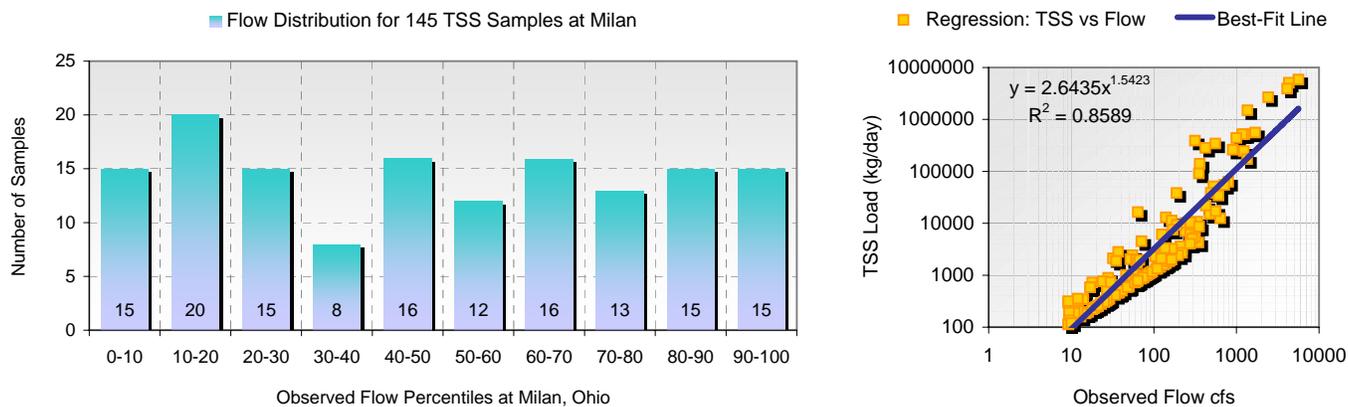


3. Estimated TMDL Load Reductions by Percentile Range

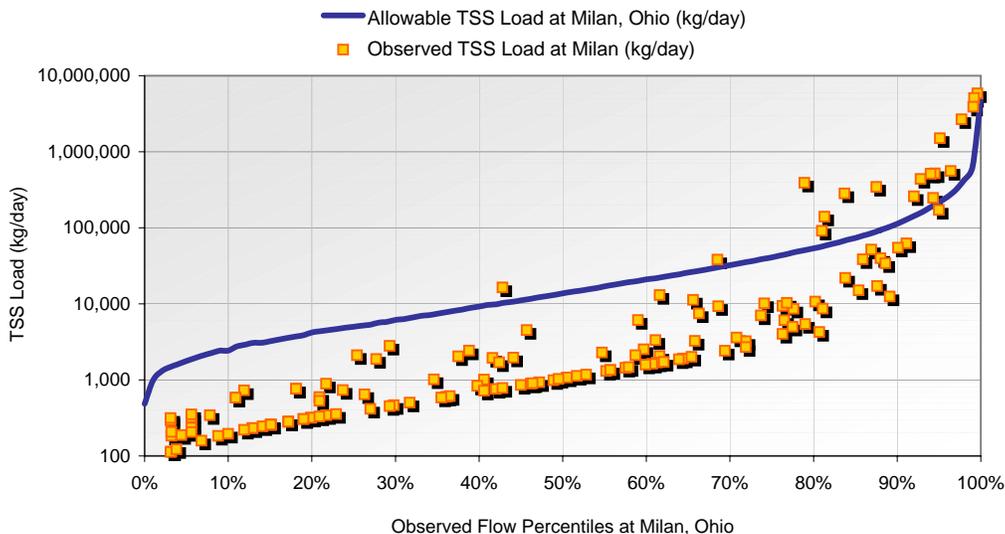
Flow Percentile Ranges	145-Sample Distribution	Median Observed Flow cfs	Allowable Load (kg/day)	Observed Load (kg/day)	Estimated Reduction (%)
0-10	15	11.00	5	2	0.0%
10-20	20	20.00	8	3	0.0%
20-30	15	31.00	13	4	0.0%
30-40	8	46.00	19	6	0.0%
40-50	16	69.00	29	9	0.0%
50-60	12	105.00	44	13	0.0%
60-70	16	160.00	67	24	0.0%
70-80	13	253.00	105	39	0.0%
80-90	15	455.65	190	129	0.0%
90-100	15	1,330.00	553	780	29.0%

[3: TSS at Milan (mg/L)] -vs- [1: Flow at Milan, Ohio cfs]

1. Data Assessment and Trend Confirmation



2. Load Duration Analysis



3. Estimated TMDL Load Reductions by Percentile Range

Flow Percentile Ranges	145-Sample Distribution	Median Observed Flow cfs	Allowable Load (kg/day)	Observed Load (kg/day)	Estimated Reduction (%)
0-10	15	11.00	1,776	207	0.0%
10-20	20	20.00	3,229	269	0.0%
20-30	15	31.00	5,006	528	0.0%
30-40	8	46.00	7,428	606	0.0%
40-50	16	69.00	11,142	960	0.0%
50-60	12	105.00	16,955	1,395	0.0%
60-70	16	160.00	25,836	2,233	0.0%
70-80	13	253.00	40,853	6,077	0.0%
80-90	15	455.65	73,576	34,157	0.0%
90-100	15	1,330.00	214,760	517,573	58.5%

APPENDIX D. NPDES PERMITTED DISCHARGERS

Table D-1. NPDES Permitted Dischargers in the Huron River Watershed

NPDES Permitted Facility	Receiving Stream (Location of Discharge)	Type of discharge	Design Flow (in MGD)
HUC 04100012 010 (Assessment Unit 1)			
Plymouth WWTP (2PB00014)	W Br Huron River (RM 39.00)	Continuous discharge lagoons	0.235
Happy Hollow MHP (2PV00001)	W Br Huron River Trib	Package plant	0.005
Willard City Schools (New Haven Elementary) (2PT00013)	W Br Huron River	Package plant	0.005
Coble Village MHP (2PY00030)	Marsh Run Trib	Package plant	0.015
Willard WWTP (2PD00005)	Jacobs Ck Trib (RM 0.08)	WWTP	4.5
CSX Transportation - Willard Yard (2IT00001) + General Permit OHR000003	Jacobs Ck Trib (in Willard)	treated stormwater, stormwater	0.010
Huron Co. Landfill (2IN00135)	Gully to W Br Huron R	surface runoff discharged from sedimentation pond	
Decker Transport Co. Inc. General Permit OHR000003	Buckingham Ditch (trib to Marsh Run)	stormwater	
R R Donnelley & Sons Co. General Permit OHR000003	Marsh Run	stormwater	
City of Willard Airport General Permit OHR000003	Marsh Run	stormwater	
K & P Trucking Co. General Permit OHR000003	Marsh Run	stormwater	
Wm Dauch Concrete Co. - Willard Plant General Permit OHR000003	Marsh Run	stormwater	
Pepperidge Farm Inc. General Permit OHR000003	Jacobs Ck (in Willard)	stormwater	
City of Willard WWTP General Permit OHR000003	Jacobs Ck (trib?)	stormwater	

Huron River Watershed TMDLs

Table D-1. NPDES Permitted Dischargers in the Huron River Watershed

NPDES Permitted Facility	Receiving Stream (Location of Discharge)	Type of discharge	Design Flow (in MGD)
HUC 04100012 020 (Assessment Unit 2)			
Monroeville WWTP (2PB00004)	W Br Huron River (RM 7.45)	WWTP	0.20
Venture Packaging Inc. General Permit OHR000003	W Br Huron River	stormwater	
Marathon Ashland Pipeline LLC - Bellevue Terminal General Permit OHR000003	Megginson Ck	stormwater	
HUC 04100012 030 (Assessment Unit 3)			
Norwalk WWTP (2PD00024)	W Br Rattlesnake Ck (RM 2.35)	WWTP	3.5
Huron Basin WWTP (2PC00001)	Huron River (RM 1.02)	WWTP	2.0
Milan WWTP (2PB00037)	Huron River (RM 12.00)	WWTP	0.37
Huron River Valley Resort (2PR00091)	Huron River	Seasonal Package Plant	0.004
Huron River Estates Subdivision (2PR00069)	Huron River	Package plant	0.0076
Alpine Trail MHP (2PY00040)	Huron River	Package plant	0.0025
Comfort Inn Motel (2PR00059)	Mud Brook	Package plant	0.014
Days Inn Motel (2PR00060)	Mud Brook Trib	Package plant	0.012
Super 8 Motel (2PR00058)	Mud Brook Trib	Package plant	0.018
Hampton Inn (2PR00073)	Mud Brook Trib	Package plant	0.012
Homestead Inn Restaurant (2PR00087)	Mud Brook Trib	Package plant	0.010
Ehove Joint Vocational School (2PT00010)	Mud Brook Trib	Package plant	0.035
Lake Erie Manufacturers Outlet Mall (2PS00006)	Mud Brook Trib	Package plant	0.067
Milan Travel Park (2PR00093)	Mud Brook Trib	Seasonal package plant	0.015

Table D-1. NPDES Permitted Dischargers in the Huron River Watershed

NPDES Permitted Facility	Receiving Stream (Location of Discharge)	Type of discharge	Design Flow (in MGD)
HUC 04100012 030 (Assessment Unit 3) continued			
Berlin Milan Local Schools (Edison High School) (2PR00174)	Huron R Trib	Package plant	0.015
Will-O-Brook MHP (2PY00053)	Willow Brook (trib to Rattlesnake Ck)	Package plant	0.006
Huron Co. Airport (2PG00116)	Huron R Trib	Package plant	0.002
Norwalk Elks Lodge #730 (2PR00152)	North Ck (trib to Norwalk Ck)	Package plant	0.0015
Christie Lane School & Workshop (2PT00041)	Norwalk Ck Trib	Package plant	0.006
ODOT Dist 3 Norwalk Garage (2PP00043)	Cole Ck Trib	Package plant	0.0015
Meadowbrook Mobile Estates MHP (2PY00054)	Cole Ck Trib	Package plant	0.0075
Fieldcrest MHP (2PY00031)	Cole Ck	Package plant	0.010
Consolidated Stores - Big Lots #34 (2PR00053)	E Br Huron River Trib	Package plant	0.0175
Norwalk American Legion Post 41 (2PR00183)	E Br Huron River	Package plant	0.0015
Huron Lime Co (2IJ00005) + General Permit OHR000003	Huron River at mouth	stormwater	
Glidden Co. (2IF00013)	Huron River	GW infiltration, stormwater	0.00317
CertainTeed Corp - Avery Plant (2IA00002)	Mud Brook	treated process discharge	3.221
Erie Co. Landfill (2IN00137)	Mud Brook	surface runoff discharged from sedimentation pond	0.010
Freudenberg - NOK (2IN00001)	Mud Brook Trib	Package plant Dec-Apr Spray irrigation Apr-Nov	0.006
Milan WTP (2IY00050)	Village Ck	Filter backwash	0.015

Huron River Watershed TMDLs

Table D-1. NPDES Permitted Dischargers in the Huron River Watershed

NPDES Permitted Facility	Receiving Stream (Location of Discharge)	Type of discharge	Design Flow (in MGD)
HUC 04100012 030 (Assessment Unit 3) continued			
Clevite Elastomers - Milan (2IR00006)	Brewery Ck (trib to Huron R)	GW and stormwater	0.005
BP Oil Co. Norwalk Bulk Plant (2IN00182)	Ditch to SS to E Br Huron River	Treated stormwater	0.0003
Speedway SuperAmerica LLC #3397 General Permit OHU000002	Huron River	Petroleum Corrective Action	
Huron Cement Products Co. General Permit OHR000003	Huron River	stormwater	
Huron River Marine Inc. General Permit OHR000003	Huron River	stormwater	
Con-Way Central Express - XEL General Permit OHR000003	Huron River (near Milan)	stormwater	
Norwalk Concrete Ind - Woodlawn Plant General Permit OHR000003	Norwalk Ck	stormwater	
Maple City Rubber Co. General Permit OHR000003	(in Norwalk)	stormwater	
Janesville Products - Plants 60 & 70 General Permits OHR000003	Norwalk Ck	stormwater	
New Horizons Baking Co. General Permit OHR000003	Norwalk Ck	stormwater	
Wm Dauch Concrete Co. - Norwalk Plant General Permit OHR000003	(in Norwalk)	stormwater	
Hull Builders Supply Co. General Permit OHR000003	Norwalk Ck Trib	stormwater	
Industrial Powder Coatings Inc - Plants 1, 2, & 5 General Permit OHR000003	Rattlesnake Ck	stormwater	
Sandusky Steel & Supply Co. General Permit OHR000003	Rattlesnake Ck	stormwater	
Midwest Wood Treating Inc. General Permit OHR000003	W Br Rattlesnake Ck	stormwater	

APPENDIX E. WATER QUALITY CHEMICAL DATA

Note: Before reviewing this table, it is recommended that Table E-2 on page 57 be printed in order provide the names of parameters designated with code names 'P10', 'P299', etc.

Table E-1. Huron River Watershed Water Quality Data

DATE	P10	P299	P400	P1002	P1027	P916	P1034	P1042	P1045
HURON RIVER (HUC 030)									
RM 0.20 HURON R NEAR MOUTH - (K01W30)									
6/23/1998	25.7	6.4	7.61	< 2	< 0.2	50	< 30	< 10	373
7/8/1998	23.8	4.9	7.34	< 2	< 0.2	45	< 30	< 10	1310
7/30/1998	25.2	5.5	7.4	< 2	< 0.2	42	< 30	< 10	1550
8/20/1998	24.9	4.2	7.24	2	< 0.2	44	< 30	< 10	1290
9/24/1998	20.9	6.3	7.47	2	< 0.2	45	< 30	< 10	1220
RM 0.70 HURON R DST US6 (DST HURON-ERIE WWTP) - (K01W31)									
6/23/1998	27.0	8.1	7.86	2	< 0.2	61	< 30	< 10	547
7/8/1998	24.2	4.9	7.27	< 2	< 0.2	54	< 30	< 10	1070
7/30/1998	25.0	5.2	7.28	< 2	< 0.2	45	< 30	< 10	1890
8/20/1998	24.6	4.0	7.28	2	< 0.2	47	< 30	< 10	1310 J
9/24/1998	20.0	6.3	7.50	2	< 0.2	52	< 30	< 10	1250
RM 1.10 HURON R ADJ RR YARD (UST HURON-ERIE WWTP) - (K01W32)									
6/23/1998	28.1	9.1	8.05	2	< 0.2	65	< 30	< 10	754
7/8/1998	24.2	5.2	7.27	2	< 0.2	59	< 30	< 10	1190
7/30/1998	25.2	5.9	7.21	< 2	< 0.2	48	< 30	< 10	2630
8/20/1998	24.6	6.3	7.60	3	< 0.2	54	< 30	< 10	2090
9/24/1998	19.2	7.8	7.79	3	< 0.2	67	< 30	< 10	2000
RM 2.75 HURON R AT SR 2 - (K01P01)									
6/23/1998	28.1	10.0	8.12	2	< 0.2	64	< 30	< 10	931
7/8/1998	24.1	7.4	7.69	< 2	< 0.2	71	< 30	< 10	648
7/30/1998	25.7	7.8	7.78	< 2	< 0.2	58	< 30	< 10	3610
8/20/1998	25.8	5.4	7.46	3	< 0.2	50	< 30	< 10	1390
9/24/1998	20.5	6.5	7.66	3	< 0.2	84	< 30	< 10	1840
RM 6.60 HURON R ADJ NORFOLK/WESTERN RR - (K01W33)									
6/23/1998	28.5	7.59	7.76	2	< 0.2	83	< 30	< 10	320
7/8/1998	23.3	7.3	7.65	< 2	< 0.2	84	< 30	< 10	671
7/30/1998	25.7	12.8	8.31	< 2	< 0.2	83	< 30	< 10	816
8/20/1998	25.7	7.9	8.02	2	< 0.2	71	< 30	< 10	763
9/24/1998	20.7	6.3	7.55	< 2	< 0.2	95	< 30	< 10	672
RM 8.01 HURON R AT MASON RD - (501040)									
6/23/1998	27.2	6.81	7.76	< 2	< 0.2	89	< 30	< 10	900
7/8/1998	23.3	6.4	7.36	< 2	< 0.2	75	< 30	< 10	769
7/30/1998	26.0	12.0	8.19	< 2	< 0.2	83	< 30	< 10	724
8/20/1998	25.8	9.4	8.21	3	< 0.2	78	< 30	< 10	829
9/24/1998	20.0	6.7	7.67	< 2	< 0.2	96	< 30	< 10	534
RM 11.85 HURON R ADJ OLD MUD BROOK RD (DST MILAN WWTP) - (501050)									
7/8/1998	22.5	7.6	7.66	< 2	< 0.2	68	< 30	< 10	801
7/28/1998	24.4	7.9	7.85	< 2	< 0.2	83	< 30	< 10	560
8/11/1998	24.5	7.9	7.84	< 2	< 0.2	66	< 30	< 10	2520
8/20/1998	19.7	8.6	8.22	2	< 0.2	82	< 30	< 10	197

Huron River Watershed TMDLs

Table E-1. Huron River Watershed Water Quality Data

DATE	P10	P299	P400	P1002	P1027	P916	P1034	P1042	P1045
RM 12.30 HURON R AT US 250 - (501030)									
7/8/1998	22.2	7.7	7.76	< 2	< 0.2	67	< 30	< 10	1060
7/28/1998	23.6	7.8	7.88	< 2	< 0.2	84	< 30	< 10	549
8/11/1998	23.7	7.8	7.85	< 2	< 0.2	66	< 30	< 10	3220
8/20/1998	20.2	9.0	8.25	2	< 0.2	82	< 30	< 10	142
6/20/2002	23.8	10.1	8.05	< 2.0	< 0.20	93	< 30	< 10	414
7/2/2002	27.4	7.4	7.79	2.5	< 0.20	97	< 30	< 10	412
7/18/2002	27.1	7.2	8.05	< 2.0	< 0.20	91	< 30	< 10	286
8/1/2002	27.4	7.0	7.65	2.6	< 0.20	91	< 30	< 10	503
8/14/2002	26.3	7.7	7.80	2.4	< 0.20	82	< 30	10	479
9/5/2002	22.4	8.1	7.71	< 2.0	< 0.20	71	< 30	< 10	460
RM 14.65 HURON R DST EAST & WEST BRANCHES (MILAN WILDLIFE AREA) - (K01W01)									
7/8/1998	22.3	7.9	7.87	< 2	< 0.2	79	< 30	< 10	684
7/30/1998	22.4	8.3	8.2	< 2	< 0.2	86	< 30	< 10	300
8/11/1998	23.6	7.9	7.91	2	< 0.2	69	< 30	< 10	5880
8/20/1998	17.3	8.7	8.01	< 2	< 0.2	85	< 30	< 10	158
6/20/2002	23.0	9.4	8.03	< 2.0	< 0.20	95	< 30	< 10	274
7/2/2002	27.4	7.3	7.78	2.5	< 0.20	104	< 30	< 10	288
7/18/2002	26.7	6.9	7.78	< 2.0	< 0.20	93	< 30	< 10	452
8/1/2002	26.2	6.3	7.58	< 2.0	< 0.20	97	< 30	< 10	515
8/14/2002	26.5	7.0	7.80	2.3	< 0.20	88	< 30	11	535
9/5/2002	21.1	7.9	7.75	< 2.0	< 0.20	76	< 30	< 10	285
MUD BROOK (HUC 030)									
RM 3.01 MUD BROOK AT SCHEID RD - (K01W28)									
7/8/1998	21.6	6.9	7.77	2	< 0.2	93	< 30	< 10	785
7/28/1998	23.0	6.2	7.90	3	< 0.2	86	< 30	< 10	1670
8/11/1998	23.3	6.1	7.61	< 2	< 0.2	75	< 30	< 10	4580
8/20/1998	17.5	6.5	8.03	5	0.2	61	< 30	< 10	4500
RM 4.69 MUD BROOK AT HOOVER RD - (K01S30)									
7/8/1998	21.6	7.1	7.69	< 2	< 0.2	84	< 30	< 10	585
7/28/1998	21.3	7.3	7.89	3	< 0.2	79	< 30	< 10	1430
8/11/1998	22.5	6.3	7.67	< 2	< 0.2	71	< 30	< 10	1360
8/20/1998	17.4	7.5	7.96	5	0.2	57	< 30	< 10	3570
RM 6.25 MUD BROOK DST MASON RD - (K01W29)									
7/8/1998	21.4	7.1	7.60	< 2	< 0.2	81	< 30	< 10	542
7/28/1998	23.9	7.0	7.45	3	< 0.2	67	< 30	< 10	1260
8/11/1998	24.5	6.3	7.40	5	< 0.2	51	< 30	< 10	1220
8/20/1998	21.8	6.8	7.65	4	< 0.2	44	< 30	< 10	3320
VILLAGE CREEK (HUC 030)									
RM 1.12 VILLAGE CK AT BERLIN ST - (K01G19)									
6/20/2002	20.0	8.4	7.74	< 2.0	< 0.20	74	< 30	< 10	406
7/2/2002	24.1	7.4	7.73	< 2.0	< 0.20	87	< 30	< 10	645
7/18/2002	23.4	8.1	7.84	2.3	< 0.20	90	< 30	< 10	508
8/1/2002	23.7	7.3	7.63	< 2.0	< 0.20	89	< 30	< 10	556
8/14/2002	19.4	7.2	7.79	5.2	< 0.20	106	< 30	20	16700
9/5/2002	19.4	8.5	7.83	< 2.0	< 0.20	79	< 30	< 10	567

Table E-1. Huron River Watershed Water Quality Data

DATE	P10	P299	P400	P1002	P1027	P916	P1034	P1042	P1045
RATTLESNAKE CREEK (HUC 030)									
RM 0.23 RATTLESNAKE CK AT SHAW MILL RD - (K01W36)									
7/8/1998	21.5	7.7	7.46	< 2	< 0.2	38	< 30	< 10	958
7/28/1998	20.4	7.3	7.82	< 2	< 0.2	85	< 30	< 10	255
8/11/1998	22.2	7.1	7.68	< 2	< 0.2	64	< 30	< 10	1580
8/20/1998	17.2	7.5	7.98	< 2	< 0.2	93	< 30	< 10	149
RM 2.37 RATTLESNAKE CK AT OLD STATE RD - (K01W34)									
7/7/1998	21.2	7.2	7.75	< 2	< 0.2	65	< 30	< 10	268
7/21/1998	24.8	6.9	7.48	< 2	< 0.2	58	< 30	< 10	6640
8/4/1998	19.9	7.2	7.82	< 2	< 0.2	82	< 30	< 10	607
8/20/1998	16.5	5.6	7.81	2	< 0.2	91	< 30	< 10	801
WILLOW BROOK (HUC 030)									
RM 1.58 WILLOW BROOK AT GALLUP RD - (K01W35)									
6/24/1998	20.9	8.4	8.10	< 2	< 0.2	114	< 30	< 10	222
7/7/1998	19.8	8.3	8.06	< 2	< 0.2	105	< 30	< 10	115
7/21/1998	22.7	7.7	7.69	< 2	< 0.2	63	< 30	12	8450
8/4/1998	19.5	8.1	8.23	< 2	< 0.2	114	< 30	< 10	209
8/19/1998	18.4	8.3	8.07	< 2	< 0.2	112	< 30	< 10	286
WEST BRANCH RATTLESNAKE CREEK (HUC 030)									
RM 1.38 W BR RATTLESNAKE CK AT LAIS RD - (501080)									
6/24/1998	22.9	6.7	7.62	< 2	< 0.2	69	< 30	< 10	324
7/7/1998	21.4	7.1	7.68	< 2	< 0.2	67	< 30	< 10	225
7/21/1998	23.5	6.7	7.42	< 2	0.6	57	< 30	39	19700
8/10/1998	24.0	6.4	7.64	< 2	< 0.2	74	< 30	< 10	213
8/20/1998	18.5	7.0	7.80	< 2	< 0.2	60	< 30	< 10	257
RM 2.35 NORWALK WWTP 001 EFFLUENT - (K01S08)									
7/7/1998	21.6	6.7	7.38	< 2	< 0.2	69	< 30	< 10	383
7/21/1998	25.6	5.2	6.82	< 2	< 0.2	46	< 30	< 10	676
8/4/1998	23.0	7.0	7.52	< 4	< 0.4	64	< 30	< 10	172
8/19/1998	23.0	5.1	7.04	< 2	< 0.2	61	< 30	< 10	174
RM 2.42 W BR RATTLESNAKE CK UST NORWALK WWTP - (K01W06)									
7/7/1998	22.0	11.6	7.28	< 2	< 0.2	103	< 30	< 10	280
7/21/1998	24.2	6.6	7.18	< 2	< 0.2	45	< 30	10	2630
8/4/1998	21.5	8.0	7.73	< 2	< 0.2	104	< 30	< 10	292
8/19/1998	22.8	8.3	7.69	< 2	< 0.2	112	< 30	< 10	386
EAST BRANCH HURON RIVER (HUC 030)									
RM 1.47 E BR HURON R AT SCHAEFFER RD - (501070)									
6/24/1998	23.8	9.3	8.21	< 2	< 0.2	99	< 30	< 10	283
7/8/1998	22.0	8.0	7.86	2	< 0.2	68	< 30	< 10	1220
7/28/1998	21.5	9.1	8.24	< 2	< 0.2	84	< 30	< 10	242
8/11/1998	23.0	8.9	8.02	< 2	< 0.2	65	< 30	< 10	1250
8/20/1998	16.4	8.2	8.02	< 2	< 0.2	96	< 30	< 10	111
RM 6.85 E BR HURON R AT BROWN RD - (K01S11)									
6/24/1998	25.9	8.7	8.13	< 2	< 0.2	101	< 30	< 10	379
7/7/1998	22.3	6.2	8.12	< 2	< 0.2	91	< 30	< 10	324

Huron River Watershed TMDLs

Table E-1. Huron River Watershed Water Quality Data

DATE	P10	P299	P400	P1002	P1027	P916	P1034	P1042	P1045
7/21/1998	27.7	9.0	8.07	< 2	< 0.2	92	< 30	< 10	362
8/19/1998	19.0	8.3	8.07	< 2	< 0.2	99	< 30	< 10	263
6/18/2002	18.0	9.5	8.05	< 2.0	< 0.20	101	< 30	< 10	293
7/1/2002	24.3	6.6	7.87	< 2.0	< 0.20	109	< 30	< 10	215
7/16/2002	22.6	6.9	7.83	< 2.0	< 0.20	111	< 30	< 10	272
7/31/2002	24.0	7.0	7.62	< 2.0	< 0.20	105	< 30	< 10	791
8/13/2002	22.6	6.9	7.86	< 2.0	< 0.20	95	< 30	< 10	246
9/4/2002	20.1	7.2	7.69	< 2.0	< 0.20	93	< 30	24	182
RM 13.66 E BR HURON R AT GEIGER RD - (K01W19)									
6/24/1998	27.3	7.5	7.91	< 2	< 0.2	103	< 30	< 10	222
7/7/1998	20.4	7.4	7.79	< 2	< 0.2	90	< 30	< 10	243
8/4/1998	19.3	6.9	7.70	< 2	< 0.2	103	< 30	< 10	203
8/19/1998	19.0	7.2	7.69	< 2	< 0.2	102	< 30	< 10	820
RM 19.11 E BR HURON R AT HANVILLE CORNERS RD - (K01G21)									
6/18/2002	17.5	8.0	7.79	< 2.0	< 0.20	95	< 30	< 10	492
7/1/2002	23.8	5.0	7.52	3.2	< 0.20	91	< 30	< 10	588
7/16/2002	22.6	5.6	7.56	3.8	< 0.20	96	< 30	< 10	676
7/31/2002	23.3	5.1	7.45	2.4	0.21	76	< 30	< 10	353
8/13/2002	22.4	6.4	7.73	< 2.0	< 0.20	80	< 30	< 10	389
9/4/2002	21.1	5.9	7.34	2.3	< 0.20	65	< 30	< 10	584
RM 20.96 E BR HURON R AT SR 162 - (K01W21)									
6/24/1998	29.5	15.0	8.36	2	< 0.2	81	< 30	< 10	108
7/7/1998	21.2	8.4	7.92	< 2	< 0.2	83	< 30	< 10	238
8/4/1998	21.5	7.0	7.81	< 2	< 0.2	84	< 30	< 10	198
8/17/1998	28.2	12.4	7.98	2	< 0.2	83	< 30	< 10	352
9/2/1998	21.9	9.6	7.95	3	< 0.2	60	< 30	< 10	889
6/18/2002	18.5	10.5	7.89	< 2.0	< 0.20	96	< 30	< 10	125
7/1/2002	24.7	5.9	7.53	3.5	< 0.20	94	< 30	< 10	240
7/16/2002	23.1	5.9	7.53	3.8	< 0.20	88	< 30	< 10	336
7/31/2002	23.7	5.9	7.57	5.2	< 0.20	80	< 30	< 10	172
8/13/2002	23.2	5.3	7.62	6.4	< 0.20	85	< 30	36	309
9/4/2002	19.4	4.7	7.29	6.4	< 0.20	81	< 30	< 10	368
RM 24.67 E BR HURON R AT OLD STATE RD - (K01W22)									
6/24/1998	27.2	12.0	8.27	3	< 0.2	84	< 30	< 10	190
7/7/1998	20.8	8.8	8.00	2	< 0.2	78	< 30	< 10	419
8/4/1998	20.5	6.1	7.87	3	< 0.2	82	< 30	< 10	272
8/17/1998	25.5	8.4	7.80	3	< 0.2	82	< 30	< 10	333
6/18/2002	19.1	12.7	8.09	< 2.0	< 0.20	96	< 30	< 10	207
7/1/2002	25.1	6.6	7.51	6.3	< 0.20	82	< 30	< 10	177
7/16/2002	23.1	7.5	7.60	6.2	< 0.20	70	< 30	< 10	363
7/31/2002	24.2	7.2	7.60	7.4	< 0.20	57	< 30	< 10	268
8/13/2002	23.7	5.9	7.82	6.1	< 0.20	42	< 30	< 10	1080
9/4/2002	21.6	5.5	7.33	10.6	< 0.20	42	< 30	< 10	1740
NORWALK CREEK (HUC 030)									
RM 0.13 NORWALK CK AT SR 61 - (K01P03)									
6/24/1998	24.0	7.3	7.91	< 2	< 0.2	105	< 30	< 10	387
7/7/1998	20.9	6.1	7.81	< 2	< 0.2	86	< 30	< 10	317
7/21/1998	25.4	6.7	7.66	< 2	< 0.2	72	< 30	< 10	1190
8/19/1998	18.9	8.1	7.95	< 2	< 0.2	104	< 30	< 10	211

Table E-1. Huron River Watershed Water Quality Data

DATE	P10	P299	P400	P1002	P1027	P916	P1034	P1042	P1045
6/18/2002	17.7	9.0	*	< 2.0	< 0.20	104	< 30	< 10	386
7/1/2002	23.7	6.8	7.74	2.9	< 0.20	118	< 30	< 10	2320
7/16/2002	20.8	6.7	7.76	< 2.0	< 0.20	129	< 30	< 10	250
7/31/2002	23.4	6.5	7.53	2.8	< 0.20	67	< 30	< 10	422
8/13/2002	21.5	6.9	7.73	2.3	< 0.20	108	< 30	< 10	375
9/4/2002	19.0	6.5	7.36	< 2.0	< 0.20	85	< 30	< 10	211
RM 1.90 NORWALK CK AT CITY PARK - (K01S13)									
6/24/1998	26.7	8.4	7.84	< 2	< 0.2	102	< 30	< 10	232
7/7/1998	21.2	7.3	7.62	< 2	< 0.2	75	< 30	< 10	355
7/21/1998	25.5	6.0	7.44	< 2	< 0.2	60	< 30	< 10	1770
8/19/1998	18.9	8.0	7.80	< 2	< 0.2	102	< 30	< 10	286
RM 5.56 NORWALK CK AT LAYLIN RD - (K01W23)									
7/7/1998	21.6	6.9	7.77	< 2	< 0.2	63	< 30	< 10	396
7/21/1998	25.8	5.9	7.43	< 2	< 0.2	51	< 30	< 10	1630
8/4/1998	20.3	6.2	7.86	< 2	< 0.2	65	< 30	< 10	410
8/19/1998	19.4	6.7	7.66	2	< 0.2	59	< 30	< 10	390
6/18/2002	18.7	7.9	*	< 2.0	< 0.20	82	< 30	< 10	234
7/1/2002	24.7	5.1	7.65	3.0	< 0.20	81	< 30	< 10	300
7/16/2002	24.0	4.6	7.53	5.1	< 0.20	80	< 30	< 10	921
7/31/2002	24.7	5.0	7.35	3.3	< 0.20	57	< 30	< 10	320
NORWALK CREEK TRIBUTARY AT RM 0.37 (HUC 030)									
RM 1.62 NORWALK CK TRIB (0.37) AT RIDGE RD - (K01G20)									
6/18/2002	17.9	9.9	*	< 2.0	< 0.20	100	< 30	< 10	151
7/1/2002	23.6	7.5	7.91	2.8	< 0.20	107	< 30	< 10	187
7/16/2002	21.9	8.0	8.03	2.0	< 0.20	111	< 30	< 10	338
7/31/2002	24.1	7.5	7.87	2.3	< 0.20	85	< 30	< 10	243
8/13/2002	22.6	7.1	7.67	< 2.0	< 0.20	74	< 30	< 10	374
9/4/2002	19.2	7.9	7.64	2.5	< 0.20	87	< 30	< 10	83
COLE CREEK (HUC 030)									
RM 0.14 COLE CK AT SR 61 - (K01P04)									
6/24/1998	29.0	9.1	7.84	< 2	< 0.2	97	< 30	< 10	242
7/7/1998	22.9	7.1	7.83	< 2	< 0.2	96	< 30	< 10	224
7/21/1998	28.1	7.6	7.76	< 2	< 0.2	95	< 30	< 10	496
8/19/1998	21.1	7.0	7.73	< 2	< 0.2	99	< 30	< 10	305
6/18/2002	18.6	8.6	*	< 2.0	< 0.20	102	< 30	< 10	360
7/1/2002	22.7	6.1	7.48	< 2.0	< 0.20	126	< 30	< 10	261
7/16/2002	22.6	6.2	7.54	< 2.0	< 0.20	130	< 30	< 10	641
7/31/2002	23.6	6.2	7.66	< 2.0	< 0.20	122	< 30	< 10	472
8/13/2002	22.4	6.6	7.58	< 2.0	< 0.20	118	< 30	19	379
9/4/2002	19.9	7.3	7.39	< 2.0	< 0.20	110	< 30	< 10	181
RM 6.52 COLE CK AT NEW STATE RD - (K01W20)									
6/24/1998	27.6	7.3	7.97	3	< 0.2	71	< 30	< 10	395
7/7/1998	21.3	6.4	7.77	< 2	< 0.2	72	< 30	< 10	415
8/4/1998	21.8	7.2	7.81	3	< 0.2	62	< 30	< 10	510
8/19/1998	20.7	5.0	7.80	3	< 0.2	53	< 30	< 10	1220

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Table E-1. Huron River Watershed Water Quality Data

DATE	P10	P299	P400	P1002	P1027	P916	P1034	P1042	P1045
COLE CREEK TRIBUTARY AT RM 2.46 (HUC 030)									
RM 0.45 COLE CK TRIB (2.46) AT RIDGE RD - (K01G18)									
6/18/2002	20.6	8.7	*	< 2.0	< 0.20	95	< 30	< 10	271
7/1/2002	23.6	7.5	7.85	2.7	< 0.20	102	< 30	< 10	372
7/16/2002	22.2	7.2	7.83	< 2.0	< 0.20	102	< 30	< 10	315
7/31/2002	23.6	7.2	7.76	2.4	< 0.20	96	< 30	< 10	981
8/13/2002	22.5	7.2	7.81	< 2.0	< 0.20	89	< 30	< 10	233
9/4/2002	19.5	7.5	7.54	< 2.0	< 0.20	88	< 30	< 10	215
EAST BRANCH HURON RIVER TRIBUTARY AT RM 19.98 (HUC 030)									
RM 1.05 E BR HURON R TRIB (19.98) AT NEW STATE RD - (K01G23)									
7/31/2002	22.4	6.2	7.67	2.2	0.43	88	< 30	33	208
8/13/2002	21.0	5.6	7.60	< 2.0	0.44	112	< 30	14	79
9/4/2002	18.2	4.1	7.25	2.9	< 0.20	88	< 30	< 10	218
WEST BRANCH HURON RIVER (HUC 020)									
RM 3.67 W BR HURON R AT LAMEREAUX RD - (K01S12)									
6/22/1998	26.4	8.3	8.15	2	< 0.2	96	< 30	< 10	413
7/8/1998	22.6	8.3	7.95	< 2	< 0.2	89	< 30	< 10	820
7/28/1998	23.6	8.1	8.08	2	< 0.2	85	< 30	< 10	463
8/11/1998	24.4	8.0	7.95	< 2	< 0.2	84	< 30	< 10	6750
8/18/1998	24.6	8.5	8.09	< 2	< 0.2	81	< 30	< 10	372
6/20/2002	24.1	9.1	8.10	< 2.0	< 0.20	98	< 30	< 10	257
7/2/2002	28.4	8.7	7.96	2.9	< 0.20	115	< 30	< 10	297
7/18/2002	27.1	8.7	8.01	< 2.0	< 0.20	93	< 30	< 10	321
8/1/2002	26.1	7.7	7.87	< 2.0	< 0.20	109	< 30	< 10	210
8/14/2002	26.9	9.6	8.21	2.6	< 0.20	94	< 30	10	399
9/5/2002	21.3	10.7	8.10	< 2.0	< 0.20	81	< 30	< 10	171
RM 7.20 W BR HURON R AT MONROEVILLE PARK (DST WWTP) - (K01W26)									
6/22/1998	27.3	8.5	8.18	2	< 0.2	102	< 30	< 10	648
7/7/1998	22.3	8.2	8.11	< 2	< 0.2	87	< 30	< 10	657
7/21/1998	24.4	7.2	7.84	< 2	< 0.2	85	< 30	< 10	1050
8/10/1998	24.9	7.8	7.96	< 2	< 0.2	65	< 30	< 10	756
8/18/1998	25.0	9.0	8.18	2	< 0.2	86	< 30	< 10	507
RM 7.60 W BR HURON R AT RIVER RD - (K01W25)									
6/22/1998	26.8	8.5	8.16	2	< 0.2	103	< 30	< 10	520
7/7/1998	22.5	8.5	8.07	< 2	< 0.2	88	< 30	< 10	807
7/21/1998	24.3	7.1	7.81	< 2	< 0.2	85	< 30	< 10	1100
8/10/1998	25.3	7.7	8.01	2	< 0.2	66	< 30	< 10	1070
8/18/1998	24.4	8.5	8.21	2	< 0.2	87	< 30	< 10	576
6/20/2002	23.3	10.8	8.16	< 2.0	< 0.20	105	< 30	< 10	333
7/2/2002	28.3	7.9	7.92	3.4	< 0.20	121	< 30	< 10	524
7/18/2002	26.8	7.1	7.96	2.8	< 0.20	108	< 30	< 10	504
8/1/2002	28.0	7.7	7.87	2.1	< 0.20	119	< 30	< 10	373
8/14/2002	26.4	7.6	7.96	< 2.0	< 0.20	104	< 30	10	483
9/5/2002	21.6	8.5	7.92	< 2.0	< 0.20	85	< 30	< 10	551
RM 10.48 W BR HURON R AT STANDARDSBURG RD - (K01W12)									
6/22/1998	27.0	8.8	8.21	2	< 0.2	107	< 30	< 10	478
7/6/1998	20.8	8.3	8.10	2	< 0.2	86	< 30	< 10	1210

Table E-1. Huron River Watershed Water Quality Data

DATE	P10	P299	P400	P1002	P1027	P916	P1034	P1042	P1045
7/20/1998	23.9	7.8	8.04	< 2	< 0.2	104	< 30	< 10	232
8/3/1998		8.8		< 2	< 0.2	97	< 30	< 10	264
8/18/1998	25.3	9.5	8.31	2	< 0.2	89	< 30	< 10	478
6/20/2002	21.4	8.8	8.13	2.0	< 0.20	112	< 30	< 10	312
7/2/2002	25.6	7.5	7.96	2.9	< 0.20	126	< 30	< 10	516
7/18/2002	24.6	7.8	8.04	< 2.0	< 0.20	128	< 30	10	341
8/1/2002	25.1	7.4	7.85	2.0	< 0.20	119	< 30	< 10	289
8/14/2002	24.0	7.8	8.00	2.3	< 0.20	117	< 30	11	199
9/5/2002	19.8	8.9	8.01	< 2.0	< 0.20	91	< 30	< 10	325

CLAYTON DITCH (HUC 020)

RM 0.01 CLAYTON DITCH AT MOUTH - (K01G16)									
6/20/2002	20.4	7.9	7.65	< 2.0	< 0.20	74	< 30	< 10	62
7/2/2002	24.4	5.7	7.26	< 2.0	< 0.20	74	< 30	< 10	267
6/20/2002	24.0	12.1	8.35	< 2.0	< 0.20	69	< 30	< 10	< 50
7/2/2002	27.5	9.5	7.95	2.0	< 0.20	66	< 30	< 10	119
9/5/2002	20.6	5.5	7.15	3.4	0.32	74	< 30	< 10	420

SEYMOUR CREEK (HUC 020)

RM 0.13 SEYMOUR CK AT LAMEREAUX RD - (K01W27)									
6/22/1998	23.7	6.2	7.57	< 2	< 0.2	77	< 30	< 10	54
7/7/1998	21.4	7.3	7.63	< 2	< 0.2	61	< 30	< 10	178
7/21/1998	23.7	6.8	7.37	< 2	< 0.2	55	< 30	< 10	1790
8/10/1998	24.2	6.2	7.64	< 2	< 0.2	70	< 30	< 10	92
8/18/1998	23.0	6.6	7.46	< 2	< 0.2	64	< 30	< 10	127

MEGGINSON CREEK (HUC 020)

RM 0.59 MEGGINSON CK AT SAND HILL RD - (K01W24)									
6/22/1998	23.9	7.3	7.83	< 2	< 0.2	88	< 30	< 10	441
7/7/1998	20.7	7.0	7.74	< 2	< 0.2	87	< 30	< 10	475
7/21/1998	22.6	6.3	7.36	< 2	< 0.2	71	< 30	< 10	1790
8/10/1998	24.3	6.7	7.85	2	< 0.2	89	< 30	< 10	344
8/18/1998	22.0	7.5	7.70	< 2	< 0.2	78	< 30	< 10	319

FRINK RUN (HUC 020)

RM 0.09 FRINK RUN AT SR 99 - (K01P08)									
6/22/1998	27.8	7.5	7.68	< 2	< 0.2	73	< 30	< 10	298
7/6/1998	21.4	7.6	7.68	< 2	< 0.2	67	< 30	< 10	411
7/20/1998	24.5	7.2	7.52	< 2	< 0.2	48	< 30	< 10	1070
8/3/1998	21.3	8.9	7.39	< 2	< 0.2	60	< 30	< 10	206
8/18/1998	25.6	6.0	7.49	< 2	< 0.2	62	< 30	< 10	233
6/20/2002	22.3	8.8	7.74	< 2.0	< 0.20	86	< 30	< 10	336
7/2/2002	25.7	5.4	7.38	2.6	< 0.20	88	< 30	10	399
RM 11.08 FRINK RUN AT BISMARCK RD - (K01W13)									
6/22/1998	30.3	8.4	7.94	< 2	< 0.2	111	< 30	< 10	388
7/6/1998	22.6	6.0	7.74	2	< 0.2	87	< 30	< 10	1100
7/20/1998	24.5	7.5	7.57	< 2	< 0.2	68	< 30	< 10	3500
8/3/1998	23.9	4.4	7.47	2	< 0.2	96	< 30	< 10	874
8/18/1998	25.5	4.3	7.52	3	< 0.2	79	< 30	< 10	1640

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FRINK RUN TRIBUTARY AT RM 5.83 (HUC 020)									
RM 3.69 FRINK RUN TRIB (5.83) AT BISMARCK RD - (K01G15)									
6/20/2002	19.1	4.3	7.23	< 2.0	< 0.20	112	< 30	< 10	1080
7/2/2002	23.7	2.5	7.16	5.6	< 0.20	116	< 30	11	775
7/18/2002	22.5	2.7	7.32	9.0	< 0.20	110	< 30	61	1230
8/1/2002	23.5	2.9	7.26	12.8	< 0.20	91	< 30	< 10	1350
SLATE RUN (HUC 020)									
RM 4.10 SLATE RUN AT TOWN LINE RD - (K01S03)									
6/22/1998	30.9	10.4	8.33	< 2	< 0.2	75	< 30	< 10	477
7/6/1998	21.5	8.8	8.12	< 2	< 0.2	77	< 30	< 10	309
7/20/1998	25.0	11.9	8.56	< 2	< 0.2	48	< 30	< 10	997
8/3/1998	21.6	9.1	8.10	< 2	< 0.2	65	< 30	< 10	92
8/18/1998	26.6	10.0	8.42	< 2	< 0.2	49	< 30	< 10	127
6/20/2002	21.9	8.2	7.80	< 2.0	< 0.20	72	< 30	< 10	349
7/2/2002	26.1	4.4	7.34	< 2.0	< 0.20	69	< 30	< 10	563
RM 10.42 SLATE RUN AT SECTION LINE RD - (K01W16)									
6/22/1998	29.0	10.4	8.00	< 2	< 0.2	92	< 30	< 10	300
7/6/1998	22.4	9.0	8.03	< 2	< 0.2	92	< 30	< 10	259
7/20/1998				< 2	< 0.2	56	< 30	< 10	2660
8/3/1998	23.1	7.7	7.59	< 2	< 0.2	93	< 30	< 10	159
8/18/1998	24.4	8.7	7.70	< 2	< 0.2	69	< 30	< 10	221
EAST BRANCH MUD RUN (HUC 020)									
RM 1.38 E BR MUD RUN AT N GREENFIELD RD - (K01W15)									
6/22/1998	24.7	5.7	7.85	< 2	< 0.2	90	< 30	< 10	558
7/6/1998	20.3	6.3	7.75	< 2	< 0.2	83	< 30	< 10	741
7/20/1998	22.0	4.1	7.31	< 2	< 0.2	56	< 30	< 10	2480
8/3/1998	19.5	4.7	7.28	< 2	< 0.2	86	< 30	< 10	691
8/18/1998	22.5	5.0	7.60	< 2	< 0.2	82	< 30	< 10	508
WEST BRANCH MUD RUN (HUC 020)									
RM 0.53 W BR MUD RUN AT TR 197 (ZOHR RD) - (K01W14)									
6/22/1998	28.5	10.4	7.92	< 2	< 0.2	96	< 30	< 10	178
7/6/1998	22.8	9.5	7.91	< 2	< 0.2	97	< 30	< 10	203
7/20/1998	25.7	8.7	7.78	< 2	< 0.2	78	< 30	< 10	459
8/3/1998	21.9	8.3	7.56	< 2	< 0.2	101	< 30	< 10	512
8/18/1998	25.5	8.1	7.57	< 2	< 0.2	84	< 30	< 10	285
WEST BRANCH HURON RIVER (HUC 010)									
RM 16.59 W BR HURON R AT SNYDER RD - (K01W17)									
6/22/1998	23.6	7.3	7.95	2	< 0.2	115	< 30	< 10	510
7/6/1998	21.9	7.4	8.02	2	< 0.2	88	< 30	< 10	1280
7/20/1998	25.8	9.4	8.14	< 2	< 0.2	108	< 30	< 10	391
8/3/1998	23.1	11.2	8.19	< 2	< 0.2	106	< 30	< 10	244
8/18/1998	25.3	8.8	8.15	< 2	< 0.2	99	< 30	< 10	427

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DATE	P10	P299	P400	P1002	P1027	P916	P1034	P1042	P1045
RM 22.73 W BR HURON R AT BAUMAN RD - (K01P05)									
6/22/1998	23.4	7.1	7.86	2	< 0.2	119	< 30	< 10	502
7/6/1998	22.5	7.6	7.94	2	< 0.2	89	< 30	< 10	1070
7/20/1998	26.2	8.3	7.87	< 2	< 0.2	111	< 30	< 10	676
8/3/1998	22.6	8.7	7.91	< 2	< 0.2	107	< 30	< 10	313
8/18/1998	25.4	7.7	7.86	2	< 0.2	95	< 30	< 10	404
RM 29.18 W BR HURON R AT SR 162 - (K01W18)									
6/22/1998	26.9	7.1	8.13	< 2	< 0.2	118	< 30	< 10	589
7/6/1998	23.1	8.4	8.17	2	< 0.2	96	< 30	< 10	966
7/20/1998	25.3	8.9	8.06	< 2	< 0.2	123	< 30	< 10	265
8/3/1998	24.5	8.1	8.19	< 2	< 0.2	115	< 30	< 10	200
8/17/1998	26.9	8.4	8.10	< 2	< 0.2	98	< 30	< 10	382
9/2/1998	21.5	8.6	8.02	2	< 0.2	100	< 30	< 10	663
RM 35.33 W BR HURON R AT GREEN BUSH RD - (K01G12)									
6/17/2002	17.6	8.1	7.79	< 2.0	< 0.20	135	< 30	< 10	1240
7/1/2002	25.2	6.1	7.67	3.2	< 0.20	173	< 30	< 10	1320
7/15/2002	22.4	7.3	7.73	2.0	< 0.20	184	< 30	< 10	534
7/30/2002	25.1	5.8	7.69	3.2	< 0.20	176	< 30	< 10	568
8/12/2002	23.7	6.1	7.73	2.9	< 0.20	188	< 30	10	496
9/3/2002	23.8	6.6	7.78	3.5	< 0.20	185	< 30	< 10	870
RM 36.26 W BR HURON R AT KLEIN RD - (K01S28)									
6/22/1998	24.5	6.52	7.72	< 2	< 0.2	81	< 30	< 10	587
7/6/1998	20.7	7.4	7.70	< 2	< 0.2	59	< 30	< 10	1170
7/20/1998	26.3	7.0	7.95	< 2	< 0.2	93	< 30	< 10	469
8/3/1998	21.0	7.6	7.91	< 2	< 0.2	89	< 30	< 10	227
8/17/1998	24.3	7.2	7.88	3	< 0.2	73	< 30	< 10	712
9/2/1998	19.8	7.3	7.68	< 2	< 0.2	62	< 30	< 10	994
RM 38.40 W BR HURON R AT SKINNER RD - (K01P06)									
6/22/1998	23.3	5.9	7.77	< 2	< 0.2	86	< 30	< 10	457
7/6/1998	20.2	7.6	7.80	2	< 0.2	60	< 30	< 10	1200
7/20/1998	24.9	6.3	7.98	< 2	< 0.2	88	< 30	< 10	278
8/3/1998	22.6	6.4	7.94	< 2	< 0.2	88	< 30	< 10	255
8/17/1998	23.7	7.2	7.83	2	< 0.2	75	< 30	< 10	721
9/2/1998	20.2	7.3	7.70	< 2	< 0.2	60	< 30	< 10	1100
6/17/2002	16.2	7.2	7.73	< 2.0	< 0.20	97	< 30	< 10	382
7/1/2002	23.6	4.2	7.54	3.8	< 0.20	101	< 30	< 10	464
7/15/2002	20.2	4.6	7.60	4.1	< 0.20	103	< 30	< 10	733
7/30/2002	23.9	4.5	7.48	4.8	< 0.20	93	< 30	< 10	658
8/12/2002	21.9	4.2	7.54	4.8	< 0.20	91	< 30	< 10	425
9/3/2002	21.9	3.0	7.89	4.6	< 0.20	89	< 30	< 10	474
RM 40.35 W BR HURON R AT PLYMOUTH EAST RD - (K01S29)									
6/17/2002	15.5	8.8	7.86	< 2.0	< 0.20	99	< 30	< 10	456
7/1/2002	23.9	6.0	7.70	2.2	< 0.20	105	< 30	< 10	516
7/15/2002	20.4	6.9	7.84	2.0	< 0.20	107	< 30	< 10	408
7/30/2002	24.1	5.9	7.70	3.5	< 0.20	98	< 30	< 10	413
8/12/2002	22.0	6.0	7.75	2.7	< 0.20	99	< 30	10	362
9/3/2002	22.0	6.1	7.75	2.7	< 0.20	93	< 30	< 10	351

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DATE	P10	P299	P400	P1002	P1027	P916	P1034	P1042	P1045
RM 42.23 W BR HURON R AT BASELINE RD - (K01W11)									
6/22/1998	25.4	7.2	7.78	< 2	< 0.2	82	< 30	< 10	792
7/6/1998	20.5	7.7	7.66	2	< 0.2	52	< 30	< 10	1380
7/20/1998	26.6	7.9	8.08	< 2	< 0.2	92	< 30	< 10	450
8/3/1998	21.9	9.7	8.08	< 2	< 0.2	92	< 30	< 10	248
8/17/1998	23.1	8.1	7.86	3	< 0.2	71	< 30	< 10	1020
9/2/1998	18.9	8.2	7.70	< 2	< 0.2	55	< 30	< 10	1600
RM 47.47 W BR HURON R AT OLD STATE RD - (K01G10)									
6/17/2002	14.6	7.7	7.29	< 2.0	< 0.20	105	< 30	< 10	864
7/1/2002	23.4	7.1	7.74	4.8	< 0.20	122	< 30	< 10	2340
7/15/2002	18.1	6.3	7.75	4.3	< 0.20	129	< 30	< 10	1990
7/30/2002	22.5	5.7	7.64	5.9	< 0.20	112	< 30	< 10	2060
8/12/2002	20.9	5.0	7.78	4.2	< 0.20	175	< 30	< 10	756
9/3/2002	23.2	6.8	7.83	4.7	< 0.20	121	< 30	< 10	673
HOLIDAY LAKES TRIBUTARY TO W BR HURON R AT RM 23.09 (HUC 010)									
RM 2.97 HOLIDAY LAKES TRIB TO W BR HURON R AT SR 162 - (K01P10)									
6/22/1998	24.5	5.85	7.61	2	< 0.2	60	< 30	< 10	491
7/6/1998	22.0	5.9	7.52	3	< 0.2	50	< 30	< 10	767
7/20/1998	22.2	4.9	7.39	6	< 0.2	68	< 30	< 10	1690
8/3/1998	22.2	5.6	7.66	3	< 0.2	61	< 30	< 10	812
8/17/1998	24.3	5.7	7.67	4	< 0.2	60	< 30	< 10	990
9/2/1998	19.4	5.3	7.23	4	< 0.2	86	< 30	< 10	2860
TRIBUTARY TO HOLIDAY LAKES TRIBUTARY (RM 23.09/2.90) (HUC 010)									
RM 0.23 TRIB TO HOLIDAY LAKES TRIB (2.90) AT SR 162 - (K01G22)									
6/17/2002	17.5	7.1	7.37	< 2.0	< 0.20	152	< 30	< 10	690
7/1/2002	24.5	8.3	7.65	< 2.0	< 0.20	219	< 30	< 10	375
7/15/2002	20.9	11.1	7.79	< 2.0	< 0.20	274	< 30	< 10	369
7/30/2002	24.6	6.4	7.62	< 2.0	< 0.20	248	< 30	17	230
8/12/2002	21.8	8.4	7.72	< 2.0	< 0.20	300	< 30	23	254
9/3/2002	21.8	7.3	7.73	< 2.0	< 0.20	248	< 30	< 10	347
JACOBS CREEK (HUC 010)									
RM 0.62 JACOBS CK AT EGYPT RD - (K01P11)									
6/22/1998	23.0	7.3	7.93	< 2	< 0.2	81	< 30	< 10	194
7/6/1998	20.3	7.3	7.97	< 2	< 0.2	82	< 30	< 10	255
7/20/1998	25.8	8.0	7.82	< 2	< 0.2	96	< 30	< 10	196
8/3/1998	21.1	7.6	7.93	< 2	< 0.2	80	< 30	< 10	227
8/17/1998	25.1	7.1	7.79	< 2	< 0.2	77	< 30	< 10	324
9/2/1998	20.2	7.1	7.79	< 2	< 0.2	102	< 30	< 10	269
WEST BRANCH JACOBS CREEK (HUC 010)									
RM 0.08 WILLARD WWTP 001 EFFLUENT - (K01E01)									
6/22/1998	23.3	6.5	7.07	< 2	< 0.2	77	< 30	< 10	218
7/6/1998	22.5	6.8	7.16	< 2	< 0.2	72	< 30	< 10	250
7/20/1998	25.5	7.6	7.20	< 2	< 0.2	101	< 30	< 10	211
8/3/1998	23.7	7.5	7.30	< 2	< 0.2	75	< 30	< 10	138
8/17/1998	25.2	7.2	7.39	< 2	< 0.2	72	< 30	< 10	181
9/2/1998	23.0	7.3	7.50	< 2	< 0.2	96	< 30	< 10	316

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DATE	P10	P299	P400	P1002	P1027	P916	P1034	P1042	P1045
RM 0.14 WEST BRANCH JACOBS CK UST WILLARD WWTP (801) - (K01W10)									
6/22/1998	21.9	5.1	7.77	2	< 0.2	128	< 30	< 10	239
7/6/1998	19.2	6.0	7.90	< 2	< 0.2	124	< 30	< 10	307
7/20/1998	21.9	5.1	7.87	< 2	< 0.2	120	< 30	< 10	506
8/3/1998	18.4	6.2	7.94	< 2	< 0.2	120	< 30	< 10	199
8/17/1998	20.2	5.5	7.84	2	< 0.2	121	< 30	< 10	618
9/2/1998	18.0	5.6	7.78	< 2	< 0.2	151	< 30	< 10	570
WALNUT CREEK (HUC 010)									
RM 0.98 WALNUT CK AT WALNUT RD - (K01P13)									
6/22/1998	29.2	10.2	8.15	< 2	< 0.2	87	< 30	< 10	183
7/6/1998	23.9	9.7	8.22	< 2	< 0.2	78	< 30	< 10	402
7/20/1998	28.3	11.1	8.10	< 2	< 0.2	88	< 30	< 10	1680
8/3/1998	22.1	12.9	8.15	< 2	< 0.2	81	< 30	< 10	164
8/17/1998	28.8	12.4	8.15	< 2	< 0.2	88	< 30	< 10	414
9/2/1998	21.5	10.0	8.03	< 2	< 0.2	74	< 30	< 10	478
MARSH RUN (HUC 010)									
RM 0.93 MARSH RUN AT SR 598 - (K01P14)									
6/22/1998	29.3	10.1	7.60	3	< 0.2	165	< 30	< 10	1020
7/6/1998	21.0	7.6	7.38	3	< 0.2	158	< 30	< 10	1590
7/20/1998	27.0	11.0	7.66	2	< 0.2	171	< 30	< 10	1430
8/3/1998	22.1	7.4	7.62	2	< 0.2	198	< 30	< 10	1950
8/17/1998	24.1	7.4	7.37	3	< 0.2	200	< 30	< 10	2210
9/2/1998	19.2	7.0	7.33	4	< 0.2	169	< 30	< 10	2620
RM 7.53 MARSH RUN AT KENESTRICK RD - (K01G13)									
6/17/2002	16.0	7.1	7.78	< 2.0	< 0.20	104	< 30	< 10	481
7/1/2002	22.4	7.3	7.74	< 2.0	< 0.20	120	< 30	< 10	423
7/15/2002	19.9	8.7	7.77	< 2.0	< 0.20	143	< 30	< 10	311
7/30/2002	22.1	6.4	7.51	2.5	< 0.20	160	< 30	< 10	335
8/12/2002	20.4	7.0	7.67	2.0	< 0.20	130	< 30	19	524
9/3/2002	21.4	7.3	7.74	2.0	< 0.20	126	< 30	< 10	398
MARSH RUN TRIBUTARY AT RM 3.12 (HUC 010)									
RM 0.28 MARSH RUN TRIB (3.12) AT MAY RD - (K01G14)									
6/17/2002	16.9	9.5	7.74	< 2.0	< 0.20	123	< 30	< 10	628
7/1/2002	24.9	8.1	7.70	< 2.0	< 0.20	132	< 30	< 10	2460
7/15/2002	21.3	4.6	7.28	4.8	< 0.20	138	< 30	< 10	1330
7/30/2002	24.5	7.2	7.67	3.0	< 0.20	135	< 30	< 10	1840
8/12/2002	23.6	5.5	7.33	6.9	< 0.20	126	< 30	11	1520
9/3/2002	22.8	9.2	7.89	< 2.0	< 0.20	136	< 30	< 10	1210
SHILOH DITCH (HUC 010)									
RM 0.12 SHILOH DITCH AT PLYMOUTH EAST RD - (K01G09)									
6/17/2002	14.3	7.8	7.71	< 2.0	< 0.20	98	< 30	< 10	527
7/1/2002	22.4	4.9	7.30	6.2	< 0.20	82	< 30	< 10	1130
7/15/2002	20.9	7.0	7.83	3.9	< 0.20	92	< 30	< 10	1070
7/30/2002	23.2	6.1	7.65	5.5	< 0.20	104	< 30	< 10	436
8/12/2002	23.1	6.2	7.88	5.6	< 0.20	104	< 30	< 10	1330
9/3/2002	21.6	5.8	7.86	5.6	< 0.20	94	< 30	< 10	404

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DATE	P10	P299	P400	P1002	P1027	P916	P1034	P1042	P1045
WEST BRANCH HURON R TRIBUTARY AT RM 41.50 (HUC 010)									
RM 0.11 W BR HURON R TRIB (41.50) AT BASELINE RD - (K01G11)									
6/17/2002	14.1	8.6	7.74	< 2.0	< 0.20	116	< 30	< 10	415
7/1/2002	20.0	7.7	7.67	< 2.0	< 0.20	121	< 30	< 10	409
7/15/2002	18.0	8.6	7.65	< 2.0	< 0.20	121	< 30	< 10	368
7/30/2002	21.9	7.3	7.68	< 2.0	< 0.20	110	< 30	< 10	372
8/12/2002	20.0	8.2	7.85	< 2.0	< 0.20	121	< 30	< 10	310
9/3/2002	20.4	8.0	7.89	< 2.0	< 0.20	114	< 30	< 10	372

Table E-1. Huron River Watershed Water Quality Data

DATE	P1051	P927	P1055	P71900	P1067	P937	P1147	P929	P1092
HURON RIVER (HUC 030)									
RM 0.20 HURON R NEAR MOUTH - (K01W30)									
6/23/1998	< 2	13		< 0.200	< 40		< 2	11	11
7/8/1998	< 2	11		< 0.200	< 40		< 2	9	< 10
7/30/1998	< 2	10			< 40		< 2	10	< 10
8/20/1998	< 2	12		< 0.200	< 40		< 2	12	< 10
9/24/1998	< 2	12		< 0.200	< 40		< 2	12	< 10
RM 0.70 HURON R DST US6 (DST HURON-ERIE WWTP) - (K01W31)									
6/23/1998	< 2	16		< 0.200	< 40		< 2	12	< 10
7/8/1998	2	13		< 0.200	< 40		< 2	10	< 10
7/30/1998	2	11			< 40		< 2	10	< 10
8/20/1998	< 2	12		< 0.200	< 40		< 2	12	< 10
9/24/1998	< 2	14		< 0.200	< 40		< 2	14	10
RM 1.10 HURON R ADJ RR YARD (UST HURON-ERIE WWTP) - (K01W32)									
6/23/1998	< 2	16			< 40		< 2	11	11
7/8/1998	2	14			< 40		< 2	10	< 10
7/30/1998	< 2	12			< 40		< 2	11	11
8/20/1998	< 2	14			< 40		< 2	13	10
9/24/1998	< 2	18			< 40		< 2	16	15
RM 2.75 HURON R AT SR 2 - (K01P01)									
6/23/1998	< 2	16			< 40		< 2	12	< 10
7/8/1998	< 2	17			< 40		< 2	12	< 10
7/30/1998	3	14			< 40		< 2	12	16
8/20/1998	< 2	12			< 40		< 2	10	< 10
9/24/1998	< 2	22			< 40		< 2	21	10
RM 6.60 HURON R ADJ NORFOLK/WESTERN RR - (K01W33)									
6/23/1998	< 2	20		< 0.200	< 40		< 2	15	< 10
7/8/1998	< 2	20		< 0.200	< 40		< 2	16	< 10
7/30/1998	< 2	20			< 40		< 2	18	< 10
8/20/1998	< 2	18		< 0.200	< 40		< 2	19	< 10
9/24/1998	< 2	27		< 0.200	< 40		< 2	28	< 10

Table E-1. Huron River Watershed Water Quality Data

DATE	P1051	P927	P1055	P71900	P1067	P937	P1147	P929	P1092
RM 8.01 HURON R AT MASON RD - (501040)									
6/23/1998	< 2	22			< 40		< 2	17	< 10
7/8/1998	< 2	18			< 40		< 2	19	< 10
7/30/1998	< 2	21			< 40		< 2	19	< 10
8/20/1998	< 2	20			< 40		< 2	21	20
9/24/1998	< 2	28			< 40		< 2	29	< 10
RM 11.85 HURON R ADJ OLD MUD BROOK RD (DST MILAN WWTP) - (501050)									
7/8/1998	< 2	16		< 0.200	< 40		< 2	14	< 10
7/28/1998	< 2	20			< 40		< 2	16	< 10
8/11/1998	< 2	17		< 0.200	< 40		< 2	13	< 10
8/20/1998	< 2	23		< 0.200	< 40		< 2	24	< 10
RM 12.30 HURON R AT US 250 - (501030)									
7/8/1998	2	16			< 40		< 2	14	< 10
7/28/1998	< 2	20			< 40		< 2	16	< 10
8/11/1998	3	17			< 40		< 2	13	14
8/20/1998	< 2	23			< 40		< 2	22	< 10
6/20/2002	< 2.0	26	29	< 0.20	< 40	4	< 2.0	28	< 10
7/2/2002	< 2.0	30	43	< 0.20	< 40	6	< 2.0	41	11
7/18/2002	< 2.0	31	36	< 0.20	< 40	7	< 2.0	53	10
8/1/2002	< 2.0	28	59	< 0.20	< 40	6	< 2.0	38	< 10
8/14/2002	< 2.0	30	45	< 0.20	< 40	8	< 2.0	51	< 10
9/5/2002	< 2.0	25	41	< 0.20	< 40	6	< 2.0	60	14
RM 14.65 HURON R DST EAST & WEST BRANCHES (MILAN WILDLIFE AREA) - (K01W01)									
7/8/1998	< 2	19		< 0.200	< 40		< 2	14	< 10
7/30/1998	< 2	23			< 40		< 2	16	< 10
8/11/1998	3	18		< 0.200	< 40		< 2	12	22
8/20/1998	< 2	23		< 0.200	< 40		< 2	17	< 10
6/20/2002	< 2.0	27	21	< 0.20	< 40	4	< 2.0	22	< 10
7/2/2002	< 2.0	31	42	< 0.20	< 40	5	< 2.0	25	< 10
7/18/2002	< 2.0	33	58	< 0.20	< 40	5	< 2.0	25	< 10
8/1/2002	< 2.0	35	51	< 0.20	< 40	5	< 2.0	23	< 10
8/14/2002	< 2.0	37	45	< 0.20	< 40	6	< 2.0	27	< 10
9/5/2002	< 2.0	29	27	< 0.20	< 40	5	< 2.0	31	< 10
MUD BROOK (HUC 030)									
RM 3.01 MUD BROOK AT SCHEID RD - (K01W28)									
7/8/1998	< 2	23		< 0.200	< 40		< 2	44	< 10
7/28/1998	< 2	24			< 40		< 2	64	< 10
8/11/1998	3	19		< 0.200	< 40		< 2	61	20
8/20/1998	3	18		< 0.200	< 40		< 2	113	22
RM 4.69 MUD BROOK AT HOOVER RD - (K01S30)									
7/8/1998	< 2	20			< 40		< 2	49	< 10
7/28/1998	< 2	22			< 40		< 2	77	< 10
8/11/1998	< 2	20			< 40		< 2	119	12
8/20/1998	2	17			< 40		< 2	114	19
RM 6.25 MUD BROOK DST MASON RD - (K01W29)									
7/8/1998	< 2	18			< 40		< 2	41	< 10
7/28/1998	< 2	19			< 40		< 2	74	< 10
8/11/1998	< 2	15			< 40		< 2	104	14

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DATE	P1051	P927	P1055	P71900	P1067	P937	P1147	P929	P1092
8/20/1998	3	14			< 40		< 2	120	19
VILLAGE CREEK (HUC 030)									
RM 1.12 VILLAGE CK AT BERLIN ST - (K01G19)									
6/20/2002	< 2.0	16	34	< 0.20	< 40	4	< 2.0	25	< 10
7/2/2002	< 2.0	17	77	< 0.20	< 40	4	< 2.0	35	< 10
7/18/2002	< 2.0	18	108	< 0.20	< 40	4	< 2.0	39	12
8/1/2002	< 2.0	17	120	< 0.20	< 40	5	< 2.0	34	12
8/14/2002	9.4	22	1630	< 0.20	< 40	11	< 2.0	47	61
9/5/2002	< 2.0	15	133	< 0.20	< 40	4	< 2.0	39	< 10
RATTLESNAKE CREEK (HUC 030)									
RM 0.23 RATTLESNAKE CK AT SHAW MILL RD - (K01W36)									
7/8/1998	4	9		< 0.200	< 40		< 2	14	< 10
7/28/1998	< 2	22			< 40		< 2	58	< 10
8/11/1998	< 2	14		< 0.200	< 40		< 2	36	17
8/20/1998	< 2	25		< 0.200	< 40		< 2	70	< 10
RM 2.37 RATTLESNAKE CK AT OLD STATE RD - (K01W34)									
7/7/1998	< 2	16			< 40		< 2	28	12
7/21/1998	2	15			< 40		< 2	22	17
8/4/1998	< 2	19			< 40		< 2	37	< 10
8/20/1998	< 2	21			< 40		< 2	44	< 10
WILLOW BROOK (HUC 030)									
RM 1.58 WILLOW BROOK AT GALLUP RD - (K01W35)									
6/24/1998	< 2	20		< 0.200	< 40		< 2	46	< 10
7/7/1998	< 2	19			< 40		< 2	45	< 10
7/21/1998	7	11		< 0.200	< 40		< 2	12	46
8/4/1998	< 2	21		< 0.200	< 40		< 2	51	13
8/19/1998	< 2	20		< 0.200	< 40		< 2	48	< 10
WEST BRANCH RATTLESNAKE CREEK (HUC 030)									
RM 1.38 W BR RATTLESNAKE CK AT LAIS RD - (501080)									
6/24/1998	< 2	16			< 40		< 2	93	16
7/7/1998	< 2	15			< 40		< 2	87	28
7/21/1998	28	12			< 40		< 2	20	180
8/10/1998	< 2	17			< 40		< 2	80	12
8/20/1998	< 2	15			< 40		2	88	23
RM 2.35 NORWALK WWTP 001 EFFLUENT - (K01S08)									
7/7/1998	< 2	16		< 0.200	< 40		< 2	97	22
7/21/1998	< 2	11		< 0.200	< 40		< 2	62	17
8/4/1998	< 4	16		< 0.200	< 40		< 4	113	19
8/19/1998	< 2	15		< 0.200	< 40		< 2	96	12
RM 2.42 W BR RATTLESNAKE CK UST NORWALK WWTP - (K01W06)									
7/7/1998	< 2	23			< 40		< 2	48	22
7/21/1998	6	6			< 40		< 2	18	17
8/4/1998	< 2	27			< 40		< 2	51	28
8/19/1998	< 2	23			< 40		< 2	48	10

Table E-1. Huron River Watershed Water Quality Data

DATE	P1051	P927	P1055	P71900	P1067	P937	P1147	P929	P1092
EAST BRANCH HURON RIVER (HUC 030)									
RM 1.47 E BR HURON R AT SCHAEFFER RD - (501070)									
6/24/1998	< 2	22			< 40		< 2	16	< 10
7/8/1998	6	15			< 40		< 2	13	16
7/28/1998	< 2	19			< 40		< 2	13	< 10
8/11/1998	< 2	15			< 40		< 2	15	12
8/20/1998	< 2	22			< 40		< 2	17	< 10
RM 6.85 E BR HURON R AT BROWN RD - (K01S11)									
6/24/1998	< 2	23			< 0.200	< 40	< 2	12	< 10
7/7/1998	< 2	20			< 0.200	< 40	< 2	11	11
7/21/1998	< 2	22			< 0.200	< 40	< 2	13	< 10
8/19/1998	< 2	23			< 0.200	< 40	< 2	12	< 10
6/18/2002	< 2.0	23	21		< 0.20	< 40	3	< 2.0	15
7/1/2002	< 2.0	26	46		< 0.20	< 40	3	< 2.0	17
7/16/2002	< 2.0	27	40		< 0.20	< 40	3	< 2.0	14
7/31/2002	< 2.0	24	64		< 0.20	< 40	3	< 2.0	12
8/13/2002	< 2.0	25	35		< 0.20	< 40	3	< 2.0	12
9/4/2002	< 2.0	23	28		< 0.20	< 40	3	< 2.0	14
RM 13.66 E BR HURON R AT GEIGER RD - (K01W19)									
6/24/1998	< 2	23			< 40		< 2	13	< 10
7/7/1998	< 2	20			< 40		< 2	12	< 10
8/4/1998	< 2	23			< 40		< 2	13	< 10
8/19/1998	< 2	23			< 40		< 2	13	< 10
RM 19.11 E BR HURON R AT HANVILLE CORNERS RD - (K01G21)									
6/18/2002	< 2.0	22	29		< 0.20	< 40	3	< 2.0	19
7/1/2002	< 2.0	23	165		< 0.20	< 40	3	< 2.0	20
7/16/2002	< 2.0	24	208		< 0.20	< 40	3	< 2.0	20
7/31/2002	< 2.0	19	51		< 0.20	< 40	7	< 2.0	17
8/13/2002	< 2.0	22	107		< 0.20	< 40	5	< 2.0	20
9/4/2002	< 2.0	17	107		< 0.20	< 40	6	< 2.0	16
RM 20.96 E BR HURON R AT SR 162 - (K01W21)									
6/24/1998	< 2	22			< 0.200	< 40	< 2	14	< 10
7/7/1998	< 2	20			< 0.200	< 40	< 2	14	< 10
8/4/1998	< 2	23			< 0.200	< 40	< 2	17	< 10
8/17/1998	< 2	22			< 0.200	< 40	< 2	18	< 10
9/2/1998	< 2	13			< 0.200	< 40	< 2	12	22
6/18/2002	< 2.0	23	19		< 0.20	< 40	3	< 2.0	18
7/1/2002	< 2.0	25	133		< 0.20	< 40	3	< 2.0	21
7/16/2002	< 2.0	25	224		< 0.20	< 40	3	< 2.0	18
7/31/2002	< 2.0	20	161		< 0.20	< 40	4	< 2.0	20
8/13/2002	< 2.0	26	338		< 0.20	< 40	4	< 2.0	20
9/4/2002	< 2.0	25	296		< 0.20	< 40	4	< 2.0	20
RM 24.67 E BR HURON R AT OLD STATE RD - (K01W22)									
6/24/1998	< 2	23			< 40		3	14	< 10
7/7/1998	< 2	19			< 40		< 2	14	< 10
8/4/1998	< 2	24			< 40		< 2	17	< 10
8/17/1998	< 2	22			< 40		< 2	16	< 10
6/18/2002	< 2.0	23	27		< 0.20	< 40	2	< 2.0	18

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Table E-1. Huron River Watershed Water Quality Data

DATE	P1051	P927	P1055	P71900	P1067	P937	P1147	P929	P1092
7/1/2002	< 2.0	26	352	< 0.20	< 40	3	< 2.0	20	< 10
7/16/2002	< 2.0	26	329	< 0.20	< 40	3	< 2.0	20	13
7/31/2002	< 2.0	23	200	< 0.20	< 40	3	< 2.0	20	< 10
8/13/2002	< 2.0	26	310	< 0.20	< 40	4	< 2.0	24	< 10
9/4/2002	< 2.0	21	566	< 0.20	< 40	5	< 2.0	19	< 10

NORWALK CREEK (HUC 030)

RM 0.13 NORWALK CK AT SR 61 - (K01P03)

6/24/1998	< 2	23		< 0.200	< 40		< 2	28	< 10
7/7/1998	< 2	19		< 0.200	< 40		< 2	24	19
7/21/1998	3	16		< 0.200	< 40		< 2	25	< 10
8/19/1998	< 2	22		< 0.200	< 40		< 2	32	< 10
6/18/2002	< 2.0	24	44	< 0.20	< 40	4	< 2.0	38	< 10
7/1/2002	2.3	26	167	< 0.20	< 40	4	< 2.0	51	22
7/16/2002	< 2.0	28	72	< 0.20	< 40	4	< 2.0	44	17
7/31/2002	< 2.0	13	96	< 0.20	< 40	3	< 2.0	27	12
8/13/2002	< 2.0	23	81	< 0.20	< 40	4	< 2.0	37	< 10
9/4/2002	< 2.0	18	72	< 0.20	< 40	4	< 2.0	38	< 10

RM 1.90 NORWALK CK AT CITY PARK - (K01S13)

6/24/1998	< 2	20		< 0.200	< 40		< 2	39	< 10
7/7/1998	< 2	16		< 0.200	< 40		< 2	26	< 10
7/21/1998	6	11		< 0.200	< 40		< 2	34	14
8/19/1998	< 2	20		< 0.200	< 40		< 2	40	< 10

RM 5.56 NORWALK CK AT LAYLIN RD - (K01W23)

7/7/1998	< 2	21		< 0.200	< 40		< 2	17	< 10
7/21/1998	< 2	23		< 0.200	< 40		< 2	19	< 10
8/4/1998	< 2	30		< 0.200	< 40		< 2	24	14
8/19/1998	< 2	27		< 0.200	< 40		< 2	25	< 10
6/18/2002	< 2.0	25	32	< 0.20	< 40	4	< 2.0	23	10
7/1/2002	< 2.0	32	131	< 0.20	< 40	4	< 2.0	32	< 10
7/16/2002	< 2.0	31	674	< 0.20	< 40	5	< 2.0	26	14
7/31/2002	< 2.0	20	149	< 0.20	< 40	5	< 2.0	23	11

NORWALK CREEK TRIBUTARY AT RM 0.37 (HUC 030)

RM 1.62 NORWALK CK TRIB (0.37) AT RIDGE RD - (K01G20)

6/18/2002	< 2.0	25	19	< 0.20	< 40	3	< 2.0	36	< 10
7/1/2002	< 2.0	27	43	< 0.20	< 40	4	< 2.0	53	< 10
7/16/2002	< 2.0	27	46	< 0.20	< 40	4	< 2.0	51	15
7/31/2002	< 2.0	20	40	< 0.20	< 40	4	< 2.0	42	< 10
8/13/2002	< 2.0	17	45	< 0.20	< 40	4	< 2.0	37	15
9/4/2002	< 2.0	20	20	< 0.20	< 40	4	< 2.0	40	< 10

COLE CREEK (HUC 030)

RM 0.14 COLE CK AT SR 61 - (K01P04)

6/24/1998	< 2	22		< 0.200	< 40		< 2	17	< 10
7/7/1998	< 2	21		< 0.200	< 40		< 2	15	< 10
7/21/1998	< 2	20		< 0.200	< 40		< 2	18	< 10
8/19/1998	< 2	22		< 0.200	< 40		< 2	16	< 10
6/18/2002	< 2.0	25	66	< 0.20	< 40	4	< 2.0	22	10
7/1/2002	< 2.0	28	211	< 0.20	< 40	4	< 2.0	23	< 10

Table E-1. Huron River Watershed Water Quality Data

DATE	P1051	P927	P1055	P71900	P1067	P937	P1147	P929	P1092
7/16/2002	< 2.0	29	228	< 0.20	< 40	4	< 2.0	21	< 10
7/31/2002	< 2.0	27	166	< 0.20	< 40	4	< 2.0	23	< 10
8/13/2002	< 2.0	27	150	< 0.20	< 40	4	< 2.0	19	< 10
9/4/2002	< 2.0	25	156	< 0.20	< 40	4	< 2.0	21	< 10
RM 6.52 COLE CK AT NEW STATE RD - (K01W20)									
6/24/1998	< 2	25			< 40		< 2	31	< 10
7/7/1998	< 2	24			< 40		< 2	23	< 10
8/4/1998	< 2	23			< 40		< 2	45	< 10
8/19/1998	< 2	19			< 40		< 2	56	< 10
COLE CREEK TRIBUTARY AT RM 2.46 (HUC 030)									
RM 0.45 COLE CK TRIB (2.46) AT RIDGE RD - (K01G18)									
6/18/2002	< 2.0	26	31	< 0.20	< 40	4	< 2.0	22	< 10
7/1/2002	< 2.0	27	54	< 0.20	< 40	4	< 2.0	23	< 10
7/16/2002	< 2.0	26	57	< 0.20	< 40	3	< 2.0	34	< 10
7/31/2002	< 2.0	23	144	< 0.20	< 40	4	< 2.0	22	10
8/13/2002	< 2.0	23	48	< 0.20	< 40	3	< 2.0	18	< 10
9/4/2002	< 2.0	23	40	< 0.20	< 40	4	< 2.0	22	< 10
EAST BRANCH HURON RIVER TRIBUTARY AT RM 19.98 (HUC 030)									
RM 1.05 E BR HURON R TRIB (19.98) AT NEW STATE RD - (K01G23)									
7/31/2002	< 2.0	22	18	< 0.20	< 40	6	< 2.0	23	11
8/13/2002	< 2.0	25	53	< 0.20	< 40	6	< 2.0	31	< 10
9/4/2002	< 2.0	21	400	< 0.20	< 40	7	< 2.0	46	< 10
WEST BRANCH HURON RIVER (HUC 020)									
RM 3.67 W BR HURON R AT LAMEREAUX RD - (K01S12)									
6/22/1998	< 2	23		< 0.200	< 40		< 2	13	< 10
7/8/1998	< 2	21		< 0.200	< 40		< 2	13	< 10
7/28/1998	< 2	21			< 40		< 2	13	< 10
8/11/1998	3	22		< 0.200	< 40		< 2	15	29
8/18/1998	< 2	22		< 0.200	< 40		< 2	15	< 10
6/20/2002	< 2.0	29	25	< 0.20	< 40	4	< 2.0	22	< 10
7/2/2002	< 2.0	34	37	< 0.20	< 40	5	< 2.0	25	13
7/18/2002	< 2.0	35	62	< 0.20	< 40	5	< 2.0	29	< 10
8/1/2002	< 2.0	36	33	< 0.20	< 40	5	< 2.0	23	13
8/14/2002	< 2.0	38	38	< 0.20	< 40	6	< 2.0	27	< 10
9/5/2002	< 2.0	29	16	< 0.20	< 40	5	< 2.0	32	< 10
RM 7.20 W BR HURON R AT MONROEVILLE PARK (DST WWTP) - (K01W26)									
6/22/1998	< 2	25			< 40		< 2	14	< 10
7/7/1998	< 2	22			< 40		< 2	14	< 10
7/21/1998	< 2	25			< 40		< 2	18	< 10
8/10/1998	< 2	17			< 40		< 2	13	< 10
8/18/1998	< 2	23			< 40		< 2	15	< 10
RM 7.60 W BR HURON R AT RIVER RD - (K01W25)									
6/22/1998	< 2	25			< 40		< 2	13	< 10
7/7/1998	< 2	22			< 40		< 2	13	10
7/21/1998	< 2	26			< 40		< 2	17	< 10
8/10/1998	< 2	17			< 40		< 2	12	< 10

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Table E-1. Huron River Watershed Water Quality Data

DATE	P1051	P927	P1055	P71900	P1067	P937	P1147	P929	P1092
8/18/1998	< 2	23			< 40		< 2	14	< 10
6/20/2002	< 2.0	29	33	< 0.20	< 40	4	< 2.0	21	< 10
7/2/2002	< 2.0	35	57	< 0.20	< 40	5	< 2.0	24	< 10
7/18/2002	< 2.0	36	77	< 0.20	< 40	5	< 2.0	25	< 10
8/1/2002	< 2.0	37	43	< 0.20	< 40	4	< 2.0	20	10
8/14/2002	< 2.0	38	44	< 0.20	< 40	5	< 2.0	22	< 10
9/5/2002	< 2.0	29	41	< 0.20	< 40	5	< 2.0	28	< 10
RM 10.48 W BR HURON R AT STANDARDSBURG RD - (K01W12)									
6/22/1998	< 2	26		< 0.200	< 40		< 2	13	< 10
7/6/1998	< 2	21		< 0.200	< 40		< 2	12	< 10
7/20/1998	< 2	33		< 0.200	< 40		< 2	20	< 10
8/3/1998	< 2	28		< 0.200	< 40		< 2	17	< 10
8/18/1998	< 2	24		< 0.200	< 40		< 2	15	< 10
6/20/2002	2.1	30	49	< 0.20	< 40	4	< 2.0	22	< 10
7/2/2002	< 2.0	36	67	< 0.20	< 40	4	< 2.0	24	22
7/18/2002	< 2.0	39	54	< 0.20	< 40	4	< 2.0	22	19
8/1/2002	< 2.0	35	40	< 0.20	< 40	4	< 2.0	19	< 10
8/14/2002	< 2.0	39	38	< 0.20	< 40	5	< 2.0	21	< 10
9/5/2002	< 2.0	29	32	< 0.20	< 40	5	< 2.0	26	< 10
CLAYTON DITCH (HUC 020)									
RM 0.01 CLAYTON DITCH AT MOUTH - (K01G16)									
6/20/2002	< 2.0	21	< 10	< 0.20	< 40	2	< 2.0	21	< 10
7/2/2002	< 2.0	21	56	< 0.20	< 40	3	< 2.0	24	< 10
6/20/2002	< 2.0	25	< 10	< 0.20	< 40	< 2	< 2.0	24	< 10
7/2/2002	< 2.0	28	53	< 0.20	< 40	< 2	< 2.0	31	15
9/5/2002	2.3	20	310	< 0.20	< 40	8	< 2.0	75	< 10
SEYMOUR CREEK (HUC 020)									
RM 0.13 SEYMOUR CK AT LAMEREAUX RD - (K01W27)									
6/22/1998	< 2	23		< 0.200	< 40		< 2	16	< 10
7/7/1998	< 2	17		< 0.200	< 40		< 2	12	< 10
7/21/1998	< 2	17		< 0.200	< 40		< 2	13	< 10
8/10/1998	< 2	20		< 0.200	< 40		< 2	16	< 10
8/18/1998	< 2	19		< 0.200	< 40		< 2	18	< 10
MEGGINSON CREEK (HUC 020)									
RM 0.59 MEGGINSON CK AT SAND HILL RD - (K01W24)									
6/22/1998	< 2	28			< 40		< 2	20	< 10
7/7/1998	< 2	26			< 40		< 2	24	< 10
7/21/1998	< 2	24			< 40		< 2	24	< 10
8/10/1998	< 2	25			< 40		< 2	19	13
8/18/1998	< 2	25			< 40		< 2	35	< 10
FRINK RUN (HUC 020)									
RM 0.09 FRINK RUN AT SR 99 - (K01P08)									
6/22/1998	< 2	26		< 0.200	< 40		< 2	14	< 10
7/6/1998	< 2	23		< 0.200	< 40		< 2	12	< 10
7/20/1998	< 2	18		< 0.200	< 40		< 2	11	11
8/3/1998	< 2	21		< 0.200	< 40		< 2	14	< 10

Table E-1. Huron River Watershed Water Quality Data

DATE	P1051	P927	P1055	P71900	P1067	P937	P1147	P929	P1092
8/18/1998	< 2	23		< 0.200	< 40		< 2	18	< 10
6/20/2002	< 2.0	32	18	< 0.20	< 40	5	< 2.0	21	11
7/2/2002	< 2.0	34	88	< 0.20	< 40	6	< 2.0	26	22
RM 11.08 FRINK RUN AT BISMARCK RD - (K01W13)									
6/22/1998	< 2	51			< 40		< 2	28	< 10
7/6/1998	< 2	37			< 40		< 2	21	< 10
7/20/1998	< 2	30			< 40		< 2	18	17
8/3/1998	< 2	51			< 40		< 2	28	< 10
8/18/1998	< 2	47			< 40		< 2	27	10
FRINK RUN TRIBUTARY AT RM 5.83 (HUC 020)									
RM 3.69 FRINK RUN TRIB (5.83) AT BISMARCK RD - (K01G15)									
6/20/2002	< 2.0	49	200	< 0.20	< 40	6	< 2.0	33	< 10
7/2/2002	< 2.0	50	1260	< 0.20	< 40	7	< 2.0	38	12
7/18/2002	< 2.0	49	1390	< 0.20	< 40	8	< 2.0	41	17
8/1/2002	< 2.0	39	1340	< 0.20	< 40	8	< 2.0	37	12
SLATE RUN (HUC 020)									
RM 4.10 SLATE RUN AT TOWN LINE RD - (K01S03)									
6/22/1998	< 2	24			< 40		< 2	11	< 10
7/6/1998	< 2	24			< 40		< 2	11	< 10
7/20/1998	< 2	16			< 40		< 2	9	< 10
8/3/1998	< 2	25			< 40		< 2	14	< 10
8/18/1998	< 2	17			< 40		< 2	10	< 10
6/20/2002	< 2.0	25	10	< 0.20	< 40	7	< 2.0	13	< 10
7/2/2002	< 2.0	26	184	< 0.20	< 40	7	< 2.0	22	17
RM 10.42 SLATE RUN AT SECTION LINE RD - (K01W16)									
6/22/1998	< 2	34		< 0.200	< 40		< 2	16	< 10
7/6/1998	< 2	34		< 0.200	< 40		< 2	16	< 10
7/20/1998	< 2	20		< 0.200	< 40		< 2	10	14
8/3/1998	< 2	36		< 0.200	< 40		< 2	18	< 10
8/18/1998	< 2	27		< 0.200	< 40		< 2	16	< 10
EAST BRANCH MUD RUN (HUC 020)									
RM 1.38 E BR MUD RUN AT N GREENFIELD RD - (K01W15)									
6/22/1998	< 2	31		< 0.200	< 40		< 2	15	< 10
7/6/1998	< 2	28		< 0.200	< 40		< 2	15	< 10
7/20/1998	< 2	19		< 0.200	< 40		< 2	9	17
8/3/1998	< 2	28		< 0.200	< 40		< 2	16	< 10
8/18/1998	< 2	28		< 0.200	< 40		< 2	16	< 10
WEST BRANCH MUD RUN (HUC 020)									
RM 0.53 W BR MUD RUN AT TR 197 (ZOHR RD) - (K01W14)									
6/22/1998	< 2	39			< 40		< 2	23	< 10
7/6/1998	< 2	36			< 40		< 2	21	< 10
7/20/1998	< 2	31			< 40		< 2	19	< 10
8/3/1998	< 2	43			< 40		< 2	26	< 10
8/18/1998	< 2	38			< 40		< 2	26	< 10

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Table E-1. Huron River Watershed Water Quality Data

DATE	P1051	P927	P1055	P71900	P1067	P937	P1147	P929	P1092
WEST BRANCH HURON RIVER (HUC 010)									
RM 16.59 W BR HURON R AT SNYDER RD - (K01W17)									
6/22/1998	< 2	28		< 0.200	< 40		< 2	15	< 10
7/6/1998	< 2	22		< 0.200	< 40		< 2	13	10
7/20/1998	< 2	32		< 0.200	< 40		< 2	21	10
8/3/1998	< 2	30		< 0.200	< 40		< 2	18	< 10
8/18/1998	< 2	26		< 0.200	< 40		< 2	16	< 10
RM 22.73 W BR HURON R AT BAUMAN RD - (K01P05)									
6/22/1998	< 2	29			< 40		< 2	15	< 10
7/6/1998	< 2	22			< 40		< 2	14	10
7/20/1998	< 2	5			< 40		< 2	87	11
8/3/1998	< 2	30			< 40		< 2	18	< 10
8/18/1998	< 2	26			< 40		< 2	16	< 10
RM 29.18 W BR HURON R AT SR 162 - (K01W18)									
6/22/1998	< 2	27			< 40		< 2	15	< 10
7/6/1998	< 2	22			< 40		< 2	13	10
7/20/1998	< 2	32			< 40		< 2	21	10
8/3/1998	< 2	29			< 40		< 2	19	< 10
8/17/1998	< 2	24			< 40		< 2	16	< 10
9/2/1998	< 2	22			< 40		< 2	13	10
RM 35.33 W BR HURON R AT GREEN BUSH RD - (K01G12)									
6/17/2002	< 2.0	31	178	< 0.20	< 40	4	< 2.0	24	< 10
7/1/2002	< 2.0	39	276	< 0.20	< 40	3	< 2.0	25	39
7/15/2002	< 2.0	43	217	< 0.20	< 40	4	< 2.0	26	< 10
7/30/2002	< 2.0	41	250	< 0.20	< 40	4	< 2.0	27	< 10
8/12/2002	< 2.0	45	269	< 0.20	< 40	4	< 2.0	24	< 10
9/3/2002	< 2.0	45	224	< 0.20	< 40	4	< 2.0	25	< 10
RM 36.26 W BR HURON R AT KLEIN RD - (K01S28)									
6/22/1998	< 2	21		< 0.200	< 40		< 2	20	< 10
7/6/1998	< 2	14		< 0.200	< 40		< 2	12	< 10
7/20/1998	< 2	26		< 0.200	< 40		< 2	32	16
8/3/1998	< 2	24		< 0.200	< 40		< 2	28	< 10
8/17/1998	< 2	19		< 0.200	< 40		< 2	19	< 10
9/2/1998	< 2	15		< 0.200	< 40		< 2	14	15
RM 38.40 W BR HURON R AT SKINNER RD - (K01P06)									
6/22/1998	< 2	22		< 0.200	< 40		< 2	22	< 10
7/6/1998	< 2	15		< 0.200	< 40		< 2	13	< 10
7/20/1998	< 2	27		< 0.200	< 40		< 2	30	< 10
8/3/1998	< 2	25		< 0.200	< 40		< 2	28	< 10
8/17/1998	< 2	20		< 0.200	< 40		< 2	5	< 10
9/2/1998	< 2	15		< 0.200	< 40		< 2	15	14
6/17/2002	< 2.0	26	67	< 0.20	< 40	4	< 2.0	33	< 10
7/1/2002	< 2.0	28	202	< 0.20	< 40	4	< 2.0	36	12
7/15/2002	< 2.0	30	202	< 0.20	< 40	4	< 2.0	39	10
7/30/2002	< 2.0	28	153	< 0.20	< 40	4	< 2.0	38	< 10
8/12/2002	< 2.0	29	220	< 0.20	< 40	5	< 2.0	47	< 10
9/3/2002	< 2.0	29	340	< 0.20	< 40	6	< 2.0	46	< 10
RM 40.35 W BR HURON R AT PLYMOUTH EAST RD - (K01S29)									

Table E-1. Huron River Watershed Water Quality Data

DATE	P1051	P927	P1055	P71900	P1067	P937	P1147	P929	P1092
6/17/2002	< 2.0	26	43	< 0.20	< 40	3	< 2.0	28	< 10
7/1/2002	< 2.0	28	84	< 0.20	< 40	3	< 2.0	32	< 10
7/15/2002	< 2.0	30	79	< 0.20	< 40	3	< 2.0	33	< 10
7/30/2002	< 2.0	29	89	< 0.20	< 40	4	< 2.0	32	< 10
8/12/2002	< 2.0	30	89	< 0.20	< 40	4	< 2.0	32	< 10
9/3/2002	< 2.0	28	84	< 0.20	< 40	4	< 2.0	31	< 10
RM 42.23 W BR HURON R AT BASELINE RD - (K01W11)									
6/22/1998	< 2	22			< 40		< 2	18	< 10
7/6/1998	< 2	13			< 40		< 2	9	10
7/20/1998	< 2	25			< 40		< 2	20	< 10
8/3/1998	< 2	25			< 40		< 2	26	< 10
8/17/1998	< 2	18			< 40		< 2	16	< 10
9/2/1998	< 2	14			< 40		< 2	15	14
RM 47.47 W BR HURON R AT OLD STATE RD - (K01G10)									
6/17/2002	< 2.0	27	92	< 0.20	< 40	3	< 2.0	42	< 10
7/1/2002	< 2.0	30	170	< 0.20	< 40	3	< 2.0	58	16
7/15/2002	< 2.0	32	177	< 0.20	< 40	4	< 2.0	50	11
7/30/2002	< 2.0	29	216	< 0.20	< 40	6	< 2.0	68	14
8/12/2002	< 2.0	40	227	< 0.20	< 40	3	< 2.0	9	< 10
9/3/2002	< 2.0	31	147	< 0.20	< 40	5	< 2.0	67	58
HOLIDAY LAKES TRIBUTARY TO W BR HURON R AT RM 23.09 (HUC 010)									
RM 2.97 HOLIDAY LAKES TRIB TO W BR HURON R AT SR 162 - (K01P10)									
6/22/1998	< 2	20		< 0.200	< 40		< 2	24	< 10
7/6/1998	< 2	16		< 0.200	< 40		< 2	20	< 10
7/20/1998	< 2	21		< 0.200	< 40		< 2	25	< 10
8/3/1998	< 2	17		< 0.200	< 40		< 2	20	< 10
8/17/1998	< 2	17		< 0.200	< 40		< 2	21	< 10
9/2/1998	< 2	19		< 0.200	< 40		< 2	17	14
TRIBUTARY TO HOLIDAY LAKES TRIBUTARY (RM 23.09/2.90) (HUC 010)									
RM 0.23 TRIB TO HOLIDAY LAKES TRIB (2.90) AT SR 162 - (K01G22)									
6/17/2002	< 2.0	65	180	< 0.20	< 40	6	< 2.0	34	< 10
7/1/2002	< 2.0	104	270	< 0.20	< 40	7	< 2.0	57	14
7/15/2002	< 2.0	127	262	< 0.20	< 40	7	< 2.0	56	< 10
7/30/2002	< 2.0	118	211	< 0.20	< 40	7	< 2.0	60	11
8/12/2002	< 2.0	140	204	< 0.20	< 40	8	< 2.0	55	< 10
9/3/2002	< 2.0	117	279	< 0.20	< 40	8	2.1	61	< 10
JACOBS CREEK (HUC 010)									
RM 0.62 JACOBS CK AT EGYPT RD - (K01P11)									
6/22/1998	< 2	28			< 40		< 2	55	14
7/6/1998	< 2	29			< 40		< 2	43	18
7/20/1998	< 2	33			< 40		< 2	80	29
8/3/1998	< 2	28			< 40		< 2	48	20
8/17/1998	< 2	28			< 40		< 2	49	20
9/2/1998	< 2	34			< 40		< 2	66	36
WEST BRANCH JACOBS CREEK (HUC 010)									
RM 0.08 WILLARD WWTP 001 EFFLUENT - (K01E01)									

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Table E-1. Huron River Watershed Water Quality Data

DATE	P1051	P927	P1055	P71900	P1067	P937	P1147	P929	P1092
6/22/1998	< 2	17		< 0.200	< 40		< 2	61	32
7/6/1998	< 2	15		< 0.200	< 40		< 2	43	34
7/20/1998	< 2	24		< 0.200	< 40		< 2	95	56
8/3/1998	< 2	16		< 0.200	< 40		< 2	48	29
8/17/1998	< 2	16		< 0.200	< 40		< 2	50	34
9/2/1998	< 2	22		< 0.200	< 40		< 2	77	67
RM 0.14 WEST BRANCH JACOBS CK UST WILLARD WWTP (801) - (K01W10)									
6/22/1998	< 2	44			< 40		< 2	34	< 10
7/6/1998	< 2	40			< 40		< 2	35	< 10
7/20/1998	< 2	45			< 40		< 2	43	12
8/3/1998	< 2	43			< 40		< 2	34	< 10
8/17/1998	< 2	45			< 40		< 2	33	< 10
9/2/1998	< 2	47			< 40		< 2	33	16
WALNUT CREEK (HUC 010)									
RM 0.98 WALNUT CK AT WALNUT RD - (K01P13)									
6/22/1998	< 2	22			< 40		< 2	15	< 10
7/6/1998	< 2	19			< 40		< 2	13	< 10
7/20/1998	< 2	25			< 40		< 2	20	17
8/3/1998	< 2	20			< 40		< 2	16	< 10
8/17/1998	< 2	22			< 40		< 2	18	< 10
9/2/1998	< 2	16			< 40		< 2	11	< 10
MARSH RUN (HUC 010)									
RM 0.93 MARSH RUN AT SR 598 - (K01P14)									
6/22/1998	< 2	35		< 0.200	< 40		< 2	14	< 10
7/6/1998	< 2	32		< 0.200	< 40		< 2	13	< 10
7/20/1998	< 2	40		< 0.200	< 40		< 2	18	11
8/3/1998	< 2	43		< 0.200	< 40		< 2	17	< 10
8/17/1998	< 2	44		< 0.200	< 40		< 2	17	< 10
9/2/1998	< 2	35		< 0.200	< 40		< 2	15	31
RM 7.53 MARSH RUN AT KENESTRICK RD - (K01G13)									
6/17/2002	< 2.0	27	43	< 0.20	< 40	2	< 2.0	24	< 10
7/1/2002	< 2.0	34	117	< 0.20	< 40	3	< 2.0	25	20
7/15/2002	< 2.0	45	131	< 0.20	< 40	3	< 2.0	30	< 10
7/30/2002	< 2.0	52	308	< 0.20	< 40	4	< 2.0	34	< 10
8/12/2002	< 2.0	51	302	< 0.20	< 40	3	< 2.0	38	11
9/3/2002	< 2.0	55	195	< 0.20	< 40	4	< 2.0	46	< 10
MARSH RUN TRIBUTARY AT RM 3.12 (HUC 010)									
RM 0.28 MARSH RUN TRIB (3.12) AT MAY RD - (K01G14)									
6/17/2002	< 2.0	30	67	< 0.20	< 40	2	< 2.0	16	< 10
7/1/2002	< 2.0	36	192	< 0.20	< 40	3	< 2.0	24	33
7/15/2002	< 2.0	46	1250	< 0.20	< 40	4	< 2.0	25	< 10
7/30/2002	< 2.0	40	93	< 0.20	< 40	4	< 2.0	29	13
8/12/2002	< 2.0	51	662	< 0.20	< 40	4	< 2.0	22	< 10
9/3/2002	< 2.0	45	44	< 0.20	< 40	3	< 2.0	35	< 10
SHILOH DITCH (HUC 010)									
RM 0.12 SHILOH DITCH AT PLYMOUTH EAST RD - (K01G09)									

Table E-1. Huron River Watershed Water Quality Data

DATE	P1051	P927	P1055	P71900	P1067	P937	P1147	P929	P1092
6/17/2002	< 2.0	26	89	< 0.20	< 40	3	< 2.0	61	< 10
7/1/2002	< 2.0	24	378	< 0.20	< 40	4	< 2.0	94	10
7/15/2002	< 2.0	29	308	< 0.20	< 40	5	< 2.0	102	< 10
7/30/2002	< 2.0	30	228	< 0.20	< 40	8	< 2.0	119	< 10
8/12/2002	< 2.0	30	523	< 0.20	< 40	7	< 2.0	115	11
9/3/2002	< 2.0	27	234	< 0.20	< 40	8	< 2.0	115	24

WEST BRANCH HURON R TRIBUTARY AT RM 41.50 (HUC 010)

RM 0.11 W BR HURON R TRIB (41.50) AT BASELINE RD - (K01G11)

6/17/2002	< 2.0	27	59	< 0.20	< 40	3	< 2.0	32	< 10
7/1/2002	< 2.0	28	86	< 0.20	< 40	3	< 2.0	32	< 10
7/15/2002	< 2.0	29	81	< 0.20	< 40	3	< 2.0	32	< 10
7/30/2002	< 2.0	27	100	< 0.20	< 40	3	< 2.0	34	14
8/12/2002	< 2.0	29	94	< 0.20	< 40	3	< 2.0	31	< 10
9/3/2002	< 2.0	29	85	< 0.20	< 40	3	< 2.0	32	< 10

Table E-1. Huron River Watershed Water Quality Data

DATE	P900	P410	P310	P680	P340	P940	P95	P630	P615
HURON RIVER (HUC 030)									
RM 0.20 HURON R NEAR MOUTH - (K01W30)									
6/23/1998	178	99	3.8		19	20	403	4.49	0.14
7/8/1998	158	99	2.2			17	367		0.08
7/30/1998	146	88	< 2.0		19	16	337	1.52	0.06
8/20/1998	159	107	< 2.0		18	19	372	0.46	0.04
9/24/1998	162	100	< 2.0		< 10	18	368	0.15	0.02
RM 0.70 HURON R DST US6 (DST HURON-ERIE WWTP) - (K01W31)									
6/23/1998	218	107	5.4		19	25	494	8.13	0.25
7/8/1998	188	109	2.5		19	18	427	4.40	0.13
7/30/1998	158	92	2.0		24	16	355	1.80	0.06
8/20/1998	167	111	< 2.0		15 J	19	387	0.47	0.04
9/24/1998	187	112	2.0		< 10	20	426	0.23	0.03
RM 1.10 HURON R ADJ RR YARD (UST HURON-ERIE WWTP) - (K01W32)									
6/23/1998	228	109	18		55	25	509	9.37	0.27
7/8/1998	205	116	3.9		15	16	461	4.88	0.14
7/30/1998	169	98	2.3		24	15	382	2.17	0.08
8/20/1998	192	123	2.6		30	19	432	0.50	0.05
9/24/1998	241	138	5.6		31	24	541	0.20	0.03
RM 2.75 HURON R AT SR 2 - (K01P01)									
6/23/1998	226	109	8.5		33	24	501	7.72	0.24
7/8/1998	247	138	4.1		19	19	547	4.58	0.05
7/30/1998	202	112	3.2		34	17	445	2.54	0.08
8/20/1998	174	116	< 2.0		33	15	388	0.53	0.05
9/24/1998	300	157	2.8		13	29	656	0.12	0.02
RM 6.60 HURON R ADJ NORFOLK/WESTERN RR - (K01W33)									
6/23/1998	290	139	2.3		22	31	634	9.71	0.15
7/8/1998	292	162	< 2.0		22	24	635	3.71	0.02

Huron River Watershed TMDLs

Table E-1. Huron River Watershed Water Quality Data

DATE	P900	P410	P310	P680	P340	P940	P95	P630	P615
7/30/1998	290	152	5.9		26	27	613	2.01	0.03
8/20/1998	251	156	2.5		30	26	564	0.64	0.02
9/24/1998	348	167	< 2.0		< 10	37	749	0.94	< 0.02
RM 8.01 HURON R AT MASON RD - (501040)									
6/23/1998	313	151	2.0		17	33	668	8.38	0.08
7/8/1998	261	145	< 2.0		19	27	593	3.24	0.03
7/30/1998	294	151	5.5		26	28	627	1.89	0.02
8/20/1998	277	164	2.4		30	30	616	0.74	0.02
9/24/1998	355	169	< 2.0		12	39	754	0.73	< 0.02
RM 11.85 HURON R ADJ OLD MUD BROOK RD (DST MILAN WWTP) - (501050)									
7/8/1998	236	131	< 2.0		28	21	520	2.88	0.03
7/28/1998	290	149	< 2.0		19	25	620	2.67	< 0.02
8/11/1998	235	132	< 2.0		17	20	510	1.09	0.02
8/20/1998	299	167	< 2.0		37	34	676	1.32	< 0.02
RM 12.30 HURON R AT US 250 - (501030)									
7/8/1998	233	129	2.0		39	21	516	2.88	0.03
7/28/1998	292	150	< 2.0		16	25	622	2.68	< 0.02
8/11/1998	235	131	< 2.0		21	20	505	1.24	0.02
8/20/1998	299	168	< 2.0		17	30	666	1.26	< 0.02
6/20/2002	339	178	< 2.0	6.5	13	45.6	774	2.55	0.026
7/2/2002	366	183	< 2.0	7.8	19	55.0	846 B	1.68 B	< 0.020
7/18/2002	355	143	< 2.0	6.3	13	75.6	926 B	3.52 B	0.028
8/1/2002	342	151	< 2.0		13	55.2	829	2.68	0.039
8/14/2002	328	129	< 2.0		17	58.0	844	2.31	0.025
9/5/2002	280	132	< 2.0		12	67.2	848 B	3.25	0.027
RM 14.65 HURON R DST EAST & WEST BRANCHES (MILAN WILDLIFE AREA) - (K01W01)									
7/8/1998	276	151	< 2.0		19	22	582	2.99	0.03
7/30/1998	309	159	< 2.0		18	24	638	1.03	< 0.02
8/11/1998	246	136	< 2.0		69	19	522	1.16	0.02
8/20/1998	307	182	< 2.0		14	24	645	< 0.10	< 0.02
6/20/2002	348	184	< 2.0		13	37.7	754	2.04	0.023
7/2/2002	387	191	< 2.0		< 10	40.1	823 B	0.26 B	< 0.020
7/18/2002	368	146	< 2.0		19	43.5	799 B	< 0.10	< 0.020
8/1/2002	386	141	< 2.0		16	34.8	817	< 0.10	< 0.020
8/14/2002	372	129	< 2.0		23	35.9	790	< 0.10	< 0.020
9/5/2002	309	132	< 2.0		22	48.0	769 B	< 0.10	< 0.020
MUD BROOK (HUC 030)									
RM 3.01 MUD BROOK AT SCHEID RD - (K01W28)									
7/8/1998	327	201	< 2.0		17	74	833	8.84	0.09
7/28/1998	314	191	< 2.0		12	103	894	4.63	0.07
8/11/1998	266	158	< 2.0		10	94	795	3.10	0.11
8/20/1998	226	*	*		30	*	*	2.95	0.05
RM 4.69 MUD BROOK AT HOOVER RD - (K01S30)									
7/8/1998	292	180	< 2.0		17	80	806	7.44	0.16
7/28/1998	288	173	< 2.0		< 10	118	926	5.89	0.25
8/11/1998	260	166	2.2		14	183	1080	5.46	0.49
8/20/1998	212	149	< 2.0		30	171	993	6.83	0.19

Table E-1. Huron River Watershed Water Quality Data

DATE	P900	P410	P310	P680	P340	P940	P95	P630	P615
RM 6.25 MUD BROOK DST MASON RD - (K01W29)									
7/8/1998	276	175	6.1		17	66	737	7.56	0.16
7/28/1998	246	157	6.3		19	112	852	3.13	0.17
8/11/1998	189	143	7.1		28	154	914	2.54	0.22
8/20/1998	168	146	4.9		53	179	965	1.70	0.35
VILLAGE CREEK (HUC 030)									
RM 1.12 VILLAGE CK AT BERLIN ST - (K01G19)									
6/20/2002	251	149	< 2.0		< 10	44.8	615	3.84	0.025
7/2/2002	287	182	< 2.0		22	63.8	720 B	1.34 B	0.020
7/18/2002	299				< 10			0.94	
8/1/2002	292	180	< 2.0		10	67.3	716	1.08	0.020
8/14/2002	355	26.7	5.0		20	84.6	858	< 0.10	0.036
9/5/2002	259	182	< 2.0		< 10	74.8	731 B	0.87	0.021
RATTLESNAKE CREEK (HUC 030)									
RM 0.23 RATTLESNAKE CK AT SHAW MILL RD - (K01W36)									
7/8/1998	132	75	4.2		41	17	342	3.06	0.09
7/28/1998	303	152	< 2.0		< 10	78	877	7.38	0.02
8/11/1998	217	127	< 2.0		21	47	610	3.09	0.05
8/20/1998	335	165	< 2.0		24	90	1010	14.1	0.13
RM 2.37 RATTLESNAKE CK AT OLD STATE RD - (K01W34)									
7/7/1998	228	150	< 2.0		11	39	595	3.61	0.02
7/21/1998	206	120	< 2.0		16	32	494	1.16	0.09
8/4/1998	283	172	< 2.0		< 10	54	701	0.41	0.02
8/20/1998	314	225	< 2.0		14	60	778	0.48	0.02
WILLOW BROOK (HUC 030)									
RM 1.58 WILLOW BROOK AT GALLUP RD - (K01W35)									
6/24/1998	367	231	< 2.0		11	78	868	1.51	< 0.02
7/7/1998	340	238	< 2.0		< 10	76	853	1.20	0.06
7/21/1998	203	112	5.8		31	37	488	1.37	0.10
8/4/1998	371	215	< 2.0		< 10	84	887	1.20	< 0.02
8/19/1998	362	242	< 2.0		11	82	885	1.04	< 0.02
WEST BRANCH RATTLESNAKE CREEK (HUC 030)									
RM 1.38 W BR RATTLESNAKE CK AT LAIS RD - (501080)									
6/24/1998	238	124	< 2.0		16	116	951	12.0	0.04
7/7/1998	229	142	< 2.0		< 10	106	913	10.0	0.04
7/21/1998	192	76	24		52	25	339	2.28	0.19
8/10/1998	255	118	< 2.0		14	95	873	12.1	0.04
8/20/1998	212	91	< 2.0		24	110	925	20.5	0.06
RM 2.35 NORWALK WWTP 001 EFFLUENT - (K01S08)									
7/7/1998	238	120	3.8		27	133	980	11.7	< 0.02
7/21/1998	160	82	13		30	77	689	10.2	0.20
8/4/1998	226	77	< 2.0		22	134	1030	15.0	< 0.02
8/19/1998	214	96	2.0		30	120	980	17.6	0.07
RM 2.42 W BR RATTLESNAKE CK UST NORWALK WWTP - (K01W06)									
7/7/1998	352	221	< 2.0		21	69	907	0.32	0.02

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Table E-1. Huron River Watershed Water Quality Data

DATE	P900	P410	P310	P680	P340	P940	P95	P630	P615
7/21/1998	137	72	19		39	24	350	1.22	0.11
8/4/1998	371	212	< 2.0		< 10	73	907	< 0.10	< 0.02
8/19/1998	374	223	2.0		49	98	946	0.28	0.03
EAST BRANCH HURON RIVER (HUC 030)									
RM 1.47 E BR HURON R AT SCHAEFFER RD - (501070)									
6/24/1998	338	196	< 2.0		11	30	679	3.28	0.02
7/8/1998	232	140	3.9		41	20	505	2.52	0.08
7/28/1998	288	169	< 2.0		< 10	22	586	1.89	< 0.02
8/11/1998	224	138	< 2.0		17	23	494	0.97	0.03
8/20/1998	330	209	< 2.0		11	28	680	< 0.10	< 0.02
RM 6.85 E BR HURON R AT BROWN RD - (K01S11)									
6/24/1998	347	222	< 2.0		< 10	20	662	2.04	< 0.02
7/7/1998	310	219	< 2.0		< 10	19	628	2.53	< 0.02
7/21/1998	320	191	< 2.0		13	22	634	0.34	0.02
8/19/1998	342	235	< 2.0		14	20	698	0.18	< 0.02
6/18/2002	347	223	< 2.0	6.5	< 10	28.1	700 B	3.56	0.024 J
7/1/2002	379	246	< 2.0	4.7	< 10	25.9	739 B	0.36 B	< 0.020
7/16/2002	388	236	< 2.0	3.7	< 10	25.4	727 B	0.11 B	< 0.020
7/31/2002	361	224	< 2.0		10	22.9	693	0.20	< 0.020
8/13/2002	340	209	< 2.0		21	22.9	671	0.10	< 0.020
9/4/2002	327	214	< 2.0		< 10	23.5	689	< 0.10	< 0.020
RM 13.66 E BR HURON R AT GEIGER RD - (K01W19)									
6/24/1998	352	230	< 2.0		< 10	21	683	1.50	< 0.02
7/7/1998	307	218	< 2.0		11	20	627	2.23	< 0.02
8/4/1998	352	210	< 2.0		< 10	24	685	0.12	< 0.02
8/19/1998	349	240	< 2.0		11	21	690	0.43	< 0.02
RM 19.11 E BR HURON R AT HANVILLE CORNERS RD - (K01G21)									
6/18/2002	328	216	< 2.0		< 10	31.9	702 B	6.47	0.032 J
7/1/2002	322	237	< 2.0		20	30.6	686 B	0.45 B	< 0.020
7/16/2002	338	241	2.8		18	34.6	696 B	0.47 B	0.020
7/31/2002	268	156	< 2.0		29	33.3	604	7.71	0.084
8/13/2002	290	207	< 2.0		18	33.3	620	0.31	< 0.020
9/4/2002	232	172	2.6		19	29.8	542	0.94	0.040
RM 20.96 E BR HURON R AT SR 162 - (K01W21)									
6/24/1998	293	202	< 2.0		36	20	584	2.08	0.03
7/7/1998	290	219	< 2.0		13	21	607	3.03	0.02
8/4/1998	304	194	< 2.0		< 10	25	626	0.73	< 0.02
8/17/1998	298	203	2.1		< 10	24	612	0.57	< 0.02
9/2/1998	203	152	< 2.0		27	17	415	0.65	< 0.02
6/18/2002	334	222	< 2.0		< 10	29.8	705 B	5.28	0.045 J
7/1/2002	338	236	< 2.0		16	30.9	701 B	1.48 B	0.033
7/16/2002	323	214	< 2.0		15	33.7	667 B	< 0.10	< 0.020
7/31/2002	282	206	< 2.0		23	32.1	604	0.20	< 0.020
8/13/2002	319	197	< 2.0		< 10	36.4	661	< 0.10	< 0.020
9/4/2002	305	212	2.1		< 10	35.8	675	< 0.10	< 0.020
RM 24.67 E BR HURON R AT OLD STATE RD - (K01W22)									
6/24/1998	304	222	< 2.0		11	17	596	2.60	0.02
7/7/1998	273	213	< 2.0		11	18	579	2.62	0.02

Table E-1. Huron River Watershed Water Quality Data

DATE	P900	P410	P310	P680	P340	P940	P95	P630	P615
8/4/1998	304	216	< 2.0		14	18	620	0.19	< 0.02
8/17/1998	295	230	< 2.0		< 10	20	612	0.27	< 0.02
6/18/2002	334	233	< 2.0		16	26.1	688 B	3.76	0.032 J
7/1/2002	312	239	< 2.0		24 PT	23.9	654 B	0.37 B	0.037
7/16/2002	282	201	< 2.0		11	25.4	600 B	< 0.10	< 0.020
7/31/2002	237	188	< 2.0		16	25.4	527	< 0.10	< 0.020
8/13/2002	212	143	2.6		33	33.2	513	< 0.10	< 0.020
9/4/2002	191	144	7.2		35	29.5	473	< 0.10	< 0.020
NORWALK CREEK (HUC 030)									
RM 0.13 NORWALK CK AT SR 61 - (K01P03)									
6/24/1998	357	207	< 2.0		< 10	51	777	3.77	0.03
7/7/1998	293	195	< 2.0		125	42	677	1.65	0.03
7/21/1998	246	143	6.5		21	42	593	0.72	0.04
8/19/1998	350	227	< 2.0		55	58	802	0.40	< 0.02
6/18/2002	358	216	< 2.0	6.9	13	68.2	843 B	2.36	0.030 J
7/1/2002	402	241	< 2.0	4.8	16	84.5	931 B	0.37 B	< 0.020
7/16/2002	437	244	< 2.0	4.1	< 10	86.5	980 B	0.22 B	< 0.020
7/31/2002	221	138	< 2.0		13	41.5	546	0.40	< 0.020
8/13/2002	364	203	< 2.0		18	73.3	852	0.31	< 0.020
9/4/2002	286	181	< 2.0		12	66.1	746	0.41	0.023
RM 1.90 NORWALK CK AT CITY PARK - (K01S13)									
6/24/1998	337	210	< 2.0		< 10	66	792	0.50	0.03
7/7/1998	253	172	< 2.0		< 10	47	633	1.34	0.03
7/21/1998	195	114	8.5		25	57	545	1.00	0.08
8/19/1998	337	218	< 2.0		18	73	810	0.48	0.03
RM 5.56 NORWALK CK AT LAYLIN RD - (K01W23)									
7/7/1998	244	167	< 2.0		12	23	556	2.08	0.02
7/21/1998	222	127	2.1		21	27	515	0.51	0.02
8/4/1998	286	160	< 2.0		17	30	622	0.31	< 0.02
8/19/1998	258	171	< 2.0		21	33	603	0.25	< 0.02
6/18/2002	308	201	< 2.0	8.1	16	39.1	681 B	4.14	0.024 J
7/1/2002	334	222	< 2.0	7.1	41	42.3	737 B	1.42 B	< 0.020
7/16/2002	327	241	4.7	8.5	15	41.5	706 B	0.12 B	0.036
7/31/2002	225	152	< 2.0		20	30.7	532	0.80	< 0.020
NORWALK CREEK TRIBUTARY AT RM 0.37 (HUC 030)									
RM 1.62 NORWALK CK TRIB (0.37) AT RIDGE RD - (K01G20)									
6/18/2002	353	216	< 2.0		< 10	65.7	828 B	3.00	0.032 J
7/1/2002	378	241	< 2.0		22	87.8	935 B	0.79 B	< 0.020
7/16/2002	388	224	< 2.0		< 10	95.5	944 B	0.74 B	< 0.020
7/31/2002	295	182	< 2.0		13	75.2	750	0.77	< 0.020
8/13/2002	255	138	2.9		30 J	77.5	690	0.60 J	0.021
9/4/2002	300	195	< 2.0		< 10	66.7	769	0.60	< 0.020

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Table E-1. Huron River Watershed Water Quality Data

DATE	P900	P410	P310	P680	P340	P940	P95	P630	P615
COLE CREEK (HUC 030)									
RM 0.14 COLE CK AT SR 61 - (K01P04)									
6/24/1998	333	176	< 2.0		< 10	32	690	3.82	0.02
7/7/1998	326	188	< 2.0		< 10	28	688	3.26	0.02
7/21/1998	320	169	< 2.0		10	32	678	0.34	< 0.02
8/19/1998	338	181	< 2.0		21	28	685	< 0.10	< 0.02
6/18/2002	358	202	< 2.0	5.7	19	38.2	761 B	4.04	0.043 J
7/1/2002	430	222	< 2.0	4.1	25	39.4	867 B	< 0.10	< 0.020
7/16/2002	444	217	< 2.0	3.2	< 10	44.0	855 B	< 0.10	< 0.020
7/31/2002	416	212	< 2.0		10	43.0	838	< 0.10	< 0.020
8/13/2002	406	193	< 2.0		13	42.2	827	< 0.10	< 0.020
9/4/2002	378	200	< 2.0		58	44.2	817	< 0.10	0.023
RM 6.52 COLE CK AT NEW STATE RD - (K01W20)									
6/24/1998	280	198	< 2.0		11	42	651	1.44	0.02
7/7/1998	279	190	< 2.0		13	31	641	8.55	0.04
8/4/1998	250	173	< 2.0		19	60	677	0.68	< 0.02
8/19/1998	210	183	3.3		36	76	682	0.46	< 0.02
COLE CREEK TRIBUTARY AT RM 2.46 (HUC 030)									
RM 0.45 COLE CK TRIB (2.46) AT RIDGE RD - (K01G18)									
6/18/2002	344	223	< 2.0		16	38.0	728 B	2.11	0.026 J
7/1/2002	366	257	< 2.0		25	33.4	751 B	0.28 B	< 0.020
7/16/2002	362	237	< 2.0		11	60.1	813 B	0.36 B	< 0.020
7/31/2002	334	227	< 2.0		13	37.0	700	0.57	< 0.020
8/13/2002	317	215	< 2.0		< 10	30.8	667	0.16	< 0.020
9/4/2002	314	202	< 2.0		< 10	32.6	696	0.40	< 0.020
EAST BRANCH HURON RIVER TRIBUTARY AT RM 19.98 (HUC 030)									
RM 1.05 E BR HURON R TRIB (19.98) AT NEW STATE RD - (K01G23)									
7/31/2002	310	164	< 2.0		16	46.5	719	11.3	0.038
8/13/2002	383	193	< 2.0		21	67.2	863	10.0	0.075
9/4/2002	306	223	2.2		12	81.4	814	0.88	0.045
WEST BRANCH HURON RIVER (HUC 020)									
RM 3.67 W BR HURON R AT LAMEREAUX RD - (K01S12)									
6/22/1998	334	165	< 2.0		14	29	705	8.46	0.03
7/8/1998	309	166	< 2.0		22	20	637	2.92	< 0.02
7/28/1998	299	155	< 2.0		19	22	634	2.48	< 0.02
8/11/1998	300	147	< 2.0		35	19	563	1.00	0.03
8/18/1998	293	173	< 2.0		20	21	616	0.17	< 0.02
6/20/2002	364	188	< 2.0		13	36.0	773	1.40	< 0.020
7/2/2002	427	209	< 2.0		17 PT	39.4	891 B	0.45 B	< 0.020
7/18/2002	376	144	2.5		22	43.2	820 B	< 0.10	< 0.020
8/1/2002	420	176	< 2.0		16	33.9	867	< 0.10	< 0.020
8/14/2002	391	145	< 2.0		17	34.7	819	< 0.10	< 0.020
9/5/2002	322	146	< 2.0		< 10	45.2	779 B	< 0.10	< 0.020
RM 7.20 W BR HURON R AT MONROEVILLE PARK (DST WWTP) - (K01W26)									
6/22/1998	358	172	< 2.0		17	29	727	8.14	0.05
7/7/1998	308	180	< 2.0		13	22	645	3.08	0.02

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DATE	P900	P410	P310	P680	P340	P940	P95	P630	P615
7/21/1998	315	146	4.4		18	26	661	0.39	0.03
8/10/1998	232	123	< 2.0		12	18	481	1.14	0.02
8/18/1998	309	186	< 2.0		20 J	21	649	0.28	< 0.02
RM 7.60 W BR HURON R AT RIVER RD - (K01W25)									
6/22/1998	360	172	< 2.0		14	28	726	8.09	0.05
7/7/1998	310	180	< 2.0		19	21	642	3.20	0.02
7/21/1998	319	152	< 2.0		13	24	674	0.18	< 0.02
8/10/1998	235	123	< 2.0		17	17	474	1.09	< 0.02
8/18/1998	312	188	< 2.0		20	20	646	0.17	< 0.02
6/20/2002	382	207	< 2.0		16	35.2	791	1.28	0.022
7/2/2002	446	222	< 2.0		14 PT	34.7	896 B	0.31 B	< 0.020
7/18/2002	418	192	< 2.0		13	36.5	850 B	< 0.10	< 0.020
8/1/2002	450	199	< 2.0		13	30.0	889	< 0.10	< 0.020
8/14/2002	416	172	< 2.0		17	28.2	830	< 0.10	< 0.020
9/5/2002	332	162	< 2.0		< 10	39.4	775 B	< 0.10	< 0.020
RM 10.48 W BR HURON R AT STANDARDSBURG RD - (K01W12)									
6/22/1998	374	183	< 2.0		17	29	755	7.78	0.03
7/6/1998	301	174	< 2.0		22	20	630	3.44	0.02
7/20/1998	396	164	< 2.0		21	25	740	< 0.10	< 0.02
8/3/1998	358	172	< 2.0		19	24	731	< 0.10	< 0.02
8/18/1998	321	192	< 2.0		17	21	659	0.22	< 0.02
6/20/2002	403	223	< 2.0	6.9	13	33.6	819	1.41	< 0.020
7/2/2002	463	242	< 2.0	7.7	< 10	33.2	908 B	0.45 B	< 0.020
7/18/2002	480	232	< 2.0	5.6	22	33.5	919 B	0.13 B	< 0.020
8/1/2002	441	211	< 2.0		10	28.6	873	0.12	< 0.020
8/14/2002	453	192	< 2.0		17	30.1	855	< 0.10	< 0.020
9/5/2002	347	< 5.0	< 2.0		39	36.7	796 B	< 0.10	< 0.020
CLAYTON DITCH (HUC 020)									
RM 0.01 CLAYTON DITCH AT MOUTH - (K01G16)									
6/20/2002	271	119	< 2.0		< 10	41.6	629	5.76	< 0.020
7/2/2002	271	129	< 2.0		22	45.6	647 B	0.75 B	< 0.020
6/20/2002	275	123	< 2.0		< 10	48.2	640	3.70	0.101
7/2/2002	280	134	< 2.0		< 10	57.3	679 B	< 0.10	< 0.020
9/5/2002	267	134	< 2.0		29	137	937 B	< 0.10	0.023
SEYMOUR CREEK (HUC 020)									
RM 0.13 SEYMOUR CK AT LAMEREAUX RD - (K01W27)									
6/22/1998	287	142	< 2.0		< 10	34	641	9.72	< 0.02
7/7/1998	222	130	< 2.0		19	23	503	4.69	< 0.02
7/21/1998	207	99	2.1		16	25	474	2.16	0.03
8/10/1998	257	148	< 2.0		19 J	25	528	1.37	< 0.02
8/18/1998	238	135	< 2.0		14	36	564	0.19	< 0.02
MEGGINSON CREEK (HUC 020)									
RM 0.59 MEGGINSON CK AT SAND HILL RD - (K01W24)									
6/22/1998	335	176	< 2.0		< 10	42	728	7.61	0.04
7/7/1998	324	198	< 2.0		14	42	733	6.22	0.03
7/21/1998	276	149	2.7		26	41	648	1.78	0.04
8/10/1998	325	186	< 2.0		21	31	646	1.57	< 0.02

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Table E-1. Huron River Watershed Water Quality Data

DATE	P900	P410	P310	P680	P340	P940	P95	P630	P615
8/18/1998	298	191	< 2.0		17	54	744	0.96	< 0.02
FRINK RUN (HUC 020)									
RM 0.09 FRINK RUN AT SR 99 - (K01P08)									
6/22/1998	289	94	< 2.0		17	33	640	7.06	0.02
7/6/1998	262	107	< 2.0		21	24	584	4.88	< 0.02
7/20/1998	194	78	< 2.0		< 10	16	399	0.99	< 0.02
8/3/1998	236	94	< 2.0			22	543	< 0.10	< 0.02
8/18/1998	250	105	< 2.0		20	25	588	< 0.10	< 0.02
6/20/2002	346	117	< 2.0	7.0	16	36.8	766	3.70	< 0.020
7/2/2002	360	119	2.3	8.8	13	38.9	790 B	0.11 B	< 0.020
RM 11.08 FRINK RUN AT BISMARCK RD - (K01W13)									
6/22/1998	487	187	< 2.0		49	46	1000	2.11	0.10
7/6/1998	370	180	< 2.0		21	27	785	1.03	0.05
7/20/1998	293	117	2.0		21	20	583	1.23	0.06
8/3/1998	450	163	2.6		36	33	943	< 0.10	< 0.02
8/18/1998	391	158	4.4		29	34	865	< 0.10	< 0.02
FRINK RUN TRIBUTARY AT RM 5.83 (HUC 020)									
RM 3.69 FRINK RUN TRIB (5.83) AT BISMARCK RD - (K01G15)									
6/20/2002	481	183	< 2.0		19	41.7	1020	6.09	0.090
7/2/2002	496	241	2.7		60	45.3	1050 B	< 0.10	0.022
7/18/2002	476	283	3.9		45	51.0	1020 B	< 0.10	< 0.020
8/1/2002	388	294	3.4		55	47.4	866	0.10	< 0.020
SLATE RUN (HUC 020)									
RM 4.10 SLATE RUN AT TOWN LINE RD - (K01S03)									
6/22/1998	286	122	< 2.0		32	28	611	7.54	0.06
7/6/1998	291	151	< 2.0		16	19	624	4.78	< 0.02
7/20/1998	186	88	< 2.0		18	13	378	1.05	0.03
8/3/1998	265	111	2.0		19	17	572	< 0.10	< 0.02
8/18/1998	192	108	< 2.0		23	13	443	< 0.10	< 0.02
6/20/2002	283	125	< 2.0		22	23.2	619	5.75	0.081
7/2/2002	279	112	4.1		31	29.4	653 B	< 0.10	< 0.020
RM 10.42 SLATE RUN AT SECTION LINE RD - (K01W16)									
6/22/1998	370	159	< 2.0		22	33	774	4.61	0.04
7/6/1998	370	185	< 2.0		13	20	765	3.38	< 0.02
7/20/1998	222	100	< 2.0		18	13	444	1.83	0.03
8/3/1998	380	161	< 2.0		11	18	785	< 0.10	< 0.02
8/18/1998	283	140	< 2.0		17	17	631	< 0.10	< 0.02
EAST BRANCH MUD RUN (HUC 020)									
RM 1.38 E BR MUD RUN AT N GREENFIELD RD - (K01W15)									
6/22/1998	352	158	< 2.0		20	28	741	7.99	0.10
7/6/1998	322	177	< 2.0		19	17	681	4.06	0.03
7/20/1998	218	104	2.2		24	14	438	2.42	0.04
8/3/1998	330	179	< 2.0		11	15	687	0.63	< 0.02
8/18/1998	320	193	< 2.0		17	15	684	0.30	< 0.02

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DATE	P900	P410	P310	P680	P340	P940	P95	P630	P615
WEST BRANCH MUD RUN (HUC 020)									
RM 0.53 W BR MUD RUN AT TR 197 (ZOHR RD) - (K01W14)									
6/22/1998	400	149	< 2.0		11	40	852	3.64	0.05
7/6/1998	390	180	< 2.0		13	27	822	3.17	0.20
7/20/1998	322	128	< 2.0		13	22	635	0.48	< 0.02
8/3/1998	429	150	< 2.0		18	26	899	< 0.10	< 0.02
8/18/1998	366	148	< 2.0		17	26	824	< 0.10	< 0.02
WEST BRANCH HURON RIVER (HUC 010)									
RM 16.59 W BR HURON R AT SNYDER RD - (K01W17)									
6/22/1998	402	201	< 2.0		17	29	803	6.54	0.03
7/6/1998	310	182	< 2.0		19	20	660	3.20	0.02
7/20/1998	401	185	< 2.0		11	26	747	< 0.10	< 0.02
8/3/1998	388	188	< 2.0			25	778	< 0.10	< 0.02
8/18/1998	354	203	< 2.0		17	21	692	0.23	< 0.02
RM 22.73 W BR HURON R AT BAUMAN RD - (K01P05)									
6/22/1998	416	210	< 2.0		14	30	832	5.62	0.03
7/6/1998	313	185	< 2.0		16	20	667	3.05	0.02
7/20/1998	298	187	< 2.0		16	25	764	0.36	< 0.02
8/3/1998	391	192	< 2.0		< 10	24	798	0.24	< 0.02
8/18/1998	344	209	< 2.0		17	22	721	0.31	< 0.02
RM 29.18 W BR HURON R AT SR 162 - (K01W18)									
6/22/1998	406	212	< 2.0		16	31	811	5.84	0.04
7/6/1998	330	191	< 2.0		19	22	676	3.56	0.02
7/20/1998	439	207	< 2.0		16	31	805	0.38	< 0.02
8/3/1998	406	211	< 2.0		11	29	841	0.36	< 0.02
8/17/1998	344	193	< 2.0		< 10	24	679	0.42	< 0.02
9/2/1998	340	194	< 2.0		27	21	654	1.69	0.02
RM 35.33 W BR HURON R AT GREEN BUSH RD - (K01G12)									
6/17/2002	465	251	< 2.0		13	46.7	960	2.05	0.060
7/1/2002	592	291	2.3		16	42.3	1150	0.96	0.039
7/15/2002	636	290	< 2.0		< 10	46.2	1180	0.91	0.033
7/30/2002	608	292	< 2.0		10	37.0	1140	0.40	0.025
8/12/2002	655	293	< 2.0		27	43.0	1190	0.12	< 0.020
9/3/2002	647	276	< 2.0		< 10	35.9	1200	0.14	0.032
RM 36.26 W BR HURON R AT KLEIN RD - (K01S28)									
6/22/1998	289	178	< 2.0		17	35	648	4.47	0.07
7/6/1998	205	143	< 2.0		21	19	469	2.08	0.03
7/20/1998	339	186	< 2.0		13	41	687	0.74	< 0.02
8/3/1998	321	199	< 2.0		11	41	728	0.80	0.02
8/17/1998	260	162	< 2.0		< 10	26	562	0.74	< 0.02
9/2/1998	216	143	< 2.0		24	20	447	0.67	0.02
RM 38.40 W BR HURON R AT SKINNER RD - (K01P06)									
6/22/1998	305	193	< 2.0		22	35	679	3.80	0.06
7/6/1998	212	144	2.0			19	475		0.03
7/20/1998	331	184	2.3		18	37	670	0.56	0.02
8/3/1998	323	201	< 2.0		11	40	732	0.48	0.03
8/17/1998	270	168	< 2.0		16	29	585	0.62	< 0.02

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DATE	P900	P410	P310	P680	P340	P940	P95	P630	P615
9/2/1998	212	145	< 2.0		27	19	449	0.54	0.02
6/17/2002	349	240	< 2.0		13	52.0	812	1.07	0.061
7/1/2002	368	251	2.9		20	55.1	857	0.37	0.106
7/15/2002	381	248	3.2		16	56.5	866	0.33	0.080
7/30/2002	348	240	3.4		23	47.6	798	0.38	0.064
8/12/2002	347	248	3.6		33	65.5	849	0.32	0.119
9/3/2002	342	226	3.6		21	71.0	864	< 0.10	0.068
RM 40.35 W BR HURON R AT PLYMOUTH EAST RD - (K01S29)									
6/17/2002	354	240	< 2.0		< 10	43.1	799	1.22	0.027
7/1/2002	377	269	2.5		13	46.6	850	0.55	< 0.020
7/15/2002	391	272	< 2.0		< 10	46.1	841	0.25	< 0.020
7/30/2002	364	258	< 2.0		10	36.3	784	0.36	< 0.020
8/12/2002	371	257	< 2.0		24	44.9	798	0.18	0.023
9/3/2002	348	223	< 2.0		< 10	43.2	778	0.18	< 0.020
RM 42.23 W BR HURON R AT BASELINE RD - (K01W11)									
6/22/1998	295	177	< 2.0		19	32	647	4.29	0.03
7/6/1998	183	121	< 2.0		34	16	416	2.14	0.04
7/20/1998	333	191	< 2.0		16	22	621	0.66	< 0.02
8/3/1998	333	209	< 2.0		25	34	726	0.68	< 0.02
8/17/1998	251	161	< 2.0		12	18	534	0.76	< 0.02
9/2/1998	195	123	< 2.0		33	26	423	0.61	0.02
RM 47.47 W BR HURON R AT OLD STATE RD - (K01G10)									
6/17/2002	373	216	< 2.0		< 10	77.4	913	1.71	0.061
7/1/2002	428	244	< 2.0		16	98.2	1080	0.74	0.052
7/15/2002	454	256	< 2.0		25	73.7	1030	0.21	0.025
7/30/2002	399	259	2.9		14	90.1	1020	0.25	0.024
8/12/2002	602	284	< 2.0		18	14.7	1020	< 0.10	0.029
9/3/2002	430	245	< 2.0		< 10	105	1080	0.18	0.030
HOLIDAY LAKES TRIBUTARY TO W BR HURON R AT RM 23.09 (HUC 010)									
RM 2.97 HOLIDAY LAKES TRIB TO W BR HURON R AT SR 162 - (K01P10)									
6/22/1998	232	121	3.2		17	30	570	0.52	0.05
7/6/1998	191	115	2.7		20	28	489	0.81	0.08
7/20/1998	256	139	4.6		21	28	563	0.41	0.07
8/3/1998	222	122	2.7		28	24	537	0.64	0.05
8/17/1998	220	121	4.2		< 10	25	518	0.21	0.03
9/2/1998	293	152	< 2.0		12	21	590	0.44	0.11
TRIBUTARY TO HOLIDAY LAKES TRIBUTARY (RM 23.09/2.90) (HUC 010)									
RM 0.23 TRIB TO HOLIDAY LAKES TRIB (2.90) AT SR 162 - (K01G22)									
6/17/2002	647	234	< 2.0		16	26.9	1270	1.33	0.027
7/1/2002	975	325	< 2.0		43	41.5	1870	0.10	< 0.020
7/15/2002	1210	348	3.2		11	26.6	2060	< 0.10	0.027
7/30/2002	1100	336	< 2.0		< 10	23.9	1930	0.11	< 0.020
8/12/2002	1320	355	< 2.0		18	31.2	2160	< 0.10	< 0.020
9/3/2002	1100	321	< 2.0		22	26.2	2060	< 0.10	0.021

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DATE	P900	P410	P310	P680	P340	P940	P95	P630	P615
JACOBS CREEK (HUC 010)									
RM 0.62 JACOBS CK AT EGYPT RD - (K01P11)									
6/22/1998	318	185	< 2.0		< 10	57	868	8.62	0.04
7/6/1998	324	209	< 2.0		< 10	46	821	6.58	0.03
7/20/1998	376	164	< 2.0		16	84	983	7.67	0.02
8/3/1998	315	167	< 2.0		11	53	838	7.26	0.02
8/17/1998	308	168	< 2.0		< 10	53	800	3.88	< 0.02
9/2/1998	395	200	< 2.0		15	70	994	7.53	0.02
WEST BRANCH JACOBS CREEK (HUC 010)									
RM 0.08 WILLARD WWTP 001 EFFLUENT - (K01E01)									
6/22/1998	262	111	< 2.0		11	76	837	12.8	< 0.02
7/6/1998	242	111	< 2.0		< 10	53	731	12.0	< 0.02
7/20/1998	351	108	< 2.0		17	113	1040	11.4	< 0.02
8/3/1998	253	97.9	< 2.0		< 10	68	778	10.7	< 0.02
8/17/1998	246	102	< 2.0		< 10	69	731	6.41	< 0.02
9/2/1998	330	119	< 2.0		26	96	1000	10.7	< 0.02
RM 0.14 WEST BRANCH JACOBS CK UST WILLARD WWTP (801) - (K01W10)									
6/22/1998	501	363	< 2.0		22	41	1010	0.96	0.08
7/6/1998	474	373	< 2.0		21	36	1000	0.99	0.06
7/20/1998	485	198	4.0		28	47	934	0.75	0.04
8/3/1998	477	334	< 2.0		22	40	1000	1.03	0.04
8/17/1998	487	338	2.1		19	36	966	0.70	0.02
9/2/1998	570	386	< 2.0		27	28	1040	1.09	0.19
WALNUT CREEK (HUC 010)									
RM 0.98 WALNUT CK AT WALNUT RD - (K01P13)									
6/22/1998	308	199	< 2.0		< 10	24	637	2.91	0.02
7/6/1998	273	194	< 2.0		11	18	577	2.74	< 0.02
7/20/1998	323	185	< 2.0		18	22	609	0.30	< 0.02
8/3/1998	285	186	< 2.0		< 10	20	611	0.32	< 0.02
8/17/1998	310	202	< 2.0		< 10	22	637	0.46	< 0.02
9/2/1998	251	178	< 2.0		18	14	493	0.93	< 0.02
MARSH RUN (HUC 010)									
RM 0.93 MARSH RUN AT SR 598 - (K01P14)									
6/22/1998	556	257	< 2.0		14	34	1040	6.37	0.16
7/6/1998	526	252	< 2.0		28	31	1000	5.84	0.13
7/20/1998	592	242	2.7		21	31	986	0.59	0.03
8/3/1998	671	292	< 2.0		< 10	31	1210	0.47	< 0.02
8/17/1998	680	305	< 2.0		< 10	28	1190	0.10	< 0.02
9/2/1998	566	257	3.7		43	32	993	3.03	0.20
RM 7.53 MARSH RUN AT KENESTRICK RD - (K01G13)									
6/17/2002	371	229	< 2.0		13	47.1	808	4.36	0.022
7/1/2002	440	253	< 2.0		16	41.5	910	0.41	< 0.020
7/15/2002	542	260	< 2.0		14	39.9	1050	< 0.10	< 0.020
7/30/2002	614	256	< 2.0		< 10	36.9	1170	< 0.10	< 0.020
8/12/2002	535	294	< 2.0		39	27.8	1070	< 0.10	0.023
9/3/2002	541	275	< 2.0		16	35.2	1110	0.15	0.057

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MARSH RUN TRIBUTARY AT RM 3.12 (HUC 010)									
RM 0.28 MARSH RUN TRIB (3.12) AT MAY RD - (K01G14)									
6/17/2002	431	250	< 2.0		< 10	29.6	857	2.64	0.046
7/1/2002	478	274	< 2.0		< 10	28.2	943	0.51	0.028
7/15/2002	534	276	< 2.0		14	29.2	1020	< 0.10	< 0.020
7/30/2002	502	280	< 2.0		< 10	26.5	970	0.13	< 0.020
8/12/2002	525	276	3.4		33	23.7	983	< 0.10	< 0.020
9/3/2002	525	244	< 2.0		< 10	27.9	1010	< 0.10	< 0.020
SHILOH DITCH (HUC 010)									
RM 0.12 SHILOH DITCH AT PLYMOUTH EAST RD - (K01G09)									
6/17/2002	352	229	< 2.0		16	93.6	960	3.32	0.121
7/1/2002	304	216	2.9		20	132	1050	0.73	0.181
7/15/2002	349	248	< 2.0			138	1130		0.065
7/30/2002	383	245	< 2.0		14	197	1260	0.94	0.099
8/12/2002	383	283	2.0		33	174	1240	0.15	0.045
9/3/2002	346	269	< 2.0		58	160	1180	0.16	0.034
WEST BRANCH HURON R TRIBUTARY AT RM 41.50 (HUC 010)									
RM 0.11 W BR HURON R TRIB (41.50) AT BASELINE RD - (K01G11)									
6/17/2002	401	282	< 2.0		< 10	51.0	883	1.26	0.059
7/1/2002	417	298	< 2.0		13	47.9	899	0.64	0.032
7/15/2002	422	280	< 2.0		< 10	45.8	880	0.41	0.025
7/30/2002	386	279	< 2.0		< 10	42.7	831	0.46	< 0.020
8/12/2002	422	294	< 2.0		13	46.2	863	0.21	0.025
9/3/2002	404	274	< 2.0		< 10	45.6	850	0.17	0.027

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DATE	P610	P625	P556	P665	P70300	P530	P945	P31616
HURON RIVER (HUC 030)								
RM 0.20 HURON R NEAR MOUTH - (K01W30)								
6/23/1998	0.12	0.9		0.06	244	12	45	
7/8/1998					226	37	55	
7/30/1998	0.14	0.7		0.09	236	32	42	
8/20/1998	0.33	0.7		0.62	232	32	46	
9/24/1998	0.24	0.6		0.11	208	24	46	
RM 0.70 HURON R DST US6 (DST HURON-ERIE WWTP) - (K01W31)								
6/23/1998	0.08	1.0		0.16	332	41	65	
7/8/1998	0.16	1.3		0.20	272	72	57	
7/30/1998	0.15	0.8		0.12	262	38	42	
8/20/1998	0.30	0.7		0.68	246	33	51	
9/24/1998	0.24	0.6		0.19	242	33	56	
RM 1.10 HURON R ADJ RR YARD (UST HURON-ERIE WWTP) - (K01W32)								
6/23/1998	0.05	2.4		0.37	348	78	70	
7/8/1998	0.14	1.5		0.20	292	84	59	
7/30/1998	0.16	0.9		0.13	240	53	45	

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DATE	P610	P625	P556	P665	P70300	P530	P945	P31616
8/20/1998	0.15	1.0		0.61	268	49	63	
9/24/1998	0.10	1.0		0.16	312	52	87	
RM 2.75 HURON R AT SR 2 - (K01P01)								
6/23/1998	< 0.05	1.6		0.21	344	54	63	
7/8/1998	< 0.05	1.1		0.16	358	41	74	
7/30/1998	< 0.05	1.1		0.18	282	77	58	
8/20/1998	0.22	1.0		0.78	258	31	52	
9/24/1998	0.15	< 0.2		0.21	420	53	116	
RM 6.60 HURON R ADJ NORFOLK/WESTERN RR - (K01W33)								
6/23/1998	< 0.05	1.0		0.15	420	31	89	
7/8/1998	< 0.05	0.7		0.14	410	35	98	
7/30/1998	< 0.05	1.0		0.10	396	21	92	
8/20/1998	0.07	0.8		0.70	370	28	85	
9/24/1998	< 0.05	0.4		0.16	460	16	136	
RM 8.01 HURON R AT MASON RD - (501040)								
6/23/1998	< 0.05	1.1		0.19	442	38	104	
7/8/1998	< 0.05	0.7		0.14	372	39	94	
7/30/1998	< 0.05	0.9		0.11	400	20	101	
8/20/1998	< 0.05	0.7		1.30	410	17	101	
9/24/1998	< 0.05	0.4		0.09	450	8	142	
RM 11.85 HURON R ADJ OLD MUD BROOK RD (DST MILAN WWTP) - (501050)								
7/8/1998	< 0.05	1.0		0.19	340	73	81	
7/28/1998	< 0.05	0.6		0.07	410	11	99	
8/11/1998	< 0.05	0.9		0.69	338	83	84	
8/20/1998	< 0.05	0.5		0.45	424	< 5	113	
RM 12.30 HURON R AT US 250 - (501030)								
7/8/1998	< 0.05	1.1		0.25	336	83	78	
7/28/1998	0.05	0.6		0.08	398	11	103	
8/11/1998	< 0.05	1.1		0.42	338	106	83	
8/20/1998	0.06	0.5		0.74	428	5	116	
6/20/2002	< 0.050	0.74		0.087	492	9	144	
7/2/2002	< 0.050	0.75		0.056	546	13	166	
7/18/2002	< 0.050	0.74		0.079	592	8	174	
8/1/2002	0.093	0.82		0.103	558	14	182	260
8/14/2002	< 0.050	0.73		0.105	558	12	184	550
9/5/2002	< 0.050	0.65		0.289	542	13	172	130
RM 14.65 HURON R DST EAST & WEST BRANCHES (MILAN WILDLIFE AREA) - (K01W01)								
7/8/1998	< 0.05	0.8		0.16	384	37	96	
7/30/1998	< 0.05	0.5		0.05	462	< 5	104	
8/11/1998	< 0.05	1.1		0.43	358	127	87	
8/20/1998	0.08	0.4		0.47	424	< 5	109	
6/20/2002	< 0.050	0.62		< 0.050	486	6	144	
7/2/2002	< 0.050	0.63		< 0.050	534	11	177	
7/18/2002	< 0.050	0.32		< 0.050	532	20	175	
8/1/2002	< 0.050	0.55		< 0.050	580	11	227	82
8/14/2002	< 0.050	0.61		< 0.050	540	21	202	300
9/5/2002	< 0.050	0.49		< 0.050	496	11	181	94

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MUD BROOK (HUC 030)								
RM 3.01 MUD BROOK AT SCHEID RD - (K01W28)								
7/8/1998	< 0.05	0.8		0.24	496	39	65	
7/28/1998	0.06	0.6		0.27	502	33	69	
8/11/1998	< 0.05	1.0		0.34	484	96	65	
8/20/1998	0.06	1.0		1.18	*	*	*	
RM 4.69 MUD BROOK AT HOOVER RD - (K01S30)								
7/8/1998	0.07	0.9		0.21	486	26	66	
7/28/1998	0.10	0.7		0.46	524	31	65	
8/11/1998	0.21	1.1		0.78	614	31	59	
8/20/1998	0.20	1.1		2.05	574	65	52	
RM 6.25 MUD BROOK DST MASON RD - (K01W29)								
7/8/1998	0.59	1.8	< 1.00	0.33	450	30	63	
7/28/1998	1.53	2.6	< 1.00	0.59	470	30	60	
8/11/1998	3.70	4.9	1.05	1.68	498	24	49	
8/20/1998	4.64	8.7	< 2.00	3.79	530	60	46	
VILLAGE CREEK (HUC 030)								
RM 1.12 VILLAGE CK AT BERLIN ST - (K01G19)								
6/20/2002	< 0.050	0.54		0.066	386	6	69.2	
7/2/2002	< 0.050	0.54		0.071	434	7	66.3	
7/18/2002	< 0.050	< 0.20		0.066				
8/1/2002	< 0.050	0.49		0.080	458	6	69.3	470
8/14/2002	2.42	2.87		0.470	516	88	28.7	580
9/5/2002	< 0.050	0.38		0.051	512	7	79.4	390
RATTLESNAKE CREEK (HUC 030)								
RM 0.23 RATTLESNAKE CK AT SHAW MILL RD - (K01W36)								
7/8/1998	< 0.05	1.7		0.41	256	180	50	
7/28/1998	0.07	0.6		0.10	534	< 5	119	
8/11/1998	0.06	0.8		0.25	382	28	80	
8/20/1998	0.52	1.2		0.93	638	< 5	148	
RM 2.37 RATTLESNAKE CK AT OLD STATE RD - (K01W34)								
7/7/1998	< 0.05	0.5		0.07	370	10	75	
7/21/1998	< 0.05	< 0.2		0.60	312	192	63	
8/4/1998	0.12	0.2		0.09	418	18	79	
8/20/1998	0.23	0.3		0.96	482	7	85	
WILLOW BROOK (HUC 030)								
RM 1.58 WILLOW BROOK AT GALLUP RD - (K01W35)								
6/24/1998	< 0.05	0.3		0.10	518	< 5	83	
7/7/1998	< 0.05	0.3		0.07	508	< 5	86	
7/21/1998	< 0.05	0.9		0.38	316	199	57	
8/4/1998	0.10	< 0.2		0.14	552	17	101	
8/19/1998	0.05	0.2		0.74	554	< 5	89	

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WEST BRANCH RATTLESNAKE CREEK (HUC 030)								
RM 1.38 W BR RATTLESNAKE CK AT LAIS RD - (501080)								
6/24/1998	0.07	1.3		0.25	594	7	109	
7/7/1998	< 0.05	0.9		0.21	562	8	106	
7/21/1998	0.82	3.1		1.29	204	582	30	
8/10/1998	0.05	1.0		0.43	538	8	100	
8/20/1998	0.14	1.4		0.93	590	9	101	
RM 2.35 NORWALK WWTP 001 EFFLUENT - (K01S08)								
7/7/1998	0.07	1.0	< 1.00	0.29	586	8	109	
7/21/1998	1.98	3.4	< 1.00	0.84	422	15	75	
8/4/1998	0.10	1.2	< 1.00	0.33	650	< 5	147	
8/19/1998	0.34	1.3		0.98	640	5	115	
RM 2.42 W BR RATTLESNAKE CK UST NORWALK WWTP - (K01W06)								
7/7/1998	0.13	0.5		0.12	580	< 5	142	
7/21/1998	1.04	2.3		0.68	208	94	42	
8/4/1998	< 0.05	0.3		0.15	563	< 5	110	
8/19/1998	0.64	1.0		1.53	600	9	107	
EAST BRANCH HURON RIVER (HUC 030)								
RM 1.47 E BR HURON R AT SCHAEFFER RD - (501070)								
6/24/1998	< 0.05	0.7		0.07	436	7	97	
7/8/1998	< 0.05	1.5		0.58	316	264	73	
7/28/1998	0.07	0.3		< 0.05	356	< 5	78	
8/11/1998	< 0.05	0.6		0.14	309	22	66	
8/20/1998	0.05	0.2		0.56	432	< 5	103	
RM 6.85 E BR HURON R AT BROWN RD - (K01S11)								
6/24/1998	< 0.05	0.8		0.05	422	10	89	
7/7/1998	< 0.05	0.5		0.09	382	7	71	
7/21/1998	< 0.05	0.2		< 0.05	408	7	88	
8/19/1998	< 0.05	0.2		1.18	468	< 5	78	
6/18/2002	< 0.050	0.67		< 0.050	442	< 5	93.9	
7/1/2002	< 0.050	0.37		0.054	472	7	105	
7/16/2002	0.061	0.21		0.059	478	< 5	103	
7/31/2002	< 0.050	< 0.20		0.056	446	20	110	280
8/13/2002	< 0.050	0.35		< 0.050	418	5	101	1800
9/4/2002	< 0.050	< 0.20		0.270	434	< 5	114	230
RM 13.66 E BR HURON R AT GEIGER RD - (K01W19)								
6/24/1998	< 0.05	0.5		0.05	430	< 5	91	
7/7/1998	< 0.05	0.5		0.09	404	8	69	
8/4/1998	0.06	< 0.2		0.15	440	< 5	90	
8/19/1998	< 0.05	0.2		0.50	466	10	80	
RM 19.11 E BR HURON R AT HANVILLE CORNERS RD - (K01G21)								
6/18/2002	< 0.050	0.68		0.070	432	5	73.2	
7/1/2002	< 0.050	0.63		0.099	436	13	77.4	
7/16/2002	< 0.050	0.54		0.130	414	12	56.1	
7/31/2002	0.093	0.57		0.142	370	7	69.1	160
8/13/2002	< 0.050	0.47		0.089	362	8	58.0	370
9/4/2002	0.062	0.80		0.073	314	14	52.8	62

Huron River Watershed TMDLs

Table E-1. Huron River Watershed Water Quality Data

DATE	P610	P625	P556	P665	P70300	P530	P945	P31616
RM 20.96 E BR HURON R AT SR 162 - (K01W21)								
6/24/1998	< 0.05	0.7		0.06	364	< 5	64	
7/7/1998	< 0.05	0.5		0.22	386	< 5	58	
8/4/1998	0.08	0.3		0.43	388	< 5	68	
8/17/1998	0.06	0.7		0.19	362	6	69	
9/2/1998	< 0.05	0.7		0.22	267	8	33	
6/18/2002	< 0.050	0.66		0.072	436	< 5	79.1	
7/1/2002	< 0.050	0.70		0.078	434	5	85.6	
7/16/2002	< 0.050	0.38		0.057	400	< 5	75.0	
7/31/2002	0.052	0.24		0.105	368	< 5	64.2	250
8/13/2002	< 0.050	0.40		0.106	412	< 5	70.4	500
9/4/2002	< 0.050	0.60		0.103	408	9	75.8	140
RM 24.67 E BR HURON R AT OLD STATE RD - (K01W22)								
6/24/1998	< 0.05	0.7		0.08	372	< 5	56	
7/7/1998	< 0.05	0.6		1.80	362	5	54	
8/4/1998	0.06	0.3		0.21	370	< 5	58	
8/17/1998	0.05	0.5		0.13	358	6	51	
6/18/2002	< 0.050	0.71	< 0.050		424	< 5	78.0	
7/1/2002	0.102	0.71		0.112	414	< 5	77.9	
7/16/2002	< 0.050	0.64		0.106	342	5	68.0	
7/31/2002	< 0.050	< 0.20		0.092	322	< 5	50.0	44
8/13/2002	< 0.050	0.54		0.093	292	13	51.6	60
9/4/2002	< 0.050	1.06		0.176	278	16	49.4	210
NORWALK CREEK (HUC 030)								
RM 0.13 NORWALK CK AT SR 61 - (K01P03)								
6/24/1998	< 0.05	0.5		0.06	482	9	100	
7/7/1998	< 0.05	0.5		0.12	420	< 5	82	
7/21/1998	0.39	0.8		0.18	372	32	66	
8/19/1998	< 0.05	0.2		0.54	506	< 5	102	
6/18/2002	< 0.050	0.62		0.062	532	5	110	
7/1/2002	< 0.050	0.66		0.058	572	19	109	
7/16/2002	< 0.050	0.51	< 0.050		600	5	119	
7/31/2002	< 0.050	< 0.20		0.064	328	< 5	56.2	190
8/13/2002	< 0.050	0.48		0.052	522	5	110	4400
9/4/2002	< 0.050	0.43		0.107	464	5	102	800
RM 1.90 NORWALK CK AT CITY PARK - (K01S13)								
6/24/1998	0.06	1.3		0.05	480	< 5	91	
7/7/1998	< 0.05	0.5		0.06	390	< 5	71	
7/21/1998	0.27	0.7		0.14	336	39	48	
8/19/1998	0.08	0.2		2.12	498	< 5	81	
RM 5.56 NORWALK CK AT LAYLIN RD - (K01W23)								
7/7/1998	< 0.05	0.5		0.07	362	13	74	
7/21/1998	< 0.05	0.5		0.17	314	36	78	
8/4/1998	0.08	0.3		0.16	384	9	102	
8/19/1998	0.05	0.3		2.06	392	6	89	
6/18/2002	< 0.050	0.94	< 0.050		422	< 5	74.4	
7/1/2002	< 0.050	0.73		0.108	452	5	96.6	
7/16/2002	0.146	0.87		0.081	422	20	61.5	
7/31/2002	0.081	0.43		0.102	336	< 5	71.4	110

Table E-1. Huron River Watershed Water Quality Data

DATE	P610	P625	P556	P665	P70300	P530	P945	P31616
NORWALK CREEK TRIBUTARY AT RM 0.37 (HUC 030)								
RM 1.62 NORWALK CK TRIB (0.37) AT RIDGE RD - (K01G20)								
6/18/2002	< 0.050	0.69		0.058	526	< 5	105	
7/1/2002	< 0.050	0.60		0.055	568	< 5	116	
7/16/2002	< 0.050	0.66		0.057	564	7	96.9	
7/31/2002	< 0.050	< 0.20		0.058	464	< 5	98.4	360
8/13/2002	< 0.050 UJ	0.69 J		< 0.050 UJ	440	5	78.0	> 10000
9/4/2002	< 0.050	0.47		< 0.050	458	< 5	95.2	690
COLE CREEK (HUC 030)								
RM 0.14 COLE CK AT SR 61 - (K01P04)								
6/24/1998	< 0.05	0.5		< 0.05	438	< 5	113	
7/7/1998	< 0.05	0.4		0.07	429	< 5	110	
7/21/1998	< 0.05	0.3		< 0.05	432	11	109	
8/19/1998	0.06	0.2		1.18	448	< 5	125	
6/18/2002	< 0.050	0.67		< 0.050	480	7	129	
7/1/2002	< 0.050	0.37		< 0.050	570	7	168	
7/16/2002	< 0.050	0.21		< 0.050	556	20	136	
7/31/2002	< 0.050	< 0.20		< 0.050	544	7	144	270
8/13/2002	< 0.050	0.27		< 0.050	536	5	153	1400
9/4/2002	< 0.050	0.35		< 0.050	534	< 5	157	260
RM 6.52 COLE CK AT NEW STATE RD - (K01W20)								
6/24/1998	0.06	0.8		0.11	388	10	67	
7/7/1998	< 0.05	0.9		0.11	396	17	61	
8/4/1998	0.12	0.6		0.20	394	5	57	
8/19/1998	0.13	1.0		0.72	394	36	34	
COLE CREEK TRIBUTARY AT RM 2.46 (HUC 030)								
RM 0.45 COLE CK TRIB (2.46) AT RIDGE RD - (K01G18)								
6/18/2002	< 0.050	0.65		0.079	458	7	94.3	
7/1/2002	< 0.050	0.43		0.084	464	10	84.1	
7/16/2002	< 0.050	0.45		0.053	486	10	82.4	
7/31/2002	< 0.050	< 0.20		0.115	436	20	90.0	320
8/13/2002	< 0.050	0.35		< 0.050	408	17	76.4	1300
9/4/2002	< 0.050	0.41		< 0.050	436	11	109	2400
EAST BRANCH HURON RIVER TRIBUTARY AT RM 19.98 (HUC 030)								
RM 1.05 E BR HURON R TRIB (19.98) AT NEW STATE RD - (K01G23)								
7/31/2002	< 0.050	0.70		0.126	440	< 5	80.6	380
8/13/2002	0.060	0.89		0.158	546	< 5	85.6	120
9/4/2002	0.131	0.98		0.160	478	< 5	67.3	1800
WEST BRANCH HURON RIVER (HUC 020)								
RM 3.67 W BR HURON R AT LAMEREAUX RD - (K01S12)								
6/22/1998	< 0.05	1.2		0.17	482	18	141	
7/8/1998	< 0.05	0.7		0.12	420	13	114	
7/28/1998	0.09	0.7		0.11	421	13	108	
8/11/1998	< 0.05	1.3		0.48	384	175	95	

Huron River Watershed TMDLs

Table E-1. Huron River Watershed Water Quality Data

DATE	P610	P625	P556	P665	P70300	P530	P945	P31616
8/18/1998	< 0.05	0.5		0.27	392	8	104	
6/20/2002	< 0.050	0.78		0.056	500	< 5	159	
7/2/2002	< 0.050	0.57	< 0.050		596	10	198	
7/18/2002	< 0.050	0.52		0.055	546	42	172	
8/1/2002	< 0.050	0.47	< 0.050		622	< 5	226	44
8/14/2002	< 0.050	0.70	< 0.050		562	13	209	40
9/5/2002	< 0.050	0.43		0.114	496	< 5	180	84
RM 7.20 W BR HURON R AT MONROEVILLE PARK (DST WWTP) - (K01W26)								
6/22/1998	< 0.05	1.3		0.18	512	23	141	
7/7/1998	< 0.05	0.7		0.29	438	23	111	
7/21/1998	0.24	0.9		0.16	436	38	132	
8/10/1998	< 0.05	0.7		0.21	310	33	78	
8/18/1998	< 0.05	0.6		0.30	410	17	113	
RM 7.60 W BR HURON R AT RIVER RD - (K01W25)								
6/22/1998	< 0.05	1.0		0.17	500	25	150	
7/7/1998	< 0.05	0.8		0.15	426	24	109	
7/21/1998	< 0.05	0.4		0.07	460	27	131	
8/10/1998	< 0.05	0.7		0.20	310	36	80	
8/18/1998	< 0.05	0.5		0.29	410	17	110	
6/20/2002	< 0.050	0.66		0.060	532	7	158	
7/2/2002	< 0.050	0.51	< 0.050		598	8	196	
7/18/2002	< 0.050	0.32	< 0.050		584	17	190	
8/1/2002	< 0.050	0.41	< 0.050		644	12	228	170
8/14/2002	< 0.050	0.47	< 0.050		566	15	199	84
9/5/2002	< 0.050	0.48	< 0.050		556	8	176	210
RM 10.48 W BR HURON R AT STANDARDSBURG RD - (K01W12)								
6/22/1998	< 0.05	1.0		0.17	524	16	163	
7/6/1998	< 0.05	0.6		0.83	434	23	108	
7/20/1998	< 0.05	0.2	< 0.05		536	6	166	
8/3/1998	< 0.05	0.3		0.08	500	5	149	
8/18/1998	< 0.05	0.5		0.23	442	8	119	
6/20/2002	< 0.050	0.69	< 0.050		532	6	164	
7/2/2002	< 0.050	0.67		0.079	614	14	196	
7/18/2002	< 0.050	0.33	< 0.050		630	9	170	
8/1/2002	< 0.050	0.29		0.077	616	5	205	170
8/14/2002	< 0.050	0.50	< 0.050		586	5	184	100
9/5/2002	< 0.050	0.51	< 0.050		524	6	176	210
CLAYTON DITCH (HUC 020)								
RM 0.01 CLAYTON DITCH AT MOUTH - (K01G16)								
6/20/2002	< 0.050	0.61		0.080	344	< 5	114	
7/2/2002	< 0.050	0.42	< 0.050		388	< 5	117	
6/20/2002	< 0.050	0.81	< 0.050		406	< 5	112	
7/2/2002	< 0.050	0.94		0.074	428	< 5	120	
9/5/2002	0.221	1.03		0.204	568	< 5	122	76
SEYMOUR CREEK (HUC 020)								
RM 0.13 SEYMOUR CK AT LAMEREAUX RD - (K01W27)								
6/22/1998	< 0.05	0.9		< 0.05	418	< 5	103	
7/7/1998	< 0.05	0.6		0.09	328	< 5	69	

Table E-1. Huron River Watershed Water Quality Data

DATE	P610	P625	P556	P665	P70300	P530	P945	P31616
7/21/1998	< 0.05	0.6		0.13	314	27	79	
8/10/1998	< 0.05	0.5		0.15	342	5	69	
8/18/1998	< 0.05	0.3		0.15	346	< 5	76	
MEGGINSON CREEK (HUC 020)								
RM 0.59 MEGGINSON CK AT SAND HILL RD - (K01W24)								
6/22/1998	0.05	0.7		0.07	464	10	120	
7/7/1998	< 0.05	0.8		< 0.05	458	10	97	
7/21/1998	0.05	0.8		0.20	440	42	85	
8/10/1998	< 0.05	0.6		0.21	406	8	79	
8/18/1998	0.08	0.5		0.18	452	7	94	
FRINK RUN (HUC 020)								
RM 0.09 FRINK RUN AT SR 99 - (K01P08)								
6/22/1998	< 0.05	1.1		0.09	446	< 5	167	
7/6/1998	< 0.05	0.7		0.05	414	7	119	
7/20/1998	< 0.05	0.5		0.07	308	8	76	
8/3/1998	< 0.05	0.5		0.06	382	5	120	
8/18/1998	< 0.05	0.5		0.20	366	< 5	139	
6/20/2002	< 0.050	0.83		< 0.050	548	7	192	
7/2/2002	0.055	0.82		0.120	518	6	200	
RM 11.08 FRINK RUN AT BISMARCK RD - (K01W13)								
6/22/1998	0.07	1.1		0.06	742	13	314	
7/6/1998	0.09	0.9		0.12	598	75	175	
7/20/1998	< 0.05	3.8		0.21	453	48	129	
8/3/1998	< 0.05	0.8		0.11	660	23	244	
8/18/1998	0.11	0.9		0.12	574	35	206	
FRINK RUN TRIBUTARY AT RM 5.83 (HUC 020)								
RM 3.69 FRINK RUN TRIB (5.83) AT BISMARCK RD - (K01G15)								
6/20/2002	0.196	1.28		0.069	704	11	268	
7/2/2002	0.768	2.03		0.171	698	12	239	
7/18/2002	0.493	1.43		0.180	664	19	169	
8/1/2002	0.722	2.15		0.272	552	16	94.7	84
SLATE RUN (HUC 020)								
RM 4.10 SLATE RUN AT TOWN LINE RD - (K01S03)								
6/22/1998	< 0.05	1.2		0.09	428	10	136	
7/6/1998	< 0.05	0.7		< 0.05	432	< 5	117	
7/20/1998	< 0.05	0.6		< 0.05	294	9	74	
8/3/1998	< 0.05	0.4		0.06	390	< 5	141	
8/18/1998	0.10	0.6		0.15	272	< 5	90	
6/20/2002	< 0.050	1.13		< 0.050	418	< 5	125	
7/2/2002	< 0.050	1.38		0.083	424	17	160	
RM 10.42 SLATE RUN AT SECTION LINE RD - (K01W16)								
6/22/1998	< 0.05	0.9		0.07	544	6	199	
7/6/1998	< 0.05	0.7		0.09	560	< 5	165	
7/20/1998	< 0.05	0.6		0.11	348	24	86	
8/3/1998	< 0.05	0.4		< 0.05	530	< 5	200	
8/18/1998	< 0.05	0.4		0.77	406	< 5	142	

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Table E-1. Huron River Watershed Water Quality Data

DATE	P610	P625	P556	P665	P70300	P530	P945	P31616
EAST BRANCH MUD RUN (HUC 020)								
RM 1.38 E BR MUD RUN AT N GREENFIELD RD - (K01W15)								
6/22/1998	0.06	1.0		0.12	512	12	187	
7/6/1998	0.08	0.8		0.10	498	17	131	
7/20/1998	< 0.05	0.8		0.14	348	27	79	
8/3/1998	< 0.05	0.4		0.43	450	20	136	
8/18/1998	0.08	0.6		0.19	436	13	146	
WEST BRANCH MUD RUN (HUC 020)								
RM 0.53 W BR MUD RUN AT TR 197 (ZOHR RD) - (K01W14)								
6/22/1998	< 0.05	1.0		0.05	618	10	279	
7/6/1998	< 0.05	0.5		0.06	628	8	176	
7/20/1998	< 0.05	0.3		< 0.05	470	5	148	
8/3/1998	< 0.05	0.4		0.08	630	7	240	
8/18/1998	0.13	0.5		0.06	542	10	219	
WEST BRANCH HURON RIVER (HUC 010)								
RM 16.59 W BR HURON R AT SNYDER RD - (K01W17)								
6/22/1998	< 0.05	1.0		0.16	559	24	175	
7/6/1998	< 0.05	0.7		0.13	456	24	101	
7/20/1998	< 0.05	0.3		< 0.05	550	7	152	
8/3/1998	< 0.05	0.2		0.19	530	6	160	
8/18/1998	< 0.05	0.4		0.13	460	12	128	
RM 22.73 W BR HURON R AT BAUMAN RD - (K01P05)								
6/22/1998	< 0.05	0.9		0.16	572	23	195	
7/6/1998	< 0.05	0.8		0.15	470	22	109	
7/20/1998	< 0.05	0.3		< 0.05	546	13	160	
8/3/1998	< 0.05	0.3		0.06	550	< 5	171	
8/18/1998	< 0.05	0.4		0.05	492	11	138	
RM 29.18 W BR HURON R AT SR 162 - (K01W18)								
6/22/1998	< 0.05	1.0		0.14	554	13	149	
7/6/1998	< 0.05	0.7		0.16	462	16	108	
7/20/1998	< 0.05	0.3		< 0.05	604	7	152	
8/3/1998	< 0.05	0.3		0.07	580	5	163	
8/17/1998	< 0.05	0.4		0.16	444	6	109	
9/2/1998	< 0.05	0.7		1.27	470	9	105	
RM 35.33 W BR HURON R AT GREEN BUSH RD - (K01G12)								
6/17/2002	0.079	0.83		0.188	634	22	187	
7/1/2002	< 0.050	0.74		0.096	806	29	244	
7/15/2002	< 0.050	0.53		0.080	824	7	278	
7/30/2002	0.093	0.49		0.082	810	12	250	220
8/12/2002	0.064	0.53		0.081	870	10	285	200
9/3/2002	0.075	0.66		0.081	858	14	317	560
RM 36.26 W BR HURON R AT KLEIN RD - (K01S28)								
6/22/1998	< 0.05	1.2		0.18	424	18	76	
7/6/1998	0.06	1.0		0.17	344	18	57	
7/20/1998	< 0.05	0.6		0.08	486	10	80	

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DATE	P610	P625	P556	P665	P70300	P530	P945	P31616
8/3/1998	< 0.05	0.6		0.14	470	5	103	
8/17/1998	< 0.05	0.6		0.18	354	8	65	
9/2/1998	0.06	0.6		1.33	298	8	56	
RM 38.40 W BR HURON R AT SKINNER RD - (K01P06)								
6/22/1998	0.10	1.3		0.17	442	13	108	
7/6/1998					330	21	59	
7/20/1998	0.06	0.8		0.12	468	6	88	
8/3/1998	0.10	0.7		0.17	440	7	95	
8/17/1998	< 0.05	0.7		0.22	360	10	70	
9/2/1998	0.14	0.8		2.87	304	8	50	
6/17/2002	0.157	1.02		0.273	510	7	105	
7/1/2002	0.299	1.27		0.279	536	9	94.9	
7/15/2002	0.233	1.02		0.299	530	15	105	
7/30/2002	0.312	0.85		0.329	480	12	97.3	390
8/12/2002	0.503	1.62		0.639	530	9	97.7	410
9/3/2002	1.89	3.74		1.12	512	5	110	290
RM 40.35 W BR HURON R AT PLYMOUTH EAST RD - (K01S29)								
6/17/2002	0.062	0.69		0.080	502	6	108	
7/1/2002	0.157	1.07		0.174	544	11	110	
7/15/2002	0.177	0.41		0.079	518	6	102	
7/30/2002	0.105	0.36		0.092	474	6	98.9	6000
8/12/2002	0.281	0.68		0.091	494	6	107	> 10000
9/3/2002	0.124	0.64		0.092	472	7	112	14000
RM 42.23 W BR HURON R AT BASELINE RD - (K01W11)								
6/22/1998	< 0.05	1.0		0.13	424	18	130	
7/6/1998	< 0.05	1.0		0.18	296	21	51	
7/20/1998	< 0.05	0.4		0.07	436	5	90	
8/3/1998	< 0.05	0.3		0.12	450	< 5	91	
8/17/1998	< 0.05	0.5		0.23	348	6	71	
9/2/1998	< 0.05	0.8		0.37	302	10	43	
RM 47.47 W BR HURON R AT OLD STATE RD - (K01G10)								
6/17/2002	0.156	0.86		0.147	582	15	134	
7/1/2002	< 0.050	0.93		0.176	676	60	155	
7/15/2002	0.093	0.55		0.100	668	31	154	
7/30/2002	0.105	0.98		0.231	636	25	121	1400
8/12/2002	0.180	0.87		0.153	734	13	233	3400
9/3/2002	0.098	0.92		0.094	684	12	138	3400
HOLIDAY LAKES TRIBUTARY TO W BR HURON R AT RM 23.09 (HUC 010)								
RM 2.97 HOLIDAY LAKES TRIB TO W BR HURON R AT SR 162 - (K01P10)								
6/22/1998	0.21	1.1		0.09	388	15	141	
7/6/1998	0.41	1.1		0.11	328	23	78	
7/20/1998	0.86	1.6		0.16	382	22	92	
8/3/1998	0.36	0.9		0.16	340	20	82	
8/17/1998	0.39	1.4		0.22	322	38	71	
9/2/1998	0.52	1.1		0.56	420	36	112	

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Table E-1. Huron River Watershed Water Quality Data

DATE	P610	P625	P556	P665	P70300	P530	P945	P31616
TRIBUTARY TO HOLIDAY LAKES TRIBUTARY (RM 23.09/2.90) (HUC 010)								
RM 0.23 TRIB TO HOLIDAY LAKES TRIB (2.90) AT SR 162 - (K01G22)								
6/17/2002	0.061	0.63		0.087	922	7	409	
7/1/2002	< 0.050	0.72		0.077	1490	6	757	
7/15/2002	< 0.050	0.53		0.073	1720	13	801	
7/30/2002	< 0.050	0.20		< 0.050	1590	< 5	747	39
8/12/2002	< 0.050	0.27		< 0.050	1820	< 5	903	68
9/3/2002	< 0.050	0.47		< 0.050	1730	16	960	430
JACOBS CREEK (HUC 010)								
RM 0.62 JACOBS CK AT EGYPT RD - (K01P11)								
6/22/1998	0.05	0.8		0.16	586	9	164	
7/6/1998	0.06	0.8		0.20	548	9	120	
7/20/1998	< 0.05	0.7		0.12	678	5	160	
8/3/1998	< 0.05	0.4		0.31	530	9	122	
8/17/1998	< 0.05	0.4		0.18	488	6	128	
9/2/1998	< 0.05	0.9		0.18	676	6	171	
WEST BRANCH JACOBS CREEK (HUC 010)								
RM 0.08 WILLARD WWTP 001 EFFLUENT - (K01E01)								
6/22/1998	< 0.05	1.2	< 1.00	0.31	530	8	160	
7/6/1998	< 0.05	1.1	< 1.00	0.29	464	10	115	
7/20/1998	< 0.05	0.8	< 1.00	0.21	682	6	178	
8/3/1998	< 0.05	0.7	< 1.00	0.19	490	< 5	123	
8/17/1998	< 0.05	0.6	< 1.00	0.24	452	5	120	
9/2/1998	< 0.05	1.2		0.66	658	10	180	
RM 0.14 WEST BRANCH JACOBS CK UST WILLARD WWTP (801) - (K01W10)								
6/22/1998	0.10	0.6		0.15	664	< 5	154	
7/6/1998	0.07	0.5		0.30	642	8	116	
7/20/1998	< 0.05	0.5		0.15	636	11	103	
8/3/1998	< 0.05	0.2		0.32	628	< 5	111	
8/17/1998	0.07	0.3		0.27	602	32	110	
9/2/1998	0.12	0.5		1.34	712	5	151	
WALNUT CREEK (HUC 010)								
RM 0.98 WALNUT CK AT WALNUT RD - (K01P13)								
6/22/1998	< 0.05	0.6		0.05	410	< 5	84	
7/6/1998	< 0.05	0.5		0.43	386	5	69	
7/20/1998	< 0.05	0.6		0.10	424	26	87	
8/3/1998	< 0.05	0.2		0.05	374	< 5	82	
8/17/1998	< 0.05	0.6		0.08	394	8	71	
9/2/1998	< 0.05	0.7		0.34	332	8	52	
MARSH RUN (HUC 010)								
RM 0.93 MARSH RUN AT SR 598 - (K01P14)								
6/22/1998	0.11	1.6		0.21	744	18	237	
7/6/1998	0.16	1.3		0.26	714	65	197	
7/20/1998	< 0.05	0.6		0.11	708	23	214	
8/3/1998	< 0.05	0.6		0.15	868	37	282	

Table E-1. Huron River Watershed Water Quality Data

DATE	P610	P625	P556	P665	P70300	P530	P945	P31616
8/17/1998	0.07	0.4		0.26	872	41	279	
9/2/1998	0.20	1.6		2.14	728	46	208	
RM 7.53 MARSH RUN AT KENESTRICK RD - (K01G13)								
6/17/2002	< 0.050	0.50		0.115	520	7	107	
7/1/2002	< 0.050	0.56		0.058	604	6	138	
7/15/2002	< 0.050	0.27		0.061	724	< 5	223	
7/30/2002	0.050	0.30		< 0.050	814	< 5	307	220
8/12/2002	0.108	0.39		0.070	724	5	230	180
9/3/2002	0.128	0.57		0.058	770	7	267	380
MARSH RUN TRIBUTARY AT RM 3.12 (HUC 010)								
RM 0.28 MARSH RUN TRIB (3.12) AT MAY RD - (K01G14)								
6/17/2002	< 0.050	0.51		< 0.050	572	8	149	
7/1/2002	0.053	0.51		< 0.050	638	54	161	
7/15/2002	< 0.050	0.41		0.073	708	21	216	
7/30/2002	< 0.050	0.22		0.070	652	35	195	120
8/12/2002	< 0.050	0.68		0.071	680	30	212	130
9/3/2002	< 0.050	0.34		< 0.050	702	52	224	140
SHILOH DITCH (HUC 010)								
RM 0.12 SHILOH DITCH AT PLYMOUTH EAST RD - (K01G09)								
6/17/2002	0.110	0.88		0.180	588	6	104	
7/1/2002	0.445	1.86		0.278	606	17	105	
7/15/2002					648	20	90.5	
7/30/2002	0.234	1.51		0.199	734	< 5	86.0	490
8/12/2002	0.197	1.78		0.188	732	33	106	680
9/3/2002	0.150	1.15		0.160	676	10	88.3	1000
WEST BRANCH HURON R TRIBUTARY AT RM 41.50 (HUC 010)								
RM 0.11 W BR HURON R TRIB (41.50) AT BASELINE RD - (K01G11)								
6/17/2002	0.074	0.65		0.075	550	< 5	109	
7/1/2002	< 0.050	0.50		0.076	614	5	110	
7/15/2002	< 0.050	< 0.20		< 0.050	546	< 5	90.6	
7/30/2002	< 0.050	0.20		0.063	508	5	93.3	2000
8/12/2002	< 0.050	0.31		< 0.050	550	< 5	110	1700
9/3/2002	< 0.050	0.40		0.050	514	5	109	3600

Table E-1. Huron River Watershed Water Quality Data

DATE	P70508	P1105	P1007	P1082
HURON RIVER (HUC 030)				
RM 0.20 HURON R NEAR MOUTH - (K01W30)				
6/23/1998		249	35	232
7/8/1998		994	37	203
7/30/1998		1140	38	179
8/20/1998		915	40	213
9/24/1998		738	38	252
RM 0.70 HURON R DST US6 (DST HURON-ERIE WWTP) - (K01W31)				

Huron River Watershed TMDLs

Table E-1. Huron River Watershed Water Quality Data

DATE	P70508	P1105	P1007	P1082
6/23/1998		291	48	249
7/8/1998		600	49	203
7/30/1998		1350	42	185
8/20/1998		888 J	43	216
9/24/1998		700	44	266
RM 1.10 HURON R ADJ RR YARD (UST HURON-ERIE WWTP) - (K01W32)				
6/23/1998		407	55	266
7/8/1998		783	53	206
7/30/1998		1830	46	199
8/20/1998		1550	52	230
9/24/1998		1170	58	296
RM 2.75 HURON R AT SR 2 - (K01P01)				
6/23/1998		596	54	234
7/8/1998		465	52	249
7/30/1998		2450	58	237
8/20/1998		849	47	205
9/24/1998		1030	67	337
RM 6.60 HURON R ADJ NORFOLK/WESTERN RR - (K01W33)				
6/23/1998		250	58	293
7/8/1998		494	54	302
7/30/1998		562	58	328
8/20/1998		542	53	290
9/24/1998		354	63	406
RM 8.01 HURON R AT MASON RD - (501040)				
6/23/1998		669	61	312
7/8/1998		575	46	264
7/30/1998		496	57	334
8/20/1998		557	59	321
9/24/1998		249	62	412
RM 11.85 HURON R ADJ OLD MUD BROOK RD (DST MILAN WWTP) - (501050)				
7/8/1998		730	50	227
7/28/1998		428	52	305
8/11/1998		1610	53	308
8/20/1998		200	52	357
RM 12.30 HURON R AT US 250 - (501030)				
7/8/1998		976	51	223
7/28/1998		396	53	308
8/11/1998		2020	56	303
8/20/1998		< 200	51	359
6/20/2002	< 5.0	295	55	397
7/2/2002	< 5.0	344	63	488
7/18/2002	< 5.0	< 200	53	413
8/1/2002	< 5.0	419	55	414
8/14/2002	< 5.0	339	50	425
9/5/2002	< 5.0	283	44	369

Table E-1. Huron River Watershed Water Quality Data

DATE	P70508	P1105	P1007	P1082
RM 14.65 HURON R DST EAST & WEST BRANCHES (MILAN WILDLIFE AREA) - (K01W01)				
7/8/1998		522	53	283
7/30/1998		< 200	55	374
8/11/1998		4350	66	340
8/20/1998		< 200	55	386
6/20/2002	< 5.0	210	55	427
7/2/2002	< 5.0	357	62	505
7/18/2002	< 5.0	305	59	480
8/1/2002	< 5.0	415	58	553
8/14/2002	< 5.0	375	55	563
9/5/2002	< 5.0	< 200	49	498
MUD BROOK (HUC 030)				
RM 3.01 MUD BROOK AT SCHEID RD - (K01W28)				
7/8/1998		606	64	239
7/28/1998		1160	63	236
8/11/1998		3080	68	214
8/20/1998		3230	70	222
RM 4.69 MUD BROOK AT HOOVER RD - (K01S30)				
7/8/1998		451	58	230
7/28/1998		1030	61	233
8/11/1998		897	62	261
8/20/1998		2530	64	228
RM 6.25 MUD BROOK DST MASON RD - (K01W29)				
7/8/1998		428	53	227
7/28/1998		771	53	234
8/11/1998		737	46	235
8/20/1998		2140	64	224
VILLAGE CREEK (HUC 030)				
RM 1.12 VILLAGE CK AT BERLIN ST - (K01G19)				
6/20/2002	< 5.0	< 200	44	193
7/2/2002	< 5.0	380	54	236
7/18/2002		< 200	50	258
8/1/2002	< 5.0	314	52	229
8/14/2002	< 5.0	8830	147	325
9/5/2002	< 5.0	231	47	234
RATTLESNAKE CREEK (HUC 030)				
RM 0.23 RATTLESNAKE CK AT SHAW MILL RD - (K01W36)				
7/8/1998		1040	42	98
7/28/1998		< 200	43	234
8/11/1998		1000	38	171
8/20/1998		270	41	264
RM 2.37 RATTLESNAKE CK AT OLD STATE RD - (K01W34)				
7/7/1998		< 200	46	187
7/21/1998		4230	62	156
8/4/1998		323	62	226
8/20/1998		250	70	288

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Table E-1. Huron River Watershed Water Quality Data

DATE	P70508	P1105	P1007	P1082
WILLOW BROOK (HUC 030)				
RM 1.58 WILLOW BROOK AT GALLUP RD - (K01W35)				
6/24/1998		< 200	77	207
7/7/1998		< 200	69	208
7/21/1998		5080	73	116
8/4/1998		< 200	80	210
8/19/1998		< 200	78	208
WEST BRANCH RATTLESNAKE CREEK (HUC 030)				
RM 1.38 W BR RATTLESNAKE CK AT LAIS RD - (501080)				
6/24/1998		441	16	156
7/7/1998		451	17	190
7/21/1998		1120	121	102
		0		
8/10/1998		428	17	173
8/20/1998		503	< 15	142
RM 2.35 NORWALK WWTP 001 EFFLUENT - (K01S08)				
7/7/1998		856	< 15	174
7/21/1998		993	< 15	111
8/4/1998		775	< 15	145
8/19/1998		807	< 15	141
RM 2.42 W BR RATTLESNAKE CK UST NORWALK WWTP - (K01W06)				
7/7/1998		< 200	59	347
7/21/1998		1820	38	97
8/4/1998		< 200	54	298
8/19/1998		< 200	60	303
EAST BRANCH HURON RIVER (HUC 030)				
RM 1.47 E BR HURON R AT SCHAEFFER RD - (501070)				
6/24/1998		< 200	66	278
7/8/1998		1250	74	191
7/28/1998		< 200	56	248
8/11/1998		855	52	211
8/20/1998		< 200	66	284
RM 6.85 E BR HURON R AT BROWN RD - (K01S11)				
6/24/1998		247	77	338
7/7/1998		231	66	312
7/21/1998		225	73	306
8/19/1998		< 200	78	328
6/18/2002	< 5.0	< 200	76	382
7/1/2002	< 5.0	< 200	92	431
7/16/2002	< 5.0	< 200	88	382
7/31/2002	< 5.0	625	94	336
8/13/2002	< 5.0	< 200	79	340
9/4/2002	< 5.0	< 200	85	339
RM 13.66 E BR HURON R AT GEIGER RD - (K01W19)				
6/24/1998		< 200	94	344
7/7/1998		< 200	77	323

Table E-1. Huron River Watershed Water Quality Data

DATE	P70508	P1105	P1007	P1082
8/4/1998		< 200	103	309
8/19/1998		417	108	315
RM 19.11 E BR HURON R AT HANVILLE CORNERS RD - (K01G21)				
6/18/2002	< 5.0	321	66	597
7/1/2002	< 5.0	358	74	620
7/16/2002	< 5.0	370	70	552
7/31/2002	< 5.0	312	60	349
8/13/2002	< 5.0	240	63	416
9/4/2002	< 5.0	311	58	332
RM 20.96 E BR HURON R AT SR 162 - (K01W21)				
6/24/1998		< 200	58	626
7/7/1998		< 200	60	593
8/4/1998		< 200	64	490
8/17/1998		< 200	63	559
9/2/1998		254	53	388
6/18/2002	< 5.0	< 200	67	771
7/1/2002	< 5.0	< 200	74	711
7/16/2002	< 5.0	< 200	62	565
7/31/2002	< 5.0	< 200	56	442
8/13/2002	< 5.0	< 200	63	477
9/4/2002	< 5.0	< 200	57	441
RM 24.67 E BR HURON R AT OLD STATE RD - (K01W22)				
6/24/1998		< 200	68	1060
7/7/1998		265	60	912
8/4/1998		< 200	72	1170
8/17/1998		< 200	68	1110
6/18/2002	< 5.0	< 200	68	1190
7/1/2002	< 5.0	< 200	74	1300
7/16/2002	< 5.0	< 200	63	1100
7/31/2002	< 5.0	< 200	48	873
8/13/2002	< 5.0	298	51	709
9/4/2002	< 5.0	212	67	663
NORWALK CREEK (HUC 030)				
RM 0.13 NORWALK CK AT SR 61 - (K01P03)				
6/24/1998		< 200	69	261
7/7/1998		< 200	56	214
7/21/1998		696	54	185
8/19/1998		< 200	68	251
6/18/2002	< 5.0	222	66	280
7/1/2002	< 5.0	1110	93	316
7/16/2002	< 5.0	< 200	83	304
7/31/2002	< 5.0	PT < 200	52	174
8/13/2002	< 5.0	< 200	75	254
9/4/2002	< 5.0	< 200	64	228
RM 1.90 NORWALK CK AT CITY PARK - (K01S13)				
6/24/1998		< 200	71	207
7/7/1998		< 200	55	174
7/21/1998		1020	50	125
8/19/1998		< 200	75	207

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Table E-1. Huron River Watershed Water Quality Data

DATE	P70508	P1105	P1007	P1082
RM 5.56 NORWALK CK AT LAYLIN RD - (K01W23)				
7/7/1998		351	37	232
7/21/1998		1330	39	219
8/4/1998		240	41	274
8/19/1998		239	38	270
6/18/2002	< 5.0	< 200	42	278
7/1/2002	< 5.0	< 200	49	353
7/16/2002	< 5.0	627	56	307
7/31/2002	< 5.0	240	38	232
NORWALK CREEK TRIBUTARY AT RM 0.37 (HUC 030)				
RM 1.62 NORWALK CK TRIB (0.37) AT RIDGE RD - (K01G20)				
6/18/2002	< 5.0	< 200	67	322
7/1/2002	< 5.0	< 200	77	362
7/16/2002	< 5.0	< 200	71	326
7/31/2002	< 5.0	< 200	61	259
8/13/2002	< 5.0	< 200	49	214
9/4/2002	< 5.0	< 200	57	267
COLE CREEK (HUC 030)				
RM 0.14 COLE CK AT SR 61 - (K01P04)				
6/24/1998		< 200	63	229
7/7/1998		< 200	58	220
7/21/1998		232	61	204
8/19/1998		< 200	69	221
6/18/2002	< 5.0	< 200	70	266
7/1/2002	< 5.0	< 200	101	324
7/16/2002	< 5.0	251	113	308
7/31/2002	< 5.0	< 200	113	321
8/13/2002	< 5.0	< 200	107	294
9/4/2002	< 5.0	< 200	114	292
RM 6.52 COLE CK AT NEW STATE RD - (K01W20)				
6/24/1998		313	46	280
7/7/1998		413	46	269
8/4/1998		383	43	233
8/19/1998		906	44	215
COLE CREEK TRIBUTARY AT RM 2.46 (HUC 030)				
RM 0.45 COLE CK TRIB (2.46) AT RIDGE RD - (K01G18)				
6/18/2002	< 5.0	< 200	69	297
7/1/2002	< 5.0	209	79	310
7/16/2002	< 5.0	< 200	70	265
7/31/2002	< 5.0	626	73	241
8/13/2002	< 5.0	< 200	61	230
9/4/2002	< 5.0	< 200	72	249
EAST BRANCH HURON RIVER TRIBUTARY AT RM 19.98 (HUC 030)				
RM 1.05 E BR HURON R TRIB (19.98) AT NEW STATE RD - (K01G23)				
7/31/2002	< 5.0	202	64	347
8/13/2002	< 5.0	< 200	70	347

Table E-1. Huron River Watershed Water Quality Data

DATE	P70508	P1105	P1007	P1082
9/4/2002	< 5.0	< 200	58	298
WEST BRANCH HURON RIVER (HUC 020)				
RM 3.67 W BR HURON R AT LAMEREAUX RD - (K01S12)				
6/22/1998		338	59	362
7/8/1998		632	55	358
7/28/1998		232	51	358
8/11/1998		4390	77	418
8/18/1998		244	52	404
6/20/2002	< 5.0	258	54	502
7/2/2002	< 5.0	314	63	608
7/18/2002	< 5.0	208	54	588
8/1/2002	< 5.0	209	57	591
8/14/2002	< 5.0	280	52	600
9/5/2002	< 5.0	< 200	47	528
RM 7.20 W BR HURON R AT MONROEVILLE PARK (DST WWTP) - (K01W26)				
6/22/1998		509	65	393
7/7/1998		476	56	382
7/21/1998		603	59	411
8/10/1998		466	48	331
8/18/1998		294	55	426
RM 7.60 W BR HURON R AT RIVER RD - (K01W25)				
6/22/1998		418	65	391
7/7/1998		594	57	379
7/21/1998		744	59	433
8/10/1998		682	50	334
8/18/1998		371	57	432
6/20/2002	< 5.0	262	59	527
7/2/2002	< 5.0	441	68	644
7/18/2002	< 5.0	378	60	647
8/1/2002	< 5.0	371	66	621
8/14/2002	< 5.0	386	58	624
9/5/2002	< 5.0	427	52	557
RM 10.48 W BR HURON R AT STANDARDSBURG RD - (K01W12)				
6/22/1998		360	66	418
7/6/1998		837	56	358
7/20/1998		210	64	569
8/3/1998		216	56	471
8/18/1998		307	56	446
6/20/2002	< 5.0	225	65	567
7/2/2002	< 5.0	357	76	684
7/18/2002	< 5.0	220	66	654
8/1/2002	< 5.0	256	66	600
8/14/2002	< 5.0	< 200	59	628
9/5/2002	< 5.0	225	58	588
CLAYTON DITCH (HUC 020)				
RM 0.01 CLAYTON DITCH AT MOUTH - (K01G16)				
6/20/2002	< 5.0	< 200	52	222
7/2/2002	< 5.0	242	57	227
6/20/2002	< 5.0	< 200	56	266

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Table E-1. Huron River Watershed Water Quality Data

DATE	P70508	P1105	P1007	P1082
7/2/2002	< 5.0	208	50	291
9/5/2002	< 5.0	< 200	74	343
SEYMOUR CREEK (HUC 020)				
RM 0.13 SEYMOUR CK AT LAMEREAUX RD - (K01W27)				
6/22/1998		< 200	51	212
7/7/1998		229	44	161
7/21/1998		1590	49	150
8/10/1998		< 200	53	190
8/18/1998		< 200	53	175
MEGGINSON CREEK (HUC 020)				
RM 0.59 MEGGINSON CK AT SAND HILL RD - (K01W24)				
6/22/1998		459	69	254
7/7/1998		372	71	254
7/21/1998		1440	72	215
8/10/1998		252	68	227
8/18/1998		< 200	72	248
FRINK RUN (HUC 020)				
RM 0.09 FRINK RUN AT SR 99 - (K01P08)				
6/22/1998		319	42	279
7/6/1998		398	42	239
7/20/1998		980	35	211
8/3/1998		< 200	39	231
8/18/1998		< 200	42	272
6/20/2002	< 5.0	360	44	360
7/2/2002	< 5.0	354	49	403
RM 11.08 FRINK RUN AT BISMARCK RD - (K01W13)				
6/22/1998		333	59	614
7/6/1998		819	51	487
7/20/1998		3100	50	386
8/3/1998		504	63	629
8/18/1998		1120	67	624
FRINK RUN TRIBUTARY AT RM 5.83 (HUC 020)				
RM 3.69 FRINK RUN TRIB (5.83) AT BISMARCK RD - (K01G15)				
6/20/2002	< 5.0	816	54	618
7/2/2002	< 5.0	320	59	648
7/18/2002	< 5.0	586	55	622
8/1/2002	< 5.0	470	49	502
SLATE RUN (HUC 020)				
RM 4.10 SLATE RUN AT TOWN LINE RD - (K01S03)				
6/22/1998		494	47	439
7/6/1998		269	45	486
7/20/1998		915	33	353
8/3/1998		< 200	40	470
8/18/1998		< 200	33	359

Table E-1. Huron River Watershed Water Quality Data

DATE	P70508	P1105	P1007	P1082
6/20/2002	< 5.0	336	42	531
7/2/2002	< 5.0	396	51	578
RM 10.42 SLATE RUN AT SECTION LINE RD - (K01W16)				
6/22/1998		314	53	738
7/6/1998		275	48	772
7/20/1998		2310	41	443
8/3/1998		< 200	49	787
8/18/1998		< 200	41	640
EAST BRANCH MUD RUN (HUC 020)				
RM 1.38 E BR MUD RUN AT N GREENFIELD RD - (K01W15)				
6/22/1998		502	56	729
7/6/1998		556	49	723
7/20/1998		1990	48	485
8/3/1998		548	50	770
8/18/1998		308	49	801
WEST BRANCH MUD RUN (HUC 020)				
RM 0.53 W BR MUD RUN AT TR 197 (ZOHR RD) - (K01W14)				
6/22/1998		< 200	55	641
7/6/1998		206	51	656
7/20/1998		410	47	552
8/3/1998		257	57	702
8/18/1998		221	52	687
WEST BRANCH HURON RIVER (HUC 010)				
RM 16.59 W BR HURON R AT SNYDER RD - (K01W17)				
6/22/1998		347	70	484
7/6/1998		823	60	395
7/20/1998		306	65	574
8/3/1998		203	60	512
8/18/1998		239	61	493
RM 22.73 W BR HURON R AT BAUMAN RD - (K01P05)				
6/22/1998		293	72	529
7/6/1998		660	59	405
7/20/1998		433	69	608
8/3/1998		< 200	62	520
8/18/1998		< 200	59	516
RM 29.18 W BR HURON R AT SR 162 - (K01W18)				
6/22/1998		381	67	400
7/6/1998		593	60	341
7/20/1998		231	69	496
8/3/1998		< 200	61	424
8/17/1998		262	60	394
9/2/1998		269	59	343
RM 35.33 W BR HURON R AT GREEN BUSH RD - (K01G12)				
6/17/2002	< 5.0	594	72	483
7/1/2002	< 5.0	696	87	536
7/15/2002	< 5.0	319	88	552

Huron River Watershed TMDLs

Table E-1. Huron River Watershed Water Quality Data

DATE	P70508	P1105	P1007	P1082
7/30/2002	< 5.0	272	91	561
8/12/2002	< 5.0	239	92	556
9/3/2002	< 5.0	370	84	579
RM 36.26 W BR HURON R AT KLEIN RD - (K01S28)				
6/22/1998		413	67	419
7/6/1998		758	51	283
7/20/1998		315	75	581
8/3/1998		< 200	64	517
8/17/1998		273	59	419
9/2/1998		419	53	297
RM 38.40 W BR HURON R AT SKINNER RD - (K01P06)				
6/22/1998		336	69	480
7/6/1998		726	51	306
7/20/1998		< 200	67	624
8/3/1998		< 200	64	560
8/17/1998		403	59	450
9/2/1998		426	52	321
6/17/2002	< 5.0	< 200	63	622
7/1/2002	< 5.0	< 200	74	710
7/15/2002	< 5.0	316	73	734
7/30/2002	< 5.0	294	68	748
8/12/2002	< 5.0	< 200	58	716
9/3/2002	< 5.0	< 200	59	764
RM 40.35 W BR HURON R AT PLYMOUTH EAST RD - (K01S29)				
6/17/2002	< 5.0	243	69	651
7/1/2002	< 5.0	282	80	746
7/15/2002	< 5.0	221	80	739
7/30/2002	< 5.0	238	84	898
8/12/2002	< 5.0	< 200	78	778
9/3/2002	< 5.0	< 200	73	831
RM 42.23 W BR HURON R AT BASELINE RD - (K01W11)				
6/22/1998		612	68	596
7/6/1998		886	47	312
7/20/1998		308	66	869
8/3/1998		221	62	823
8/17/1998		389	58	545
9/2/1998		678	51	370
RM 47.47 W BR HURON R AT OLD STATE RD - (K01G10)				
6/17/2002	< 5.0	483	68	459
7/1/2002	< 5.0	1400	86	433
7/15/2002	< 5.0	1100	87	440
7/30/2002	< 5.0	1050	87	516
8/12/2002	< 5.0	368	90	349
9/3/2002	< 5.0	362	80	498
HOLIDAY LAKES TRIBUTARY TO W BR HURON R AT RM 23.09 (HUC 010)				
RM 2.97 HOLIDAY LAKES TRIB TO W BR HURON R AT SR 162 - (K01P10)				
6/22/1998		274	43	515
7/6/1998		531	42	430
7/20/1998		1060	57	578

Table E-1. Huron River Watershed Water Quality Data

DATE	P70508	P1105	P1007	P1082
8/3/1998		432	51	457
8/17/1998		575	54	490
9/2/1998		1930	94	495

TRIBUTARY TO HOLIDAY LAKES TRIBUTARY (RM 23.09/2.90) (HUC 010)

RM 0.23 TRIB TO HOLIDAY LAKES TRIB (2.90) AT SR 162 - (K01G22)

6/17/2002	< 5.0	363	52	3020
7/1/2002	< 5.0	< 200	67	5000
7/15/2002	< 5.0	< 200	64	5600
7/30/2002	< 5.0	< 200	60	5880
8/12/2002	< 5.0	< 200	53	6310
9/3/2002	< 5.0	< 200	50	5720

JACOBS CREEK (HUC 010)

RM 0.62 JACOBS CK AT EGYPT RD - (K01P11)

6/22/1998		< 200	82	990
7/6/1998		241	84	1030
7/20/1998		210	98	1080
8/3/1998		< 200	74	1000
8/17/1998		312	81	1020
9/2/1998		213	84	1100

WEST BRANCH JACOBS CREEK (HUC 010)

RM 0.08 WILLARD WWTP 001 EFFLUENT - (K01E01)

6/22/1998		294	20	263
7/6/1998		401	22	260
7/20/1998		340	26	364
8/3/1998		269	20	255
8/17/1998		240	20	247
9/2/1998		422	30	344

RM 0.14 WEST BRANCH JACOBS CK UST WILLARD WWTP (801) - (K01W10)

6/22/1998		< 200	73	889
7/6/1998		< 200	65	841
7/20/1998		310	76	941
8/3/1998		< 200	70	848
8/17/1998		335	75	900
9/2/1998		< 200	84	1070

WALNUT CREEK (HUC 010)

RM 0.98 WALNUT CK AT WALNUT RD - (K01P13)

6/22/1998		< 200	65	487
7/6/1998		262	56	433
7/20/1998		1090	75	629
8/3/1998		< 200	60	488
8/17/1998		281	66	579
9/2/1998		237	55	352

Table E-1. Huron River Watershed Water Quality Data

DATE	P70508	P1105	P1007	P1082
MARSH RUN (HUC 010)				
RM 0.93 MARSH RUN AT SR 598 - (K01P14)				
6/22/1998		269	70	425
7/6/1998		535	72	401
7/20/1998		442	74	463
8/3/1998		542	79	467
8/17/1998		996	86	475
9/2/1998		943	79	438
RM 7.53 MARSH RUN AT KENESTRICK RD - (K01G13)				
6/17/2002	< 5.0	302	57	401
7/1/2002	< 5.0	204	63	437
7/15/2002	< 5.0	< 200	70	520
7/30/2002	< 5.0	< 200	86	622
8/12/2002	< 5.0	210	76	643
9/3/2002	< 5.0	< 200	72	714
MARSH RUN TRIBUTARY AT RM 3.12 (HUC 010)				
RM 0.28 MARSH RUN TRIB (3.12) AT MAY RD - (K01G14)				
6/17/2002	< 5.0	< 200	65	295
7/1/2002	< 5.0	1120	72	378
7/15/2002	< 5.0	382	79	501
7/30/2002	< 5.0	859	77	450
8/12/2002	< 5.0	529	89	531
9/3/2002	< 5.0	540	58	538
SHILOH DITCH (HUC 010)				
RM 0.12 SHILOH DITCH AT PLYMOUTH EAST RD - (K01G09)				
6/17/2002	< 5.0	225	70	514
7/1/2002	< 5.0	606	81	495
7/15/2002	< 5.0	636	95	602
7/30/2002	< 5.0	< 200	104	788
8/12/2002	< 5.0	810	118	729
9/3/2002	< 5.0	< 200	89	716
WEST BRANCH HURON R TRIBUTARY AT RM 41.50 (HUC 010)				
RM 0.11 W BR HURON R TRIB (41.50) AT BASELINE RD - (K01G11)				
6/17/2002	< 5.0	< 200	99	599
7/1/2002	< 5.0	< 200	109	621
7/15/2002	< 5.0	< 200	109	639
7/30/2002	< 5.0	< 200	112	652
8/12/2002	< 5.0	< 200	118	617
9/3/2002	< 5.0	< 200	114	664

Table __E-2. Names of Parameters

STORET	PARAMETER	UNITS
P10	Temperature	C
P1002	Arsenic	ug/L
P1007	Barium	ug/L
P1012	Beryllium	ug/L
P1027	Cadmium	ug/L
P1034	Chromium	ug/L
P1037	Cobalt	ug/L
P1042	Copper	ug/L
P1042LL	Copper, Low Level	ug/L
P1045	Iron	ug/L
P1051	Lead	ug/L
P1055	Manganese	ug/L
P1059	Thallium	ug/L
P1067	Nickel	ug/L
P1077	Silver	ug/L
P1082	Strontium	ug/L
P1087	Vanadium	ug/L
P1092	Zinc	ug/L
P1097	Antimony	ug/L
P1102	Tin	ug/L
P1105	Aluminum	ug/L
P1147	Selenium	ug/L
P1152	Titanium	ug/L
P1220	Hexavalent Chromium	ug/L
P299	D.O.	mg/L
P310	BOD5	mg/L
P31616	Fecal Coliform	#/100ml
P31648	E.coli	#/100ml
P31679	Fecal Streptococcus	#/100ml
P319	BOD_ULT	mg/L
P324	BOD20	mg/L
P32730	Phenolics	ug/L
P340	COD	mg/L
P34010	Toluene	ug/L
P400	pH - Field	S.U.
P403	pH - Lab	S.U.
P410	Alkalinity	mg/L

STORET	PARAMETER	UNITS
P500	Total Solids	mg/L
P530	Total Suspended Solids	mg/L
P556	Oil & Grease	mg/L
P61	Flow	cfs
P610	Ammonia	mg/L
P615	Nitrite	mg/L
P625	TKN	mg/L
P630	Nitrate+nitrite	mg/L
P65	Gage	feet
P665	Total Phosphorus	mg/L
P665LL	Total Phosphorous, Low	ug/L
P666	Total Phosphorous,	mg/L
P680	TOC	mg/L
P70300	Total Dissolved Solids	mg/L
P70508	Acidity	mg/L
P718	Cyanide, Free	ug/L
P71900	Mercury	ug/L
P720	Cyanide, Total	ug/L
P80082	CBOD5	mg/L
P80087	CBOD20	mg/L
P82079	Turbidity	ntu
P900	Hardness, Total	mg/L
P916	Calcium	mg/L
P927	Magnesium	mg/L
P929	Sodium	mg/L
P937	Potassium	mg/L
P94	Conductivity, field	umhos/cm
P940	Chloride	mg/L
P945	Sulfate	mg/L
P95	Conductivity @ 25C	umhos/cm
P951	Fluoride	mg/L
QCOLIF	QTRAY (Total Coliform)	#/100ml
QECOCC	QTRAY (E.coccus)	#/100ml
QECOLI	QTRAY (E.coli)	#/100ml
VOLSOL	Total Volatile Solids	mg/L

APPENDIX F. SEDIMENT CHEMISTRY DATA

Table F-1. Dry weight concentrations (mg/kg or ppm) of metals in sediment samples from the Huron River Basin study area, 2002. Metal concentrations are evaluated using the Ohio specific sediment reference values (OEPA, 2003) for the HELP and ECBP Ecoregions and were also compared to published consensus-based sediment quality guidelines (McDonald, Ingersoll and Berger 2000).

Parameter	ECOREGION					
	EASTERN CORN BELT PLAINS (ECBP)					HURON ERIE LAKE PLAINS (HELP)
	E Br Huron R at Hanville Corners Rd (RM 19.11)	E Br Huron R at Brown Rd (RM 6.85)	W Br Huron R at Skinner Rd (RM 38.40)	W Br Huron R at Lamereaux Rd (RM 3.67)	E Br Huron R Tributary at State Rd (RM 1.05)	Huron R dst East & West Branches (RM 14.65)
Solids (%)	54.1%	%	58.7%	67.3%	59.8%	55.6%
TOC (%)	3.2%	2.6%	3.6%	5.5%	3.2%	5.1%
Aluminum	15600	30700	16300	17900	20200	29300
Arsenic	7.33	18.2 ^{*a}	7.56	7.81	9.56	15.3 [*]
Barium	94.8	201	104	109	117	209
Cadmium	0.472	0.757	0.323	0.232	0.469	0.283
Chromium	19	38	19	18	24	32
Copper	12.3	29.4	12.3	10	19	17.8
Iron	15400	37600 [*]	16500	13200	17200	24600
Lead	<26	<46 ^a	<23	<20	<24	<24
Manganese	329	572	226	369	390	464
Mercury	<0.037	<0.050	<0.034	<0.030	0.035	<0.026
Nickel	<26 ^a	<46 ^{*a}	<23 ^a	<20	<24 ^a	25 ^a
Selenium	<1.27	<2.29	<1.15	<1.01	<1.17	1.53
Strontium	50	88	48	86	32	100
Zinc	77.2	174 ^{*a}	77.1	68.4	93.7	102
Calcium	45200	46100	15400	35700	7540	49500
Magnesium	9050	12200	5880	3550	3590	12900
Potassium	4340	9190	4900	4870	5260	9760
Sodium	<3190	<5730	<2890	<2520	<2930	<2950

^a Exceeds the consensus-based threshold effects concentration (TEC): concentrations **below** the TEC provide an accurate basis for predicting the absence of toxicity. (McDonald, Ingersoll and Berger 2000).

^b Exceeds the consensus-based probable effects concentration (PEC): concentrations **above** the PEC provide an accurate basis for predicting sediment toxicity. (McDonald, Ingersoll and Berger 2000).

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Table F-2. Results of analyses for organic compounds in sediment samples from the Huron River Basin study area, 2002. BNAs (including PAHs) were analyzed using Method 8270 (mg/kg or ppm) . Pesticides and PCBs were analyzed using Method 8081/8082A (ug/kg or ppb). Only compounds that were detected are listed. Concentrations were compared to published consensus-based sediment quality guidelines (McDonald, Ingersoll and Berger 2000).

Parameter	ECOREGION					HURON ERIE LAKE PLAINS (HELP)
	EASTERN CORN BELT PLAINS (ECBP)					
	E Br Huron R at Hanville Corners Rd (RM 19.11)	E Br Huron R at Brown Rd (RM 6.85)	W Br Huron R at Skinner Rd (RM 38.40)	W Br Huron R at Lamereaux Rd (RM 3.67)	E Br Huron R Tributary ust New State Rd (RM 1.05)	
TOC (%)	3.2%	2.6%	3.6%	5.5%	3.2%	5.1%
<u>Method 8260B (mg/kg)</u>						
Acetone	–	0.099	–	–	–	–
<u>Method 8270 (mg/kg)</u>						
Number of Tentatively Identified Compounds	7	7	10	10	8	8
<u>Method 8081/8082A (ug/kg)</u>						
4,4'-DDD	–	–	–	–	16.1 ^b	–
4,4'-DDE	16.0 ^a	–	–	–	85.9 ^b	–
4,4'-DDT	–	–	–	–	38.3 ^a	–
Total DDTs	16.0 ^a	–	–	–	140.3 ^a	–
Dieldrin	–	–	–	–	10.2 ^a	–
Endosulfan II	–	–	–	–	21.5	–
Endosulfan sulfate	11.4	–	–	–	51.7	–
PCB-1254	–	–	–	–	–	129
Total PCBs	–	–	–	–	–	129 ^a

Table F-3. Results of pesticide analyses in additional sediment samples collected from the East Branch Huron River and the unnamed tributary in the North Fairfield area in 2003. Pesticides were analyzed using Method 8082A (ug/kg or ppb). Only compounds that were detected are listed. Concentrations were compared to published consensus-based sediment quality guidelines (McDonald, Ingersoll and Berger 2000).

Parameter	ECOREGION					
	EASTERN CORN BELT PLAINS (ECBP)					
	E Br Huron R Tributary ust New State Rd (RM 1.05)	E Br Huron R Tributary dst lagoon (RM)	E Br Huron R Tributary adj orchard ust lagoon (RM)	E Br Huron R Tributary at Old State Rd (RM)	E Br Huron R ust unnamed Tributary (RM)	E Br Huron R dst unnamed Tributary (RM)
TOC (%)	1.4%	1.8%	2%	2.5%	1.9%	1.6%
<u>Method 8082A (ug/kg)</u>						
4,4'-DDD	8.0 ^a	–	18.4 ^a	–	–	–
4,4'-DDE	27.7 ^a	13.6 ^a	–	14.4 ^a	–	–
4,4'-DDT	18.2 ^a	–	–	6.3 ^a	–	–
Total DDTs	53.9 ^a	13.6 ^a	18.4 ^a	20.7 ^a	–	–
Endosulfan sulfate	5.7	–	–	9.9	–	–

APPENDIX G. AQUATIC LIFE ATTAINMENT STATUS

Table G-1. Aquatic life attainment status based on data collected in 1998–2002.						
River Mile	Mod.			Attainment		
Fish/Macro.	IBI	Iwb	ICl ^b	QHEI	Status ^a	Comments
<u>Assessment Unit (AU) 1: West Br. Huron River - Upper basin; headwaters to ust. Slate Run</u>						
West Branch Huron River 2002						
<i>Eastern Corn Belt Plain–WWH Aquatic Life Use Designation (Existing)</i>						
47.5 ^(H) /47.6	38 ^{ns}	NA	F*	45.0	PARTIAL	Old State Rd.
40.4 ^(H) /40.1	37 ^{ns}	NA	44	73.5	FULL	Ust. Plymouth WWTP-Plymouth E. Rd.
38.4 ^(W) /38.5	<u>27</u> *	<u>4.9</u> *	16*	65.0	NON	Dst. Plymouth WWTP at Skinner Rd.
35.3 ^(W) /35.2	44	7.8 ^{ns}	40	66.5	FULL	Dst. Marsh Run at Green Bush Rd.
16.6 ^(W) /16.6	34*	8.3 ^{ns}	VG	75.5	PARTIAL	Snyder Rd.
AU 2: West Branch Huron River - Lower Basin; Slate Run to mouth						
7.7 ^(W) /7.7 ^R	51	10.1	48	67.5	FULL	Ust. Monroeville WWTP at River Rd.
3.7 ^(W) /3.5 ^R	46	9.5	E	61.0	FULL	Lamereaux Rd.
West Branch Huron River 1998						
42.2 ^(H) /42.1	38 ^{ns}	NA	56	77.0	FULL	Ust. Plymouth WWTP at Baseline Rd.
38.4 ^(W) /38.5	28*	<u>5.3</u> *	52	75.0	NON	Dst. Plymouth WWTP at Skinner Rd.
36.3 ^(W) /36.3	35*	7.7*	54	74.0	PARTIAL	Ust. Marsh Run, adj. SR 61
29.2 ^(W) /29.2	49	9.0	54	86.0	FULL	Dst. Marsh Run at SR 162
22.7 ^(W) /22.9	38 ^{ns}	7.2*	46	57.5	PARTIAL	Bauman Rd.(channel modified)
16.6 ^(W) /16.6	39 ^{ns}	8.8	54	76.0	FULL	Snyder Rd.
AU 2: West Branch Huron River - Lower Basin; Slate Run to mouth						
10.5 ^(W) /10.5	48	9.1	E	78.5	FULL	Standardsburg Rd.
7.7 ^(W) /7.7 ^R	46	8.8	E	62.0	FULL	Ust. Monroeville WWTP at River Rd.
7.0 ^(W) /6.3	43	9.0	E	74.5	FULL	Dst. Monroeville WWTP

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Table G-1. Aquatic life attainment status based on data collected in 1998–2002.						
River Mile Fish/Macro.	Mod.			Attainment		
	IBI	lwb	IC ^b	QHEI	Status ^a	Comments
3.7 ^(W) /3.6 ^R	41	8.1 ^{ns}	E	59.0	FULL	Lamereaux Rd.
Shiloh Ditch, (i.e., Tributary to West Branch Huron River @ 48.05) (2002)						
<i>Eastern Corn Belt Plain–MWH Aquatic Life Use Designation (Recommended)</i>						
0.1 ^(H) /0.2	30*	NA	F*	41.5	PARTIAL	Plymouth East Rd.
Tributary to West Branch Huron River @ RM 41.50 (2002)						
<i>Eastern Corn Belt Plain–WWH Aquatic Life Use Designation (Recommended)</i>						
0.1 ^(H) /0.3	36 ^{ns}	NA	MG ^{ns}	48.5	FULL	Baseline Rd.
Marsh Run (2002)						
<i>Eastern Corn Belt Plain–WWH Aquatic Life Use Designation (headwaters) (Existing)</i>						
7.9 ^(H) /7.9	30*	NA	MG ^{ns}	52.5	PARTIAL	Kenestrick Rd.
<i>Eastern Corn Belt Plain–MWH Aquatic Life Use Designation (Celeryville area) (Recommended)</i>						
3.7 ^(H) /3.7	<u>26</u> *	NA	<u>VP</u> *	41.0	NON	Buckingham Rd.
Marsh Run (1998)						
<i>Eastern Corn Belt Plain–WWH Aquatic Life Use Designation (lower mile) (Existing)</i>						
0.2 ^(W) /0.2	<u>26</u> *	6.5*	F*	60.0	NON	SR 61
Tributary to Marsh Run @ RM 3.12 (2002)						
<i>Eastern Corn Belt Plain–MWH Aquatic Life Use Designation (Recommended)</i>						
0.3 ^(H) /0.3	36	NA	<u>P</u> *	36.5	PARTIAL	May Rd.
Walnut Creek 1998						
<i>Eastern Corn Belt Plain–WWH Aquatic Life Use Designation (Existing)</i>						
1.0 ^(H) /1.3	46	NA	VG	51.5	FULL	Walnut Rd.
West Branch Jacobs Creek (1998)						
<i>Eastern Corn Belt Plain–WWH Aquatic Life Use Designation (Existing)</i>						
0.2 ^(H) / --	<u>22</u> *	NA	--	62.0	(NON)	Ust. Willard WWTP
East Branch Jacobs Creek (1998)						
<i>Eastern Corn Belt Plain–WWH Aquatic Life Use Designation (Existing)</i>						
-- /0.2	--	--	F*	--	(NON)	Ust. West Branch at Townline Rd.
Jacobs Creek (1998)						

Table G-1. Aquatic life attainment status based on data collected in 1998–2002.						
River Mile Fish/Macro.	Mod.			Attainment		
	IBI	lwb	IC ^b	QHEI	Status ^a	Comments
<i>Eastern Corn Belt Plain–WWH Aquatic Life Use Designation (Existing)</i>						
0.6 ^(H) /0.6	<u>20</u> *	NA	F*	50.0	NON	Dst. Willard WWTP at Egypt Rd.
Holiday Lake Trib.(i.e., West Branch Tributary @ RM 23.09) (1998)						
<i>Eastern Corn Belt Plain–WWH Aquatic Life Use Designation (Existing)</i>						
3.0 ^(H) /3.0	<u>26</u> *	NA	F*	74.5	NON	Dst. Holiday Lake at SR 162
Unnamed Tributary to Holiday Lake Trib. @ RM 23.09/2.8 (2002)						
<i>Eastern Corn Belt Plain–WWH Aquatic Life Use Designation (Recommended)</i>						
0.3 ^(H) /0.4	28*	NA	F*	72.5	NON	SR 162
<u>Assessment Unit 2: West Branch Huron River - Lower Basin; Slate Run to mouth</u>						
Slate Run (2002)						
<i>Eastern Corn Belt Plain–WWH Aquatic Life Use Designation (Existing)</i>						
4.1 ^(W) /4.1 ^R	35*	8.3 ^{ns}	<u>P</u> *	54.5	NON	Townline Rd. (intermittent)
Slate Run (1998)						
<i>Eastern Corn Belt Plain–WWH Aquatic Life Use Designation</i>						
10.4 ^(H) /10.4	40	NA	MG ^{ns}	75.0	FULL	Section Line Rd.
4.1 ^(W) /4.1	28*	8.2 ^{ns}	44	54.5	PARTIAL	Townline Rd.
East Branch Mud Run (1998)						
<i>Eastern Corn Belt Plain–WWH Aquatic Life Use Designation (Existing)</i>						
1.4 ^(H) /1.4	<u>22</u> *	NA	F*	43.0	NON	Northgreenfield Rd.
West Branch Mud Run (1998)						
<i>Eastern Corn Belt Plain–WWH Aquatic Life Use Designation (Existing)</i>						
0.6 ^(H) /0.6	40	NA	F*	57.5	PARTIAL	TR 197
Frink Run (1998)						
<i>Eastern Corn Belt Plain–WWH Aquatic Life Use Designation (Existing)</i>						
– /11.7	–	–	MG ^{ns}	–	(FULL)	Bismark Rd.
0.1 ^(W) /0.1	44	7.8 ^{ns}	MG ^{ns}	59.5	FULL	SR 99
Tributary to Frink Run @ RM 5.83 (2002)						
<i>Eastern Corn Belt Plain–MWH Aquatic Life Use Designation (Recommended)</i>						

Huron River Watershed TMDLs

Table G-1. Aquatic life attainment status based on data collected in 1998–2002.						
River Mile Fish/Macro.	Mod.			Attainment		
	IBI	lwb	ICl ^b	QHEI	Status ^a	Comments
4.3 ^(H) /4.2	28	NA	P*	43.0	PARTIAL	Bismark Rd.(nearly intermittent)
Megginson Creek (1998)						
<i>Huron Erie Lake Plain–WWH Aquatic Life Use Designation (Recommended)</i>						
0.6 ^(H) /0.6	32	NA	MG ^{ns}	61.0	FULL	Sand Hill Rd.
Seymour Creek (1998)						
<i>Huron Erie Lake Plain–WWH Aquatic Life Use Designation (Recommended)</i>						
0.1 ^(H) / –	40	NA	–	60.0	FULL	Lamereaux Rd.
Clayton Ditch (2002)						
<i>Huron Erie Lake Plain–MWH Aquatic Life Use Designation (Recommended)</i>						
4.1 ^(H) /4.1	38	NA	F	34.5	FULL	Strecker Rd.
<i>Huron Erie Lake Plain–WWH Aquatic Life Use Designation (Recommended)</i>						
0.1 ^(H) /0.1	40	NA	MG ^{ns}	58.0	FULL	At mouth
Assessment Unit 3: Huron River and East Branch Huron River basins-headwaters to Lake Erie						
East Branch Huron River (2002)						
<i>Eastern Corn Belt Plain–WWH Aquatic Life Use Designation (Existing)</i>						
24.6 ^(H) /24.7	41	NA	P*	64.0	NON	Old State Rd.(intermittent)
21.0 ^(H) /21.0	38 ^{ns}	NA	MG ^{ns}	66.0	FULL	SR 162
19.1 ^(H) /19.1	42	NA	P*	71.0	NON	Hanville Corners Rd.(Dst. fish kill)
13.7 ^(W) /13.7	44	8.8	VG	78.0	FULL	Geiger Rd.
6.8 ^(W) /6.9	46	8.9	50	56.0	FULL	Ust. Norwalk Creek at Brown Rd.
East Branch Huron River (1998)						
24.6 ^(H) /24.7	30*	NA	44	70.5	PARTIAL	Old State Rd.
21.0 ^(H) /21.0	34*	NA	50	46.5	PARTIAL	SR 162
13.7 ^(W) /13.7	40	7.5*	E	80.0	PARTIAL	Geiger Rd.
6.8 ^(W) /6.9	36 ^{ns}	7.1*	E	60.0	PARTIAL	Ust. Norwalk Creek at Brown Rd.
<i>Huron Erie Lake Plain–WWH Aquatic Life Use Designation</i>						

Table G-1. Aquatic life attainment status based on data collected in 1998–2002.						
River Mile Fish/Macro.	Mod.			Attainment		
	IBI	lwb	ICP ^b	QHEI	Status ^a	Comments
1.5 ^(W) /1.5	45	9.0	VG	58.5	FULL	Jacob Rd.
Tributary to East Branch Huron River @ RM 19.98 (2002)						
<i>Eastern Corn Belt Plain–WWH Aquatic Life Use Designation (Recommended)</i>						
1.0 ^(H) /1.0	14*	NA	<u>VP</u> *	73.0	NON	New State Rd. (Fish Kill)
Cole Creek (1998)						
<i>Eastern Corn Belt Plain–WWH Aquatic Life Use Designation (Existing)</i>						
4.9 ^(H) /5.0	42	NA	VG	62.0	FULL	New State Rd.
0.2 ^(W) /0.1	42	8.5	VG	58.5	FULL	SR 61
Tributary to Cole Creek @ RM 2.36 (2002)						
<i>Eastern Corn Belt Plain–WWH Aquatic Life Use Designation (Recommended)</i>						
0.4 ^(H) /0.4	42	NA	G	69.5	FULL	Ridge Rd
Norwalk Creek (1998)						
<i>Eastern Corn Belt Plain–WWH Aquatic Life Use Designation (Existing)</i>						
6.7 ^(H) /5.5	<u>26</u> *	NA	F*	74.0	NON	Ust. Laylin Rd.
1.8 ^(H) /1.8	28*	NA	F*	53.5	NON	Dst Reservoirs/CSOs at S. Pleasant St.
0.2 ^(W) /0.1	38 ^{ns}	7.7*	G	66.0	PARTIAL	SR 61
Tributary to Norwalk Creek @ RM 0.38 (2002)						
<i>Eastern Corn Belt Plain–WWH Aquatic Life Use Designation (Recommended)</i>						
1.6 ^(H) /1.6	42	NA	G	71.5	FULL	Ridge Rd.
Huron River (2002)						
<i>Huron Erie Lake Plain–WWH Aquatic Life Use Designation (Existing) Riverine</i>						
14.5 ^(W) /14.3 ^R	52	10.0	E	75.0	FULL	Milan Wildlife Area (Post Dam)
Huron River (1998)						
<i>Huron Erie Lake Plain–WWH Aquatic Life Use Designation (Existing)</i>						
14.5 ^(W) /13.0 ^R	46	9.2	48	72.0	FULL	Milan Wildlife Area (Ref. Site)

Huron River Watershed TMDLs

Table G-1. Aquatic life attainment status based on data collected in 1998–2002.						
River Mile	Mod.			Attainment		
Fish/Macro.	IBI	lwb	ICI^b	QHEI	Status^a	Comments
12.3 ^(W) /12.3	46	8.3	54	64.5	FULL	Ust. Milan WWTP at SR 601
11.9 ^(W) /11.6	45	8.3	VG	74.0	FULL	Dst. Milan WWTP
<i>Huron Erie Lake Plain – WWH Aquatic Life Use Designation (Existing) Lacustuary</i>						
9.8 ^(B) /10.0	<u>30</u> *	8.0*	VG	–	NON	US 80 (Turnpike)
6.5 ^(B) /6.6	<u>29</u> *	8.0*	32 ^{ns}	–	NON	Adj. Norfolk & Western RR
3.2 ^(B) /3.2	<u>27</u> *	8.3 ^{ns}	34	–	NON	Upstream SR 2
2.9 ^(B) / –	<u>19</u> *	8.0*	–	–	(NON)	At SR 2
0.6 ^(B) /0.5	<u>29</u> *	7.8*	<u>16</u> *	–	NON	Dst. Huron Basin WWTP at US 6
0.2 ^(B) /0.2	<u>28</u> *	7.4*	38	–	NON	Near Mouth
Rattlesnake Creek 1998						
<i>Huron Erie Lake Plain–WWH Aquatic Life Use Designation (Existing)</i>						
2.6 ^(H) /2.4	42	NA	VG	84.0	FULL	Ust. W.Br. at Shaw Mill Rd.
0.2 ^(H) /0.2	54	NA	MG ^{ns}	69.5	FULL	Dst. W.Br. at mouth
West Branch Rattlesnake Creek 1998						
<i>Huron Erie Lake Plain–WWH Aquatic Life Use Designation (Existing)</i>						
2.4 ^(H) /2.4	32	NA	F*	41.0	PARTIAL	Ust. Norwalk WWTP
1.4 ^(H) /1.4	50	NA	F*	65.5	PARTIAL	Dst. Norwalk WWTP at Lais Road
Village Creek 2002						
<i>Huron Erie Lake Plain–WWH Aquatic Life Use Designation (Recommended)</i>						
1.1 ^(H) /1.0	48	NA	G	54.5	FULL	Berlin St.
* Significant departure from ecoregion biocriterion; poor and very poor results are underlined.						
^{ns} Nonsignificant departure from biocriterion (≤ 4 IBI or ICI units; ≤ 0.5 Mlwb units).						
^a Use attainment status based on one organism group is parenthetically expressed.						
^b Narrative evaluation based on qualitative benthic macroinvertebrate sample (E-Exceptional, VG-Very Good, G-good, MG-Marginally Good, F-Fair, P-Poor, and VP-Very Poor).						
H Headwater site type (drainage area ≤ 20 square miles).						
W Wading site type.						
B Boat site type.						

Table G-1. Aquatic life attainment status based on data collected in 1998–2002.							
River Mile	Mod.			Attainment			
Fish/Macro.	IBI	lwb	ICI ^b	QHEI	Status ^a	Comments	
R Regional Reference Site							
Note: The table reflects the aquatic life attainment status for the existing and recommended use designations of the Huron River study area (HUC Assessment Units 1, 2, and 3).							
Biological Criteria: (OAC 3745-1-07, Table 7-14)							
Eastern Corn Belt Plains (ECBP)				Huron Erie Lake Plain (HELP)			
<u>INDEX - Site Type</u>	<u>WWH</u>	<u>EWB</u>	<u>MWH^d</u>	<u>INDEX - Site Type</u>	<u>WWH</u>	<u>EWB</u>	<u>MWH^d</u>
IBI - Headwater/Wading	<u>40</u>	50	24	IBI - Headwater	28	50	20
MIwb - Wading	<u>8.3</u>	9.4	6.2	IBI - Wading	32	50	22
ICI	<u>36</u>	46	22	MIwb - Wading	7.3	9.4	5.6
				ICI	34	46	22
Interim Lacustrary Biocriteria: Huron Erie Lake Plain (HELP) (Ohio EPA 1999a,b)							
	<u>INDEX - Site Type</u>	<u>WWH</u>	<u>EWB</u>	<u>MWH^d</u>			
	IBI - Boat	36	50	24			
	MIwb - Boat	8.6	9.4	6.2			
	ICI	34	46	22			
^d - Modified Warmwater Habitat for channelized habitats/impounded habitats.							

APPENDIX H. QUALITATIVE HABITAT EVALUATION INDEX (QHEI) COMPONENTS AND SCORES

QHEI Components and Scores		
Component	Example values	Points ^a
<i>1. Substrate</i>		<i>Max 20</i>
Type	Boulder, sand, silt	0 to 20
Number	More or less than 4 types	0 to 2
Quality	Silt heavy, moderate, free	-2 to 1
Origin	Limestone, shale, wetlands	-2 to 1
Embeddedness	Rocks difficult to remove from sediment	-2 to 1
<i>2. In-stream Cover</i>		<i>Max 20</i>
Type	Rootmats, boulders, backwaters	0 to 9
Amount	Extensive, moderate, sparse	1 to 11
<i>3. Channel Morphology</i>		<i>Max 20</i>
Sinuosity	High, moderate, low, none	1 to 4
Development	Excellent to poor pool-riffle complexes	1 to 7
Channelization	None, recovering, no recovery	1 to 6
Stability	High, moderate, low bank erodibility	1 to 3
<i>4. Riparian Zone and Bank Erosion</i>		<i>Max 10</i>
Riparian Width	Wide, narrow, none	0 to 4
Flood Plain Quality	Forest, urban, rowcrop	0 to 3
Bank Erosion	None, moderate, severe	1 to 3
<i>5. Pool/Glide and Riffle/Run Quality</i>		<i>Max 20</i>
Pool Max Depth	>1m, 0.4-0.7m, <0.2m	0 to 6
Riffle Depth	Best areas >10cm, 5-10cm, <5cm	0 to 2
Run Depth	Max > 50 or < 50	1 to 2
Morphology	Pool width compared to riffle width	0 to 2
Current velocity	Eddies, interstitial, fast	-2 to 4
Riffle/Run Substrate	Stable (cobble), unstable (sand)	0 to 2
Riffle/Run Embeddedness	None, extensive, moderate	-1 to 2

Huron River Watershed TMDLs

QHEI Components and Scores		
Component	Example values	Points^a
6. <i>Gradient</i> - score based on stream width, drainage area, and slope		<i>Max 10</i>

^a Several of the metrics can "overscore" slightly the value that is listed as the maximum for the metric. For substrate, if a site receives a score of 25, the score for that metric is limited to 20. Limiting the scoring is done to ensure all substrate types can be represented in scoring without "inflating" a particular metric that can result in a higher QHEI score than is justified by the available habitat..

**APPENDIX I. D.O. MODELING RESULTS FOR THE PLYMOUTH
WWTP**

Inter-Office Communication

To: Walter Ariss, NWDO Date: 09/30/04

From: Keith Orr, WQ Modeling

Subject: D.O. Modeling Results for the Plymouth WWTP

Per your request, we have evaluated the proposed Plymouth WWTP limits to protect for ammonia toxicity and the D.O. WQS. The WWTP consists of two continuous flow lagoons with a design flow of 0.235 MGD that discharges to the West Branch of Huron River downstream of Plymouth at river mile 38.9. The use designation for the river here is WWH. Currently there are no permit limits for the Plymouth WWTP.

The first step in the analysis was to evaluate NH₃-N toxicity for summer and winter. It was determined that in order to protect aquatic life from ammonia toxicity at the current design flow the summer limits should be set at 1.5 mg/l and the winter limits at 9.2 mg/l.

After the ammonia limits were determined, a Multi-SMP D.O. model was setup using field data from 2003 to compare instream D.O. to the WQS. Once calibrated, inputs in the model were changed to reflect summer low flow and winter low flow conditions. Figure 1 shows the response of the instream D.O. to existing summer low flow conditions assuming the WWTP discharges at design capacity and the maximum allowable NH₃-N, note that D.O. goes to zero. Using the minimum CBOD permit limit and the maximum D.O. concentration permit limit, figure 2 shows the response of instream D.O. to the proposed limits for CBOD₅ (8.0 mg/l), ammonia (1.0 mg/l), and D.O. (7.0 mg/l). Even with these minimum values (maximum for D.O.) the D.O. WQS is exceeded.

Figure 3 shows the D.O. response to existing winter low flow conditions. The D.O. drops below the WQS of 5.0 mg/l. Figure 4 shows the response of instream D.O. to the proposed limits for CBOD₅ (14.0 mg/l), ammonia (9.2 mg/l), and D.O. (5.0 mg/l). The proposed summer and winter limits are listed on Table 1.

Table 1. Proposed Permit Limits (all values in mg/l)

Season	CBOD ₅	NH ₃ -N	D.O.
Summer	8.0	1.0	7.0
Winter	14.0	9.2	5.0

The model simulations assumed plant flows were discharging at design capacity (0.235 MGD). Simulations done at plant flows greater than design show reduced instream D.O. concentrations.

Figure 1. D.O. Response to Existing Summer Conditions with ammonia set to waste load allocation, (CBOD5/NH3-N/D.O. = 29.2/1.5/6.1).

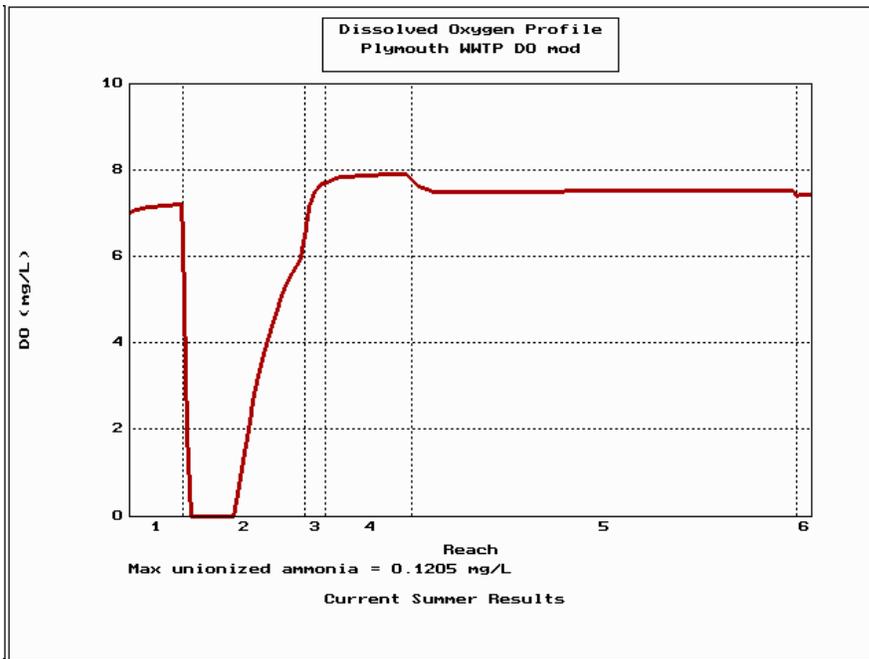


Figure 2. D.O. Response to Proposed Summer Permit Limits, (CBOD5/NH3-N/D.O. = 8/1.0/7.0).

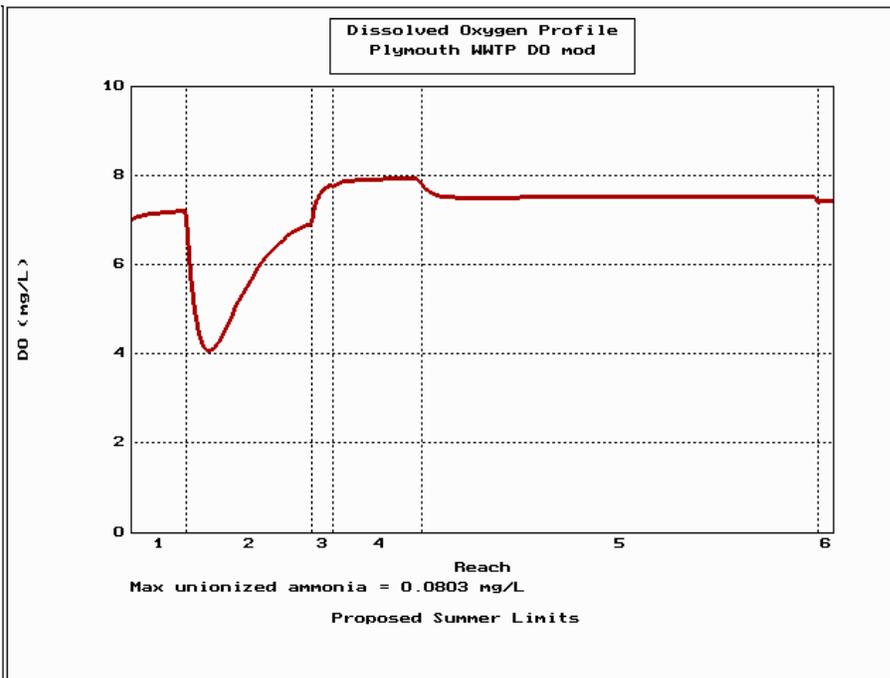


Figure 3. D.O. Response to Current Winter Conditions with ammonia set to waste load allocation, (CBOD5/NH3-N/D.O. = 30.3/9.2/7.4).

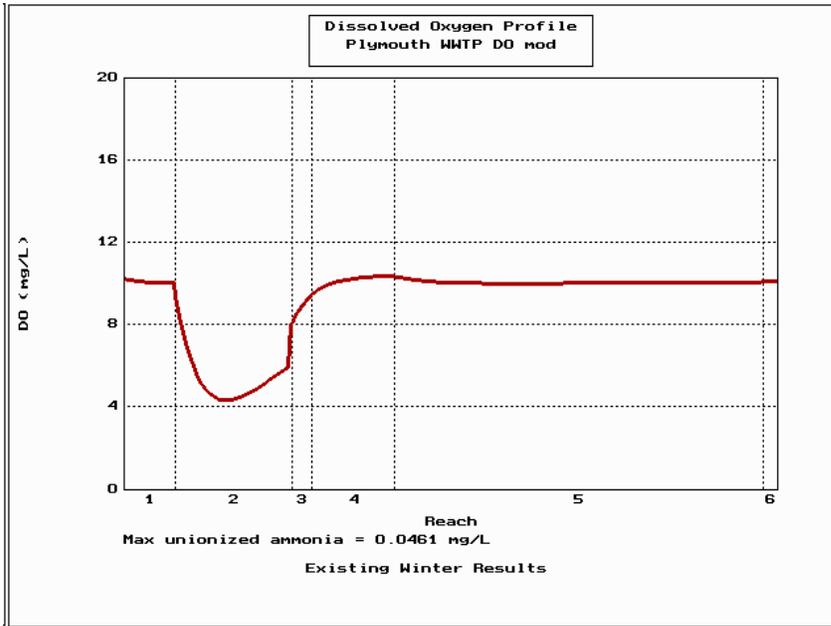
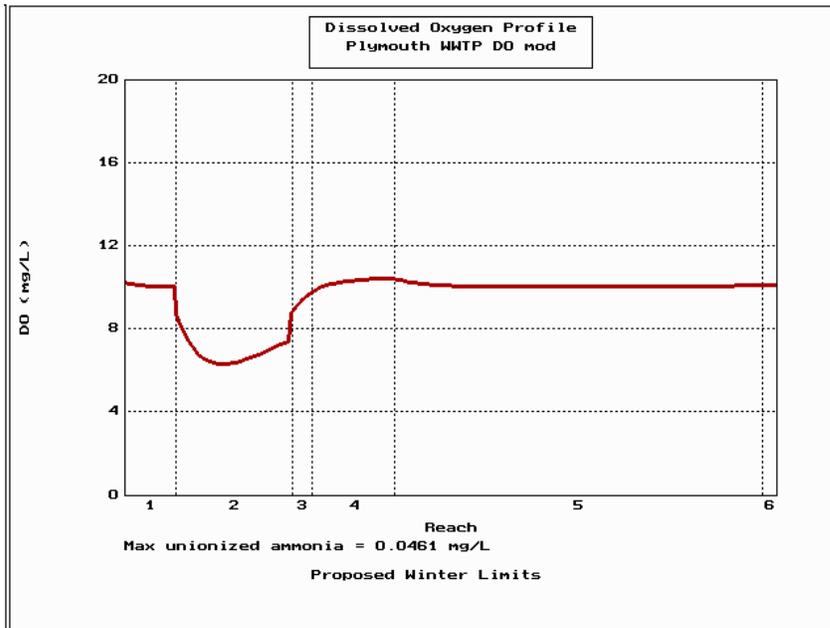


Figure 4. D.O. Response to Proposed Winter Permit Limits, (CBOD5/NH3-N/D.O. = 14/9.2/5.0).



Please let me know if you have any questions or require further information.
cc. M. Osman, M. Smith, E. Wick

APPENDIX J. RESPONSIVENESS SUMMARY TO PUBLIC COMMENTS

All of the comments addressed in this appendix were submitted by Mark Bohne, a citizen living in Milan, Ohio within the Huron River watershed. The comments below have been paraphrased.

Responses to Comments:

1. **Comment:** Chapter Two, Table 7 - “Promises to alleviate environmental problems are usually coupled with the funding necessary to provide the resources for the project. Local government also requires further, responsible legislation before the improvements can occur. For this reason, please remove the statement in paragraph four, ‘These package plants are scheduled for elimination within the next two years.’ Replace it with, ‘Until these waste water plants are replaced by sewer lines (estimated for two to three years), aggressive monitoring and strict adherence to the constraints of the individual NPDES Permits will be required.’”

Response: Ohio EPA does not believe there is any reason to remove the referenced statement. However, the following statement has been added after the referenced sentence: “Ohio EPA will continue to regulate all package plants under the terms and conditions of their NPDES permits until they are abandoned and facilities are connected to the regional sanitary sewer system.”

2. **Comment:** Chapter Two, Mud Brook - “...please remove the statement, ‘Recently, a plan was approved to eliminate the package plant discharges within the next one or two years and the sanitary wastewater will be sent to the Huron Basin WWTP for treatment.’ Replace it with, ‘Until these waste water plants are replaced by sewer lines (estimated for two to three years), aggressive monitoring and strict adherence to the constraints of the individual NPDES Permits will be required.’”

Response: Please see the response to the previous comment. The fourth sentence in the second paragraph under the discussion of Mud Brook in Chapter 2 has been replaced with the following language: “Plans are currently under design by the Erie County Commissioners to extend sanitary sewers to the State Route 250/Mason Road area of the package plants within the next two years. Wastewater would be transported to the Erie County Huron Basin WWTP for treatment. Ohio EPA will continue to regulate all

package plants under the terms and conditions of their NPDES permits until they are abandoned and facilities are connected to the regional sanitary sewer system.”

- 3. Comment:** Chapter Two, Mud Brook - “Please remove the statement in the closing paragraph, ‘The results from sediment sampling indicated little, if any off-site contamination from Erie County Landfill... Aluminum was elevated...and thus, may have reflected background or regional norms.’ With only one sampling year (1998) listed, the data is not sufficient to make such conclusions... The statement should reflect that continued monitoring...should be maintained and further study made to determine the effects of the Erie County Landfill...There is a neighbor...to the Erie County Landfill who lives immediately downstream...at no time was he approached for the opportunity to provide a point of sampling for the purpose of this study.

Response: Since the initial sample indicated no impact or very little impact from the Erie County Landfill, Ohio EPA chose not to conduct additional sampling for the TMDL Report given the limited resources which the Agency has available for sampling activities. However, if you or another individual can provide evidence that the area downstream of the landfill warrants additional scrutiny, Ohio EPA will consider the information. If sample collection is planned, please see the following website address for guidance on collecting samples:

<http://www.epa.state.oh.us/dsw/credibledata/index.html>

Ohio EPA does not believe that the language which you have referenced from Chapter 2 needs to be revised.

- 4. Comment:** Chapter Three, Section 3.2.1 Habitat and Sedimentation, Paragraph 9 - “...the comment, ‘Many of these streams have been modified for agricultural drainage or to prevent flooding and exhibit more severe levels of habitat degradation’ may be incorrect when considering Mud Brook...Mud Brook has remained relatively untouched for the past twenty-five years.”

Response: The sentence which you have referenced has been revised as follows: “Many of these streams, with a notable exception being Mud Brook, have been modified for agricultural drainage...”

- 5. Comment:** Chapter Five, Public Participation - “I am truly amazed that a ‘stakeholder’ group was formed and met within 10 miles of my home and I knew absolutely nothing about it...I see no evidence of the ‘public’ in the ‘Public Participation’ section of this

document...Input from public stakeholders is integral for the successful 'buy-off' of any environmental project. In this area of the report, the project is seriously deficient.”

Response: Ohio EPA compiled interested parties lists from past activities in the watershed. These mailing lists included state agencies, local officials, municipalities, environmental groups and individual citizens requesting to be included in the mailing list. The Agency's goal was an audience from a wide background and we rely on our local partners to distribute this information to their constituents and members.

The Agency agrees that any proposed cleanup solutions must be reasonable (economically and technically), sustainable and locally acceptable. That is why we hold informal stakeholder meetings during our TMDL process. We also were hoping for a larger turnout of individual citizens and farmers at our two stakeholder meetings. Therefore, the Agency provided a news release to announce the draft TMDL report in local papers in the watershed to gain additional citizen comments from interested parties who were unable to attend the previous meetings.

6. Comment: Chapter Six, Section 6.2.3, Package Plants - “While the plan calls for expansion of sewer lines to the area of State Route 250 and Mason Road in 2 to 3 years...nothing has been proposed for the interim period...Until such time as sewers are in place and all package plants are removed, the OEPA should be diligent in enforcing existing regulations...”

Response: The following language has been added to this section: “Ohio EPA will continue to regulate all package plants under the terms and conditions of their NPDES permits until they are abandoned and facilities are connected to the regional sanitary sewer system. When permit compliance issues are discovered, the Agency will work with the owners to bring the plant back into compliance.”

7. Comment: Chapter Six, Section 6.2.3, Package Plants - “More stakeholders would surface if Ohio EPA would print legal advertisements that made sense. They rarely list the physical location of a package plant or a point source...”

Response: The comment refers to public notices of NPDES permit actions rather than the public notice associated with the release of the draft TMDL for this watershed.

With thousands of public notices being published by the Ohio EPA every year, the public noticing system is automated to reserve staff

time for project reviews and other technical work. As a result, notices are very uniform and may not include the full details of projects, whether they be a permit renewal or a proposed sewer extension.

Regarding the address or location of a facility, public notices are required to show both the mailing address for the applicant as well as the physical location of the facility. As opportunity allows, we will look for ways to improve the public noticing system within the resources available.

- 8. Comment:** Chapter Six, Section 6.2.3, Package Plants - "Appendix A of this document [Mark Bohne document] is a listing of the package plants and rated daily capacity. All plants should be listed in this report with their ratings..."

Response: Appendix D of the TMDL Report has been revised to include the design flow for those facilities with permits which have design flows.

- 9. Comment:** General Comments, Industrial Pollution - "The methodology of listing chemical contamination in Appendix E...by 'code name' (e.g., P10, P299, etc.), then expecting the general public to reference a table at the end is asinine...List the actual chemicals on the pages relevant to the tests and leave the 'code names' out."

Response: Ohio EPA agrees that Table E-1 in Appendix E is somewhat difficult to review. The information in this table is extracted directly from a database which uses these code names. Inserting the parameter names would increase the size of the table considerably. As an alternative to your suggestion, the statement at the beginning of Appendix E has been revised as follows:

"Before reviewing this table, it is recommended that Table E-2 on page 57 be printed in order provide the names of parameters designated with code names 'P10', P299', etc."

In Chapter 2 of the report, similar language has been added to a footnote which references Appendix E.

- 10. Comment:** General Comments, Industrial Pollution - "Throughout the document I see an absence of addressing the past environmental misdeeds by industry...Glidden, in Huron, Ohio is one such plant. According to the 2002 TRI, Glidden was responsible for 26,400 pounds of hazardous releases to the environment...Clevite Elastomers... is another source of pollution...Would the Ohio EPA lead us to believe that the Erie County Landfill, Glidden or Clevite pose no threat to the Huron River?..."

Response: The objective of the TMDL Report is to present a biological and chemical assessment of the surface water quality within the watershed, and then propose solutions for restoring those streams segments which are failing to meet the water quality designated uses. Although companies such as Glidden and Clevite Elastomers may be significant sources of pollution according to the TRI, Ohio EPA has no basis or authority to address these issues through the Huron River TMDL unless sampling results show water quality impacts to surface waters from these facilities. Ohio EPA regulates these industrial facilities through several other programs in an effort to ensure that the potential threat for industrial pollution does not become a reality.