

## Hurford Run Subwatershed Action Plan

### **Inventory**

#### **Physical Description**

Hurford Run is a five mile long tributary in the southwest portion of the Nimishillen Creek Watershed draining approximately 8.5 square miles of Stark County. The headwaters are located in Perry Township and flow primarily northeast before merging with the Nimishillen Creek Mainstem at RM 11.5. The only significant tributary to Hurford Run is Domer Ditch which originates in Canton Township. Domer Ditch flows north near Interstate 77 for approximately three miles before joining Hurford Run east of Linwood Road (Figure VII-10).

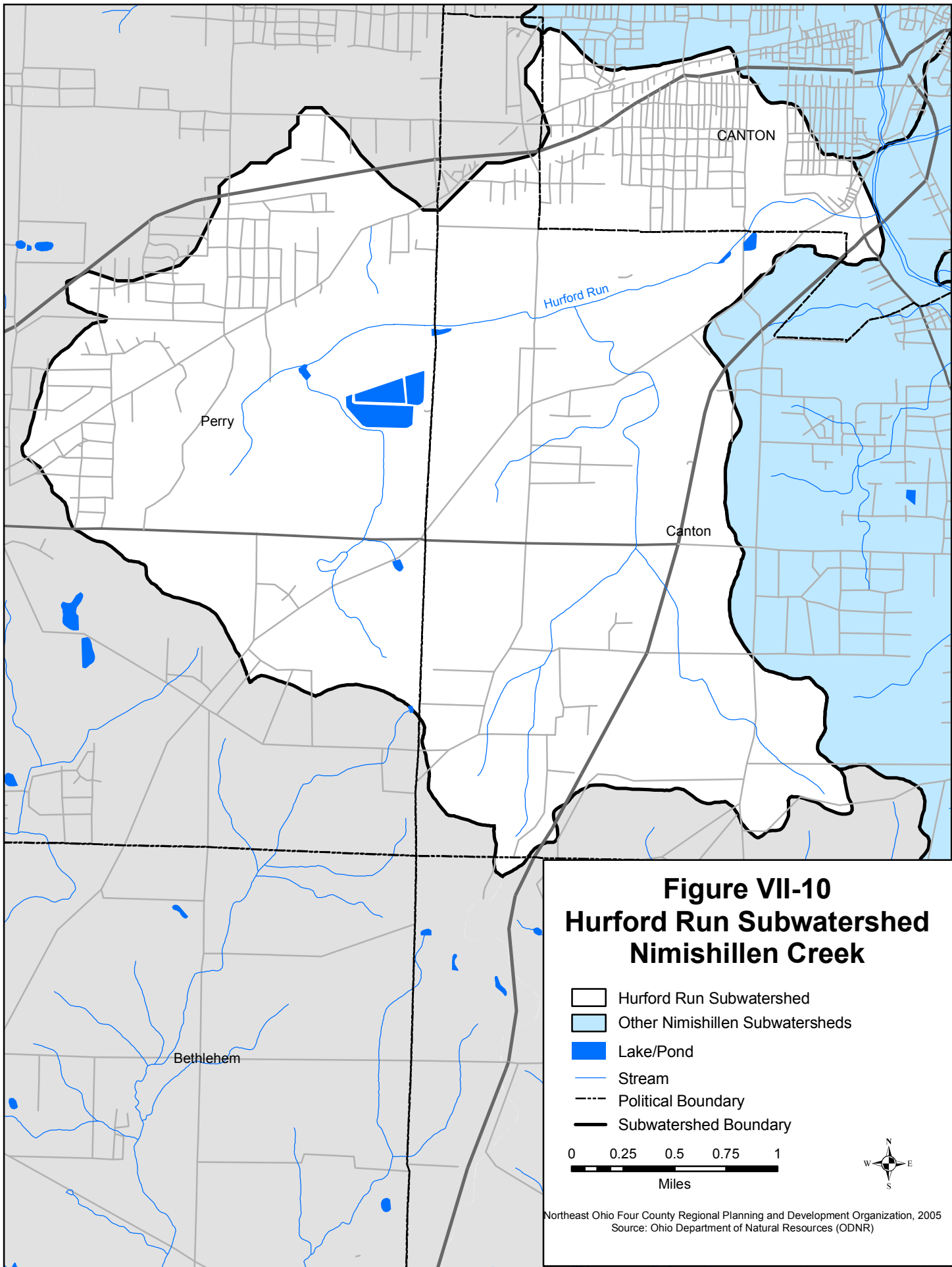
Nearly the entire watershed resides in the unglaciated portion of Stark County (Figure II-5) resulting in moderate relief and generally less than six percent slopes (Figure II-6). The primary soils are the Fitchville-Sebring, the Chili-Wheeling-Shoals, and the Canfield-Wooster associations, typical of glaciated areas in Stark County. Also like other areas in the watershed, most soils in the basin have poor drainage and infiltration properties resulting in poor locations for HSTSs (Figure VI-3). Fortunately, only the headwater areas are without sanitary sewers (Figure VI-4). The bedrock in the area along Domer Ditch is covered by over 60 feet of glacial outwash. In areas not covered by this thick layer of glacial sediment, the primary bedrock types are Brookville Coal, Mercer Limestone, and Middle Kittaning Coal (Figure II-7).

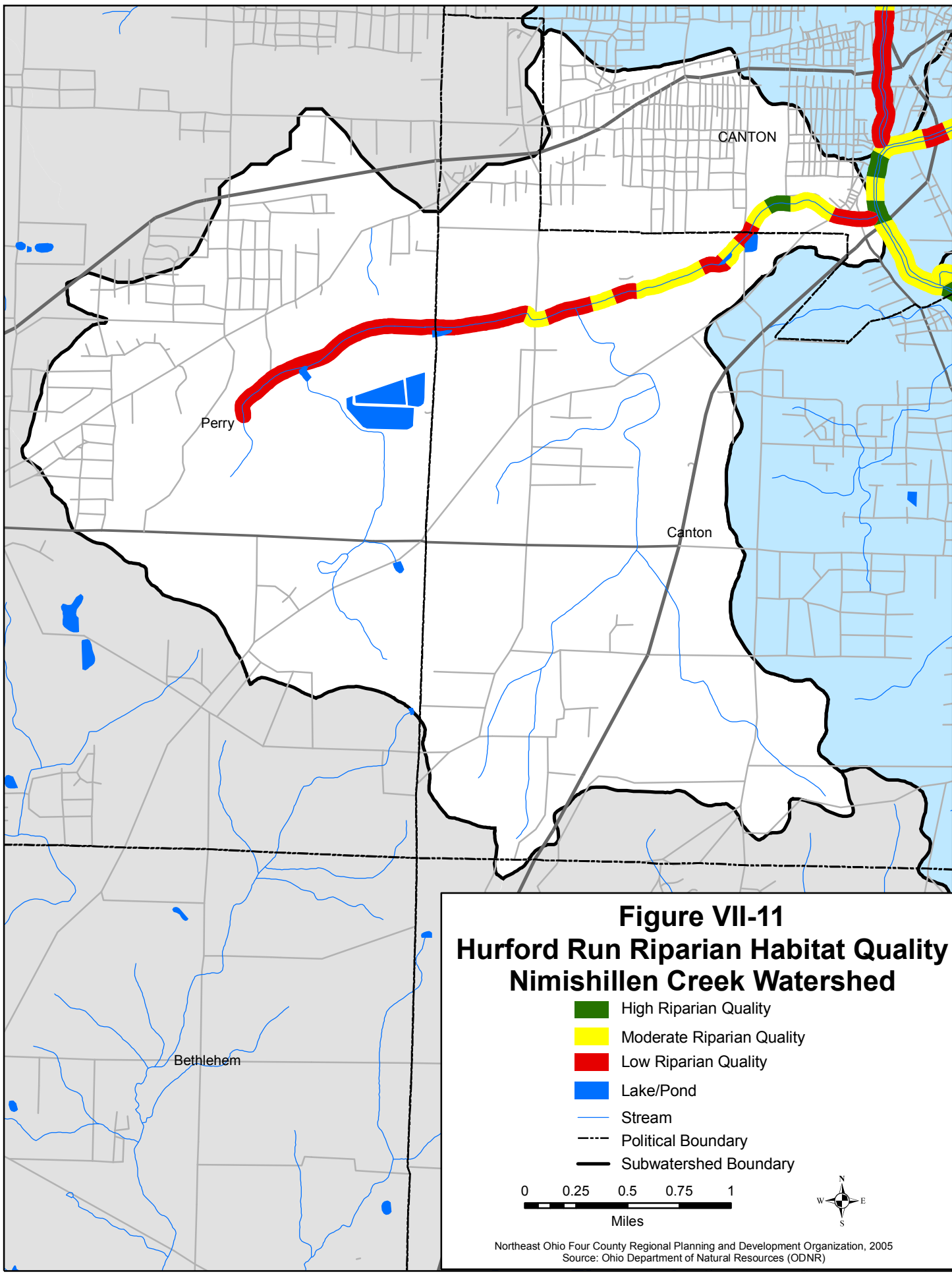
#### **Land Use**

Hurford Run has the greatest concentration of industrial land usage of any of the six subwatersheds of Nimishillen Creek. Industrial companies in the subwatershed include the Marathon Petroleum Company, Canton Alloys Inc., Republic Engineered Steel Inc., and the Timken Company. Point source discharges, storm water runoff, and riparian habitat degradation are concerns in these areas. Other land uses in the area include urban/suburban areas primarily in the northern portions of the subwatershed, with agriculture and wooded areas the dominant use in the southern portion (Figure II-13). Soil erosion, nutrient runoff, channel modification, and riparian habitat destruction are concerns. In addition, the Hurford Run watershed is encountering development pressures from continued suburbanization of Stark County due to its location near both Massillon and Canton and being adjacent to two highways. Habitat encroachment and increased runoff from increasing impervious area is a long-term concern for water quality. Lastly, the riparian habitat quality along Hurford Run was rated the lowest in NEFCO's evaluation (Figure VII-11). Riparian habitat restoration, where possible, is a priority.

#### **Point Source Dischargers**

A point source is defined as a source that discharges pollutants, or any effluent, from a known discharge point, such as a pipe, ditch, or sewer and into a waterbody after treatment (Miller, 1988). Treatment can vary depending on the type of effluent, but generally includes the removal of solids and disinfection. Point source discharges





have the potential to introduce high levels of nutrients and chemicals into a waterway. However, these discharges are monitored and tracked by the Ohio EPA via the National Pollutant Discharge Elimination System (NPDES) program to protect local water resources.

Along Hurford Run, eight point sources were identified as discharging into the watershed. These include five industrial dischargers and three private wastewater treatment systems. Table VII-8 provides information about each permitted discharge and Figure IV-1 maps the location of them in the watershed. Please note that this section does not include storm sewer outfalls, off-lot discharging home sewage treatment systems, or illegal point source discharges into the Nimishillen Creek Watershed. Additional point source discharge information will be added when it becomes available.

| <b>Table VII-18: Point Source Discharging Operations in the Hurford Run Subwatershed</b> |  |                          |   |
|--|--|--------------------------|---|
| <b>Map Symbol</b>  | <b>Discharging Operation</b>   | <b>Design Flow (GPD)</b> | <b>Classification</b>   |
| 2  | AGA Gas Incorporated<br>2505 Shepler Church S.W.<br>Canton, OH 44706                                     | Not Given                | Industrial Discharger   |
| 13   | Gullivers 77 Travel Center Inc.<br>2320 Faircrest St. SW<br>Canton, OH 44706                             | Not Given                | Private Discharging<br>Semi-Public Sewage<br>Treatment System |
| 21*  | Marathon Ashland Petroleum<br>LLC - Ohio Refining Div.<br>2408 Gambrius Rd. SW<br>Canton, OH 44706       | Not Given                | Industrial Discharger   |
| 26   | Praxair (Liquid Carbonic Corp.)<br>2225 Bolivar Rd. S.W.<br>Canton, OH 44706                             | Not Given                | Industrial Discharger   |
| 28   | Republic Engineered Steel Inc.<br>Special Metals Division<br>2201 Harrison Ave. S.W.<br>Canton, OH 44706 | Not Given                | Industrial Discharger   |
| 34   | The Timken Company -<br>Faircrest Steel Plant<br>Canton, OH 44706  | Not Given                | Industrial Discharger   |
| 38   | Prairie College School<br>3021 Prairie College Ave. S.W.<br>Canton, OH 44706                             | 5,000 to <10,000         | Private Discharging<br>Semi-Public Sewage<br>Treatment System |
| 65   | The WG Fairfield Co.<br>4255 Kropf Ave. S.W.<br>Canton, OH 44706   | 1 to <1,500              | Private Discharging<br>Semi-Public Sewage<br>Treatment System |
| * Permit Expired in 2004; GPD = Gallons Per Day; Source: Ohio EPA, 2005                  |  |                          |   |

**Water Quality Data and Impairments**

**Ohio EPA's Water Quality Results**

Of the 3.1 miles of Hurford Run assessed by the Ohio EPA, 2.7 miles were in non-attainment, or none of the three biological indices (IBI, ICI, MWwb) were meeting or near state standards. Only 0.4 miles were in partial attainment (one or two of the three indices meeting respective criteria), and no sections of Hurford Run were meeting state water quality standards. Table IV-19 summarizes the Ohio EPA's results.

| Segment River Mile (Lower/Upper) | Reach Length | Attainment Miles Status |         |      |              |
|----------------------------------|--------------|-------------------------|---------|------|--------------|
|                                  |              | Full                    | Partial | Non  | Not Assessed |
| 0/4.95                           | 4.95         | 0                       | 0.40    | 2.70 | 1.85         |

Source: Ohio EPA's 2000 305(b) Ohio Water Resource Inventory

In the comments section of the 2000 305(b) Ohio Water Resource Inventory, the Ohio EPA noted high levels of manganese present in the headwaters of Hurford Run. Downstream of the Timken Company Outfall 006 there were high levels of pH. In addition, the Marathon Petroleum Company's effluent increased stream temperature and has high ammonia concentrations. They noted additional exceedences of pH, temperature, conductivity and ammonia. Historically, biology surveys have been poor, but improved scores at the mouth of Hurford Run in 1998 brought the segment into partial WWH attainment for the first time.

**Impairments**

**Aquatic Life Use:**

Of the 3.1 miles accessed by the Ohio EPA in 1998, 0.40 miles were in partial attainment and 2.70 miles were in non-attainment.

**Recreation:**

All of Hurford Run, except Domer Ditch, is impaired for Primary Contact Recreation. Domer Ditch is impaired for Secondary Contact Recreation.

**Fish Consumption:**

There is a fish consumption advisory of only one meal per month of common carp caught from Hurford Run. In addition, the Ohio Department of Health has issued a statewide advisory to limit meals of fish caught from all Ohio waterbodies to one meal per week due to mercury.

**Ohio EPA's Causes and Sources of Impairments**

The causes of impairments for a stream are the specific pollutants or alterations that result in the stream not meeting state water quality standards. Examples of common causes of water quality impairments are siltation, flow alteration, nutrient enrichment,

metals, and temperature. Sources of impairments are where the cause(s) originated or where the causes of impairments are supplied from. Sources include crop production, channelization, urban runoff, dam construction, discharge pipes, and stream bank erosion. Table VII-20 lists the causes and sources of impairment for aquatic life use, recreation, and fish consumption for Hurford Run.

| <b>Table VII-20: Ohio EPA's Causes and Sources of Impairments for Hurford Run</b>                 |  |  |
|---|--|--|
| <b>Impairment Of:</b>   | <b>Causes of Impairment (magnitude)</b>  | <b>Sources of Impairment (magnitude)</b>               |
| Aquatic Life Use  | Unionized Ammonia (high)<br>Thermal Modifications (high)<br>pH (high)<br>Metals (high)<br>Unknown (moderate) | Major Industrial Point Source (high)<br>Unknown (high) |
| Recreation  | Pathogens  | Unknown  |
| Fish Consumption  | Polychlorinated Biphenyls (PCBs)   | Unknown  |
| Sources: Ohio EPA's 2000 305(b) Ohio Water Resource Inventory and Ohio EPA 2004 Integrated Report |  |  |

**Other Water Quality Information**

***Nimishillen Creek Macroinvertebrate Survey - 2000, 2002, and 2004:***

Since 2000, NEFCO and the City of Canton have conducted three macroinvertebrate surveys along Nimishillen Creek. Three of the seventeen sites sampled are located in Hurford Run. The two downstream sites, RM 0.5 and 1.1, are situated in heavily industrial areas that include The Timken Company Canton Steel Plant, Republic Engineered Steel Inc. Special Metals Division, and Marathon-Ashland Petroleum LLC refinery. The location of the upstream site, RM 2.5, is on an unnamed tributary to Hurford with a subwatershed comprised mainly of wooded and agricultural/pasture areas. Table VII-21 summarizes the sampling results.

| <b>Table VII-21: Mean Cumulative Index Values* (CIV) for Hurford Run Based on NEFCO's Macroinvertebrate Surveys</b>                    |                               |                               |                               |
|--|-------------------------------|-------------------------------|-------------------------------|
| <b>Station Location</b>  | <b>Mean CIV**</b>             |                               |                               |
|  | <b>2000 Segment Condition</b> | <b>2002 Segment Condition</b> | <b>2004 Segment Condition</b> |
| River Mile 0.5 - Bolivar Ave. and I-77 Off Ramp  | 13<br>Fair                    | 15<br>Fair                    | 16<br>Fair                    |
| River Mile 1.1 - Harrison Ave. Bridge  | 17<br>Good                    | 18<br>Good                    | 20<br>Good                    |
| River Mile 2.5 - Shepler Church Rd. Bridge   | 22<br>Good                    | 19<br>Good                    | 18<br>Good                    |
| * Stream Quality Assessment (Source: ODNR, Stream Quality Monitoring Manual)<br>**Excellent: >22, Good: 17-22, Fair: 11-16, Poor < 11. |                               |                               |                               |

The general trend for the sampling locations is a gradual decrease in macroinvertebrate scores from upstream to downstream sites. This corresponds with decreased riparian cover and increased industrial land use. River miles 1.1 and 2.5 consistently scored in the “Good” range, while RM 0.5, near the mouth of Hurford Run, ranked as only “Fair” each year.

It is likely that the upstream sites are closer to attainment of state water quality standards than the downstream location because the Ohio EPA found that generally ODNR’s Stream Quality Monitoring Program tend to reflect attainment and non-attainment aquatic life uses. “Excellent” scores in the ODNR method commonly meet the Ohio EPA attainment standards, while stream segments with “Fair” or “Poor” scores generally are assessed as being in non-attainment (Yoder and Davis, 1996). Based on this assumption, it is believed that Hurford is in or close to attainment for aquatic life uses in the headwaters and becomes gradually worse and likely in non-attainment as it flows through urban and industrial areas near the confluence with Nimishillen Creek.

**Hurford Run Subwatershed Issues:**

- |                                   |   |
|-----------------------------------|---|
| <b>1. Industrial Site Runoff</b>  | <b>3. Riparian Corridor Restoration</b> |
| <b>2. Environmental Education</b> | <b>4. Failing HSTs</b>                  |

Hurford Run, as noted above, has the greatest concentration of industrial activity of any of Nimishillen Creek’s subwatersheds. Both nonpoint and point source water quality concerns result from discharges and runoff from these vast industrial sites. Pollution discharges for point sources is strictly monitored by the Ohio EPA through the National Pollutant Discharge Elimination System (NPDES) permits, although spills and accidental discharges are still possible. Another issue is the storm water runoff from the large and old industrial complexes which pickup various pollutants before entering Hurford Run.

Hurford Run also has the most degraded riparian corridor of any of the Nimishillen Creek tributaries (Table II-10 and Figure VII-11). This is due to the heavy concentration of industrial sites along the downstream section and agricultural areas in the headwaters. Restoration of the riparian habitat is a priority in this subwatershed. Where development has occurred without the aid of a sanitary sewer system, failing home sewage treatment systems (HSTs) is also an issue due to the prevalence of poor soils in the subwatershed.

Using available data and information along with personal knowledge of Hurford Run, watershed stakeholders ranked the top four issues they believe to be hindering water quality attainment in this subwatershed. Under each of the four issues are goal and objective statements accompanied by recommended actions. Please note that the recommended actions are not intended to a comprehensive list of actions that could address each issue; but rather, a list of actions that the stakeholders believe is the best course of action given the current circumstances and available information. Refer to NEFCO’s *Nimishillen Creek Comprehensive Watershed Management Plan - Phase III*

for a more comprehensive list of water quality improvement actions for Nimishillen Creek (NEFCO, 2001).

“Focus Areas” were also included under each objective to indicate specific areas to direct actions, if known, and a “Target” was established to help evaluate the objective and measure accomplishments. Lastly, “Responsible Parties” are identified if a watershed action is ongoing, while “Suggested Responsible Parties” indicate who could take the lead on actions not yet being implemented.

**Hurford Run Issue #1 - Industrial Site Runoff**

**Goal:** Decrease the levels of toxic substances and dissolved solids (heavy metals, petroleum products, etc.) entering surface water and/or groundwater.

**Objectives:**

1. Decrease levels of toxic substances from industrial land use areas.  
*Focus Areas:* Watershed area between Shepler Church Ave. and U.S. Route 30; Timken Company Property; Republic Steel Property; Marathon Petroleum Company  
*Target:* To be determined
2. Decrease levels of toxic substances from storm water runoff.  
*Focus Areas:* Watershed area between Shepler Church Ave. and U.S. Route 30; Timken Company Property; Republic Steel Property; Marathon Petroleum Company  
*Target:* To be determined

**Hurford Run Issue #1 - Recommended Actions Tables:**

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| <b>Action A:</b> Implement a regional/watershed-based storm water management plan. |  |
| <b>Responsible Parties:</b>  | Stark County Drainage Task Force   |
| <b>Funding Options:</b>  | Local; Conservancy District; Storm Water Utility   |
| <b>Time Frame:</b>   | Ongoing  |
| <b>Expected Improvements:</b>  | Improved water quality and moderated peak storm water flows.   |
| <b>Evaluation Method:</b>  | Completion of the plan; Level of participation; Improved macroinvertebrate and water chemistry results |
| <b>Estimated Costs:</b>  | \$300,000 and up annually for all of Stark County  |
| <b>Estimated Load Reduction:</b>   | To be determined   |

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| <b>Action B:</b> Implement NPDES Phase II Storm Water Program |                              |
| <b>Responsible Parties:</b>                                   | Stark County; City of Canton |
| <b>Funding:</b>   | Local                        |
| <b>Time Frame:</b>  | Ongoing                      |



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| <b>Expected Improvements:</b>    | Significant reduction of pollution in urban storm water runoff through the establishment of six minimum control measures. |
| <b>Evaluation Method:</b>        | Annual review of the Program by permitted communities and the Ohio EPA  |
| <b>Estimated Costs:</b>          | Variable  |
| <b>Estimated Load Reduction:</b> | Variable depending on the practices implemented by each permitted community   |

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| <b>Action C:</b> Identify by-products of industrial processes taking place in the watershed. |  |
| <b>Suggested Responsible Parties:</b>  | Ohio EPA; Stark County Health Department; Private Sector       |
| <b>Funding Options:</b>  | OEEF; Ohio EPA Section 319 NPS Grant; Private Sector           |
| <b>Time Frame:</b>   | 2006 - 2007  |
| <b>Expected Improvements:</b>  | Lower releases of toxic substances from Industrial operations. |
| <b>Evaluation Method:</b>  | A listing of identified by-products from industrial processes. |
| <b>Estimated Costs:</b>  | Sorting through RCRA Documents = \$500                         |
| <b>Estimated Load Reduction:</b>   | No direct reduction in pollution loads expected from action    |

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|---|---|
| <b>Action D:</b> Limit the amount of impervious areas for commercial and industrial establishments. |   |
| <b>Suggested Responsible Parties:</b>   | Stark County Zoning Commission; Canton Zoning Commission; Building Industry Association                       |
| <b>Funding Options:</b>   | OEEF; Private Sector; Ohio EPA Section 319 NPS Grant; Smart Growth Grant                                      |
| <b>Time Frame:</b>  | 2007 and beyond   |
| <b>Expected Improvements:</b>   | Lower levels of toxic substances entering the environment due to runoff from impervious areas                 |
| <b>Evaluation Method:</b>   | Number of permits or ordinances in effect; Number of companies voluntarily adopting best management practices |
| <b>Estimated Costs:</b>   | Variable  |

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| <b>Estimated Load Reduction:</b> | <p>Porous Pavement General Removal Efficiencies:<br/>Sediment = 82%-95%; TPs = 65%; TN = 80%-85%</p> <p>Infiltration Basin General Removal Efficiencies:<br/>TSS = 75%; TP = 60%-70%; TN = 55%-60%; Metals = 85%-90%;<br/>Bacteria = 90%</p> <p>Treatment Wetland Median Removal Efficiencies:<br/>TSS = 76%; TP = 46%; Orthophosphate Phosphorus = 28%;<br/>Nitrate = 46%; and NH<sub>3</sub> = 33%</p> <p>Grass Swales General Removal Efficiencies:<br/>TSS = 81%; TP = 29%; Nitrate = 38%; Metals = 14%-55%;<br/>Bacteria = -50%</p> |
|----------------------------------|--|

### Hurford Run Issue #2 - Environmental Education

**Goal:** Educate residents, government officials, and businesses about watershed issues impacting Hurford Run.

**Objectives:**

1. Increase awareness among operators of industrial facilities of the implementing preventative and control measures to reduce pollutants.  
*Focus Areas:* Industrial Sites  
*Target:* Direct contact with 10 Hurford Run industrial stakeholders per year
2. Strengthen awareness of and involvement in watershed issues.  
*Focus Areas:* Residential and Commercial Areas  
*Target:* Direct contact with 15 Hurford Run residential or commercial stakeholders per year
3. Increase awareness regarding the location and pollution potential of oil and gas pipelines in relation to drinking water wells.  
*Focus Areas:* Entire Subwatershed  
*Target:* To be determined
4. Monitor and evaluate surface water quality in the watershed.  
*Focus Areas:* Sherrick Run and Domer Ditch  
*Target:* Program established by 2008

### Hurford Run Issue #2 - Recommended Actions Tables:

|   |   |
|---|---|
| <b>Action A:</b> Educate owners and operators of industrial facilities about the benefits of implementing preventive and control measures to reduce pollutants. |   |
| <b>Suggested Responsible Parties:</b>   | Ohio EPA; City of Canton; Stark County Regional Planning Commission; NEFCO; Stark County and Canton Health Departments; Canton Regional Chamber of Commerce |
| <b>Funding Options:</b>   | OEEF; WPCLF; Ohio EPA Section 319 NPS Grant   |
| <b>Time Frame:</b>  | 2007 - 2008   |
| <b>Expected Improvements:</b>   | Increased awareness about the benefits of BMPs and reduced levels of pollutants from industrial land use areas.   |

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| <b>Evaluation Method:</b>        | List of contacts; Number of operations that have implemented BMPs; Water quality testing showing the reduction of pollutants after implementation  |
| <b>Estimated Costs:</b>          | Workshop = \$15 per person; Pamphlet or fact sheet = \$1.50 to \$3.00 per sheet; Chemical Sampling = \$500 - \$1,000 and up for laboratory tests + cost of collection and transportation |
| <b>Estimated Load Reduction:</b> | No direct reduction in pollution loads expected from action  |

**Action B:** Educate industrial owners and operators about the hazards of negligent management of industrial by-products.

|                                       |   |
|---------------------------------------|---|
| <b>Suggested Responsible Parties:</b> | Ohio EPA; Stark and Canton Health Departments; Private Sector                   |
| <b>Funding Options:</b>               | OEEF; Ohio EPA Section 319 NPS Grant  |
| <b>Time Frame:</b>                    | 2007 - 2008   |
| <b>Expected Improvements:</b>         | Lower releases of toxic substances from industrial operations                   |
| <b>Evaluation Method:</b>             | Number of owners/operators educated about the hazards of negligent management   |
| <b>Estimated Costs:</b>               | Workshop = \$15 per person; Pamphlet or fact sheet = \$1.50 to \$3.00 per sheet |
| <b>Estimated Load Reduction:</b>      | No direct reduction in pollution loads expected from action                     |

**Action C:** Educate residents about watershed issues through regularly scheduled events and activities that are recognized by the public. These events and activities can include watershed surveys, presentation at local meetings, information booths at local fairs, creek clean-ups, and other public meetings.

|                                       |   |
|---------------------------------------|---|
| <b>Suggested Responsible Parties:</b> | Nimishillen Creek Watershed Partners; NEFCO; Stark SWCD; Stark RPC                              |
| <b>Funding Options:</b>               | Private Sector; NPS Education Grant; OEEF Grant; CWA Section 319 NPS Grant                      |
| <b>Time Frame:</b>                    | Ongoing   |
| <b>Expected Improvements:</b>         | Greater awareness regarding watershed issues  |
| <b>Evaluation Method:</b>             | Number of events held; Surveys taken; Presentations given; Fairs attended; Public meetings held |

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|----------------------------------|---|
| <b>Estimated Costs:</b>          | Surveys = \$2.00 per survey; Presentations = \$3,000 and up per 80 picture slide/PowerPoint show; County Fair Display = \$1,000 and up + \$1.50 to \$3.00 per pamphlet + \$15.00 per volunteer hour; Public Meeting = \$1,200 per meeting |
| <b>Estimated Load Reduction:</b> | No direct reduction in pollution loads expected from action   |

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| <b>Action D:</b> Create a map of pipeline and drinking well locations to provide to community planning and zoning officials. |  |
| <b>Suggested Responsible Parties:</b>  | ODNR - Div. of Oil and Gas; Stark County Regional Planning Commission; NEFCO   |
| <b>Funding Options:</b>  | Private Sector; Local Funds; Ohio EPA Section 319 NPS Grant  |
| <b>Time Frame:</b>   | 2006 - 2009  |
| <b>Expected Improvements:</b>  | More precise locations of oil and gas pipelines; Detection of leaks or ruptures in pipelines; Increased knowledge regarding pipeline location and potential drinking water wells |
| <b>Evaluation Method:</b>  | Detailed maps of oil and gas pipeline locations in relation to drinking water wells  |
| <b>Estimated Costs:</b>  | \$7,000 to \$25,000; \$140 to \$490 and up per map   |
| <b>Estimated Load Reduction:</b>   | No direct reduction in pollution loads expected from action  |

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| <b>Action E:</b> Establish long-term chemical and biological monitoring program for subwatershed. |  |
| <b>Suggested Responsible Parties:</b>   | NEFCO; Earth Action Partnership; Crossroads RC&D; Stark County SWCD; Stark County Health Department; Local University  |
| <b>Funding Options:</b>   | CWA Section 319 NPS Grant; OEEF; Private Sector  |
| <b>Time Frame:</b>  | 2007 and beyond  |
| <b>Expected Improvements:</b>   | Increase knowledge of the extent of the AMD problem along the Mainstem; Better evaluation of AMD abatement projects  |
| <b>Evaluation Method:</b>   | Macroinvertebrate monitoring; Chemical sampling of effluent  |
| <b>Estimated Costs:</b>   | <ul style="list-style-type: none"> <li>- Macroinvertebrate monitoring:<br/>\$15 per volunteer per hour + \$50 monitoring kit;</li> <li>- NEFCO Macroinvertebrate Monitoring = \$750 per site;</li> <li>- Chemical Sampling:<br/>\$500 - \$1,000 and up for laboratory tests + cost of collection and transportation</li> </ul> |
| <b>Estimated Load Reduction:</b>  | No direct reduction in pollution loads expected from action  |

**Hurford Run Issue #3 - Riparian Corridor Restoration**

**Goal:** Restore habitat areas with “poor” or “moderate” riparian habitat scores to the next attainment level.

**Objectives:**

1. Work with industrial property owners to improve the riparian habitat along Hurford Run.

*Focus Areas:* Watershed area between Shepler Church Ave. and U.S. Route 30; Timken Company Property; Republic Steel Property; Marathon Petroleum Company

*Target:* Restore 5 percent or approximately 900 linear feet of “poor” or “moderate” quality riparian habitat

2. Establish policies to protect the riparian corridor and habitat.

*Focus Areas:* Entire Subwatershed

*Target:* Adoption of policies by the county and municipalities

**Hurford Run Issue #3 - Recommended Actions:**

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| <b>Action A:</b> Provide incentives for industrial landowners to protect the shoreline, riparian corridor, or wetlands with long-term protection or permanent conservation easements. |  |
| <b>Suggested Responsible Parties:</b>   | Stark County RPC; City of Canton; Stark Parks; Land Conservancy Organizations  |
| <b>Funding Options:</b>   | Clean Ohio Fund; Ohio EPA Section 319 NPS Grant; Private Sector; WRRSP   |
| <b>Time Frame:</b>  | 2007 thru 2010   |
| <b>Expected Improvements:</b>   | Protection of shoreline and riparian corridor resulting in increase riparian habitat scores, reduction in stream bank erosion, and floodway protection |
| <b>Evaluation Method:</b>   | Linear feet set aside for long-term protection; Number of permanent conservation easements; Riparian habitat scores                                    |
| <b>Estimated Costs:</b>   | \$0.00 to \$5,000 per acre and up; \$4,000 and up on average to set up a maintenance fees  |
| <b>Estimated Load Reduction:</b>  | No direct reduction in pollution loads expected from action; however, long-term or permanent protection measures will reduce future pollution loading. |

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| <b>Action B:</b> Assist landowners in re-vegetating shoreline and riparian areas. |   |
| <b>Suggested Responsible Parties:</b>   | Stark SWCD; NEFCO; Earth Action Partnership; Stark Parks; City of Canton; ODNR - DSWC |
| <b>Funding Options:</b>   | WPCLF; Ohio EPA Section 319 NPS Grant; PL-566; SIP                                    |
| <b>Time Frame:</b>  | 2006 thru 2010  |

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| <b>Expected Improvements:</b>    | Restoration of shoreline and riparian corridor; Increased riparian habitat scores; Improved wildlife habitat; Reduction in stream bank erosion during high flow events |
| <b>Evaluation Method:</b>        | Linear feet of replanted riparian habitat; Wildlife surveys; Riparian habitat scores   |
| <b>Estimated Costs:</b>          | \$0.25 - \$1.10 per yd <sup>2</sup> seeded and mulched; \$0.40 - \$0.50 per seedling planted   |
| <b>Estimated Load Reduction:</b> | Vegetated Buffer Strips General Removal Efficiencies:<br>TSS = 40%-90%; TP = 30%-90%; TN = 20%-60%;<br>Metals = 20%-80%  |

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| <b>Action C:</b> Assist shoreline and riparian landowners to stabilize shoreline and riparian corridor using appropriate BMPs. |  |
| <b>Suggested Responsible Parties:</b>  | County SWCDs; NEFCO; ODNR - DSWC; USDA - NRCS; Earth Action Partnership; ODNR - Division of Wildlife   |
| <b>Funding Options:</b>  | EQUIP; CRP; WPCLF; CWA Section 319 NPS Grant; PL-566; SIP  |
| <b>Time Frame:</b>   | 2006 thru 2009   |
| <b>Expected Improvements:</b>  | Stabilization of shoreline and riparian corridor; Reduction in stream bank erosion; Improved wildlife habitat  |
| <b>Evaluation Method:</b>  | Linear feet of bank or shoreline stabilized; Wildlife survey; Riparian habitat scores  |
| <b>Estimated Costs:</b>  | Approximately \$350,000 to restore or stabilize 1,300 linear feet of stream channel; Fiber Rolls = \$12.00 per linear foot; Plant Cuttings = \$0.40 - \$0.50 per cutting; Erosion Control Blankets = \$2.00 per yd <sup>2</sup>  |
| <b>Estimated Load Reduction:</b>   | Erosion Control Blankets:<br>Runoff Reduction = 80%; Erosion Rate Reduction = up to 99%;<br>Weed Growth Reduction = 75%<br>Fiber Rolls: TSS Reduction = 58%<br>Vegetated Buffer Strips General Removal Efficiencies:<br>TSS = 40%-90%; TP = 30%-90%; TN = 20%-60%;<br>Metals = 20%-80% |

|  |   |
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| <b>Action D:</b> Assist communities with the development of township or municipal ordinances requiring new construction sites to leave easements or a specific distance near shorelines of targeted wetlands and floodplains of streams. |   |
| <b>Suggested Responsible Parties:</b>  | Stark County Regional Planning Commission; Stark SWCD; City of Canton |
| <b>Funding Options:</b>  | OEEF  |
| <b>Time Frame:</b>   | 2007 thru 2009  |

|                                  |  |
|----------------------------------|--|
| <b>Expected Improvements:</b>    | Protection of shoreline and riparian corridor resulting in increases in riparian habitat scores, reduction in stream bank erosion, and floodway protection |
| <b>Evaluation Method:</b>        | Number of ordinances established and enforced; Riparian and shoreline miles protected; Riparian habitat scores   |
| <b>Estimated Costs:</b>          | Variable   |
| <b>Estimated Load Reduction:</b> | Vegetated Buffer Strips General Removal Efficiencies:<br>TSS = 40%-90%; TP = 30%-90%; TN = 20%-60%; Metals = 20%-80%                                       |

**Hurford Run Issue #4 - Failing Home Sewage Treatment Systems**

**Goal:** Reduce the nutrient and bacteria pollution in the Hurford Run and Domer Ditch from failing home sewage treatment systems (HSTs).

**Objectives:**

1. Establish a comprehensive education and outreach program for stakeholders using HSTs.  
*Focus Areas:* All unsewered areas  
*Target:* Program established by 2008
2. Begin an operations and maintenance program in the watershed.  
*Focus Areas:* Prairie College Subdivision  
*Target:* Inspection of 25 systems per year in the subwatershed
3. Provide financial support for the repair and replacement of failing HSTs for low income property owners.  
*Focus Areas:* Entire Subwatershed  
*Target:* Assistance available for all low income property owners

**Hurford Run Issue #4 - Recommended Actions Tables**

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| <b>Action A:</b> Establish education efforts to increase public awareness of faulty HSTs through door-to-door surveys, information materials, educational video, public meetings, and/or informational booths at local public events like fairs |  |
| <b>Suggested Responsible Parties:</b>   | Stark County Health Department, Ohio Department of Health; Ohio EPA; NEFCO; Earth Action Partnership                                   |
| <b>Funding Options:</b>   | OEEF; Ohio EPA Section 319 NPS Grant; Local Funding  |
| <b>Time Frame:</b>  | Door-to-Door Survey: 2007 - 2008<br>Information Material: Ongoing<br>Public Meetings: 2007 - 2008<br>Informational Booths: 2007 - 2008 |
| <b>Expected Improvements:</b>   | Increased awareness of water quality impacts associated with malfunctioning or failing HSTs  |

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|                                  |  |
|----------------------------------|--|
| <b>Evaluation Method:</b>        | Number of surveys completed; Number of informational material distributed; Number of public meetings held; Number of fair or public events attended; Surveys before and after education efforts begin to gauge a change in general knowledge among watershed residents |
| <b>Estimated Costs:</b>          | <ul style="list-style-type: none"> <li>- Surveys = \$2.00 per survey</li> <li>- Pamphlets and Flyers = \$1.50 - \$3.00 per item</li> <li>- Public Meeting = \$1,200 per 2 hour meeting</li> <li>- Display = \$1,000 and up</li> </ul>                                  |
| <b>Estimated Load Reduction:</b> | No direct reduction in pollution loads expected from action; however, indirect reductions possible depending on the number of homeowners that utilize the information presented.   |

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| <b>Action B:</b> Seek funding assistance for homeowners to repair or replace faulty HSTSs. |   |
| <b>Suggested Responsible Parties:</b>  | Stark County Health Department; Stark County Regional Planning Commission; Ohio EPA   |
| <b>Funding Options:</b>  | WPCLF; Ohio EPA Section 319 NPS Grant; WPCLF; Community Development Block Grant   |
| <b>Time Frame:</b>   | 2007 - 2010   |
| <b>Expected Improvements:</b>  | Lower number of malfunctioning or failing HSTSs   |
| <b>Evaluation Method:</b>  | Number of systems repaired or replaced  |
| <b>Estimated Costs:</b>  | \$3,000 - \$8,000 average cost to replace a HSTS; Up to \$1,000 to repair HSTS  |
| <b>Estimated Load Reduction:</b>   | On-Site HSTS Repair or Replacement: 100% reduction in bacteria and nutrient pollution from a HSTS<br>Off-Site Repair or Replacement: Variable reduction for each HSTS |



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| <b>Action C:</b> Establish an operations and maintenance inspection program to facilitate the repair and replacement of failing HSTs. |   |
| <b>Suggested Responsible Parties:</b>   | Stark County Health Department  |
| <b>Funding Options:</b>   | Local Property/Home Owner Operations and Maintenance Fee; Ohio EPA Section 319 NPS Grant; WPCLF   |
| <b>Time Frame:</b>  | 2007 - 2010   |
| <b>Expected Improvements:</b>   | Lower number of malfunctioning or failing HSTs in the Hurford Run subwatershed; Reduction in nutrient and pathogens entering the stream                   |
| <b>Evaluation Method:</b>   | Number of systems inspected, pumped, and/or repaired  |
| <b>Estimated Costs:</b>   | Approximately \$250,000 for Stark County Health Department to establish and run a permit system for three years in the entire Nimishillen Creek Watershed |
| <b>Estimated Load Reduction:</b>  | Variable depending on the number of HSTs inspected and ordered to be repaired or replaced   |

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| <b>Action D:</b> Promote the extension of sewers in the watershed, especially where high concentrations of HSTs are located on poor soils for septic systems. |   |
| <b>Suggested Responsible Parties:</b>   | Stark County Sanitary Engineer; Stark County Health Department; Ohio EPA; Ohio Department of Health   |
| <b>Funding Options:</b>   | WPCLF; Local Property/Homeowner via Assessment; WRRSP; USDA - Rural Development Grant   |
| <b>Time Frame:</b>  | 2007 and beyond   |
| <b>Expected Improvements:</b>   | Lower number of malfunctioning or failing HSTs polluting local water resources  |
| <b>Evaluation Method:</b>   | Number of homeowners contacted about sewer expansion in areas of high housing concentrations with poor soils; Future plans or projects for sewer expansion into these areas |
| <b>Estimated Costs:</b>   | \$1.50 - \$3.00 per Pamphlet or Fact Sheet; \$2.00 per Survey; \$9,000 per Home and Up for Sewer Tap-in Fee   |
| <b>Estimated Load Reduction:</b>  | Up to 100% reduction in pollution including bacteria and nutrients originating from HSTs in newly sewerred areas  |