

IDENTIFICATION OF POLLUTION SOURCES AND BACTERIAL REDUCTION IN A LAKE ERIE WATERSHED

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Open for map of
Cuyahoga County, Ohio
Major Watersheds

Executive Summary

The Cuyahoga County Board of Health (CCBH) received a grant from the Ohio Lake Erie Protection Fund starting in January 2004. This project was to investigate the water quality issues within Cuyahoga County affecting the Lake Erie Watershed.

The overall objectives of this project included: to provide data regarding the performance rates of household sewage treatment systems (HSTS) in Cuyahoga County, to assess the possible contributing failure factors, to enhance the ability of the Ohio Department of Health regarding new rule development, and to educate homeowners on HSTS and water quality issues. The CCBH performed water quality assessments on specific streams and tributaries that are a part of the Lake Erie Watershed to assess the overall health of these specific aquatic environments.

The aim of this project is to provide reliable information on water quality studies and issues that will enhance the information available for the Lake Erie Watershed. The water quality studies will provide information as to the overall health of the specific stream segments evaluated. This project developed information to guide and support appropriate administrative and HSTS information for the Ohio Department of Health for rule revisions as well as information on water quality studies for the Lake Erie Watershed. The results should benefit other regions of the state as well by justifying the implementation of better management systems that would reduce the number and degree of failing HSTS and aid in water quality improvements. To summarize, the study included:

1. Inspection of 4,000 HSTS throughout the Lake Erie Watershed in Cuyahoga County.
2. Educational Outreach programs on water quality and HSTS issues.
3. Performing extensive chemical, biological and physical assessments on selected tributaries and streams.

The first process of this grant project was the development of a Quality Assurance Project Plan (QAPP) specific for the water quality studies performed as part of this project. This plan includes the chemical, biological and physical assessments performed as part of this overall project. The purpose of the QAPP is to document planning results for environmental data operations and to provide a project specific “blueprint” for obtaining the type and quality of environmental data needed for a specific decision or use. (EPA, 2001).

General Information

The Cuyahoga County Board of Health (CCBH) provides public health services to 56 cities, villages, and townships in Cuyahoga County, Ohio with an approximate population of 830,000. A total of 48 communities have residences that utilize household sewage treatment systems (HSTS). Approximately 12,500 systems are currently being utilized throughout the General Health District, and the number of sewage systems in each community ranges from only one to over 1,500. The potential impact these systems have on the rivers, streams, and surface waters of these communities varies greatly.

Cuyahoga County is on the shores of Lake Erie and contains 3 major watersheds (Rocky River, Cuyahoga River and the Chagrin River) which all drain to the lake. Due to limiting factors, such as poor soils, shallow bedrock or high water table, and limited lot sizes, the majority of the HSTS

currently in use in Cuyahoga County function as "discharging systems". These systems discharge their treated effluent directly into streams, storm sewers or ditches that ultimately end up in Lake Erie. Only a small percentage of the existing sewage treatment systems are true "leaching systems" designed to provide on-lot retention, treatment, and dissipation of wastewater. Those locations with suitable soils, no topographical restrictions, and sufficient lot sizes are limited in Cuyahoga County.

These major watersheds are impacted by both point source and non-point source pollution. Sources of point source pollution are often continuous and can typically be identified, minimized, and even eliminated. Sources of non-point source pollution are often very difficult to trace and identify. They are widespread and are often intermittent. Examples include runoff from streets and parking lots, agricultural fields, home lawns, construction sites, and HSTS. Contaminants in non-point source pollution include sediment, nutrients, heavy metals, salts, toxic chemicals, and pathogens. These pollutants have the potential to adversely impact both ground and surface waters. The effluent from failing HSTS has been identified as a major contributor of non-point source pollution in the Cuyahoga, Rocky and the Chagrin River Watersheds.

Section 1: Household Sewage Treatment System Project

Assessment Criteria for HSTS

The objective for this component is to inspect approximately 4,000 household sewage treatment systems (HSTS) throughout Cuyahoga County, including both on-lot and off-lot HSTS over a two year period (2004-2005). These inspections consist of full evaluations, operational assessments and educational assessments.

Full evaluations consist of an analysis of the operation of the sewage system. This thorough inspection includes inspecting interior waste lines in the home, looking at all system components and evaluating whether the system is operating in a satisfactory manner. Operational Assessments are conducted mainly on aeration systems. Aeration systems function as mechanical units that treat the wastewater with the aid of a motor. These assessments consist of inspecting the aeration unit to ensure that the motor(s) are operating as designed and that the HSTS is properly treating the wastewater prior to discharging the treated effluent off-lot. These operational assessments are also conducted on some of the new installations within one year of the final installation date. These inspections enable CCBH to ensure that these new household sewage systems are operating as designed. The Educational Assessments consist of a visit to a property that utilizes a household sewage system. It incorporates providing educational materials on the specific sewage system servicing that property as well as the observation of the sewage system location for any nuisance conditions that may be present. This educational assessment provides a one on one opportunity for the Board of Health to educate homeowners on sewage system operation and the maintenance that they require.

The Board of Health determines and prioritizes the areas for HSTS evaluations. This determination consists of utilizing the following protocols:

1. The age of the sewage systems. Those less than one year of age and those that are older than 20 years of age,
2. HSTS that discharge directly into tributaries that are deemed in non-compliance with water quality assessment reports from the Ohio EPA,
3. Water Quality data from the Cuyahoga County Board of Health's water monitoring program.

This initial list was re-evaluated throughout the grant project as water quality sampling data was received. During the project period, the emphasis did change on the age of the systems to be inspected as well as additional inspections on other aspects of household sewage protection. Included in the new inspection criteria were HSTS that were between one year of age and 20 years of age. Also during this project period, the CCBH is also including information on new HSTS that were installed to replace failing HSTS found during this project. The CCBH also inspects HSTS during their abandonment when a home is connecting to a sanitary sewer. This is to ensure that the HSTS are properly abandoned during this time so that future public health problems are eliminated from occurring such as tanks collapsing and raw sewage seepage.

On-Site HSTS

An on-site HSTS is designed to dissipate sewage effluent through the soil by means of soil absorption and/or evapotranspiration. A visual inspection of each HSTS is conducted to determine function. Inspections are not conducted if snow cover exceeds two inches. An on-site HSTS is considered to be malfunctioning when sewage effluent is surfacing, ponding or discharging on the ground surface or into an underground drain and then into a drainage ditch, storm sewer or watercourse.

Off-lot Discharging HSTS

An off-lot discharging HSTS is designed to adequately treat sewage to a level that meets the Ohio Department of Health standards and discharges treated wastewater back into the environment. During an HSTS inspection, the quality of effluent is determined (clear/cloudy/black, odor/no odor). If an aerobic unit exists, it should be determined if the aerator motor is operational at the time of inspection. A discharging HSTS is considered to be malfunctioning when the discharging effluent is black/cloudy or has foul odor or if the effluent exceeds the standards for Total Suspended Solids or Biological Oxygen Demand stated within the Ohio Administrative Code 3701-29-02(G).

Sewage System Design Information and Drawings

Prior to the late 1950's, very little information was available on HSTS that were installed. Many of these systems were installed without the issuance of a permit and without an inspection. As sewage treatment rules changed and the CCBH service area grew, information on sewage system design became more readily available. Installation permits were now being required along with an inspection of the system at the time of installation. A drawing of the sewage system is now generated during this installation inspection.

The CCBH maintains active files on HSTS currently in use throughout the county. Each property utilizing a sewage system is represented by a file folder in the Household Sewage Files. These files include sewage system drawings, evaluation reports, and any other correspondence involving that specific property. To help make information on sewage systems easier to access, the CCBH created a comprehensive computer database. Information such as the property owner's name, sewage system description, evaluation dates, tank pumping dates, and permit numbers are included in this database.

A separate database is maintained for systems that are abandoned when the property is connected to a sanitary sewer. Due to the installation of sanitary sewer lines and future sewer planning throughout much of Cuyahoga County, this database has now become a valuable record-keeping tool that will continue to grow as sanitary sewer service areas are expanded in the future.

Existing Household Sewage Treatment Systems

Due to the limiting factors associated with our soils, many of the leaching systems installed before the 1970's were placed in poorly drained clay soils which had very little or no absorption capacity. The soil permeability was very slow and thus did not allow for suitable effluent treatment and dissipation. Only a few traditional leaching systems have been approved for installation in areas with relatively well drained sandy soils in the last twenty years in Cuyahoga County.

Several types of discharging systems are currently approved for use as replacement systems. Aeration systems and subsurface sand filter beds preceded by septic tanks are typically utilized. All aeration systems currently installed must be of a "fail-safe" design so that no effluent is discharged if the aerator is not operational. This fail-safe design incorporates the use of a dosing tank. This tank contains a pump that works in conjunction with the aeration motor. When the aeration motor does not function, the dose pump does not discharge the untreated wastewater out of the system. The system also includes a high water alarm that lets the homeowner know there is a problem with the system when one of these motors is not functioning. Many older aeration systems are still in use throughout the county. These systems are of an antiquated design and are typically not capable of properly treating household wastewater prior to discharging an effluent to the environment.

Likewise, many older subsurface filter bed systems are also still in use. These systems utilized gravel as a filtration media, instead of approved filter sand as is now required. Older filter bed systems are smaller in size and were not designed using two separate beds. Modern subsurface sand filter bed systems are substantially larger in size and utilize a sand media rather than gravel.

On-lot system designs include the evapo-transpiration system, mound system, and now the drip distribution system. The evapo-transpiration system design incorporates a large leaching field preceded by an aeration unit. Mound and drip irrigation system guidelines have also been created for use in Cuyahoga County. The CCBH does require that all possible means of installing a non-discharging sewage system be addressed prior to allowing off-lot discharge of an effluent on replacement systems.

Table 1.1: Number of HSTS located in each community located in the CCBH's jurisdiction.

| Community | Number of HSTS | Community | Number of HSTS |
|-------------------|----------------|------------------|----------------|
| Bay Village | 1 | Maple Hts | 12 |
| Beachwood | 3 | Mayfield | 253 |
| Bedford | 71 | Mayfield Hts | 48 |
| Bedford Hts | 8 | Middleburg Hts | 312 |
| Bentleyville | 132 | Moreland Hills | 948 |
| Berea | 10 | Newburgh Hts | 0 |
| Bratenahl | 3 | North Olmsted | 16 |
| Brecksville | 534 | North Randall | 0 |
| Broadview Hts | 287 | North Royalton | 1062 |
| Brook Park | 287 | Oakwood | 44 |
| Brooklyn | 3 | Olmsted Falls | 528 |
| Brooklyn Hts | 9 | Olmsted Township | 962 |
| Chagrin Falls | 56 | Orange | 635 |
| Chagrin Falls Twp | 41 | Parma | 1220 |
| Cleveland Hts | 1 | Parma Hts | 10 |
| Cuyahoga Hts | 0 | Pepper Pike | 1511 |
| East Cleveland | 0 | Richmond Hts | 264 |
| Euclid | 8 | Rocky River | 0 |
| Fairview Park | 1 | Seven Hills | 490 |
| Garfield Hts | 60 | Solon | 314 |
| Gates Mills | 867 | South Euclid | 3 |
| Glenwillow | 91 | Strongsville | 929 |
| Highland Hts | 19 | Valley View | 98 |
| Highland Hills | 0 | Walton Hills | 35 |
| Hunting Valley | 238 | Warrensville Hts | 22 |
| Independence | 10 | Westlake | 58 |
| Lyndhurst | 2 | Woodmere | 2 |

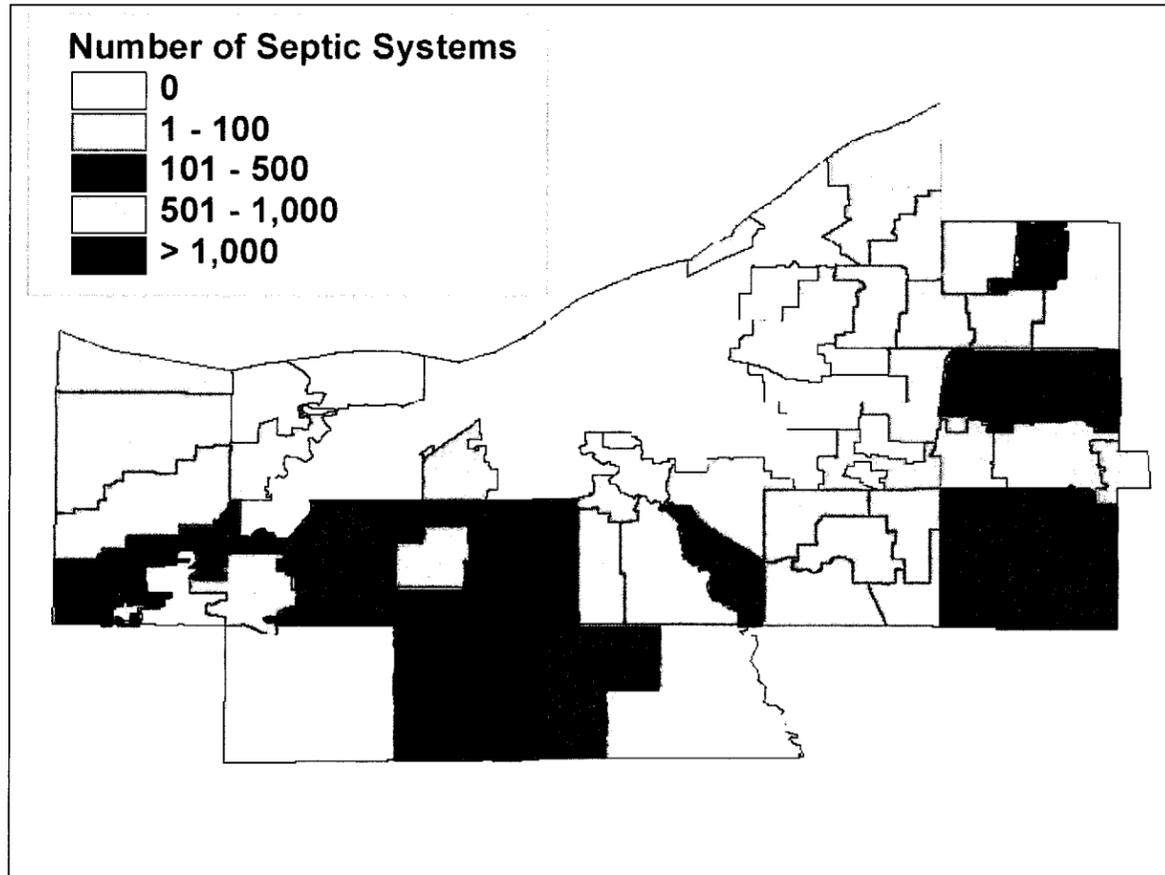


Figure 1.1: Number of HSTS per community in CCBH Jurisdiction

Table 1.2: Total number of HSTS broken down by system throughout county

| Systems Type | Total Number of Systems |
|-------------------|-------------------------|
| Aeration | 4288 |
| Filter Bed | 4928 |
| Leachfield | 370 |
| Unknown | 2663 |
| ET Field | 157 |
| Mound | 9 |
| Drip Distribution | 2 |
| Total | 12,417 |

Project Results

The project results are summarized below and the query sheets are provided in the attachment document for this report. A total of 3,836 HSTS were inspected or assessed during this project period. Included in this number are inspections, assessments and re-evaluations. Re-evaluations occur when the initial inspection of an aeration unit was in failure. The re-evaluation is a means to ensure the aeration unit was repaired. An additional 89 systems were investigated due to a complaint at that property. An additional 789 HSTS were inspected as part of their abandonment and connection to a sanitary sewer. And a total of 261 HSTS were installed to replace a failing HSTS during this report period as a result of inspections conducted as part of this project. (See Appendix A for a list of all HSTS inspected and assessed as part of this project)

The following tables are summary tables on the data from this project. The information includes total numbers of systems assessed, inspected, abandoned, and installed. The data is broken down by age groupings, HSTS type, and discharge locations for off-lot HSTS. Following each table is a summary of the results of the data located within that table.

Table 1.3 Total number of inspections and assessments of HSTS

| | Inspections | Assessed | Compliant | Abandonment | Installations |
|---------------------|-------------|----------|-----------|-------------|---------------|
| Passed | 1726 | 0 | 0 | 0 | 0 |
| Failed | 1320 | 0 | 0 | 0 | 0 |
| Inconclusive | 4 | 0 | 0 | 0 | 0 |
| Total | 3050 | 786 | 89 | 789 | 261 |

Table 1.3 represents an overview of all inspections and assessments that were conducted as part of this project. This does not include complaints, abandonment inspections or installations. This includes full inspections, assessments and re-evaluations.

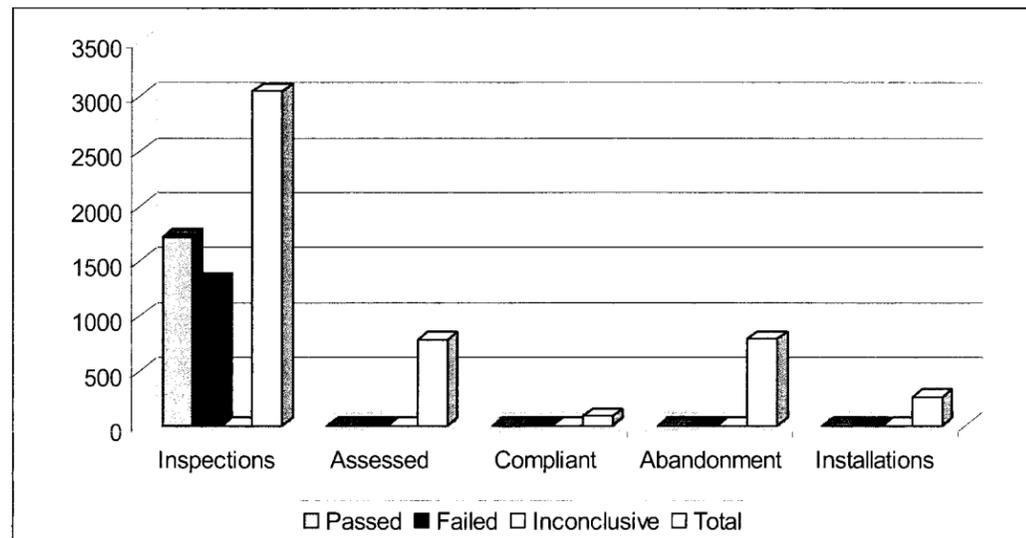


Figure 1.2 Total number of HSTS inspected and assessed from Table 1.3

Table 1.4 Inspection and Assessments of Aeration HSTS

| Age Range | Number Passed | Number Failed | Number Assessed |
|---------------------|---------------|---------------|-----------------|
| 1 year or less than | 21 | 0 | 34 |
| 1 - 20 years of age | 1087 | 306 | 143 |
| > 20 years of age | 202 | 531 | 54 |
| Total | 1310 | 837 | 231 |

Table 1.4 represents an overview of all data from the inspections and assessments of aeration HSTS broken down by age ranges. As can be seen by this table, aeration units less than 20 years of age have a high passing rate compared to units older than 20 years of age. During the review of Table 1.4, the re-evaluations were conducted throughout this project with aeration systems. They occurred when the initial inspection of the aeration was found to be in failure and the system could be repaired. Once the unit was repaired, usually by replacing one of the motors, a re-evaluation was conducted.

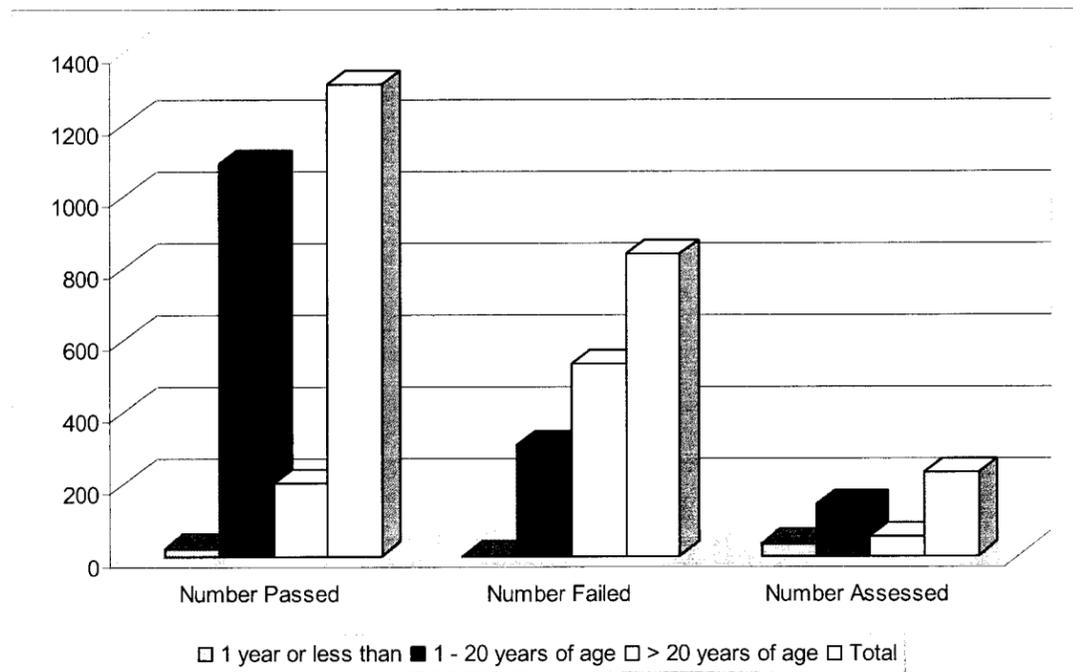


Figure 1.3: Inspection and Assessments of Aeration HSTS from Table 1.4

Table 1.5: Inspection and Assessments of Filter Bed HSTS

| Age Range | Number Passed | Number Failed | Number Inconclusive | Number Assessed |
|---------------------|---------------|---------------|---------------------|-----------------|
| 1 year or less than | 0 | 0 | 0 | 0 |
| 1 - 20 years of age | 113 | 22 | 2 | 64 |
| > 20 years of age | 191 | 266 | 0 | 324 |
| Total | 304 | 288 | 2 | 388 |

Table 1.5 represents the data from the inspections and assessments of filter bed HSTS broken down by age. This table again shows that the majority of systems less than 20 years of age are more apt to pass an inspection than those filter bed systems older than 20 years of age. Filter bed systems older than 20 years of age often utilize a gravel filter bed which did not treat wastewater to the level of today's sand filter media.

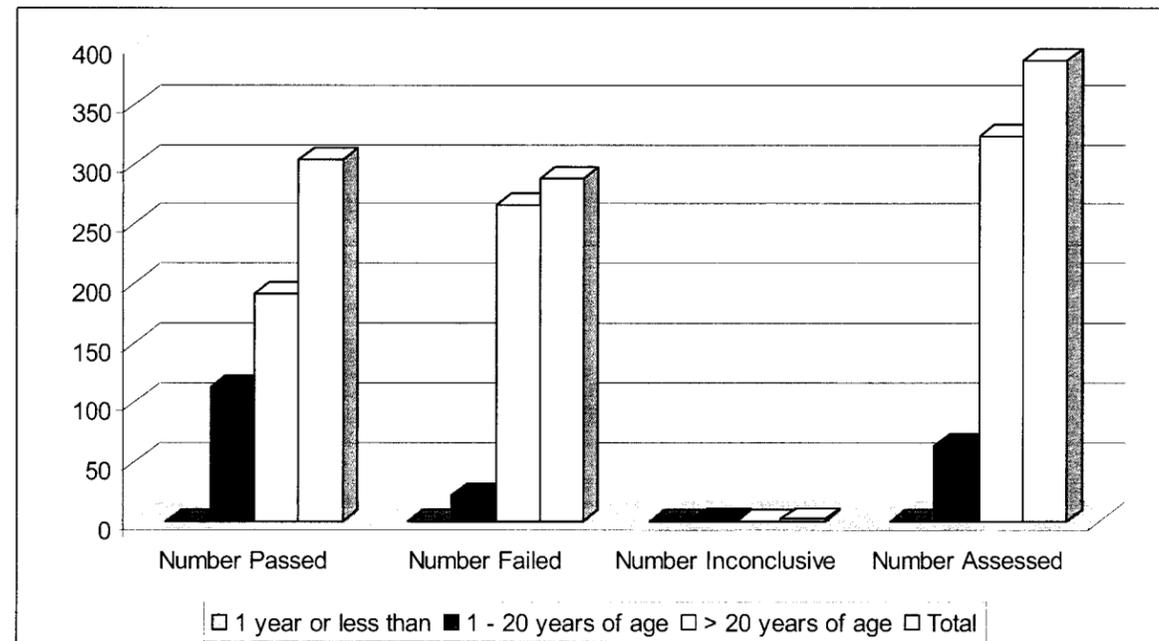


Figure 1.4: Inspection and Assessments of Filter Bed HSTS from Table 1.5

Table 1.6: Inspection and Assessments of Leachfield HSTS

| Age Range | Number Passed | Number Failed | Number Assessed |
|---------------------|---------------|---------------|-----------------|
| 1 year or less than | 0 | 0 | 0 |
| 1 - 20 years of age | 5 | 0 | 0 |
| > 20 years of age | 36 | 15 | 13 |
| Total | 41 | 15 | 13 |

Table 1.6 represents the data from the inspections and assessments of leachfield HSTS broken down by age ranges. This table shows a small number of leachfields inspected, represented by the overall small number found throughout the county. Leachfield HSTS utilize the natural soil as the treatment media. These are usually located in areas of suitable soil for absorption into the soil. True soil absorption systems have a longer life expectancy than filter bed systems. The data from this table represents a high passing rate for systems older than 20 years of age due to the soil absorption of the wastewater with no ponding occurring or runoff from the leaching fields.

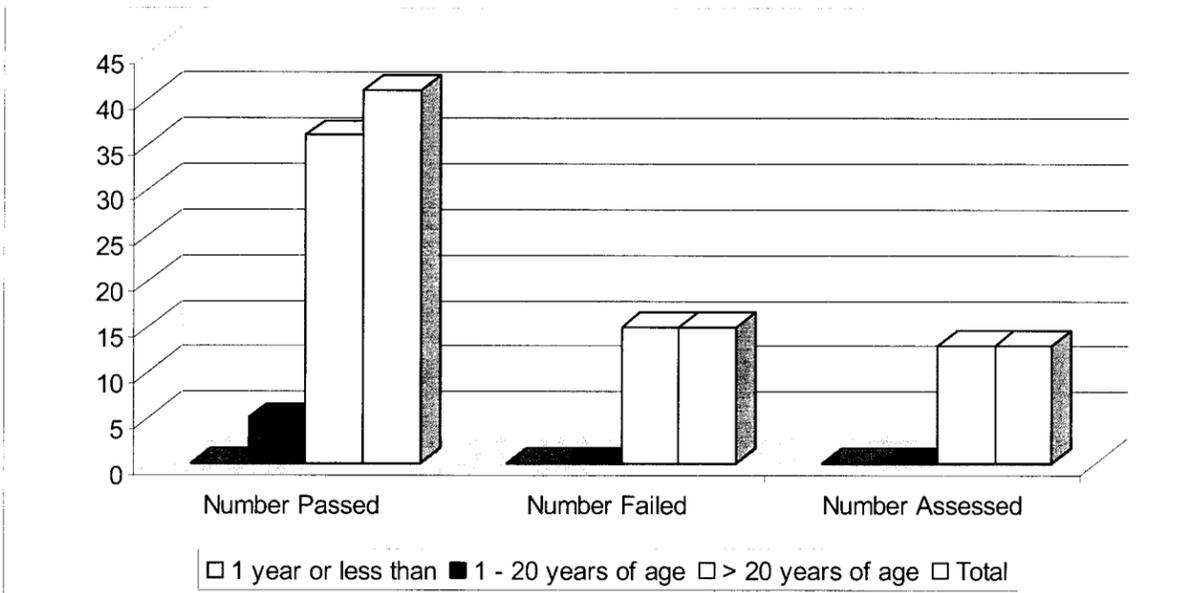


Figure 1.5: Inspection and Assessments of Leachfield HSTS from Table 1.6

Table 1.7: Inspection and Assessments of Unknown HSTS

| Age Range | Number Passed | Number Failed | Number Assessed | Number Inconclusive |
|---------------------|---------------|---------------|-----------------|---------------------|
| 1 year or less than | 0 | 0 | 0 | 0 |
| 1 - 20 years of age | 3 | 2 | 1 | 2 |
| > 20 years of age | 68 | 169 | 136 | 0 |
| Total | 71 | 171 | 137 | 2 |

Table 1.7 represents inspections and assessments of unknown HSTS broken down by age. The majority of unknown secondary HSTS are typically filter bed systems. These systems were installed before records were kept or prior to receiving an installation permit from CCBH. These systems have a high failure rate over 20 years of age.

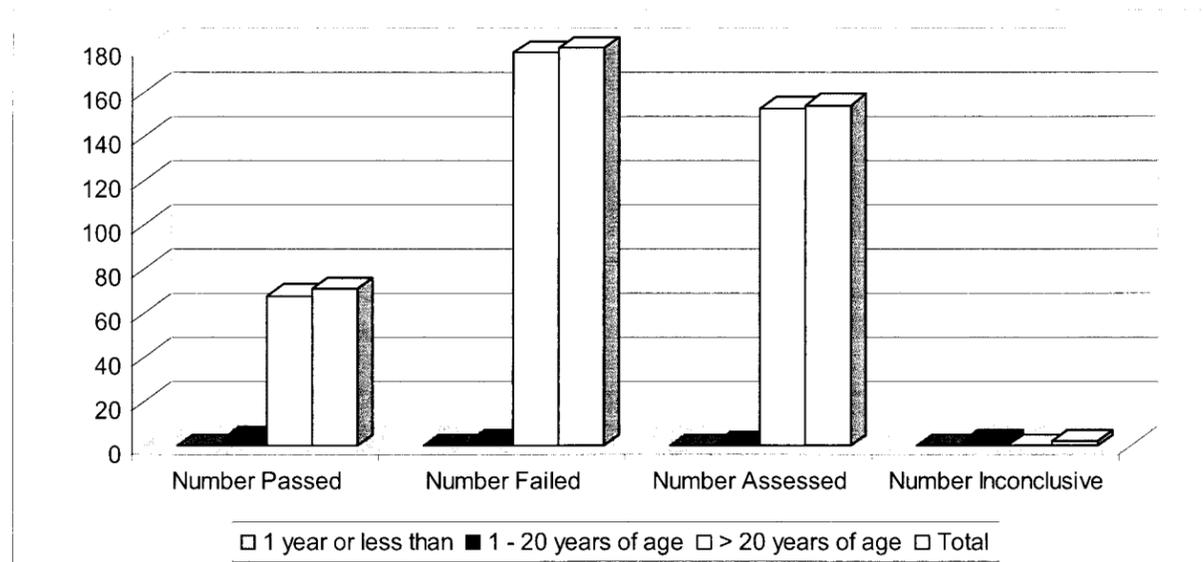


Figure 1.6: Inspection and Assessments of Unknown HSTS from Table 1.7

Table 1.8: On-Lot HSTS Inspections and Assessments

| System Type | Number Passed | Number Failed | Number Assessed |
|--------------------|---------------|---------------|-----------------|
| Drip Distribution | 1 | 0 | 0 |
| Evapotranspiration | 38 | 3 | 1 |
| Mound | 4 | 0 | 1 |
| Total | 43 | 3 | 2 |

Table 1.8 represents inspections and assessments of on-lot HSTS (mound systems, evapotranspiration fields, and drip distribution systems). These systems are newer design HSTS and are all under 20 years of age, with the majority being under 10 years of age. The high passing rate indicates the age of installation plus the fact that these are soil absorption systems designed for the removal of wastewater in soils.

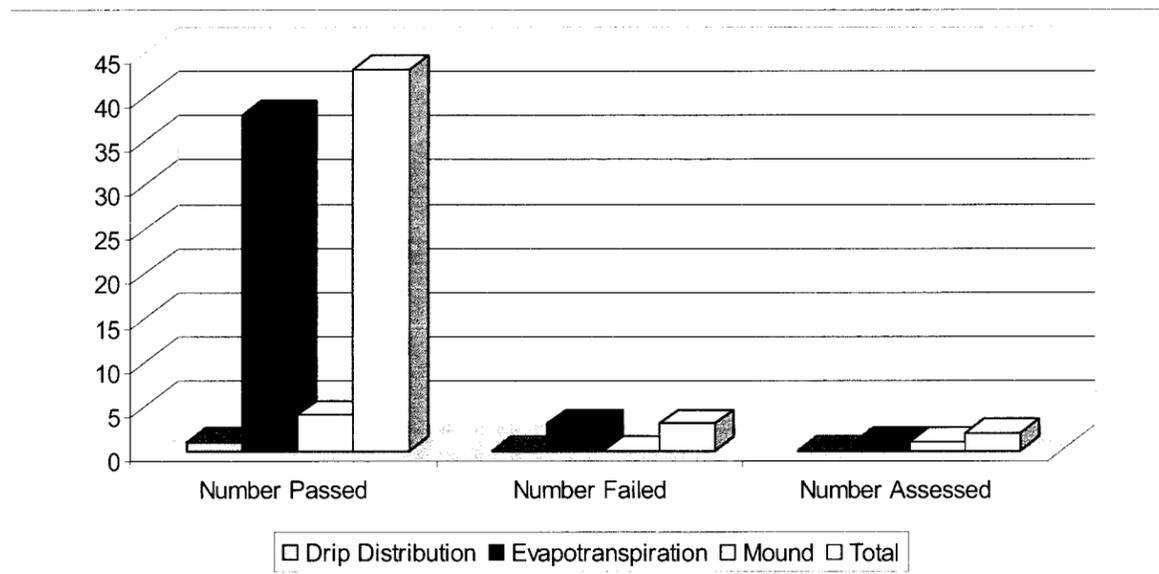


Figure 1.7: Inspection and Assessments of On-lot HSTS from Table 1.8

Table 1.9: Discharge Locations for Off-lot HSTS

| System Type | Streams | Storm Sewers | Ditches | Swale | Unknown |
|-------------|---------|--------------|---------|-------|---------|
| Aeration | 418 | 955 | 222 | 71 | 7 |
| Filterbed | 168 | 331 | 39 | 25 | 12 |
| Unknown | 50 | 90 | 45 | 3 | 54 |

Table 1.9 represents common discharge locations for the off-lot HSTS evaluated as part of this project. The majority of the systems discharge to storm sewers which eventually discharge to a creek or to another surface body of water. All the off-lot HSTS discharge their treated wastewater to surface waters which all are a part of the Lake Erie Watershed and can have significant affects on the overall water quality of these bodies of water. According to the Ohio EPA, the typical HSTS generates and discharges about 400 gallons of water per day back into the environment. In Cuyahoga County, that would equate to approximately 4,843,200 gallons of water per day being generated by HSTS.

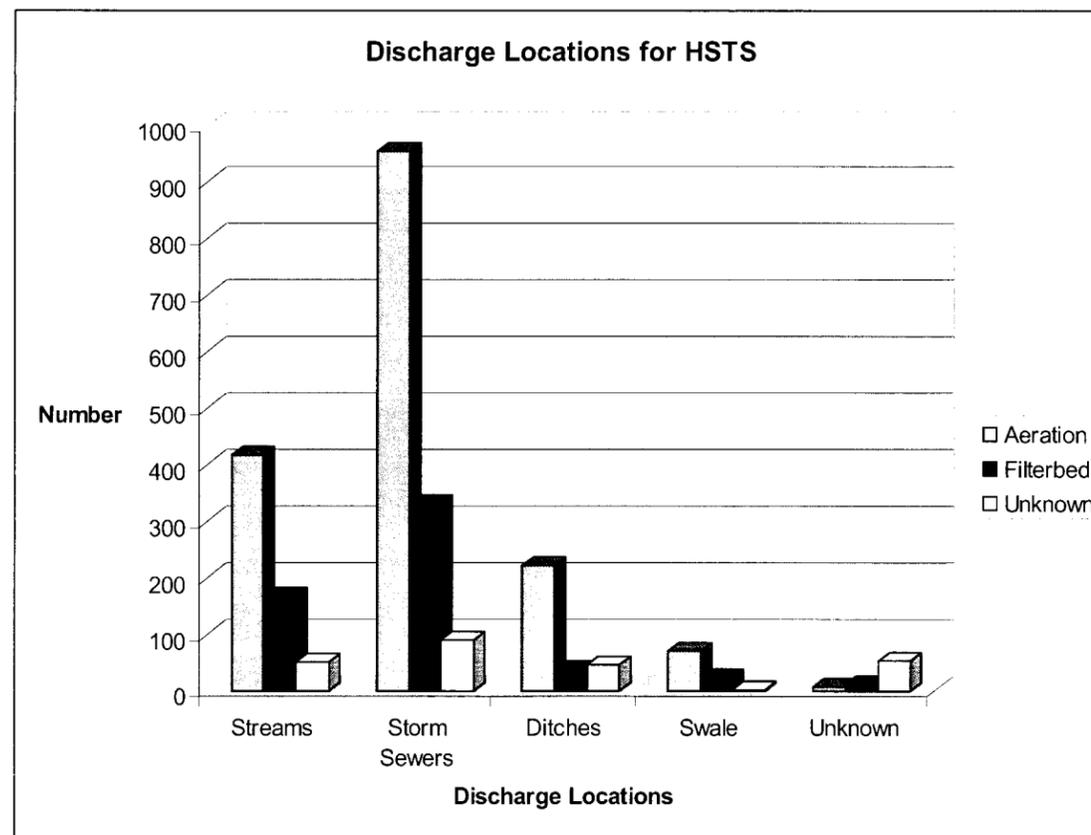


Figure 1.8: Discharge locations from Table 1.9

Two other components of this project include inspecting HSTS during their abandonment when connecting to a sanitary sewer and for the installation of new HSTS on failing systems. The CCBH started to perform inspections of these sanitary sewer connections to ensure that the septic tanks were pumped and that all components were properly removed or crushed during this connection. If the systems are not properly abandoned, future problems could result. This would include tanks collapsing and seepage of raw sewage into ground or surface waters. During this project, 789 HSTS were inspected by the CCBH to ensure proper abandonment. All of these households are now being serviced by a sanitary sewer.

The CCBH also sent postcards to all homeowners whose septic tanks had not been pumped within the previous 4 years in the beginning of 2004. This was followed up by several mailings. To date, a total of 4,310 septic tanks have been pumped and cleaned since January 1, 2004. The pumping of these tanks ensures proper care and maintenance of these systems. The reason for pumping these septic tanks is to remove the accumulation of solids and scum layer from the tanks. If they are not pumped and removed, then these solids can enter the secondary components for these septic systems (aeration unit or filter bed) and start to clog vital components and media. This will then shorten the life span of these systems and cause untreated wastewater to enter the environment and the Lake Erie Watersheds.

Likewise, during the inspection of the HSTS throughout this project, a number were found to be in failure. The CCBH did order a large number of HSTS to be replaced during this time. A total of 261 HSTS have been replaced to date during this project period. The majority of these system installations occurred in those communities where sanitary sewers are not being installed or are not planned for installation. This includes communities such as Pepper Pike, Gates Mills, Hunting Valley, Moreland Hills, North Royalton and Orange Village. In areas where failures were found where sanitary sewers are planned, the HSTS were not ordered to be replaced. Instead, the information was forwarded to those communities to document the need for the sanitary sewer installations and to advise the general public that the sanitary sewer installations were necessary.

Conclusion

For the purpose of this report, a HSTS in failure is one where, upon inspection or assessment, there is observable surfacing of effluent from the HSTS, observable operational problems (e.g., a system component such as an aerator motor is not operational) and observable poor effluent quality (cloudy, black and odorous) being discharged from the system.

As can be seen by the above data, there was a large correlation between age, system type and failure rates. The newer the HSTS, the higher the percentage of systems found to be operating in a satisfactory manner. Likewise, the older the HSTS, the higher the percentage of failure rates. The majority of Aeration HSTS and Filter Bed HSTS are designed to discharge the treated wastewater off-lot in Cuyahoga County. These systems are the most commonplace and they were inspected and assessed the most as part of this project.

Aeration units were found to have a higher passing percentage than filter bed systems. The reason behind this is due to the fact that most aeration units can be repaired to treat the

wastewater properly again. Newer aeration units (less than 20 years of age) are NSF approved and they should meet the water quality standards that they were tested and designed for. When an aeration system is found to be in failure, it is usually due to a motor not operating, or the system being overloaded and needing to be pumped or serviced. Once these problems have been repaired, the aeration systems can be re-evaluated and in most cases, found to be operating properly.

Filter bed systems are designed differently depending upon the age of installation. Prior to 1976, most filter bed systems were designed by using gravel as the filter media. The beds were also sized typically as 180-square foot per household. Since 1976, all filter bed systems have been designed utilizing filter sand. There is typically 12 inches of gravel on the bottom of the excavation (this is the area where the discharge pipe is located), on top of which is the filter sand, usually 18 inches in depth. On top of the filter sand is another 12 inches of gravel where the distribution lines from the septic tank are located. These beds are also sized differently. These systems are sized at a rate of 240-square foot per bedroom. The older filter beds have a high failure rate, which can be expected due to their design. Filter bed systems installed since 1976 have a higher passing rate because of the design of these systems compared to the older design standards.

Overall, there are over 13,000 HSTS in Cuyahoga County. This project has allowed the CCBH to inspect and assess one third of these systems. The overall failure and passing rates were expected due to the age of the systems that were observed as part of this project. This project has allowed the CCBH to justify the need for continued inspections and assessments on HSTS. Since the large majority of these HSTS are off-lot discharging systems, they have a large impact on the surface water quality of the creeks, streams, rivers and the overall Lake Erie Watershed. The need to inspect and assess these HSTS on a routine basis is apparent.

This project also enabled the CCBH to inspect HSTS during their abandonment when homes were connected to a sanitary sewer. These inspections ensured that future problems with these systems will be reduced significantly. These inspections ensured that the septic tanks were pumped and then crushed or removed.

During this project, 265 HSTS were installed to replace failing HSTS. Since each system generally discharges approximately 400 gallons of wastewater per day back into the environment, these 261 systems represent 104,400 gallons of water being discharged back to the environment but now within the water quality parameters set forth in the Ohio Department of Rules for Household Sewage Treatment Systems. The continued replacement of failing HSTS will continue to improve the water quality emanating from HSTS. The CCBH will continue to evaluate and assess HSTS and replace failing HSTS. The fact that aeration systems depend on mechanical components also documents a need for frequent assessments and/or inspections. This will ensure that these systems are treating the wastewater properly because all components are functioning as designed.

Section 2: Educational Outreach Project

As part of this overall project, the CCBH performed outreach programs for school-aged children on water quality and water pollution issues and to HSTS homeowners on the care and maintenance of their HSTS and on water quality issues. The purpose of this outreach was to provide school-aged children with information on specific water quality issues and water pollution that affects the Lake Erie Watershed. Likewise, it provided homeowners of HSTS the necessary information on how their HSTS operates, how these systems must be maintained and how off-lot HSTS can have a major impact on the water quality of the Lake Erie Watershed. The CCBH originally was to perform 12 educational outreach seminars for homeowners who utilize sewage systems. There were a total of 20 outreach programs performed. One of these sessions was a week long booth displayed at the Cuyahoga County Fair. This booth had the CCBH display board with information on HSTS. Approximately 1,000 residents visited this booth during that week and received information on HSTS including outreach materials. The homeowner seminars were held during the evening and included a PowerPoint Presentation on household sewage treatment systems. They included information on the different HSTS designs, off-lot versus on-lot sewage systems, water quality effects from HSTS, care and maintenance of these systems and overall Lake Erie water quality information. Over 5,400 residents received invitations to attend the meetings. Approximately 2,000 residents attended these meetings (this number includes the 1,000 from the County Fair).

The educational outreach program also included educational deliverables for homeowners who utilize sewage systems. These deliverables included a 12-page "Homeowners Guide to Septic System" booklet (see Appendix B), and a Record Keeper Folder containing fact sheets (see Appendix C, for the fact sheets). These fact sheets contain information on HSTS care and maintenance, and water quality issues. The booklet acts as a manual on HSTS designs, care and maintenance and includes other information concerning water quality issues. These booklets and record keeper folders were provided to residents who attended the evening meetings and were given to homeowners during the inspection or assessment of their HSTS. Approximately 2,800 Homeowners Guide to Septic Systems and 1,400 record keeper folders with facts sheets were handed out to HSTS homeowners.

Table 2.1: HSTS Outreach Programs

| HSTS Homeowner Outreach | | |
|--------------------------------|--------------------|------------------------|
| Location | Date | Number Attended |
| Cleveland State University | February 17, 2004 | 25 |
| Middleburg Hts | February 18, 2004 | 45 |
| North Royalton | February 25, 2004 | 50 |
| Bentleyville | May 13, 2004 | 23 |
| Chagrin Falls | July 19, 2004 | 15 |
| Gates Mills | September 15, 2004 | 45 |
| Orange Village | September 29, 2004 | 10 |
| Valley View | November 4, 2004 | 5 |
| Orange Village | April 20, 2005 | 40 |
| Gates Mills | May 11, 2005 | 15 |
| North Royalton | May 9, 2005 | 75 |
| North Royalton | June 13, 2005 | 111 |
| County Fair | August 8-12, 2005 | 1000 |
| Strongsville | September 22, 2005 | 70 |
| Strongsville | September 29, 2005 | 50 |
| Strongsville | October 6, 2005 | 50 |
| Mayfield Village | October 27, 2005 | 90 |
| Olmsted Township | November 14, 2005 | 70 |
| Olmsted Township | November 15, 2005 | 50 |
| Olmsted Township | November 18, 2005 | 50 |

The Cuyahoga County Board of Health also provided a total of 33 educational outreach programs to school-aged children in various school districts throughout the county. The grant originally stated that 6 of these outreach programs would be performed. Approximately 1,500 school-aged children were included in these outreach programs. These in-class sessions incorporated water quality issues and information on Lake Erie, the *Lake Erie Protection & Restoration Plan*, and overall water monitoring procedures. The sessions at both Strongsville and Orange High included field outreach with macroinvertebrate sampling. The CCBH was also able to initiate a volunteer monitoring program with the Orange High School's Environmental Club. This club is now performing macroinvertebrate monitoring on a site in the Chagrin River as part of the ODNR's Scenic River Program.

Table 2.2: School-Aged Children Outreach Programs

| Outreach for School-Aged Children | | |
|--|-------------------|------------------------|
| Location | Date | Number Attended |
| St Rita's School (2 sessions) | March 4, 2004 | 40 |
| Cuyahoga Community College | March 5, 2004 | 45 |
| ODNR's Fun Fair | May 26, 2004 | 300 |
| Strongsville High School (10 sessions) | October 2004 | 365 |
| Orange High School (4 sessions) | October 2004 | 100 |
| Baldwin Wallace College | February 3, 2005 | 40 |
| Orange High School | February 3, 2005 | 20 |
| Gates Mills Elementary School | February 24, 2005 | 30 |
| Rocky River Nature Center | March 18, 2005 | 25 |
| Rocky River Nature Center | March 19, 2005 | 25 |
| Rocky River Nature Center | March 26, 2005 | 25 |
| Earthday Fest Metroparks | April 17, 2005 | 300 |
| NASA Earthday Fest | April 22, 2005 | 100 |
| Roehm Middle School, Berea | May 24, 2005 | 116 |
| ODNR's Fun Fair | May 25, 2005 | 300 |
| Gates Mills Elementary | May 26, 2005 | 31 |
| Albion Middle school, Strongsville | May 27, 2005 | 66 |
| Burning River Festival | August 13, 2005 | 150 |
| Conservation Day | August 20, 2005 | 75 |
| Strongsville High School (10 sessions) | October 2005 | 350 |

Section 3: Water Quality Project

The CCBH performed chemical, biological and physical monitoring in areas throughout the county. This monitoring served a variety of purposes. The chemical analysis enabled the Board of Health to prioritize areas for HSTS inspections. It also provided data as to the water quality in those specific tributaries and streams.

The biological and physical monitoring are an effective way to identify water quality problems. Aquatic biological communities reflect overall ecological integrity (i.e., chemical, physical, and biological integrity). These communities change in response to a wide variety of pollutants and to the cumulative impacts of those pollutants. Biological monitoring was used for detecting the health of aquatic environments and assessing the relative severity of the pollution impacts. Physical assessments include both Headwater Habitat Evaluation Index (HHEI) studies as well as Qualitative Habitat Evaluation Index (QHEI) studies. These physical assessments provided valuable information as to the physical structures of a stream corridor. This provides information as to the physical health of aquatic environments.

CCBH Registered Sanitarians and college interns conducted these studies. The training of these staff on water quality studies were included in the QAPP that was produced for this project. The areas identified for chemical, biological and physical assessments included Cahoon Creek, Pepper Creek, Sagamore Creek and a joint project with the Cuyahoga Valley National Park District on headwater streams located in Brecksville and northern Summit County within the Cuyahoga River Watershed. The stream assessments performed in these waterways are attached as reports written by staff members who performed each stream assessment. Below are summaries of each stream assessment project.

Pepper Creek (see Appendix D for full report)

This study was carried out to assess the physical (QHEI), biological (macroinvertebrate population), and bacteriological/chemical health of Pepper Creek. Both the QHEI and the macroinvertebrate scores were in the fair range, suggesting that the creek has been negatively impacted by urbanization. Fecal coliform levels were also high in the creek, indicating a potential public health nuisance from sewage pollution.

The surrounding suburban land use negatively affects stream habitat in many ways. Storm sewer systems designed to prevent roadways from flooding are responsible for increased sporadic stream flows, which can wash away macroinvertebrate populations and also increase erosion and sediment loadings. The destruction of the natural riparian buffer leaves the creek further unprotected from lawn, roof-top, and pavement run-off. The manicured lawns bordering much of the creek do not provide the necessary root system to prevent erosion and absorb the sediment and chemicals that are present in urban rainwater run-off. Shade trees are sparse, which increases summer water temperatures and limits the sources of instream cover for fish and macroinvertebrates. Channel modifications (retaining walls, rip-rap) decrease sinuosity and inhibit natural riffle/pool development. All these factors decrease the creek's ability to support healthy aquatic communities.

Pepper Creek failed to meet its OEPA designation as a primary contact waterway due to high fecal coliform bacteria levels in several locations. Improperly functioning household sewage treatment systems (HSTS) are the likely source of this pollution. The Cuyahoga County Board of Health (CCBH) is working with both communities in the Pepper Creek watershed (Pepper Pike and Hunting Valley) to upgrade failing HSTS. When failing systems are identified by CCBH sanitarians, the homeowners are required to replace them with systems meeting the current standards. In addition, the village of Pepper Pike plans to install sanitary sewers in portions of the watershed, which will further improve the water quality of Pepper Creek.

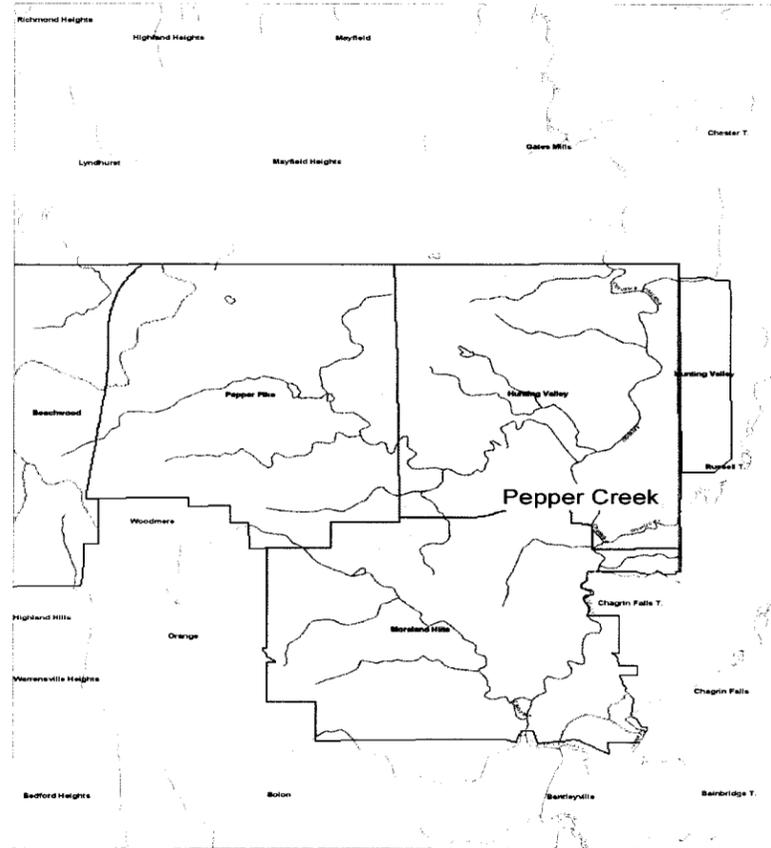


Figure 3.2: Map of Pepper Creek

Cahoon Creek (see Appendix E for full report)

This study was carried out to assess the physical (QHEI), biological (macroinvertebrate population), and bacteriological/chemical health of Cahoon Creek. Both the QHEI and the macroinvertebrate scores were in the fair range, suggesting that the creek has been negatively impacted by urbanization. For the most part, the bacteriological and chemical readings were in the acceptable range, so inadequate habitat appears to be the limiting factor for the mediocre aquatic communities.

The surrounding suburban land use negatively affects stream habitat in many ways. Storm sewer systems designed to prevent roadways from flooding are responsible for increased sporadic stream flows, which can wash away macroinvertebrate populations and also increase erosion and

sediment loadings. The destruction of the natural riparian buffer leaves the creek further unprotected from lawn, roof-top, and pavement run-off. The manicured lawns bordering much of the creek do not provide the necessary root system to prevent erosion and absorb the sediment and chemicals that are present in urban rainwater run-off. Shade trees are sparse, which increases summer water temperatures and limits the sources of instream cover for fish and macroinvertebrates. Channel modifications (retaining walls, rip-rap) decrease sinuosity and inhibit natural riffle/pool development. All these factors decrease the creek's ability to support healthy aquatic communities.

Cahoon Creek also has some naturally limiting habitat factors. Its relatively small size (6.2 miles) affects its channel morphology, and large sections of bedrock substrate make macroinvertebrate collection difficult. However, the surrounding urbanization of the Cahoon Creek watershed is definitely impacting the health of the creek.

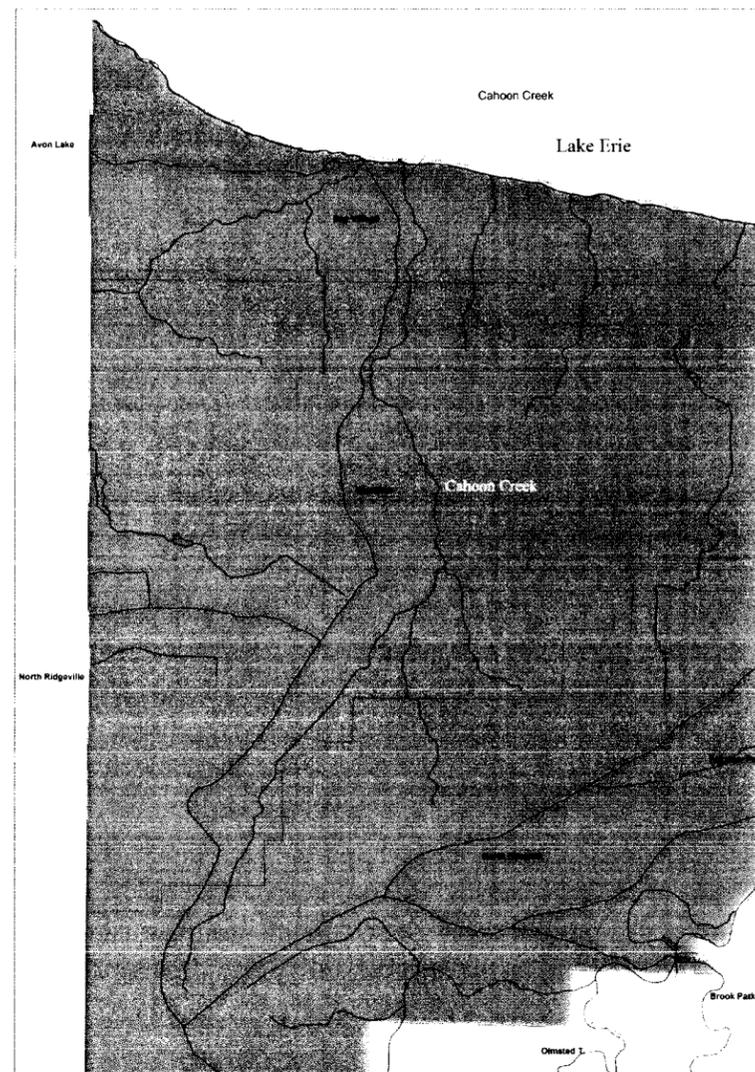


Figure 3.1: Map of Cahoon Creek

HHEI Project (see Appendix F for full report)

This study was conducted to evaluate the quality of the headwater streams that flow into the Cuyahoga River near River Mile 19. The evaluation of headwater quality can help environmental and municipal officials with land use decisions in areas where small streams may be culverted for new development. The results of this study show that most headwaters in the tested area are currently healthy. The physical, chemical, and biological components of the stream all work together to create a hospitable environment for plants and organisms. Decent headwater habitat and water quality contribute to a diverse population of macroinvertebrates, fish, and salamanders, which consequently increases the health of the Cuyahoga River downstream.

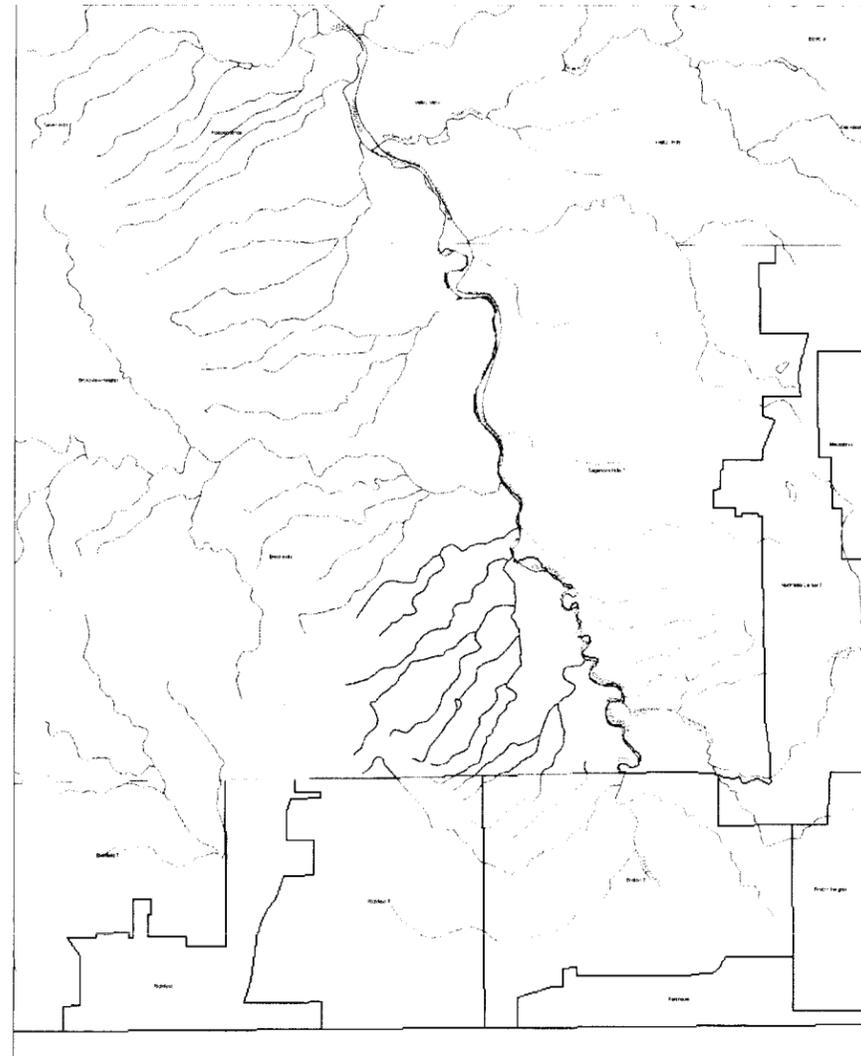


Figure 3.3: Map of HHEI Project in Brecksville

Sagamore Creek (see Appendix G for full report)

This project was carried out to assess the physical (QHEI) and biological (macroinvertebrate population) health of Sagamore Creek. Both these factors were satisfactory for the most part, suggesting that this creek is capable of supporting healthy aquatic communities. Many small fish were observed living in its pools during this study. The health of Sagamore Creek ultimately affects the Cuyahoga River, into which it flows.

Water Quality Sampling

All the major streams in Cuyahoga County are designated primary contact waters by the Ohio EPA. These are waters that are suitable for full body contact during the recreation season, which includes swimming, canoeing and scuba diving, with minimal threat to public health as a result of water quality. The standard for these waters is based on the geometric mean of at least five samples collected within a thirty day period. The samples are tested for either fecal coliform or Escherichia coliform (E. coli). Both of these types of bacteria are associated with sewage contamination. CCBH currently uses the **fecal coliform standard** when conducting stream monitoring. (The E. coli standard is used when sampling bathing beaches.) In order to meet primary contact standards, the geometric mean for fecal coliform bacteria shall not exceed 1,000 fecal coliform colonies per 100 milliliters of sample. Additionally, no more than ten per cent of these samples shall exceed 2,000 colonies per 100 milliliters.

Small unnamed tributaries, ditches, and storm sewer outfalls which are not designated primary contact waters must meet a less stringent bacteria standard, but still must not exceed 5,000 fecal coliform colonies in two or more samples taken within a thirty day period.

The water quality parameters used by CCBH for stream monitoring are described below:

- Fecal coliform: Fecal coliform is bacteria which is present in the intestinal tract of warm-blooded animals and is evidence of the presence of human or animal wastes.
- Total Phosphorous: Nutrient enrichment may cause excessive algae and aquatic plant growth, which may choke open waters and consume oxygen, primarily from decomposition of dead plants and algae.
- Total ammonia nitrogen: Ammonia is another source of nutrient enrichment. Acceptable ammonia levels vary according to season, and are temperature and pH dependent.
- Turbidity: Turbidity is a measure of the cloudiness of water- the cloudier the water, the greater the turbidity. Turbidity in water is caused by suspended matter such as clay, silt, and organic matter and by plankton and other microscopic organisms that interfere with the passage of light through the water. Turbidity is closely related to total suspended solids (TSS), but also includes plankton and other organisms. Turbidity itself is not a major health concern, but high turbidity can interfere with disinfection and provide a medium for microbial growth. It also may indicate the presence of microbes.
- Total Suspended Solids: The term "total solids" refers to matter suspended or dissolved in water or wastewater, and is related to both specific conductance and turbidity. Total Solids include both total suspended solids, the portion of total solids retained by a filter and total dissolved solids, the portion that passes through a filter. Total Suspended Solids

(TSS) are solids in water that can be trapped by a filter. TSS can include a wide variety of material, such as silt, decaying plant and animal matter, industrial wastes, and sewage. High concentrations of suspended solids can cause many problems for stream health and aquatic life. High TSS can block light from reaching submerged vegetation. As the amount of light passing through the water is reduced, photosynthesis slows down. Reduced rates of photosynthesis cause less dissolved oxygen to be released into the water by plants. If light is completely blocked from bottom dwelling plants, the plants will stop producing oxygen and will die. As the plants decompose, bacteria will use up even more oxygen from the water. Low dissolved oxygen can lead to fish kills. High TSS can also cause an increase in surface water temperature, because the suspended particles absorb heat from sunlight.

- **Dissolved Oxygen:** Dissolved Oxygen (DO) is found in microscopic bubbles of oxygen that are mixed in the water and occur between water molecules. DO is a very important indicator of a water body's ability to support aquatic life. Fish "breathe" by absorbing dissolved oxygen through their gills. Oxygen enters the water by absorption directly from the atmosphere or by aquatic plant and algae photosynthesis. Oxygen is removed from the water by respiration and decomposition of organic matter. In fast-moving streams, rushing water is aerated by bubbles as it churns over rocks and falls down hundreds of tiny waterfalls. These streams, if unpolluted, are usually saturated with oxygen. In slow, stagnant waters, oxygen only enters the top layer of water, and deeper water is often low in DO concentration due to decomposition of organic matter by bacteria that live on or near the bottom of the reservoir. Dams slow water down, and therefore can affect the DO concentration of water downstream. If water is released from the top of the reservoir, it can be warmer because the dam has slowed the water, giving it more time to warm up and lose oxygen. If dams release water from the bottom of a reservoir, this water will be cooler, but may be low in DO due to decomposition of organic matter by bacteria.
- **Specific Conductance:** Specific Conductance (SC) is a measure of how well water can conduct an electrical current. Conductivity increases with increasing amount and mobility of ions. These ions, which come from the breakdown of compounds, conduct electricity because they are negatively or positively charged when dissolved in water. Therefore, SC is an indirect measure of the presence of dissolved solids such as chloride, nitrate, sulfate, phosphate, sodium, magnesium, calcium, and iron, and can be used as an indicator of water pollution.
- **pH:** Acidic or alkaline waters will adversely affect many biological processes. Low pH or acidic conditions adversely affect the reproduction and development of fish and amphibians, and can decrease microbial activity important to nutrient cycling. High pH, or alkaline conditions, can cause toxicity in aquatic organisms.
- **Water temperature:** Temperature of water is a very important factor for aquatic life. It controls the rate of metabolic and reproductive activities, and determines which fish species can survive. Temperature also affects the concentration of dissolved oxygen and can influence the activity of bacteria and toxic chemicals in water.
- **Flow rate:** While flow is technically a physical parameter rather than chemical, it gives valuable information about the quantity of water. High flow rates can harm aquatic life by literally washing it away while low flows can increase the impact of any pollutants on an aquatic community.

The CCBH also performed an extensive chemical water quality sampling throughout the county in various watersheds. 53 permanent sampling locations have been established throughout the county. The sampling conducted at these locations occurred three times in 2004 and another three times in 2005. These locations are sampled to obtain general baseline data and to identify potential problem areas being impacted by pollution during the recreational season. They are monitored during dry weather conditions for the following parameters: fecal coliform, ammonia, total phosphorous, total suspended solids, pH, temperature, dissolved oxygen, specific conductance, and flow rate. In addition to the permanent sampling sites, CCBH also collects other samples in response to nuisance conditions or for general water quality information.

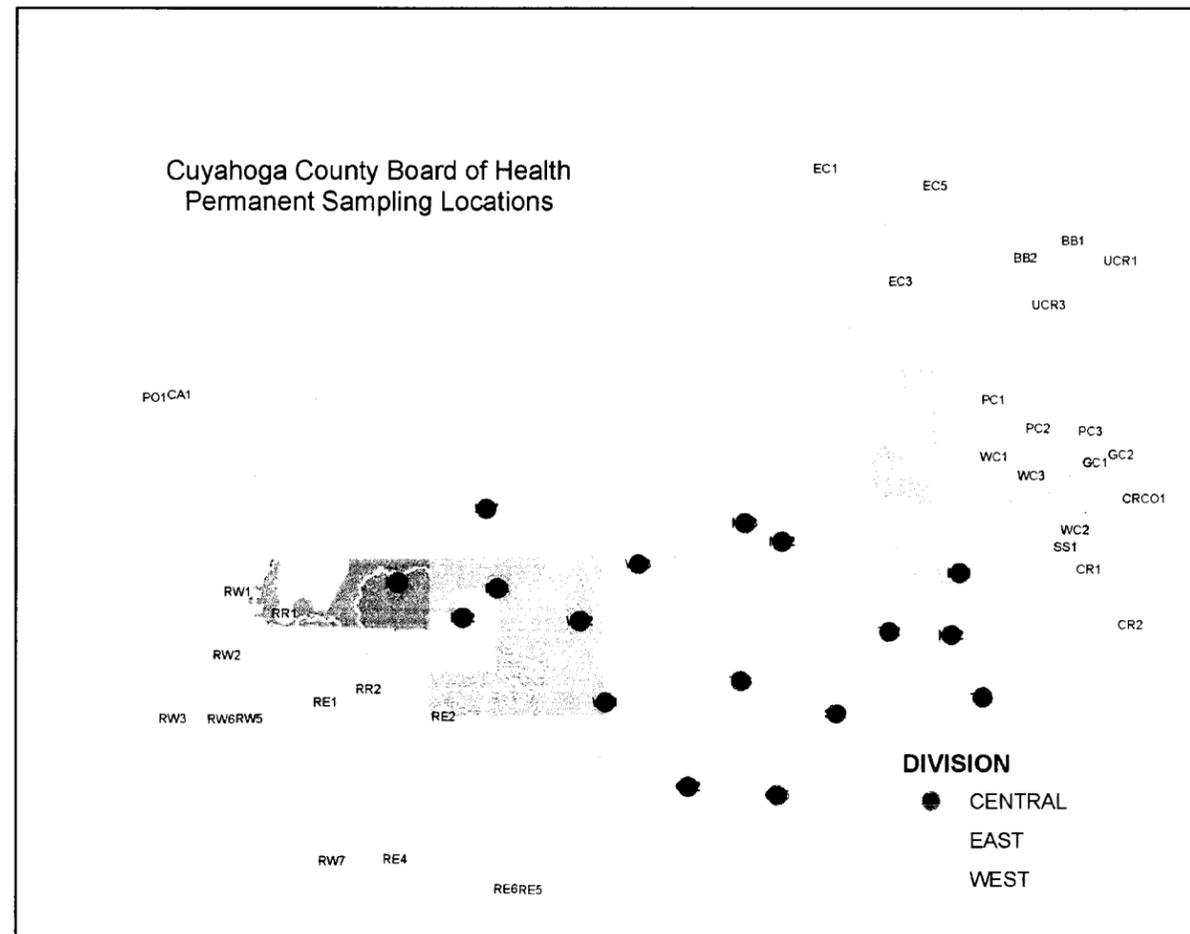


Figure 3.4: Permanent sampling locations in Cuyahoga County

The summary of all water sampling conducted since January 2004 is in Appendix H. The majority of the samples taken at the permanent sampling locations over the past two years show an overall good general water quality at these locations. Throughout these sample results, there are a few samples that have high levels of fecal coliform above the recommended standards for primary contact waters. These sites all have a connection to areas of high numbers of HSTS. This shows a significant correlation between HSTS failures and definite water quality impairments. There were also a couple of samples taken in the Rocky River Watershed that showed low levels of dissolved oxygen. This, too, is a possible sign of high levels of bacteria. The CCBH also performed chemical sampling of fecal coliform throughout the county in ditches, storm sewers and creeks to determine if nuisance conditions exist and to assist in prioritizing HSTS inspections and assessments.

The summary of this data shows strong correlations between high levels of fecal coliform and areas with large numbers of HSTS. The table below shows a breakdown by community, and a summary of the average fecal coliform levels taken at locations within those communities.

Table 3.1: Sampling results per community

| Community | Average of Fecal coliform colonies /100ml |
|--------------------|--|
| Bay Village | 1,423 |
| Beachwood | 13,543 |
| Brook Park | 35,333 |
| Brecksville | 20,422 |
| Berea | 1,731 |
| Independence | 4,478 |
| Mayfield | 19,045 |
| Middleburg Heights | 335,536 |
| Moreland Hills | 136,099 |
| North Olmsted | 402,999 |
| Olmsted Township | 52,936 |
| Orange Village | 19,907 |
| Parma | 126,579 |
| Pepper Pike | 1,008,883 |
| Seven Hills | 6,415 |
| Solon | 40,427 |
| Strongsville | 202,067 |
| Woodmere | 1,396 |

This table clearly shows the connection of high fecal coliform colonies with those having large concentrations of HSTS. When looking at the water quality data in Appendix H, you will notice a high number of chemical samples taken. This data was used in assessing and inspecting HSTS. Those areas with the highest number of fecal coliform counts were the areas where a large number of HSTS were inspected. These areas are also where a large number of failures were reported.

Conclusion

The water quality component of this project has provided valuable data as to the condition of Pepper Creek, Cahoon Creek, Sagamore Creek and enabled the categorizing of a number of headwater streams within the Cuyahoga River Watershed. It also provided the chance to perform an extensive water quality sampling throughout the county to assist in prioritizing where HSTS would be inspected and/or assessed and to the overall condition of bacterial contaminants that are reaching the watersheds of Cuyahoga County. Table 3.1 shows an average of the water quality results for fecal coliform within specific communities in Cuyahoga County. The full report, located in Appendix H, shows the locations where the samples were taken and the results. This data has proved to be very valuable. The data has been provided to communities to assist them in prioritizing their own infrastructure programs. The higher bacterial counts have inspired communities to start to look at the potential causes of these bacterial counts. In communities with HSTS, the CCBH is working with each community to make the best possible decision to rectify the problems emanating from these systems. As sewage systems are evaluated in a community and water quality sampling is performed, the data gathered is provided to local officials. This information can then be utilized to help determine the most effective means of eliminating pollution sources in a specific area. In many circumstances, the design and installation of a sanitary sewer is a feasible solution for eliminating failing sewage systems. Where sanitary sewers are determined not to be feasible, the repair or replacement of failing HSTS will be on going by the CCBH.

Appendix A

LEPF INSPECTIONS

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|---------------|--------|------------|------------|-----|--------------|
| BAYV | OSBORNE RD | 29404 | AERATION | 4/8/2004 | F | 7/20/2004 |
| BDFD | BARTLETT RD | 420 | UNKNOWN | 5/10/2005 | P | 5/1/2005 |
| BDFD | BEDFORD GLEN | 123 | AERATION | 10/20/2004 | P | 8/5/2005 |
| BDFD | COLUMBUS RD | 527 | AERATION | 1/31/2005 | P | 4/6/2005 |
| BDFD | COLUMBUS RD | 533 | AERATION | 5/23/2005 | P | 3/1/2004 |
| BDFD | COLUMBUS RD | 632 | AERATION | 2/25/2005 | P | 9/19/2002 |
| BDFD | COLUMBUS RD | 654 | FILTER BED | 2/25/2005 | I | 4/8/2005 |
| BDFD | COLUMBUS RD | 704 | UNKNOWN | 5/13/2004 | F | 7/18/2005 |
| BDFD | COLUMBUS RD | 726 | AERATION | 1/31/2005 | F | 4/15/2005 |
| BDFD | GILBERT DR | 1099 | AERATION | 4/5/2005 | P | 5/20/2004 |
| BDFD | HIGH ST | 759 | FILTER BED | 5/13/2004 | P | 11/24/2001 |
| BDFD | HIGH ST | 837 | UNKNOWN | 5/20/2004 | F | 5/28/2004 |
| BDFD | OLD EGBERT RD | 128 | AERATION | 4/18/2005 | P | 4/1/2005 |
| BDFD | OVERLOOK PL | 72 | AERATION | 4/18/2005 | P | 4/25/1997 |
| BDFD | OVERLOOK PL | 74 | AERATION | 4/18/2005 | P | 10/10/2005 |
| BDFD | OVERLOOK PL | 78 | AERATION | 4/18/2005 | P | 10/11/2000 |
| BDFD | OVERLOOK PL | 86 | AERATION | 3/2/2005 | P | 4/11/2005 |
| BDFD | PINECREST DR | 94 | UNKNOWN | 4/29/2005 | F | 7/21/2003 |
| BDFD | POWERS RD | 129 | FILTER BED | 4/29/2005 | F | 9/22/2005 |
| BDFD | POWERS RD | 133 | FILTER BED | 7/14/2004 | F | 6/14/2001 |
| BDFD | UNION ST | 70 | AERATION | 3/2/2005 | P | 8/10/2002 |
| BDFD | W GRACE ST | 286 | AERATION | 4/18/2005 | P | 6/26/2001 |
| BDHT | RICHMOND RD | 5602 | UNKNOWN | 4/18/2005 | P | 4/1/2005 |
| BDHT | WICKLEY LN | 5540 | FILTER BED | 7/21/2004 | F | 5/19/2005 |
| BDHT | WICKLEY LN | 5548 | UNKNOWN | 9/1/2004 | F | 4/1/2002 |
| BDHT | WICKLEY LN | 5549 | UNKNOWN | 3/9/2005 | P | 4/1/2002 |
| BDHT | WICKLEY LN | 5555 | FILTER BED | 3/9/2005 | P | 4/1/2002 |
| BKLN | BIDDULPH RD | 16716 | UNKNOWN | 3/23/2005 | F | 8/16/2000 |
| BKPK | SHELDON RD | 19988 | FILTER BED | 7/1/2004 | F | 2/24/1998 |
| BNVL | CANNON RD | 35072 | UNKNOWN | 11/17/2005 | F | 5/18/2004 |
| BNVL | CANNON RD | 35074 | AERATION | 11/15/2005 | P | |
| BNVL | CANNON RD | 35114 | AERATION | 8/30/2004 | P | 8/27/2003 |
| BNVL | CANNON RD | 35126 | UNKNOWN | 11/17/2005 | F | 6/9/2004 |
| BNVL | CANNON RD | 35130 | FILTER BED | 4/30/2004 | P | 3/22/2001 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|---------------|--------|------------|------------|-----|--------------|
| BNVL | CANNON RD | 35134 | AERATION | 8/16/2005 | P | 11/14/2001 |
| BNVL | CHAGRIN RIVER | 6031 | AERATION | 6/6/2005 | | 7/22/2005 |
| BNVL | CHAGRIN RIVER | 6073 | AERATION | 10/14/2005 | P | 6/17/2003 |
| BNVL | CHAGRIN RIVER | 6075 | AERATION | 8/30/2004 | F | 7/11/1988 |
| BNVL | CHAGRIN RIVER | 6105 | UNKNOWN | 10/11/2005 | F | 11/22/2004 |
| BNVL | CHAGRIN RIVER | 6115 | AERATION | 4/13/2004 | P | |
| BNVL | CHAGRIN RIVER | 6123 | AERATION | 4/13/2004 | P | 3/10/2004 |
| BNVL | CHAGRIN RIVER | 6187 | AERATION | 8/30/2004 | P | 7/7/2000 |
| BNVL | CHAGRIN RIVER | 6535 | LEACHFIELD | 9/6/2005 | P | 8/16/2005 |
| BNVL | HOLBROOK RD | 35185 | AERATION | 8/30/2004 | P | 3/11/1999 |
| BNVL | HOLBROOK RD | 35187 | FILTER BED | 10/28/2005 | F | 6/3/2004 |
| BNVL | LIBERTY RD | 5300 | AERATION | 7/1/2004 | P | 6/1/2005 |
| BNVL | LIBERTY RD | 5361 | FILTER BED | 8/5/2005 | F | 2/15/2000 |
| BNVL | LIBERTY RD | 5419 | AERATION | 7/28/2004 | P | 8/26/2004 |
| BNVL | LIBERTY RD | 5477 | AERATION | 7/28/2004 | P | 8/26/2004 |
| BNVL | LIBERTY RD | 5600 | UNKNOWN | 9/6/2005 | F | 3/30/2005 |
| BNVL | OVERLOOK RD | 15 | FILTER BED | 7/22/2004 | P | 12/3/2003 |
| BNVL | PARK WOOD CIR | 5675 | FILTER BED | 2/10/2005 | F | 8/21/1997 |
| BNVL | PINE RIVER DR | 35 | LEACHFIELD | 8/4/2005 | P | 2/11/2005 |
| BNVL | SOLON RD | 35907 | UNKNOWN | 11/22/2004 | F | 8/1/2002 |
| BNVL | SOLON RD | 35911 | FILTER BED | 8/18/2005 | F | 2/15/1999 |
| BNVL | SOLON RD | 35954 | AERATION | 6/23/2004 | F | 6/11/2002 |
| BNVL | SOLON RD | 35960 | AERATION | 3/10/2005 | P | 5/26/2004 |
| BRCK | AMBER LN | 8043 | AERATION | 5/10/2004 | P | 6/7/1997 |
| BRCK | AMBER LN | 8068 | AERATION | 5/10/2004 | P | 5/18/2005 |
| BRCK | AMBER LN | 8069 | AERATION | 5/10/2004 | P | 7/15/2004 |
| BRCK | AMBER LN | 8080 | AERATION | 8/9/2004 | P | 6/26/2000 |
| BRCK | BARR RD | 10115 | FILTER BED | 4/13/2005 | P | 7/29/2005 |
| BRCK | BARR RD | 10143 | FILTER BED | 5/10/2005 | F | 12/27/2002 |
| BRCK | BARR RD | 10174 | FILTER BED | 3/18/2005 | F | 7/19/2001 |
| BRCK | BARR RD | 10193 | FILTER BED | 8/18/2005 | P | 3/23/2002 |
| BRCK | BARR RD | 10227 | AERATION | 1/24/2005 | P | 3/30/2005 |
| BRCK | BARR RD | 10233 | FILTER BED | 4/15/2005 | F | 4/22/2002 |
| BRCK | BARR RD | 10247 | FILTER BED | 8/22/2005 | F | 3/7/2003 |
| BRCK | BARR RD | 10335 | AERATION | 4/29/2005 | P | |
| BRCK | BARR RD | 10340 | FILTER BED | 9/14/2005 | P | 7/6/2004 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|--------------|--------|------------|------------|-----|--------------|
| BRCK | BARR RD | 10360 | FILTER BED | 2/7/2005 | P | 3/19/2002 |
| BRCK | BARR RD | 10401 | FILTER BED | 8/3/2005 | F | 7/19/1982 |
| BRCK | BARR RD | 9603 | FILTER BED | 2/14/2005 | F | 6/11/2004 |
| BRCK | BARR RD | 9619 | AERATION | 7/7/2004 | P | 4/23/2004 |
| BRCK | BARR RD | 9635 | AERATION | 7/7/2004 | P | 9/1/2005 |
| BRCK | BARR RD | 9667 | LEACHFIELD | 2/8/2005 | P | 6/1/2003 |
| BRCK | BARR RD | 9697 | AERATION | 7/7/2004 | P | 11/15/2004 |
| BRCK | BARR RD | 9701 | AERATION | 7/7/2004 | P | 5/23/2003 |
| BRCK | BARR RD | 9713 | FILTER BED | 2/14/2005 | P | 5/1/2003 |
| BRCK | BARR RD | 9721 | FILTER BED | 2/7/2005 | P | 9/2/2003 |
| BRCK | BARR RD | 9729 | FILTER BED | 3/1/2005 | P | 3/28/2001 |
| BRCK | BARR RD | 9739 | AERATION | 2/2/2005 | | 10/11/2004 |
| BRCK | BARR RD | 9746 | AERATION | 7/7/2004 | P | 8/1/2003 |
| BRCK | BARR RD | 9830 | AERATION | 7/27/2004 | P | 7/23/2004 |
| BRCK | BARR RD | 9846 | FILTER BED | 6/6/2005 | P | 5/29/1999 |
| BRCK | BARR RD | 9878 | FILTER BED | 5/23/2005 | F | 4/1/2001 |
| BRCK | BARR RD | 9906 | FILTER BED | 5/24/2005 | F | 8/19/2002 |
| BRCK | BARR RD | 9920 | UNKNOWN | 4/26/2005 | P | 11/15/2003 |
| BRCK | BOSTON RD | 3807 | FILTER BED | 4/4/2005 | F | 8/9/2003 |
| BRCK | CALVIN DR | 12200 | FILTER BED | 6/6/2005 | F | 10/23/2000 |
| BRCK | CALVIN DR | 12207 | FILTER BED | 6/1/2005 | P | 4/23/2002 |
| BRCK | CALVIN DR | 12222 | FILTER BED | 6/15/2005 | F | 1/1/2004 |
| BRCK | CALVIN DR | 12257 | FILTER BED | 5/25/2005 | P | 6/14/2005 |
| BRCK | CALVIN DR | 12365 | AERATION | 5/23/2005 | P | 2/10/2003 |
| BRCK | CALVIN DR | 12306 | FILTER BED | 6/15/2005 | F | 8/1/2003 |
| BRCK | CALVIN DR | 12390 | FILTER BED | 6/6/2005 | P | 11/15/2004 |
| BRCK | CALVIN DR | 12407 | UNKNOWN | 7/13/2005 | F | 8/1/2003 |
| BRCK | CALVIN DR | 12414 | UNKNOWN | 4/28/2005 | F | 9/1/2003 |
| BRCK | CALVIN DR | 12421 | FILTER BED | 7/11/2005 | F | 11/5/2005 |
| BRCK | CALVIN DR | 12428 | FILTER BED | 3/28/2005 | P | 3/21/2005 |
| BRCK | CALVIN DR | 12440 | FILTER BED | 7/21/2005 | P | 10/11/2004 |
| BRCK | CHIPPEWA RD | 11221 | UNKNOWN | 9/22/2004 | P | 12/15/2004 |
| BRCK | CHIPPEWA RD | 12800 | UNKNOWN | 10/19/2005 | P | 6/11/2003 |
| BRCK | CHIPPEWA RD | 9515 | FILTER BED | 7/6/2005 | P | 8/27/2002 |
| BRCK | DEERFIELD LN | 10028 | FILTER BED | 6/20/2005 | F | 6/2/2005 |
| BRCK | DEERFIELD LN | 10037 | AERATION | 6/15/2005 | P | 12/16/2004 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|---------------|--------|------------|-----------|-----|--------------|
| BRCK | ECHO HILL DR | 10144 | AERATION | 5/17/2005 | F | 7/17/1998 |
| BRCK | ECHO HILL DR | 10205 | AERATION | 5/17/2005 | F | 7/31/1987 |
| BRCK | ECHO HILL DR | 10243 | AERATION | 5/17/2005 | F | 5/22/2001 |
| BRCK | EDGERTON RD | 4100 | FILTER BED | 2/7/2005 | F | 11/15/2004 |
| BRCK | EDGERTON RD | 5000 | AERATION | 2/18/2005 | P | 6/30/2001 |
| BRCK | EDGERTON RD | 5023 | LEACHFIELD | 2/9/2005 | P | 3/29/1999 |
| BRCK | FITZWATER RD | 11375 | LEACHFIELD | 2/8/2005 | P | 8/2/2004 |
| BRCK | FITZWATER RD | 7701 | FILTER BED | 2/14/2005 | P | 5/3/2005 |
| BRCK | FORESTVIEW TE | 9938 | AERATION | 3/7/2005 | P | 8/1/2003 |
| BRCK | HIGHLAND DR | 10156 | FILTER BED | 3/8/2005 | P | 8/23/2004 |
| BRCK | HIGHLAND DR | 10426 | FILTER BED | 3/7/2005 | P | 8/5/2002 |
| BRCK | HIGHLAND DR | 10460 | FILTER BED | 3/24/2005 | F | 11/6/2000 |
| BRCK | HIGHLAND DR | 9195 | UNKNOWN | 3/2/2005 | P | 7/25/2005 |
| BRCK | HILLSDALE RD | 9831 | FILTER BED | 3/21/2005 | P | 9/29/2005 |
| BRCK | MILLER RD | 5520 | AERATION | 8/24/2004 | P | 4/1/2005 |
| BRCK | MILLER RD | 5600 | AERATION | 8/24/2004 | P | 8/27/2004 |
| BRCK | MILLER RD | 5801 | AERATION | 8/24/2004 | P | 9/1/2003 |
| BRCK | MILLER RD | 5995 | FILTER BED | 2/23/2005 | F | 9/6/2001 |
| BRCK | MILLER RD | 6101 | AERATION | 8/24/2004 | P | 6/30/2004 |
| BRCK | MILLER RD | 6530 | AERATION | 8/24/2004 | F | 5/28/2004 |
| BRCK | MILLER RD | 6620 | AERATION | 8/24/2004 | F | 3/8/1999 |
| BRCK | PARKVIEW RD | 10409 | UNKNOWN | 2/1/2005 | F | 10/1/2003 |
| BRCK | PARKVIEW RD | 11224 | UNKNOWN | 2/2/2005 | P | 11/20/2003 |
| BRCK | PARKVIEW RD | 11414 | AERATION | 9/19/2005 | P | 11/18/2004 |
| BRCK | PARKVIEW RD | 11510 | FILTER BED | 8/29/2005 | P | 6/14/2004 |
| BRCK | PARKVIEW RD | 11700 | FILTER BED | 3/1/2005 | F | 3/14/2005 |
| BRCK | PARKVIEW RD | 8101 | UNKNOWN | 3/9/2005 | F | 9/19/2003 |
| BRCK | PARKVIEW RD | 8755 | AERATION | 6/13/2005 | P | 1/11/2005 |
| BRCK | RESERVE RUN | 9100 | AERATION | 3/30/2004 | P | 7/8/2004 |
| BRCK | RESERVE RUN | 9300 | AERATION | 3/30/2004 | P | |
| BRCK | RIVERVE RUN | 9400 | AERATION | 3/30/2004 | P | 9/4/2003 |
| BRCK | RESERVE RUN | 9555 | AERATION | 3/30/2004 | P | 3/18/2004 |
| BRCK | RESERVE RUN | 9655 | AERATION | 3/30/2004 | P | 5/7/2003 |
| BRCK | RESERVE RUN | 9700 | AERATION | 3/30/2004 | P | 10/11/2002 |
| BRCK | RESERVE RUN | 9755 | AERATION | 3/30/2004 | P | |
| BRCK | RIVERVIEW RD | 7760 | AERATION | 9/29/2004 | F | 1/9/2003 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|---------------|--------|------------|------------|-----|--------------|
| BRCK | RIVERVIEW RD | 7963 | AERATION | 9/29/2004 | P | 9/28/1995 |
| BRCK | RIVERVIEW RD | 8369 | LEACHFIELD | 2/18/2005 | P | 4/8/2004 |
| BRCK | RIVERVIEW RD | 8395 | LEACHFIELD | 2/1/2005 | P | 2/15/1999 |
| BRCK | RIVERVIEW RD | 8436 | AERATION | 9/29/2004 | P | 9/21/2000 |
| BRCK | RIVERVIEW RD | 8448 | AERATION | 9/29/2004 | F | 10/12/2004 |
| BRCK | RIVERVIEW RD | 8451 | LEACHFIELD | 2/24/2005 | P | 4/1/2004 |
| BRCK | RIVERVIEW RD | 8479 | LEACHFIELD | 2/8/2005 | P | 2/10/1999 |
| BRCK | RIVERVIEW RD | 8509 | UNKNOWN | 5/17/2005 | P | 5/16/2002 |
| BRCK | RIVERVIEW RD | 8554 | LEACHFIELD | 2/1/2005 | P | 7/28/2003 |
| BRCK | RIVERVIEW RD | 8567 | LEACHFIELD | 2/2/2005 | P | 4/1/2005 |
| BRCK | RIVERVIEW RD | 8584 | AERATION | 9/29/2004 | P | |
| BRCK | RIVERVIEW RD | 8591 | AERATION | 9/29/2004 | P | 3/30/2002 |
| BRCK | RIVERVIEW RD | 8598 | LEACHFIELD | 10/1/2004 | P | 3/26/2003 |
| BRCK | RIVERVIEW RD | 8680 | AERATION | 9/29/2004 | P | 1/1/1998 |
| BRCK | RIVERVIEW RD | 8700 | UNKNOWN | 3/21/2005 | F | 3/29/2003 |
| BRCK | RIVERVIEW RD | 8717 | AERATION | 9/29/2004 | F | 3/29/2004 |
| BRCK | RIVERVIEW RD | 8771 | FILTER BED | 3/4/2005 | F | 3/24/2004 |
| BRCK | SNOWVILLE RD | 10679 | FILTER BED | 2/9/2005 | P | 4/28/2003 |
| BRCK | SNOWVILLE RD | 11115 | FILTER BED | 2/9/2005 | F | 7/16/2001 |
| BRCK | SNOWVILLE RD | 12911 | FILTER BED | 8/22/2005 | P | 5/1/2005 |
| BRCK | SPRINGHILL DR | 10375 | AERATION | 3/2/2005 | P | 7/20/2005 |
| BRCK | TIMOTHY LN | 12229 | AERATION | 8/2/2005 | P | 2/21/2001 |
| BRCK | TIMOTHY LN | 12230 | AERATION | 5/14/2004 | P | 9/10/2001 |
| BRKH | VAN EPPS RD | 4559 | AERATION | 6/24/2005 | P | 4/1/2005 |
| BRKH | VAN EPPS RD | 4559 | AERATION | 6/24/2005 | P | 4/26/2005 |
| BRKH | VAN EPPS RD | 4562 | AERATION | 6/24/2005 | P | 10/1/2001 |
| BVHT | AKINS RD | 1295 | FILTER BED | 3/7/2005 | P | 7/16/2001 |
| BVHT | AVERY RD | 8529 | AERATION | 9/29/2005 | P | 4/15/2000 |
| BVHT | AVERY RD | 8900 | FILTER BED | 10/31/2005 | P | 6/8/1996 |
| BVHT | BOSTON RD | 2130 | UNKNOWN | 2/18/2005 | F | 5/6/2004 |
| BVHT | BOSTON RD | 2228 | UNKNOWN | 12/16/2004 | F | 3/2/1999 |
| BVHT | BOSTON RD | 2456 | UNKNOWN | 12/10/2004 | F | 9/1/1998 |
| BVHT | BROADVIEW RD | 8260 | FILTER BED | 11/23/2004 | P | 5/24/2003 |
| BVHT | BROADVIEW RD | 8270 | FILTER BED | 11/23/2004 | P | 10/5/2001 |
| BVHT | BROADVIEW RD | 8575 | AERATION | 7/13/2004 | P | 10/6/2003 |
| BVHT | BROADVIEW RD | 8791 | UNKNOWN | 9/8/2005 | F | 8/15/2004 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|---------------|--------|------------|------------|-----|--------------|
| BVHT | BROADVIEW RD | 8813 | AERATION | 9/2/2005 | F | 7/30/1997 |
| BVHT | BROADVIEW RD | 8866 | UNKNOWN | 3/9/2005 | P | 6/18/2003 |
| BVHT | BROADVIEW RD | 8868 | FILTER BED | 9/29/2005 | F | 12/14/2001 |
| BVHT | BROADVIEW RD | 9360 | UNKNOWN | 8/31/2005 | F | 12/16/1999 |
| BVHT | EDGERTON RD | 1140 | FILTER BED | 4/1/2005 | P | 11/29/1999 |
| BVHT | HARRIS RD | 3370 | UNKNOWN | 9/27/2004 | F | 10/20/2003 |
| BVHT | HARRIS RD | 3980 | UNKNOWN | 9/27/2004 | F | 11/12/2004 |
| BVHT | HARRIS RD | 4950 | UNKNOWN | 9/27/2004 | F | 7/1/2002 |
| BVHT | HARRIS RD | 5000 | UNKNOWN | 9/27/2004 | F | 5/13/2003 |
| BVHT | HARRIS RD | 5070 | UNKNOWN | 9/27/2004 | F | 5/26/2005 |
| BVHT | SKYLINE DR | 7921 | AERATION | 10/26/2004 | F | 10/14/2003 |
| BVHT | SKYLINE DR | 7941 | AERATION | 10/26/2004 | P | 6/10/1999 |
| BVHT | SKYLINE DR | 7946 | FILTER BED | 10/26/2004 | P | 7/12/2005 |
| BVHT | SKYLINE DR | 7950 | FILTER BED | 5/25/2005 | P | 7/14/2005 |
| BVHT | SKYLINE DR | 7951 | FILTER BED | 5/27/2005 | P | 5/18/2001 |
| BVHT | SKYLINE DR | 7962 | UNKNOWN | 6/20/2005 | P | 4/25/2005 |
| BVHT | SKYLINE DR | 7965 | FILTER BED | 3/29/2005 | F | 3/1/2001 |
| BVHT | SKYLINE DR | 7968 | AERATION | 5/13/2005 | P | 8/31/2005 |
| BVHT | SKYLINE DR | 7973 | AERATION | 3/30/2004 | F | 12/27/1997 |
| BVHT | SKYLINE DR | 7980 | AERATION | 3/30/2004 | P | 3/19/2001 |
| BVHT | SKYLINE DR | 7985 | AERATION | 3/30/2004 | F | 6/27/2003 |
| BVHT | SKYLINE DR | 7990 | FILTER BED | 5/11/2005 | P | 8/10/1998 |
| BVHT | SKYLINE DR | 7998 | FILTER BED | 5/13/2005 | P | 6/2/2004 |
| BVHT | SKYLINE DR | 8005 | FILTER BED | 6/1/2005 | P | 9/20/2004 |
| BVHT | SKYLINE DR | 8008 | UNKNOWN | 5/13/2005 | P | 4/28/2004 |
| BVHT | SKYLINE DR | 8015 | FILTER BED | 4/11/2005 | F | 8/6/2001 |
| BVHT | SKYLINE DR | 8018 | FILTER BED | 4/29/2005 | F | 6/10/2005 |
| BVHT | SKYLINE DR | 8023 | FILTER BED | 11/5/2004 | F | 8/3/1999 |
| BVHT | SKYLINE DR | 8028 | AERATION | 3/30/2004 | P | 11/28/2000 |
| BVHT | SKYLINE DR | 8071 | AERATION | 3/30/2004 | P | 8/5/2005 |
| BVHT | VALLEY PKY | 1750 | AERATION | 1/25/2005 | F | 11/24/2003 |
| BVHT | VALLEY PKY | 1776 | AERATION | 1/25/2005 | P | 8/21/2003 |
| BVHT | VALLEY PKY | 2450 | AERATION | 1/25/2005 | P | 4/1/2001 |
| BVHT | W EDGERTON RD | 2255 | AERATION | 1/25/2005 | P | 1/10/2003 |
| BVHT | W SPRAGUE RD | 1397 | AERATION | 4/30/2004 | P | 4/29/2005 |
| BVHT | W SPRAGUE RD | 1857 | AERATION | 4/30/2004 | P | 2/22/2001 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|---------------|--------|------------|------------|-----|--------------|
| BVHT | W SPRAGUE RD | 2283 | AERATION | 4/30/2004 | F | 8/1/1996 |
| BVHT | W SPRAGUE RD | 2499 | AERATION | 8/29/2005 | P | 11/1/2003 |
| BVHT | W SPRAGUE RD | 2539 | UNKNOWN | 8/23/2005 | F | 5/1/2003 |
| BVHT | WOLF DR | 440 | AERATION | 4/30/2004 | P | 5/1/2003 |
| BVHT | WOLF DR | 765 | AERATION | 4/30/2004 | P | 9/13/2000 |
| CFTP | FALLS RD | 541 | AERATION | 2/1/2005 | F | 6/11/2002 |
| CFTP | FALLS RD | 616 | AERATION | 8/17/2005 | F | 3/14/2002 |
| CFTP | FALLS RD | 625 | AERATION | 3/31/2005 | P | 8/31/2005 |
| CFTP | FALLS RD | 636 | AERATION | 6/30/2004 | P | 1/7/2004 |
| CFTP | N MAIN ST | 600 | LEACHFIELD | 8/13/2004 | P | 3/13/1997 |
| CFTP | STONECREEK DR | 30 | FILTER BED | 9/19/2005 | F | 6/10/2004 |
| CFTP | STONECREEK DR | 50 | AERATION | 10/19/2004 | P | 9/1/1999 |
| CHFL | N MAIN ST | 354 | UNKNOWN | 8/9/2005 | F | 7/12/2005 |
| CHFL | NORTH ST | 616 | UNKNOWN | 10/7/2005 | F | 3/29/1997 |
| CHFL | SOLOM RD | 550 | AERATION | 6/25/2004 | P | 7/15/2004 |
| GARH | E 94 ST | 5501 | AERATION | 2/18/2005 | F | 1/20/2004 |
| GARH | E 96 ST | 5470 | AERATION | 3/23/2005 | F | 6/30/1990 |
| GARH | E 96 ST | 5471 | AERATION | 11/17/2004 | P | 7/1/2003 |
| GARH | MOUNTVIEW AV | 10520 | AERATION | 4/4/2005 | F | 3/26/1999 |
| GARH | OVERLOOK RD | 4921 | UNKNOWN | 3/2/2005 | F | 11/9/2002 |
| GARH | RUDOLPH AVE | 9422 | AERATION | 4/15/2005 | P | 3/25/2005 |
| GARH | RUDOLPH AVE | 9427 | AERATION | 4/15/2005 | F | 3/30/2005 |
| GARH | RUDOLPH AVE | 9503 | AERATION | 4/15/2005 | P | 3/24/2004 |
| GARH | RUDOLPH AVE | 9512 | AERATION | 4/15/2005 | P | 11/18/2002 |
| GARH | RUDOLPH AVE | 9515 | AERATION | 3/23/2005 | F | 3/24/2004 |
| GLWO | ANNETTA DR | 27810 | AERATION | 10/18/2004 | F | 10/15/2004 |
| GLWO | ANNETTA DR | 27820 | FILTER BED | 1/26/2005 | P | 9/10/2002 |
| GLWO | ANNETTA DR | 27825 | FILTER BED | 10/14/2004 | P | 8/7/2002 |
| GLWO | ANNETTA DR | 27835 | FILTER BED | 10/6/2004 | P | 9/16/2004 |
| GLWO | ANNETTA DR | 27840 | FILTER BED | 8/11/2005 | F | 8/3/2004 |
| GLWO | ANNETTA DR | 27845 | FILTER BED | 11/8/2004 | P | 2/16/2005 |
| GLWO | MELLO DR | 27665 | FILTER BED | 3/31/2005 | P | 6/26/2002 |
| GLWO | MELLO DR | 27675 | FILTER BED | 3/16/2005 | P | 5/7/2001 |
| GLWO | PERGL RD | 27445 | AERATION | 10/31/2005 | P | 5/4/2004 |
| GLWO | PERGL RD | 27750 | AERATION | 10/31/2005 | P | 2/23/2000 |
| GLWO | PERGL RD | 27915 | AERATION | 10/31/2005 | P | 9/9/2002 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|--------------|--------|------------|------------|-----|--------------|
| GLWO | PERGL RD | 27945 | AERATION | 10/31/2005 | F | 10/3/2003 |
| GLWO | PERGL RD | 27970 | AERATION | 10/31/2005 | P | |
| GLWO | PETTIBONE RD | 28450 | FILTER BED | 11/2/2004 | P | 6/3/2005 |
| GMIL | BATTLES RD | 506 | UNKNOWN | 10/1/2004 | F | 7/9/2004 |
| GMIL | BATTLES RD | 509 | AERATION | 11/9/2004 | P | 10/14/2002 |
| GMIL | BATTLES RD | 514 | UNKNOWN | 7/29/2004 | F | 9/18/2003 |
| GMIL | BATTLES RD | 519 | AERATION | 5/19/2004 | | 4/29/2004 |
| GMIL | BATTLES RD | 539 | AERATION | 5/19/2004 | | 6/6/2002 |
| GMIL | BATTLES RD | 540 | UNKNOWN | 10/18/2004 | P | 7/30/2004 |
| GMIL | BATTLES RD | 544 | FILTER BED | 4/26/2004 | P | 4/20/2004 |
| GMIL | BATTLES RD | 549 | AERATION | 11/29/2004 | P | 8/11/2003 |
| GMIL | BATTLES RD | 550 | FILTER BED | 11/29/2004 | P | 6/27/2002 |
| GMIL | BATTLES RD | 570 | AERATION | 11/9/2004 | P | 12/29/2003 |
| GMIL | BATTLES RD | 589 | AERATION | 11/9/2004 | P | 7/22/2005 |
| GMIL | BATTLES RD | 619 | AERATION | 9/27/2004 | F | 10/13/2004 |
| GMIL | BATTLES RD | 630 | UNKNOWN | 10/15/2004 | P | 5/22/2003 |
| GMIL | BATTLES RD | 639 | AERATION | 11/9/2004 | P | 4/6/2004 |
| GMIL | BATTLES RD | 7719 | AERATION | 11/29/2004 | P | 6/27/2002 |
| GMIL | BATTLES RD | 7779 | FILTER BED | 4/28/2004 | P | 7/19/2005 |
| GMIL | BATTLES RD | 7780 | AERATION | 11/9/2004 | P | 12/15/2004 |
| GMIL | BATTLES RD | 7799 | AERATION | 11/29/2004 | P | 6/6/2002 |
| GMIL | BATTLES RD | 7840 | AERATION | 6/20/2005 | P | 9/11/2003 |
| GMIL | BATTLES RD | 7939 | AERATION | 7/5/2005 | P | 2/12/2001 |
| GMIL | BATTLES RD | 7940 | AERATION | 8/9/2005 | P | 7/1/2004 |
| GMIL | BERKSHIRE RD | 1608 | UNKNOWN | 10/18/2004 | F | 4/29/2003 |
| GMIL | BERKSHIRE RD | 1638 | AERATION | 10/21/2004 | | 5/9/2005 |
| GMIL | BERKSHIRE RD | 1644 | AERATION | 10/29/2004 | F | 9/10/1998 |
| GMIL | BERKSHIRE RD | 1653 | FILTER BED | 10/29/2004 | F | 6/10/2003 |
| GMIL | BERKSHIRE RD | 1779 | AERATION | 5/19/2004 | | 4/5/2001 |
| GMIL | BERKSHIRE RD | 1809 | UNKNOWN | 10/29/2004 | F | 10/2/2000 |
| GMIL | BERKSHIRE RD | 1890 | AERATION | 5/6/2005 | P | 6/6/2003 |
| GMIL | BERKSHIRE RD | 1970 | AERATION | 5/4/2005 | P | 8/11/1998 |
| GMIL | BEVERLY | 7612 | AERATION | 9/13/2004 | P | 4/5/2005 |
| GMIL | BRIGHAM RD | 7400 | FILTER BED | 5/7/2004 | P | 7/15/2002 |
| GMIL | BRIGHAM RD | 7449 | AERATION | 6/10/2005 | P | 8/2/2002 |
| GMIL | BRIGHAM RD | 7459 | FILTER BED | 11/9/2005 | P | 9/1/2003 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|----------------|--------|------------|------------|-----|--------------|
| GMIL | BRIGHAM RD | 7499 | AERATION | 10/14/2005 | F | 6/14/2002 |
| GMIL | BRIGHAM RD | 7523 | AERATION | 3/3/2004 | P | 10/3/2000 |
| GMIL | BRIGHAM RD | 7619 | FILTER BED | 8/16/2005 | P | 7/31/2003 |
| GMIL | BRIGHAM RD | 7770 | AERATION | 9/14/2005 | P | 7/27/1999 |
| GMIL | BRIGHAM RD | 7783 | FILTER BED | 1/6/2005 | F | 10/27/1998 |
| GMIL | BRIGHAM RD | 7803 | FILTER BED | 6/24/2004 | P | 11/2/2004 |
| GMIL | CAIRN LN | 7600 | AERATION | 11/29/2004 | P | 12/17/2003 |
| GMIL | CAIRN LN | 7630 | AERATION | 11/29/2004 | P | 11/11/2000 |
| GMIL | CARDINAL LN | 1420 | AERATION | 10/29/2004 | P | 5/13/2004 |
| GMIL | CARDINAL LN | 1430 | FILTER BED | 6/6/2005 | F | 2/20/2004 |
| GMIL | CEDAR RD | 37749 | AERATION | 6/21/2005 | P | 6/20/2005 |
| GMIL | CHAGRIN RIVER | 1009 | AERATION | 5/10/2004 | | 4/11/2005 |
| GMIL | CHAGRIN RIVER | 1349 | UNKNOWN | 11/9/2005 | P | 3/21/2001 |
| GMIL | CHAGRIN RIVER | 1420 | AERATION | 12/8/2004 | P | 7/23/1997 |
| GMIL | CHAGRIN RIVER | 1720 | AERATION | 8/24/2004 | | 7/20/2004 |
| GMIL | CHAGRIN RIVER | 2097 | FILTER BED | 4/26/2004 | F | 4/30/2004 |
| GMIL | CHAGRIN RIVER | 471 | LEACHFIELD | 7/21/2004 | P | 10/12/1998 |
| GMIL | CHAGRIN RIVER | 550 | UNKNOWN | 5/12/2004 | P | 5/17/2004 |
| GMIL | CHAGRIN RIVER | 629 | AERATION | 3/29/2005 | P | 7/1/2002 |
| GMIL | CHAGRIN RIVER | 659 | FILTER BED | 3/3/2004 | P | 7/13/2004 |
| GMIL | CHELSEA LN | 7521 | LEACHFIELD | 5/4/2005 | P | 12/12/2001 |
| GMIL | CHELSEA LN | 7550 | AERATION | 9/13/2004 | | 9/1/2003 |
| GMIL | CHELSEA LN | 7581 | FILTER BED | 9/13/2004 | F | 12/5/2001 |
| GMIL | CHESTNUT RUN | 982 | AERATION | 6/14/2004 | P | 3/8/2004 |
| GMIL | CHESTNUT RUN | 999 | FILTER BED | 6/11/2004 | P | 12/4/2000 |
| GMIL | COLVIN RD | 7638 | UNKNOWN | 11/15/2005 | F | 5/13/1999 |
| GMIL | COLVIN RD | 7648 | AERATION | 6/27/2005 | P | 6/2/2005 |
| GMIL | COUNTY LINE RD | 1800 | AERATION | 5/18/2004 | | 6/24/2004 |
| GMIL | COUNTY LINE RD | 1840 | AERATION | 6/14/2004 | | 7/3/2001 |
| GMIL | COUNTY LINE RD | 1880 | AERATION | 7/19/2005 | P | 3/20/2002 |
| GMIL | COUNTY LINE RD | 1940 | AERATION | 5/10/2004 | | 9/28/2004 |
| GMIL | COUNTY LINE RD | 710 | FILTER BED | 9/13/2004 | P | 9/7/2004 |
| GMIL | DORCHESTER RD | 34249 | FILTER BED | 8/9/2005 | F | 9/28/2004 |
| GMIL | DORCHESTER RD | 36100 | AERATION | 6/21/2005 | P | 9/1/2000 |
| GMIL | DORCHESTER RD | 36600 | AERATION | 5/18/2005 | P | 7/8/2004 |
| GMIL | DORCHESTER RD | 36790 | AERATION | 7/5/2005 | P | 4/26/2004 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|----------------|--------|------------|------------|-----|--------------|
| GMIL | DORCHESTER RD | 36799 | FILTER BED | 7/18/2005 | F | 8/10/2001 |
| GMIL | EPPING RD | 1651 | AERATION | 9/14/2005 | P | 3/16/2005 |
| GMIL | EPPING RD | 1725 | AERATION | 5/19/2004 | P | 8/20/1998 |
| GMIL | EPPING RD | 1745 | UNKNOWN | 4/26/2004 | P | 8/7/2003 |
| GMIL | EPPING RD | 1935 | UNKNOWN | 11/15/2005 | F | 5/4/1999 |
| GMIL | EPPING RD | 1954 | AERATION | 11/18/2005 | P | 4/14/2003 |
| GMIL | FOX HILL DR | 7885 | AERATION | 10/5/2004 | P | 10/11/2004 |
| GMIL | GATES MILLS BL | 6668 | AERATION | 10/29/2004 | P | 5/2/2003 |
| GMIL | GATES MILLS BL | 6683 | AERATION | 7/18/2005 | P | 10/18/2004 |
| GMIL | GATES MILLS BL | 6692 | AERATION | 10/29/2004 | F | 10/18/2004 |
| GMIL | GATES MILLS BL | 6699 | AERATION | 4/20/2005 | | 7/3/2002 |
| GMIL | GATES MILLS BL | 6728 | FILTER BED | 4/21/2005 | F | 8/3/2005 |
| GMIL | GATES MILLS BL | 6733 | FILTER BED | 11/15/2005 | F | 6/26/1998 |
| GMIL | GATES MILLS BL | 6738 | FILTER BED | 4/28/2004 | P | 5/30/2003 |
| GMIL | GATES MILLS BL | 6745 | AERATION | 10/29/2004 | P | 8/26/1999 |
| GMIL | GATES MILLS BL | 6780 | AERATION | 10/29/2004 | P | 3/15/2001 |
| GMIL | GATES MILLS BL | 6790 | AERATION | 10/29/2004 | P | 5/26/2000 |
| GMIL | GATES MILLS BL | 7000 | AERATION | 10/29/2004 | P | 9/22/1998 |
| GMIL | GATES MILLS BL | 7073 | AERATION | 10/18/2004 | P | 8/24/2004 |
| GMIL | GATES MILLS ES | 7839 | LEACHFIELD | 8/29/2005 | P | 10/5/2004 |
| GMIL | GATES MILLS ES | 7859 | AERATION | 10/26/2005 | F | 2/17/2000 |
| GMIL | GATES MILLS ES | 7860 | UNKNOWN | 8/10/2004 | P | 5/20/1997 |
| GMIL | GATES MILLS ES | 7879 | UNKNOWN | 9/14/2005 | P | 10/20/1999 |
| GMIL | GATES MILLS ES | 7880 | AERATION | 8/9/2005 | P | 5/7/2001 |
| GMIL | GATES MILLS ES | 7899 | LEACHFIELD | 8/9/2004 | P | 8/18/2004 |
| GMIL | GATES MILLS ES | 7940 | LEACHFIELD | 10/1/2004 | P | 9/13/2004 |
| GMIL | GATES RD | 6922 | AERATION | 6/20/2005 | | 3/15/2005 |
| GMIL | GATES RD | 6923 | AERATION | 11/10/2004 | P | 3/25/2004 |
| GMIL | GATES RD | 6929 | AERATION | 11/10/2004 | P | 6/24/2004 |
| GMIL | GATES RD | 6936 | UNKNOWN | 4/18/2005 | P | 6/19/2002 |
| GMIL | GATES RD | 6949 | AERATION | 12/2/2004 | P | 5/26/2005 |
| GMIL | GATES RD | 6960 | FILTER BED | 8/9/2005 | P | 9/26/2002 |
| GMIL | GATES RD | 6973 | AERATION | 11/9/2004 | P | 5/19/2004 |
| GMIL | GATES RD | 6979 | AERATION | 6/24/2004 | P | 5/15/2002 |
| GMIL | GATES RD | 7039 | AERATION | 11/10/2004 | P | 4/8/2003 |
| GMIL | GATES RD | 7099 | AERATION | 3/29/2005 | P | 9/17/2003 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|----------------|--------|------------|------------|-----|--------------|
| GMIL | GATEWOOD OV | 7839 | FILTER BED | 7/19/2004 | P | 9/25/2000 |
| GMIL | GREY EAGLE CH | 7880 | AERATION | 7/14/2004 | P | 5/1/2005 |
| GMIL | HILLCREEK LN | 1130 | AERATION | 11/10/2004 | P | 9/9/2004 |
| GMIL | HILLCREEK LN | 1131 | AERATION | 11/10/2004 | P | 7/20/2004 |
| GMIL | HILLCREEK LN | 1145 | AERATION | 3/30/2004 | P | 8/15/2002 |
| GMIL | HILLCREEK LN | 1156 | AERATION | 10/26/2005 | F | 2/11/2003 |
| GMIL | HILLCREEK LN | 7037 | AERATION | 11/10/2004 | P | 9/16/2003 |
| GMIL | HILLCREEK LN | 7059 | AERATION | 11/10/2004 | P | 12/12/2001 |
| GMIL | HILLCREEK LN | 7083 | AERATION | 8/30/2005 | P | 1/14/2002 |
| GMIL | MAIN ST | 7420 | UNKNOWN | 11/22/2004 | F | 5/11/2000 |
| GMIL | MAIN ST | 7480 | AERATION | 5/18/2004 | P | 2/17/2004 |
| GMIL | MAIN ST | 7480 | AERATION | 5/18/2004 | P | 3/22/2005 |
| GMIL | MAYFIELD RD | 6984 | AERATION | 6/14/2004 | | 5/18/2004 |
| GMIL | MAYFIELD RD | 7850 | AERATION | 6/13/2005 | P | 6/19/1998 |
| GMIL | OLD MILL RD | 7300 | SEPTI-FECH | 7/14/2004 | P | 6/12/2001 |
| GMIL | OLD MILL RD | 7670 | AERATION | 8/29/2005 | P | 2/21/2003 |
| GMIL | OLD MILL RD | 7820 | FILTER BED | 11/15/2005 | F | 4/3/1998 |
| GMIL | OLD MILL RD | 7940 | UNKNOWN | 10/18/2004 | F | 4/7/2004 |
| GMIL | RACEBROOK RD | 650 | AERATION | 5/26/2004 | | 9/20/2004 |
| GMIL | RACEBROOK RD | 670 | AERATION | 6/13/2005 | P | 9/22/2003 |
| GMIL | RACEBROOK RD | 690 | LEACHFIELD | 4/8/2004 | P | 7/10/2003 |
| GMIL | RACEBROOK RD | 695 | LEACHFIELD | 5/16/2005 | P | 9/10/2004 |
| GMIL | RIVER OAKS TRL | 7450 | LEACHFIELD | 4/21/2004 | P | 3/24/2000 |
| GMIL | RIVER OAKS TRL | 7520 | FILTER BED | 2/24/2004 | P | 7/20/2005 |
| GMIL | RIVERVIEW RD | 433 | UNKNOWN | 5/23/2005 | P | 6/14/2005 |
| GMIL | RIVERVIEW RD | 437 | AERATION | 4/12/2004 | | 4/9/2004 |
| GMIL | RIVERVIEW RD | 449 | UNKNOWN | 6/10/2005 | P | 10/14/2000 |
| GMIL | RIVERVIEW RD | 464 | AERATION | 4/5/2005 | | 4/4/2005 |
| GMIL | RIVERVIEW RD | 480 | AERATION | 7/20/2004 | | 8/6/2003 |
| GMIL | ROBINWOOD LN | 7112 | AERATION | 4/11/2005 | P | 11/28/1995 |
| GMIL | ROBINWOOD LN | 7122 | AERATION | 5/13/2005 | P | 4/11/2000 |
| GMIL | ROBINWOOD LN | 7142 | FILTER BED | 4/28/2005 | F | 10/5/1999 |
| GMIL | ROBINWOOD LN | 7180 | AERATION | 6/2/2005 | P | 6/1/1980 |
| GMIL | SADDLEBACK LN | 7482 | AERATION | 11/24/2004 | P | 7/30/2003 |
| GMIL | SADDLEBACK LN | 7503 | AERATION | 6/11/2004 | | 12/27/2002 |
| GMIL | SADDLEBACK LN | 7522 | AERATION | 11/24/2004 | P | 8/30/2002 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|----------------|--------|------------|------------|-----|--------------|
| GMIL | SADDLEBACK LN | 7529 | AERATION | 2/7/2005 | P | 6/13/2003 |
| GMIL | SADDLEBACK LN | 7576 | AERATION | 11/24/2004 | P | 2/19/2003 |
| GMIL | SADDLEBACK LN | 7600 | UNKNOWN | 9/28/2004 | P | 8/4/2005 |
| GMIL | SHERMAN RD | 7620 | AERATION | 6/1/2005 | P | 9/6/2002 |
| GMIL | SHERMAN RD | 7840 | AERATION | 9/21/2004 | | 9/15/1997 |
| GMIL | SHERMAN RD | 7889 | AERATION | 6/1/2005 | P | 8/27/2004 |
| GMIL | STONEHAM RD | 7320 | AERATION | 4/11/2005 | P | 8/8/2000 |
| GMIL | SUGAR BUSH LN | 7799 | FILTER BED | 5/7/2004 | P | 7/3/2003 |
| GMIL | SUGAR BUSH LN | 7819 | FILTER BED | 7/19/2004 | P | 6/12/2001 |
| GMIL | SUGAR BUSH LN | 7830 | AERATION | 6/14/2004 | | 10/19/2005 |
| GMIL | SUGAR BUSH LN | 7860 | AERATION | 9/23/2005 | F | 8/28/2000 |
| GMIL | SUGAR BUSH LN | 7920 | AERATION | 10/1/2004 | | 8/25/2000 |
| GMIL | TIMBERIDGE TRL | 335 | FILTER BED | 7/5/2005 | P | 5/16/2002 |
| GMIL | TIMBERIDGE TRL | 345 | FILTER BED | 11/24/2004 | P | 8/20/2003 |
| GMIL | TIMBERIDGE TRL | 367 | AERATION | 11/24/2004 | P | 5/7/2002 |
| GMIL | TIMBERIDGE TRL | 400 | FILTER BED | 6/27/2005 | F | 5/17/2005 |
| GMIL | TIMBERIDGE TRL | 410 | AERATION | 11/24/2004 | P | 1/27/2005 |
| GMIL | TIMBERIDGE TRL | 413 | AERATION | 11/24/2004 | P | 5/1/2001 |
| GMIL | TIMBERIDGE TRL | 450 | AERATION | 11/24/2004 | F | 10/5/2004 |
| GMIL | TIMBERIDGE TRL | 470 | AERATION | 11/24/2004 | P | 2/25/2004 |
| GMIL | WEST HILL DR | 1015 | AERATION | 9/27/2004 | P | 6/19/2000 |
| GMIL | WEST HILL DR | 1035 | AERATION | 9/27/2004 | P | 8/15/2003 |
| GMIL | WEST HILL DR | 1230 | AERATION | 3/29/2005 | P | 5/16/2003 |
| GMIL | WEST HILL DR | 1309 | AERATION | 4/8/2004 | P | 6/11/1999 |
| GMIL | WILSON MILLS R | 7150 | AERATION | 10/21/2004 | P | 10/29/2004 |
| GMIL | WILSON MILLS R | 7301 | AERATION | 10/21/2004 | P | 12/5/2001 |
| GMIL | WOODSTOCK RD | 1790 | AERATION | 9/13/2004 | | 2/1/1993 |
| HUNV | CEDAR RD | 34000 | AERATION | 12/21/2004 | P | 12/22/2004 |
| HUNV | CEDAR RD | 34500 | AERATION | 4/12/2005 | P | 10/20/1999 |
| HUNV | CEDAR RD | 34600 | FILTER BED | 7/20/2004 | P | 8/8/2002 |
| HUNV | CEDAR RD | 34650 | AERATION | 3/9/2004 | P | 11/2/2004 |
| HUNV | CHAGRIN RIVER | 2655 | AERATION | 4/14/2005 | P | 7/15/2003 |
| HUNV | CHAGRIN RIVER | 2655 | AERATION | 4/14/2005 | P | 2/28/1996 |
| HUNV | CHAGRIN RIVER | 3160 | AERATION | 3/25/2004 | P | |
| HUNV | COUNTY LINE RD | 13400 | FILTER BED | 9/15/2005 | F | |
| HUNV | COUNTY LINE RD | 13400 | AERATION | 8/25/2005 | P | |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|----------------|--------|------------|------------|-----|--------------|
| HUNV | COUNTY LINE RD | 13400 | AERATION | 4/11/2005 | F | |
| HUNV | COURTNEY TRL | 2566 | AERATION | 3/10/2004 | P | 8/30/2005 |
| HUNV | FAIRMOUNT BLV | 34000 | UNKNOWN | 6/22/2004 | F | 1/4/2005 |
| HUNV | FAIRMOUNT BLV | 37100 | AERATION | 4/12/2005 | P | 4/10/2000 |
| HUNV | FAIRMOUNT BLV | 37999 | AERATION | 5/4/2004 | P | 4/15/2004 |
| HUNV | FAIRMOUNT BLV | 38003 | AERATION | 6/7/2005 | P | 5/24/2005 |
| HUNV | FAIRMOUNT BLV | 38215 | AERATION | 5/28/2004 | F | |
| HUNV | FAIRMOUNT BLV | 38383 | AERATION | 6/30/2004 | P | 4/27/2004 |
| HUNV | FALLS RD | 45002 | AERATION | 2/19/2004 | P | 3/29/2004 |
| HUNV | HUNTING HILL F | 38665 | AERATION | 7/8/2004 | P | 3/1/2004 |
| HUNV | OLD KINSMAN R | 33851 | FILTER BED | 10/7/2004 | P | 5/14/2003 |
| HUNV | OXGATE LN | 32000 | AERATION | 7/28/2005 | P | 5/30/2003 |
| HUNV | ROUNDWOOD RD | 3215 | FILTER BED | 2/22/2005 | F | 6/25/2003 |
| HUNV | ROUNDWOOD RD | 3240 | AERATION | 10/28/2005 | F | 6/3/2004 |
| HUNV | ROUNDWOOD RD | 3305 | FILTER BED | 4/26/2005 | P | 10/13/2005 |
| HUNV | ROUNDWOOD RD | 3482 | AERATION | 8/5/2005 | P | 8/22/2005 |
| HUNV | SHAKER BLVD | 35000 | AERATION | 7/1/2005 | P | 4/9/2004 |
| HUNV | SHAKER BLVD | 38035 | AERATION | 4/15/2004 | P | 4/30/2002 |
| HUNV | SOM CENTER RD | 2875 | AERATION | 7/8/2004 | P | 8/14/2002 |
| HUNV | SOM CENTER RD | 3017 | FILTER BED | 6/16/2004 | P | 10/7/2003 |
| HUNV | WHISPERWOOD L | 4 | FILTER BED | 9/12/2005 | P | 7/11/2005 |
| INDP | DAISY BLVD | 6292 | UNKNOWN | 4/19/2004 | F | 5/12/1999 |
| INDP | DALEBROOK RD | 8410 | AERATION | 11/2/2005 | P | 12/18/2003 |
| INDP | RIVERVIEW RD | 7624 | LEACHFIELD | 7/28/2004 | P | |
| INDP | SCHAAF RD | 6016 | FILTER BED | 9/1/2004 | P | 8/14/2002 |
| INDP | TANGLEWOOD D | 7400 | FILTER BED | 3/30/2004 | P | 9/1/2005 |
| MAYH | CEDAR RD | 29665 | UNKNOWN | 11/18/2004 | F | 10/11/2004 |
| MAYH | CEDAR RD | 31791 | AERATION | 4/11/2005 | P | 11/16/2004 |
| MAYH | CEDAR RD | 32981 | AERATION | 4/11/2005 | P | 8/25/2005 |
| MAYH | GATES MILLS BL | 6396 | AERATION | 11/15/2005 | P | 4/13/2000 |
| MAYH | GATES MILLS BL | 6420 | UNKNOWN | 11/16/2005 | F | 8/10/2004 |
| MAYH | PEEPER HOLLOW | 6500 | UNKNOWN | 9/13/2005 | F | 1/24/2002 |
| MAYH | PEEPER HOLLOW | 6604 | AERATION | 9/13/2005 | P | 7/22/2004 |
| MAYV | EASTGATE DR | 6753 | AERATION | 2/23/2004 | P | 1/4/2002 |
| MAYV | EASTGATE DR | 6790 | UNKNOWN | 10/3/2005 | P | 10/28/1997 |
| MAYV | ECHO DR | 663 | UNKNOWN | 12/20/2004 | P | 8/8/2003 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|----------------|--------|------------|------------|-----|--------------|
| MAYV | ECHO DR | 696 | AERATION | 12/8/2004 | | 5/19/2005 |
| MAYV | ECHO DR | 697 | AERATION | 10/14/2004 | | 9/13/2004 |
| MAYV | ECHO DR | 700 | AERATION | 5/13/2005 | P | 11/11/1999 |
| MAYV | HIGHLAND RD | 6473 | AERATION | 11/21/2005 | F | 2/11/2004 |
| MAYV | MEADOWOOD D | 657 | UNKNOWN | 6/10/2005 | F | 8/9/1993 |
| MAYV | MEADOWOOD D | 6781 | FILTER BED | 9/14/2005 | F | 5/2/2000 |
| MAYV | MEADOWOOD D | 6793 | AERATION | 5/17/2005 | P | 9/18/2001 |
| MAYV | MEADOWOOD D | 6839 | AERATION | 11/16/2005 | P | 7/23/2003 |
| MAYV | METRO PARK DR | 6843 | AERATION | 7/15/2005 | P | 5/3/2005 |
| MAYV | METRO PARK DR | 6862 | FILTER BED | 7/22/2005 | F | 9/18/2002 |
| MAYV | METRO PARK DR | 6863 | AERATION | 6/7/2005 | P | 3/2/2000 |
| MAYV | N AINTREE PARK | 891 | UNKNOWN | 11/8/2005 | P | 10/13/2004 |
| MAYV | RAVINE DR | 6937 | UNKNOWN | 8/17/2004 | F | 4/8/2002 |
| MAYV | ROBLEY LN | 681 | UNKNOWN | 7/20/2004 | | 7/2/2003 |
| MAYV | ROBLEY LN | 721 | UNKNOWN | 7/5/2005 | F | 10/31/2000 |
| MAYV | WILSON MILLS R | 6885 | AERATION | 11/30/2005 | P | 5/12/2004 |
| MAYV | WILSON MILLS R | 6910 | AERATION | 7/13/2004 | F | 3/4/2004 |
| MAYV | WILSON MILLS R | 6920 | UNKNOWN | 5/23/2005 | F | 4/22/2005 |
| MAYV | WILSON MILLS R | 6989 | FILTER BED | 8/1/2005 | F | 10/4/2005 |
| MAYV | WILSON MILLS R | 6999 | AERATION | 11/16/2005 | P | 9/4/2002 |
| MAYV | WILSON MILLS R | 7025 | AERATION | 11/16/2005 | P | 8/26/2004 |
| MAYV | WILSON MILLS R | 7045 | AERATION | 11/18/2005 | P | 7/1/2003 |
| MAYV | WILSON MILLS R | 7053 | FILTER BED | 7/29/2004 | F | 11/19/2004 |
| MAYV | WILSON MILLS R | 7089 | FILTER BED | 8/9/2004 | F | 10/4/2005 |
| MAYV | WILSON MILLS R | 7097 | LEACHFIELD | 8/9/2004 | F | 9/19/2005 |
| MAYV | ZGRN LN | 546 | AERATION | 6/10/2004 | P | 5/1/2004 |
| MIDH | BIG CREEK PKY | 6683 | FILTER BED | 2/22/2005 | P | 12/15/2004 |
| MIDH | BIG CREEK PKY | 6700 | AERATION | 8/3/2004 | P | 9/6/2002 |
| MIDH | BIG CREEK PKY | 6729 | FILTER BED | 9/2/2004 | P | 8/27/2004 |
| MIDH | BIG CREEK PKY | 6744 | FILTER BED | 8/11/2004 | P | 4/24/2003 |
| MIDH | BIG CREEK PKY | 6763 | AERATION | 9/1/2004 | F | 7/1/2003 |
| MIDH | BIG CREEK PKY | 6765 | AERATION | 8/5/2004 | P | 3/23/2005 |
| MIDH | BIG CREEK PKY | 6767 | UNKNOWN | 11/29/2004 | P | 9/27/2005 |
| MIDH | BIG CREEK PKY | 6779 | AERATION | 8/17/2004 | F | 9/23/2004 |
| MIDH | BIG CREEK PKY | 6805 | FILTER BED | 6/7/2005 | P | 5/8/2003 |
| MIDH | BIG CREEK PKY | 6809 | LEACHFIELD | 10/28/2004 | F | 9/9/2002 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|----------------|--------|------------|------------|-----|--------------|
| MIDH | BIG CREEK PKY | 6820 | AERATION | 7/29/2004 | P | 4/8/2005 |
| MIDH | BIG CREEK PKY | 6830 | AERATION | 11/1/2004 | P | 9/9/2002 |
| MIDH | BIG CREEK PKY | 6926 | AERATION | 2/4/2004 | F | 9/2/2003 |
| MIDH | BIG CREEK PKY | 6936 | UNKNOWN | 11/15/2004 | F | 6/24/2005 |
| MIDH | BIG CREEK PKY | 6966 | LEACHFIELD | 11/1/2004 | P | 9/1/2002 |
| MIDH | BIG CREEK PKY | 7535 | AERATION | 8/3/2004 | P | 6/3/2005 |
| MIDH | BIG CREEK PKY | 7838 | FILTER BED | 7/29/2004 | P | 12/10/2002 |
| MIDH | FOWLES RD | 19621 | UNKNOWN | 4/11/2005 | F | 10/27/1999 |
| MIDH | OLD PLEASANT V | 13261 | FILTER BED | 11/1/2004 | P | 8/30/2004 |
| MIDH | OLD PLEASANT V | 13340 | FILTER BED | 2/19/2004 | F | 11/6/1996 |
| MIDH | OLD PLEASANT V | 13375 | AERATION | 5/4/2005 | P | 5/4/2005 |
| MIDH | UNIVERSITY ST | 341 | UNKNOWN | 8/2/2004 | F | 8/3/2004 |
| MIDH | W 130 ST | 7200 | FILTER BED | 9/19/2005 | F | 11/1/2002 |
| MIDH | WEBSTER RD | 7589 | UNKNOWN | 2/12/2004 | F | 11/5/2004 |
| MIDH | WEBSTER RD | 7619 | FILTER BED | 2/20/2004 | P | 5/19/2004 |
| MIDH | WEBSTER RD | 7679 | FILTER BED | 2/20/2004 | P | 5/1/2005 |
| MOHL | ASPENWOOD DR | 125 | AERATION | 2/3/2004 | P | 7/8/2004 |
| MOHL | BENTLEYVILLE R | 269 | AERATION | 2/14/2005 | P | 10/17/2003 |
| MOHL | BENTLEYVILLE R | 289 | AERATION | 2/9/2004 | P | 7/15/2003 |
| MOHL | BENTLEYVILLE R | 388 | AERATION | 1/28/2005 | P | 9/20/2004 |
| MOHL | BENTLEYVILLE R | 389 | AERATION | 2/14/2005 | P | 3/1/2004 |
| MOHL | BENTLEYVILLE R | 408 | AERATION | 2/2/2005 | P | 6/1/2005 |
| MOHL | BENTLEYVILLE R | 459 | AERATION | 2/19/2004 | P | 4/3/2002 |
| MOHL | BERKELEY AVE | 38519 | AERATION | 8/15/2005 | F | 8/25/2005 |
| MOHL | BERKELEY AVE | 38949 | UNKNOWN | 7/25/2005 | P | 7/2/2005 |
| MOHL | CANYON RD | 180 | AERATION | 2/24/2004 | P | 4/5/2004 |
| MOHL | CANYON RD | 195 | AERATION | 2/10/2005 | P | 9/22/2004 |
| MOHL | CHAGRIN BLVD | 320 | AERATION | 6/4/2004 | F | 4/10/1997 |
| MOHL | CHAGRIN BLVD | 33375 | AERATION | 10/26/2004 | | 10/22/2002 |
| MOHL | CHAGRIN BLVD | 33505 | FILTER BED | 7/29/2004 | F | 7/1/2003 |
| MOHL | CHAGRIN BLVD | 33655 | AERATION | 3/2/2005 | P | 5/1/2005 |
| MOHL | CHAGRIN BLVD | 33755 | AERATION | 2/1/2005 | P | 8/24/2005 |
| MOHL | CHAGRIN BLVD | 33845 | AERATION | 3/2/2005 | P | 5/1/2005 |
| MOHL | CHAGRIN BLVD | 35450 | AERATION | 7/19/2005 | P | 5/2/2001 |
| MOHL | CHAGRIN BLVD | 37250 | AERATION | 3/22/2005 | P | 6/15/2004 |
| MOHL | CHAGRIN BLVD | 37305 | AERATION | 7/14/2005 | F | 3/28/2003 |

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|------|---------------|--------|------------|-----------|-----|--------------|
| MOHL | CHAGRIN BLVD | 38355 | AERATION | 2/14/2005 | P | 8/2/2004 |
| MOHL | CHAGRIN BLVD | 38750 | AERATION | 4/6/2005 | P | 5/13/2002 |
| MOHL | CHAGRIN RIVER | 3660 | FILTER BED | 3/16/2005 | P | |
| MOHL | CHAGRIN RIVER | 3780 | AERATION | 2/2/2005 | P | 4/26/2002 |
| MOHL | CHAGRIN RIVER | 4100 | AERATION | 11/1/2005 | P | 11/1/2003 |
| MOHL | CHAGRIN RIVER | 4130 | AERATION | 6/21/2005 | P | 5/19/2003 |
| MOHL | CHAGRIN RIVER | 4140 | AERATION | 11/1/2005 | P | 8/15/2004 |
| MOHL | CHAGRIN RIVER | 4820 | FILTER BED | 2/3/2004 | P | 2/1/2004 |
| MOHL | CHAGRIN RIVER | 4950 | AERATION | 5/3/2005 | P | |
| MOHL | CHAGRIN RIVER | 5000 | AERATION | 6/13/2005 | P | 9/27/2004 |
| MOHL | DEEP CREEK LN | 15 | AERATION | 2/2/2005 | P | 9/20/2003 |
| MOHL | DEEP CREEK LN | 25 | UNKNOWN | 5/3/2005 | P | 6/1/2004 |
| MOHL | DEEP CREEK LN | 45 | AERATION | 2/16/2005 | F | 4/16/2001 |
| MOHL | DEEP CREEK LN | 50 | AERATION | 3/16/2005 | F | |
| MOHL | DEEPWOOD DR | 6015 | AERATION | 3/4/2004 | P | 8/7/2003 |
| MOHL | DEEPWOOD DR | 6035 | AERATION | 9/21/2004 | | 7/12/2005 |
| MOHL | DEEPWOOD DR | 6055 | AERATION | 2/11/2005 | P | 10/21/2001 |
| MOHL | EASTON LN | 55 | AERATION | 2/8/2005 | P | 5/14/2003 |
| MOHL | ELLENDALE RD | 3812 | FILTER BED | 7/30/2004 | P | 6/30/2004 |
| MOHL | ELLENDALE RD | 3815 | AERATION | 2/14/2005 | P | 11/8/2002 |
| MOHL | ELLENDALE RD | 3870 | AERATION | 6/1/2004 | P | 5/20/2005 |
| MOHL | ELLENDALE RD | 3880 | AERATION | 2/1/2005 | P | 5/5/2005 |
| MOHL | ELLENDALE RD | 3900 | AERATION | 1/19/2005 | P | 7/20/2004 |
| MOHL | ELLENDALE RD | 3901 | AERATION | 6/1/2005 | P | 9/29/2005 |
| MOHL | ELLENDALE RD | 3920 | AERATION | 1/20/2005 | P | 9/17/2002 |
| MOHL | ELLENDALE RD | 3991 | AERATION | 1/20/2005 | P | 5/4/2005 |
| MOHL | ELLENDALE RD | 4004 | AERATION | 1/24/2005 | P | 5/11/2005 |
| MOHL | ELLENDALE RD | 4012 | AERATION | 3/5/2004 | P | 7/15/2004 |
| MOHL | ELLENDALE RD | 4024 | AERATION | 6/8/2005 | P | 3/30/2004 |
| MOHL | ELLENDALE RD | 4026 | AERATION | 3/16/2005 | P | 11/9/2004 |
| MOHL | EMERY RD | 31300 | AERATION | 3/8/2004 | P | 6/3/2004 |
| MOHL | FALLS RD | 3815 | AERATION | 5/18/2004 | | 6/19/2000 |
| MOHL | FALLS RD | 3850 | FILTER BED | 7/13/2005 | P | 8/7/2002 |
| MOHL | FARMCOTE DR | 60 | AERATION | 3/12/2004 | P | 6/14/2005 |
| MOHL | FARWOOD DR | 105 | AERATION | 10/7/2005 | F | 2/8/2001 |
| MOHL | FARWOOD DR | 110 | AERATION | 3/8/2004 | P | 9/5/2002 |

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|------|--------------|--------|------------|------------|-----|--------------|
| MOHL | FARWOOD DR | 35 | AERATION | 7/27/2004 | P | 4/21/2004 |
| MOHL | FARWOOD DR | 75 | AERATION | 5/26/2004 | | 11/4/2003 |
| MOHL | FARWOOD DR | 80 | AERATION | 3/4/2004 | P | 8/9/2000 |
| MOHL | FARWOOD DR | 85 | AERATION | 7/27/2005 | P | 7/30/2003 |
| MOHL | FARWOOD DR | 90 | AERATION | 5/17/2005 | P | 10/1/2002 |
| MOHL | FARWOOD DR | 95 | AERATION | 3/16/2005 | P | 10/11/2001 |
| MOHL | FIRCREST LN | 25 | AERATION | 2/9/2005 | P | 3/1/2002 |
| MOHL | FIRCREST LN | 65 | AERATION | 3/24/2005 | P | 6/26/2000 |
| MOHL | FOX GLEN RD | 15 | AERATION | 3/8/2004 | P | 11/12/2003 |
| MOHL | FOX GLEN RD | 25 | AERATION | 3/8/2004 | P | 6/3/2002 |
| MOHL | FOX GLEN RD | 30 | AERATION | 3/8/2004 | P | 7/27/2004 |
| MOHL | FOX GLEN RD | 40 | AERATION | 3/8/2004 | P | 2/8/2005 |
| MOHL | FOX GLEN RD | 5 | AERATION | 1/29/2004 | P | 9/12/2005 |
| MOHL | FOX GLEN RD | 50 | AERATION | 3/9/2004 | P | 7/24/2002 |
| MOHL | GILES RD | 4073 | UNKNOWN | 5/28/2004 | F | 8/5/2002 |
| MOHL | GILES RD | 4138 | AERATION | 2/2/2005 | P | 9/21/2004 |
| MOHL | GILES RD | 4145 | AERATION | 5/3/2005 | P | 5/3/2005 |
| MOHL | GILES RD | 4146 | AERATION | 2/1/2005 | P | 7/6/2005 |
| MOHL | GILES RD | 4175 | AERATION | 5/10/2005 | P | 4/18/2005 |
| MOHL | GILES RD | 4200 | AERATION | 3/24/2005 | P | 7/23/2002 |
| MOHL | GILES RD | 4425 | AERATION | 3/11/2005 | P | 7/9/2005 |
| MOHL | GLEN RD | 160 | FILTER BED | 10/18/2005 | P | 1/14/2003 |
| MOHL | GREENTREE RD | 20 | AERATION | 3/29/2004 | P | 10/31/2002 |
| MOHL | GREENWOOD DR | 3720 | AERATION | 1/27/2005 | P | 10/25/2001 |
| MOHL | GREENWOOD DR | 3755 | AERATION | 2/1/2005 | P | 9/12/2005 |
| MOHL | HEMLOCK LN | 10 | AERATION | 3/29/2005 | F | 4/24/2002 |
| MOHL | HEMLOCK LN | 15 | AERATION | 3/29/2004 | P | 11/20/2002 |
| MOHL | HEMLOCK LN | 25 | AERATION | 6/8/2004 | P | 7/10/2001 |
| MOHL | HEMLOCK LN | 49 | FILTER BED | 11/22/2005 | F | 7/13/2004 |
| MOHL | HEMLOCK LN | 50 | AERATION | 7/6/2004 | P | 9/14/2001 |
| MOHL | HICKORY LN | 135 | AERATION | 9/2/2005 | | 5/29/2002 |
| MOHL | HICKORY LN | 145 | AERATION | 1/20/2005 | P | 5/30/2001 |
| MOHL | HICKORY LN | 162 | FILTER BED | 6/23/2005 | P | 3/30/2001 |
| MOHL | HICKORY LN | 175 | AERATION | 10/4/2005 | P | 10/17/2005 |
| MOHL | HIRAM TRL | 32370 | AERATION | 1/27/2005 | P | 7/26/2000 |
| MOHL | HIRAM TRL | 32470 | AERATION | 4/2/2004 | P | 4/5/2004 |

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|------|--------------|--------|------------|------------|-----|--------------|
| MOHL | HIRAM TRL | 32570 | AERATION | 2/23/2004 | P | 11/4/2002 |
| MOHL | HIRAM TRL | 32670 | AERATION | 8/24/2005 | P | 4/1/2001 |
| MOHL | HIRAM TRL | 32770 | AERATION | 3/11/2004 | P | 3/16/2004 |
| MOHL | HIRAM TRL | 33370 | AERATION | 10/26/2004 | | 5/1/2003 |
| MOHL | HIRAM TRL | 33770 | AERATION | 3/16/2005 | P | 5/6/2003 |
| MOHL | HIRAM TRL | 34000 | AERATION | 12/17/2004 | F | 3/20/2001 |
| MOHL | HOPEWELL TRL | 20 | AERATION | 3/24/2005 | P | 9/27/2004 |
| MOHL | HOPEWELL TRL | 25 | UNKNOWN | 6/30/2005 | P | 7/17/2003 |
| MOHL | HUNTING TRL | 100 | AERATION | 2/16/2005 | P | 9/30/1990 |
| MOHL | HUNTING TRL | 165 | AERATION | 3/11/2005 | P | 2/7/1997 |
| MOHL | HUNTING TRL | 45 | AERATION | 10/5/2005 | P | 4/13/2000 |
| MOHL | HUNTING TRL | 50 | AERATION | 6/16/2004 | P | 5/11/2004 |
| MOHL | HUNTING TRL | 85 | AERATION | 2/2/2005 | P | 6/10/2005 |
| MOHL | HUNTING TRL | 95 | AERATION | 3/15/2005 | P | 11/24/2004 |
| MOHL | JACKSON RD | 31500 | UNKNOWN | 6/7/2005 | F | 9/1/1995 |
| MOHL | JACKSON RD | 31905 | AERATION | 4/6/2005 | P | 3/8/2005 |
| MOHL | JACKSON RD | 32505 | AERATION | 1/20/2005 | P | 12/15/2004 |
| MOHL | JACKSON RD | 33440 | UNKNOWN | 6/28/2005 | F | 10/12/2004 |
| MOHL | JACKSON RD | 35190 | AERATION | 1/27/2005 | P | 1/5/2005 |
| MOHL | JACKSON RD | 35500 | AERATION | 6/8/2005 | P | 4/27/2005 |
| MOHL | JACKSON RD | 35740 | AERATION | 5/16/2005 | P | 11/1/2004 |
| MOHL | JACKSON RD | 36100 | AERATION | 6/8/2005 | P | 5/12/2005 |
| MOHL | JACKSON RD | 36350 | AERATION | 8/25/2004 | | 9/15/2004 |
| MOHL | JACKSON RD | 36930 | AERATION | 5/19/2004 | | 7/11/2003 |
| MOHL | JACKSON RD | 37150 | AERATION | 2/2/2005 | P | 11/26/2003 |
| MOHL | JACKSON RD | 37800 | FILTER BED | 4/19/2005 | F | 5/28/1992 |
| MOHL | JACKSON RD | 37800 | AERATION | 10/18/2005 | P | 1/4/2002 |
| MOHL | JACKSON RD | 37800 | AERATION | 10/18/2005 | P | 12/1/2001 |
| MOHL | JACKSON RD | 38125 | AERATION | 11/15/2005 | P | 9/10/2004 |
| MOHL | LOCHSPUR LN | 25 | AERATION | 3/16/2005 | P | 3/22/2005 |
| MOHL | LOCHSPUR LN | 35 | AERATION | 2/1/2005 | P | 2/4/2005 |
| MOHL | MANDERLY LN | 10 | FILTER BED | 8/18/2004 | P | 11/9/2004 |
| MOHL | MEADOWHILL L | 140 | AERATION | 6/24/2004 | P | 2/5/1999 |
| MOHL | MEADOWHILL L | 175 | AERATION | 5/11/2005 | P | 4/21/2005 |
| MOHL | MEADOWHILL L | 25 | AERATION | 7/29/2004 | F | 10/15/2003 |
| MOHL | MEADOWOOD LN | 205 | AERATION | 4/27/2004 | | 8/17/2001 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|---------------|--------|------------|------------|-----|--------------|
| MOHL | MEADOWOOD LN | 212 | AERATION | 1/27/2005 | P | 4/20/2001 |
| MOHL | MEADOWOOD LN | 225 | AERATION | 2/1/2005 | P | 2/27/2004 |
| MOHL | MILES RD | 197 | UNKNOWN | 4/8/2004 | P | 5/23/2002 |
| MOHL | MILES RD | 33755 | UNKNOWN | 9/27/2004 | P | 9/24/2003 |
| MOHL | MILES RD | 34995 | AERATION | 1/20/2005 | P | 3/16/2001 |
| MOHL | MILES RD | 35015 | AERATION | 10/18/2005 | P | 2/8/1999 |
| MOHL | MILES RD | 35425 | AERATION | 2/16/2005 | P | 2/16/2005 |
| MOHL | MILES RD | 35525 | FILTER BED | 3/24/2005 | F | 4/27/2004 |
| MOHL | MILES RD | 366 | AERATION | 2/8/2005 | P | 11/21/2002 |
| MOHL | MILES RD | 36905 | AERATION | 1/28/2005 | P | 8/31/1999 |
| MOHL | MILES RD | 386 | AERATION | 2/28/2005 | | 6/10/2005 |
| MOHL | MILL HOLLOW D | 185 | AERATION | 8/29/2005 | P | 5/9/2005 |
| MOHL | MILL HOLLOW D | 35 | AERATION | 10/18/2005 | P | 8/13/1999 |
| MOHL | MILL HOLLOW D | 50 | AERATION | 5/18/2004 | P | 9/23/2004 |
| MOHL | MILLCREEK LN | 10 | AERATION | 7/15/2004 | | 8/16/2001 |
| MOHL | MILLCREEK LN | 15 | AERATION | 4/29/2005 | P | 4/15/2005 |
| MOHL | MILLCREEK LN | 150 | AERATION | 2/14/2005 | P | 6/18/2001 |
| MOHL | MILLCREEK LN | 165 | UNKNOWN | 7/19/2005 | F | 5/24/2004 |
| MOHL | MILLCREEK LN | 30 | AERATION | 4/29/2005 | P | 1/24/2000 |
| MOHL | MILLCREEK LN | 35 | AERATION | 4/29/2005 | P | 9/29/2004 |
| MOHL | MILLCREEK LN | 50 | AERATION | 4/12/2005 | P | 7/30/2004 |
| MOHL | MILLCREEK LN | 75 | AERATION | 8/24/2005 | P | 5/29/2001 |
| MOHL | MILLCREEK LN | 80 | AERATION | 7/8/2004 | P | 4/1/2005 |
| MOHL | MITCHELL LN | 20 | AERATION | 9/1/2005 | P | 7/29/2005 |
| MOHL | MOUNTAIN VIEW | 100 | AERATION | 1/6/2004 | F | 12/13/2000 |
| MOHL | MURWOOD DR | 125 | AERATION | 5/31/2005 | P | 4/1/2005 |
| MOHL | MURWOOD DR | 15 | AERATION | 12/30/2004 | P | 9/24/2003 |
| MOHL | MURWOOD DR | 170 | AERATION | 6/21/2005 | P | 6/29/2005 |
| MOHL | MURWOOD DR | 185 | FILTER BED | 6/13/2005 | P | 10/11/2004 |
| MOHL | MURWOOD DR | 190 | AERATION | 10/20/2005 | P | 3/4/2005 |
| MOHL | MURWOOD DR | 205 | AERATION | 4/14/2005 | P | 7/19/2005 |
| MOHL | MURWOOD DR | 30 | AERATION | 7/11/2005 | P | 9/9/2004 |
| MOHL | MURWOOD DR | 35 | AERATION | 4/21/2005 | P | 10/2/2003 |
| MOHL | N STRAWBERRY | 40 | AERATION | 10/19/2004 | P | 9/29/2003 |
| MOHL | N STRAWBERRY | 60 | AERATION | 7/11/2005 | | 5/1/2004 |
| MOHL | N STRAWBERRY | 65 | AERATION | 2/8/2005 | P | 10/8/2003 |

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|------|---------------|--------|------------|------------|-----|--------------|
| MOHL | N STRAWBERRY | 70 | AERATION | 3/18/2004 | P | 5/9/2005 |
| MOHL | N STRAWBERRY | 75 | AERATION | 2/1/2005 | P | 11/9/2002 |
| MOHL | N STRAWBERRY | 85 | AERATION | 1/31/2005 | P | 3/12/2002 |
| MOHL | OLD FARM RD | 25 | AERATION | 2/8/2005 | P | 9/23/2004 |
| MOHL | OLD FARM RD | 40 | AERATION | 4/7/2004 | P | 9/19/2001 |
| MOHL | OLD PLANK LN | 41 | AERATION | 6/15/2004 | P | 4/29/2002 |
| MOHL | PARK LANE RD | 65 | LEACHFIELD | 7/7/2005 | P | 8/13/2004 |
| MOHL | PARK LANE RD | 80 | AERATION | 1/27/2005 | P | |
| MOHL | PARK LANE RD | 90 | LEACHFIELD | 7/13/2005 | P | 6/9/2005 |
| MOHL | RIVER MOUNTAI | 25 | AERATION | 1/20/2005 | P | 11/18/2003 |
| MOHL | S STRAWBERRY | 143 | AERATION | 1/27/2005 | P | 1/22/2004 |
| MOHL | S STRAWBERRY | 163 | AERATION | 10/18/2005 | P | 5/5/2003 |
| MOHL | S STRAWBERRY | 182 | AERATION | 1/20/2005 | P | 8/17/2005 |
| MOHL | S WOODLAND RD | 38900 | AERATION | 1/28/2005 | P | 6/9/2003 |
| MOHL | S WOODLAND RD | 38905 | AERATION | 1/19/2005 | P | 9/10/2001 |
| MOHL | S WOODLAND RD | 38955 | AERATION | 1/15/2004 | P | 7/14/2005 |
| MOHL | S WOODLAND RD | 39405 | UNKNOWN | 8/25/2004 | F | 4/12/2004 |
| MOHL | SKYLINE DR | 10 | AERATION | 5/13/2004 | | 6/28/2004 |
| MOHL | SKYLINE DR | 35 | AERATION | 2/10/2005 | P | 7/30/2003 |
| MOHL | SKYLINE DR | 70 | AERATION | 2/2/2005 | P | 3/19/2001 |
| MOHL | SKYLINE DR | 90 | AERATION | 1/19/2005 | P | 7/7/2004 |
| MOHL | SOM CENTER RD | 4005 | AERATION | 4/18/2005 | P | 3/22/2005 |
| MOHL | SOM CENTER RD | 4515 | AERATION | 2/8/2005 | P | 10/19/2004 |
| MOHL | SOM CENTER RD | 4755 | FILTER BED | 6/22/2005 | P | 3/28/2003 |
| MOHL | SOM CENTER RD | 4775 | AERATION | 7/27/2004 | P | 6/27/2005 |
| MOHL | SOM CENTER RD | 4805 | AERATION | 2/14/2005 | P | 6/18/1999 |
| MOHL | SOM CENTER RD | 4865 | AERATION | 2/8/2005 | P | 6/25/2002 |
| MOHL | SOM CENTER RD | 4920 | AERATION | 2/9/2005 | P | 12/3/2001 |
| MOHL | SOUTH LN | 40 | AERATION | 6/1/2005 | P | 5/19/2005 |
| MOHL | SOUTH LN | 75 | AERATION | 9/16/2004 | P | 5/3/2003 |
| MOHL | SPRINGDALE LN | 235 | FILTER BED | 8/24/2005 | P | 8/29/2002 |
| MOHL | SPRINGDALE LN | 252 | AERATION | 4/13/2005 | P | 7/2/2004 |
| MOHL | STERNCREST DR | 130 | UNKNOWN | 6/27/2005 | F | 8/17/2005 |
| MOHL | STERNCREST DR | 140 | FILTER BED | 3/24/2005 | F | 10/24/2001 |
| MOHL | STERNCREST DR | 145 | AERATION | 4/20/2005 | | 9/18/2001 |
| MOHL | STERNCREST DR | 155 | UNKNOWN | 7/19/2005 | F | 12/12/1990 |

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|------|---------------|--------|------------|------------|-----|--------------|
| MOHL | STERNCREST DR | 180 | UNKNOWN | 6/8/2005 | F | 2/19/2002 |
| MOHL | STERNCREST DR | 190 | AERATION | 2/28/2005 | F | 6/3/1992 |
| MOHL | STERNCREST DR | 200 | AERATION | 1/19/2005 | P | 9/17/2003 |
| MOHL | STERNCREST DR | 205 | AERATION | 12/21/2004 | P | 3/31/2005 |
| MOHL | STERNCREST DR | 225 | AERATION | 1/20/2005 | P | 8/3/2004 |
| MOHL | STERNCREST DR | 235 | AERATION | 6/1/2005 | | 4/29/2004 |
| MOHL | STERNCREST DR | 60 | AERATION | 1/12/2004 | P | 8/15/2003 |
| MOHL | STERNCREST DR | 75 | AERATION | 11/22/2005 | P | 9/19/2005 |
| MOHL | STERNCREST DR | 90 | FILTER BED | 9/22/2005 | P | 2/10/2005 |
| MOHL | WILTSHIRE RD | 3809 | AERATION | 3/30/2004 | P | 12/12/2000 |
| MOHL | WILTSHIRE RD | 3812 | FILTER BED | 11/23/2005 | P | 9/3/2004 |
| MOHL | WILTSHIRE RD | 3870 | AERATION | 3/30/2004 | P | 4/26/2004 |
| MOHL | WILTSHIRE RD | 3924 | AERATION | 2/1/2005 | P | |
| MOHL | WILTSHIRE RD | 3935 | AERATION | 4/6/2005 | P | 6/12/2003 |
| MOHL | WILTSHIRE RD | 3987 | AERATION | 9/28/2004 | P | 7/31/2001 |
| MOHL | WILTSHIRE RD | 3992 | AERATION | 3/31/2005 | P | 7/26/1996 |
| MPHT | SCHREIBER RD | 14228 | AERATION | 7/20/2005 | P | 6/16/2005 |
| MPHT | SCHREIBER RD | 14535 | UNKNOWN | 4/11/2005 | F | 4/14/2005 |
| NOLM | COLUMBIA RD | 6180 | UNKNOWN | 4/21/2004 | P | 8/31/2005 |
| NOLM | LOUIS RD | 5961 | UNKNOWN | 11/10/2004 | F | 12/3/2004 |
| NROY | ABBEY RD | 12636 | AERATION | 2/8/2005 | F | 2/7/2005 |
| NROY | ABBEY RD | 12724 | AERATION | 1/26/2005 | F | 3/30/1994 |
| NROY | ABBEY RD | 12736 | AERATION | 1/26/2005 | P | 3/2/1998 |
| NROY | ABBEY RD | 12961 | AERATION | 1/26/2005 | F | 5/17/2001 |
| NROY | ABBEY RD | 9217 | AERATION | 8/16/2005 | P | 7/28, 1998 |
| NROY | AKINS RD | 10700 | AERATION | 10/6/2004 | P | |
| NROY | AKINS RD | 10714 | AERATION | 9/28/2004 | P | 4/1/2002 |
| NROY | AKINS RD | 10796 | AERATION | 9/28/2004 | P | 10/15/2004 |
| NROY | AKINS RD | 10827 | AERATION | 9/28/2004 | P | 7/31/2000 |
| NROY | AKINS RD | 10901 | AERATION | 10/13/2004 | P | 9/14/2004 |
| NROY | AKINS RD | 11207 | FILTER BED | 8/4/2005 | P | 5/7/2004 |
| NROY | AKINS RD | 11401 | AERATION | 10/6/2004 | P | 6/8/2002 |
| NROY | AKINS RD | 11475 | FILTER BED | 7/18/2005 | F | 3/15/2003 |
| NROY | AKINS RD | 11499 | UNKNOWN | 10/13/2004 | F | 6/1/2003 |
| NROY | AKINS RD | 11600 | FILTER BED | 7/18/2005 | P | 2/3/2005 |
| NROY | AKINS RD | 11689 | AERATION | 8/3/2005 | P | 8/16/2004 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|------------|--------|------------|------------|-----|--------------|
| NROY | AKINS RD | 11690 | AERATION | 10/12/2004 | P | 3/18/2002 |
| NROY | AKINS RD | 11713 | AERATION | 2/8/2005 | P | 12/18/2001 |
| NROY | AKINS RD | 11714 | AERATION | 7/19/2005 | P | 8/10/2004 |
| NROY | AKINS RD | 3453 | AERATION | 8/8/2005 | P | 8/4/2005 |
| NROY | AKINS RD | 3465 | AERATION | 10/12/2004 | P | 6/12/2003 |
| NROY | AKINS RD | 3479 | AERATION | 8/17/2005 | | 6/26/2000 |
| NROY | AKINS RD | 3555 | AERATION | 10/5/2004 | F | 3/18/2004 |
| NROY | AKINS RD | 3566 | FILTER BED | 9/8/2005 | F | 5/8/2003 |
| NROY | AKINS RD | 3587 | AERATION | 10/5/2004 | P | 3/25/2005 |
| NROY | AKINS RD | 3819 | AERATION | 10/6/2004 | P | 5/1/2003 |
| NROY | AKINS RD | 8437 | UNKNOWN | 10/19/2005 | F | 12/6/2001 |
| NROY | AKINS RD | 8811 | FILTER BED | 6/13/2005 | P | 6/23/2005 |
| NROY | AKINS RD | 9562 | AERATION | 4/1/2005 | F | 9/7/2004 |
| NROY | AKINS RD | 9652 | UNKNOWN | 8/3/2005 | F | 9/14/1999 |
| NROY | AKINS RD | 9968 | AERATION | 4/19/2005 | P | 3/28/2005 |
| NROY | BENNETT RD | 15551 | AERATION | 6/29/2004 | P | 11/16/2004 |
| NROY | BENNETT RD | 15585 | UNKNOWN | 6/18/2004 | P | 4/1/2001 |
| NROY | BENNETT RD | 15665 | AERATION | 5/5/2005 | F | 11/1/2003 |
| NROY | BENNETT RD | 15689 | AERATION | 6/29/2004 | P | 8/5/2002 |
| NROY | BENNETT RD | 15701 | AERATION | 6/29/2004 | P | 7/29/2003 |
| NROY | BENNETT RD | 15740 | AERATION | 6/29/2004 | F | 2/9/2000 |
| NROY | BENNETT RD | 15823 | FILTER BED | 4/12/2005 | P | 5/24/2003 |
| NROY | BENNETT RD | 15826 | AERATION | 6/29/2004 | F | 5/5/2000 |
| NROY | BENNETT RD | 15838 | AERATION | 6/29/2004 | F | 4/2/1998 |
| NROY | BENNETT RD | 15906 | AERATION | 6/30/2004 | F | 4/11/2003 |
| NROY | BENNETT RD | 15918 | AERATION | 6/30/2004 | F | 3/19/2003 |
| NROY | BENNETT RD | 15942 | AERATION | 6/30/2004 | P | 8/24/1998 |
| NROY | BENNETT RD | 16101 | AERATION | 7/8/2004 | P | 1/1/2004 |
| NROY | BENNETT RD | 16221 | AERATION | 6/30/2004 | F | 9/13/2005 |
| NROY | BENNETT RD | 16228 | FILTER BED | 4/21/2005 | P | 5/8/2003 |
| NROY | BENNETT RD | 16233 | UNKNOWN | 7/21/2005 | F | 10/15/2004 |
| NROY | BENNETT RD | 16245 | AERATION | 6/30/2004 | P | 9/13/2004 |
| NROY | BENNETT RD | 16257 | AERATION | 7/26/2004 | P | 5/1/2005 |
| NROY | BENNETT RD | 16551 | FILTER BED | 4/15/2005 | F | 4/11/2003 |
| NROY | BENNETT RD | 16620 | AERATION | 7/26/2004 | P | 7/12/2004 |
| NROY | BENNETT RD | 16628 | AERATION | 6/30/2004 | P | 1/1/2003 |

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|------|------------|--------|------------|-----------|-----|--------------|
| NROY | BENNETT RD | 16648 | AERATION | 8/27/2004 | P | 10/17/2001 |
| NROY | BENNETT RD | 16660 | FILTER BED | 5/25/2005 | P | 9/2/2004 |
| NROY | BENNETT RD | 16701 | FILTER BED | 4/26/2005 | F | 6/8/2004 |
| NROY | BENNETT RD | 16731 | FILTER BED | 6/1/2005 | P | 5/11/1998 |
| NROY | BENNETT RD | 16851 | AERATION | 8/24/2004 | P | |
| NROY | BENNETT RD | 16961 | AERATION | 8/24/2004 | P | 3/28/2005 |
| NROY | BENNETT RD | 17313 | AERATION | 8/24/2004 | F | 10/21/2001 |
| NROY | BENNETT RD | 17325 | FILTER BED | 3/15/2005 | F | 8/5/2002 |
| NROY | BENNETT RD | 17337 | FILTER BED | 3/24/2005 | F | 9/26/2003 |
| NROY | BENNETT RD | 17349 | FILTER BED | 3/9/2005 | P | 11/30/2001 |
| NROY | BENNETT RD | 17358 | UNKNOWN | 3/15/2005 | P | 4/1/2001 |
| NROY | BENNETT RD | 17426 | AERATION | 1/18/2005 | F | 7/21/2005 |
| NROY | BENNETT RD | 17448 | FILTER BED | 4/29/2005 | P | 4/11/2003 |
| NROY | BENNETT RD | 17458 | AERATION | 1/18/2005 | P | 10/4/2003 |
| NROY | BENNETT RD | 17559 | FILTER BED | 3/11/2005 | P | 5/23/2003 |
| NROY | BENNETT RD | 17874 | AERATION | 1/18/2005 | P | 7/27/2005 |
| NROY | BENNETT RD | 17960 | AERATION | 5/5/2005 | P | 5/29/2003 |
| NROY | BENNETT RD | 17980 | AERATION | 4/19/2005 | P | 6/3/2000 |
| NROY | BENNETT RD | 18020 | AERATION | 3/18/2005 | F | 8/26/2003 |
| NROY | BENNETT RD | 18641 | FILTER BED | 4/27/2005 | P | 10/25/2002 |
| NROY | BENNETT RD | 18065 | AERATION | 1/18/2005 | P | 4/3/2001 |
| NROY | BENNETT RD | 18132 | AERATION | 1/18/2005 | F | 5/1/2002 |
| NROY | BENNETT RD | 18225 | AERATION | 3/18/2005 | P | 3/1/2004 |
| NROY | BENNETT RD | 18451 | AERATION | 1/18/2005 | P | 5/8/2003 |
| NROY | BENNETT RD | 19427 | FILTER BED | 5/31/2005 | F | 2/28/2005 |
| NROY | CADY RD | 7488 | AERATION | 7/16/2004 | P | 5/23/1997 |
| NROY | CADY RD | 7514 | AERATION | 7/16/2004 | P | 7/11/2003 |
| NROY | CADY RD | 7535 | AERATION | 2/23/2005 | P | 10/23/2000 |
| NROY | CADY RD | 7555 | FILTER BED | 7/16/2004 | F | 6/11/2003 |
| NROY | CADY RD | 7575 | AERATION | 7/16/2004 | P | 9/29/2003 |
| NROY | DONMAR RD | 10840 | FILTER BED | 8/10/2004 | P | 10/1/2003 |
| NROY | DONMAR RD | 11016 | UNKNOWN | 7/20/2004 | F | 7/3/2001 |
| NROY | DONMAR RD | 11040 | FILTER BED | 8/10/2004 | P | 8/7/2003 |
| NROY | DONMAR RD | 11056 | FILTER BED | 8/10/2004 | F | 10/8/2001 |
| NROY | DONMAR RD | 11067 | AERATION | 7/20/2004 | F | 9/21/2000 |
| NROY | DONMAR RD | 11070 | AERATION | 8/10/2004 | F | 12/15/2004 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|-------------|--------|------------|-----------|-----|--------------|
| NROY | DONMAR RD | 11101 | FILTER BED | 8/10/2004 | P | 10/1/2003 |
| NROY | DONMAR RD | 11115 | AERATION | 7/20/2004 | P | 3/15/2001 |
| NROY | DONMAR RD | 11121 | FILTER BED | 7/20/2004 | F | 4/28/2003 |
| NROY | DONMAR RD | 11127 | UNKNOWN | 8/10/2004 | F | 8/2/1999 |
| NROY | DRAKE RD | 11044 | AERATION | 3/15/2005 | P | 3/19/2003 |
| NROY | DRAKE RD | 11285 | AERATION | 3/4/2005 | P | 6/19/2002 |
| NROY | DRAKE RD | 11312 | AERATION | 3/4/2005 | P | 3.28/2000 |
| NROY | DRAKE RD | 11400 | AERATION | 3/4/2005 | F | 10/2/1999 |
| NROY | DRAKE RD | 11438 | AERATION | 3/4/2005 | P | 11/30/1999 |
| NROY | DRAKE RD | 11462 | AERATION | 3/4/2005 | F | 7/18/2003 |
| NROY | DRAKE RD | 11512 | AERATION | 3/4/2005 | F | 11/11/2002 |
| NROY | DRAKE RD | 12100 | AERATION | 3/4/2005 | P | 8/13/1998 |
| NROY | DRAKE RD | 12115 | AERATION | 3/15/2005 | F | 3/18/2005 |
| NROY | DRAKE RD | 12130 | FILTER BED | 3/18/2005 | P | 8/6/1997 |
| NROY | DRAKE RD | 12339 | FILTER BED | 11/8/2004 | P | 4/28/1997 |
| NROY | DRAKE RD | 12553 | AERATION | 3/15/2005 | F | 9/22/2003 |
| NROY | DRAKE RD | 12609 | AERATION | 3/15/2005 | F | 1/10/2004 |
| NROY | DRAKE RD | 12623 | AERATION | 3/15/2005 | F | 4/26/1999 |
| NROY | DRAKE RD | 12659 | AERATION | 3/15/2005 | F | 10/9/1998 |
| NROY | EDGERTON RD | 10238 | AERATION | 1/25/2005 | P | 3/24/2004 |
| NROY | EDGERTON RD | 10390 | AERATION | 4/30/2004 | P | 8/30/2002 |
| NROY | EDGERTON RD | 10462 | AERATION | 4/30/2004 | P | 4/15/2004 |
| NROY | EDGERTON RD | 10527 | AERATION | 4/30/2004 | P | 7/12/2003 |
| NROY | EDGERTON RD | 10550 | AERATION | 4/30/2004 | F | 12/1/2003 |
| NROY | EDGERTON RD | 11510 | AERATION | 9/8/2004 | F | 9/27/2001 |
| NROY | EDGERTON RD | 11701 | AERATION | 4/30/2004 | P | 8/17/2004 |
| NROY | EDGERTON RD | 11725 | AERATION | 4/30/2004 | P | 12/6/2001 |
| NROY | EDGERTON RD | 11737 | AERATION | 12/8/2004 | P | 8/17/1998 |
| NROY | EDGERTON RD | 3070 | UNKNOWN | 7/28/2004 | F | 11/1/2002 |
| NROY | EDGERTON RD | 3268 | UNKNOWN | 8/10/2004 | F | 10/3/2000 |
| NROY | EDGERTON RD | 3426 | UNKNOWN | 8/2/2004 | F | 4/19/2001 |
| NROY | EDGERTON RD | 3550 | UNKNOWN | 11/3/2004 | F | 4/18/2000 |
| NROY | EDGERTON RD | 3607 | FILTER BED | 8/24/2004 | F | 11/13/2001 |
| NROY | EDGERTON RD | 3662 | FILTER BED | 7/14/2004 | P | 11/22/2002 |
| NROY | EDGERTON RD | 3680 | AERATION | 7/19/2004 | | 7/13/2005 |
| NROY | EDGERTON RD | 3757 | FILTER BED | 8/16/2004 | F | 12/7/2002 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|-------------|--------|------------|------------|-----|--------------|
| NROY | EDGERTON RD | 3758 | AERATION | 7/14/2004 | F | 8/31/2004 |
| NROY | EDGERTON RD | 3805 | FILTER BED | 8/11/2004 | F | 6/6/1997 |
| NROY | EDGERTON RD | 3959 | AERATION | 7/14/2004 | F | 4/1/2002 |
| NROY | EDGERTON RD | 3974 | AERATION | 9/1/2004 | P | 8/15/2004 |
| NROY | EDGERTON RD | 3998 | AERATION | 7/14/2004 | | 6/1/2005 |
| NROY | EDGERTON RD | 4010 | AERATION | 7/19/2004 | P | 4/27/2004 |
| NROY | EDGERTON RD | 4022 | AERATION | 7/14/2004 | F | 7/15/2004 |
| NROY | EDGERTON RD | 4168 | UNKNOWN | 8/12/2004 | F | 6/30/1984 |
| NROY | EDGERTON RD | 4250 | AERATION | 9/1/2004 | F | 11/15/2004 |
| NROY | EDGERTON RD | 4710 | AERATION | 9/2/2005 | P | 10/21/2005 |
| NROY | EDGERTON RD | 6985 | AERATION | 4/29/2005 | P | 11/23/1998 |
| NROY | EDGERTON RD | 8563 | AERATION | 6/21/2005 | P | 8/21/2003 |
| NROY | EDGERTON RD | 8676 | UNKNOWN | 7/8/2005 | F | 4/1/2003 |
| NROY | EDGERTON RD | 8690 | AERATION | 8/4/2005 | P | 11/7/2005 |
| NROY | EDGERTON RD | 9955 | FILTER BED | 6/20/2005 | P | 10/9/2003 |
| NROY | LINDBERG DR | 9644 | AERATION | 7/14/2005 | P | 9/6/2003 |
| NROY | LINDBERG DR | 9656 | AERATION | 7/13/2005 | P | 3/9/2000 |
| NROY | LINDBERG DR | 9661 | FILTER BED | 10/5/2004 | F | 10/18/2002 |
| NROY | LOUIS DR | 15821 | AERATION | 6/24/2005 | P | 2/28/2003 |
| NROY | LOUIS DR | 15833 | AERATION | 7/9/2004 | P | 3/10/2001 |
| NROY | LOUIS DR | 15836 | UNKNOWN | 6/21/2005 | P | 1/19/2004 |
| NROY | LOUIS DR | 16104 | FILTER BED | 6/20/2005 | F | 5/6/2003 |
| NROY | LOUIS DR | 16111 | AERATION | 7/8/2005 | F | 3/27/2001 |
| NROY | LYTLE RD | 19807 | UNKNOWN | 6/24/2005 | F | 8/9/2004 |
| NROY | LYTLE RD | 19920 | UNKNOWN | 7/8/2005 | P | 7/1/2004 |
| NROY | MARTIN DR | 15325 | AERATION | 10/27/2005 | P | 2/28/2001 |
| NROY | MARTIN DR | 15499 | AERATION | 5/24/2005 | P | 9/14/2000 |
| NROY | RIDGE RD | 15933 | UNKNOWN | 9/8/2005 | P | 5/1/2004 |
| NROY | RIDGE RD | 16000 | AERATION | 10/5/2005 | P | |
| NROY | RIDGE RD | 16297 | LEACHFIELD | 10/5/2005 | P | 10/4/2002 |
| NROY | RIDGE RD | 16317 | AERATION | 1/6/2005 | P | 4/24/2003 |
| NROY | RIDGE RD | 17000 | FILTER BED | 6/3/2004 | F | 7/1/2000 |
| NROY | RIDGE RD | 17801 | FILTER BED | 9/8/2005 | P | 5/1/2003 |
| NROY | RIDGE RD | 17924 | AERATION | 8/31/2005 | P | 9/9/2003 |
| NROY | RIDGE RD | 18645 | FILTER BED | 6/3/2004 | F | 5/6/2002 |
| NROY | RIDGE RD | 18900 | AERATION | 8/31/2005 | P | 10/15/2004 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|--------------|--------|------------|------------|-----|--------------|
| NROY | RIDGE RD | 18950 | AERATION | 9/2/2005 | P | 6/1/2005 |
| NROY | RIDGE RD | 19600 | UNKNOWN | 6/3/2004 | F | 11/7/2002 |
| NROY | RIDGE RD | 19899 | AERATION | 3/29/2004 | P | 7/28/2005 |
| NROY | RIDGE RD | 8221 | FILTER BED | 11/22/2005 | F | 2/1/2003 |
| NROY | ROYALTON RD | 3337 | UNKNOWN | 11/9/2005 | F | 7/5/2001 |
| NROY | STATE RD | 15880 | AERATION | 6/24/2005 | P | 4/26/2001 |
| NROY | STATE RD | 16830 | FILTER BED | 11/8/2004 | F | 5/3/2004 |
| NROY | STATE RD | 16850 | FILTER BED | 11/8/2004 | F | 4/14/2003 |
| NROY | STATE RD | 16951 | FILTER BED | 6/18/2004 | P | 4/1/2005 |
| NROY | STATE RD | 18026 | AERATION | 4/18/2005 | P | 3/4/2004 |
| NROY | STATE RD | 18070 | AERATION | 10/6/2004 | | 5/18/2005 |
| NROY | STATE RD | 18201 | AERATION | 4/26/2005 | P | 12/31/1989 |
| NROY | STATE RD | 18435 | FILTER BED | 4/15/2005 | P | 9/13/2000 |
| NROY | STATE RD | 18989 | AERATION | 8/20/2004 | P | 6/5/2002 |
| NROY | VALLEY PARKW | 3317 | UNKNOWN | 8/26/2004 | P | 5/1/2005 |
| NROY | VALLEY PARKW | 3331 | AERATION | 7/27/2004 | F | 8/23/2004 |
| NROY | VALLEY PARKW | 3348 | FILTER BED | 6/10/2005 | P | 3/1/2003 |
| NROY | VALLEY PARKW | 3415 | AERATION | 11/15/2004 | P | 2/25/2005 |
| NROY | VALLEY PARKW | 3548 | AERATION | 8/12/2004 | P | 5/8/2002 |
| NROY | VALLEY PARKW | 3668 | AERATION | 3/4/2005 | P | 7/13/2000 |
| NROY | VALLEY PARKW | 5850 | AERATION | 11/18/2005 | P | |
| NROY | VALLEY PARKW | 5860 | AERATION | 5/17/2004 | P | |
| NROY | VALLEY PARKW | 5870 | AERATION | 5/17/2004 | P | |
| NROY | VALLEY PARKW | 5880 | AERATION | 5/17/2004 | P | |
| NROY | VALLEY PARKW | 5890 | AERATION | 5/17/2004 | F | 10/13/2004 |
| NROY | VALLEY PARKW | 5900 | AERATION | 5/17/2004 | P | |
| NROY | VALLEY PARKW | 5910 | AERATION | 5/17/2004 | P | |
| NROY | VALLEY PARKW | 5920 | AERATION | 5/17/2004 | P | 4/1/2004 |
| NROY | VALLEY PARKW | 5940 | AERATION | 5/17/2004 | P | 7/9/2003 |
| NROY | VALLEY PARKW | 5950 | AERATION | 5/17/2004 | P | |
| NROY | VALLEY PARKW | 5960 | AERATION | 5/17/2004 | P | 4/4/2005 |
| NROY | VALLEY PARKW | 5970 | AERATION | 5/17/2004 | P | 6/18/2004 |
| NROY | W 130 ST | 10889 | AERATION | 8/2/2005 | P | 5/12/2003 |
| NROY | W 130 ST | 10901 | AERATION | 2/7/2005 | F | 4/1/2004 |
| NROY | W 130 ST | 11261 | AERATION | 8/22/2005 | P | 9/2/2003 |
| NROY | W 130 ST | 12301 | FILTER BED | 8/16/2005 | F | 10/20/2004 |

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|------|--------------|--------|------------|------------|-----|--------------|
| NROY | W 130 ST | 12345 | UNKNOWN | 5/12/2004 | F | 9/1/1999 |
| NROY | W 130 ST | 12569 | AERATION | 8/16/2005 | P | 1/25/2005 |
| NROY | W 130 ST | 13027 | AERATION | 2/7/2005 | P | 5/4/2001 |
| NROY | W 130 ST | 13051 | AERATION | 1/25/2005 | P | 12/10/2004 |
| NROY | WILTSHIRE RD | 3435 | FILTER BED | 7/13/2005 | P | 5/24/2003 |
| NROY | YORK RD | 10615 | AERATION | 5/3/2005 | P | 11/12/2002 |
| NROY | YORK RD | 15819 | LEACHFIELD | 8/16/2005 | P | 6/30/1989 |
| NROY | YORK RD | 15893 | FILTER BED | 4/1/2005 | F | 5/1/2005 |
| NROY | YORK RD | 15905 | AERATION | 5/12/2004 | P | 4/28/2004 |
| NROY | YORK RD | 15958 | UNKNOWN | 5/10/2005 | F | 7/13/2005 |
| NROY | YORK RD | 16130 | AERATION | 5/12/2004 | P | 2/24/2005 |
| OKWD | ALEXANDER RD | 23070 | UNKNOWN | 3/16/2005 | P | 9/7/2005 |
| OKWD | ALEXANDER RD | 23090 | AERATION | 11/3/2004 | P | 5/13/2004 |
| OKWD | ALEXANDER RD | 23300 | AERATION | 1/31/2005 | P | 5/20/2003 |
| OKWD | FORBES RD | 22941 | AERATION | 1/31/2005 | P | 3/3/2004 |
| OKWD | RICHMOND RD | 7390 | AERATION | 5/13/2004 | | 4/3/2001 |
| OKWD | RICHMOND RD | 7400 | FILTER BED | 3/29/2005 | P | 1/29/2005 |
| OLMF | COLUMBIA RD | 7027 | AERATION | 11/10/2004 | P | 7/5/2000 |
| OLMF | COLUMBIA RD | 9299 | UNKNOWN | 7/15/2004 | F | 7/21/1999 |
| OLMF | COOK RD | 25704 | UNKNOWN | 3/23/2005 | F | 5/3/2004 |
| OLMF | COOK RD | 25705 | FILTER BED | 4/28/2005 | F | 4/22/2002 |
| OLMF | COOK RD | 25735 | FILTER BED | 8/25/2005 | F | 8/8/2005 |
| OLMF | COOK RD | 25755 | AERATION | 11/21/2005 | | 11/2/2001 |
| OLMF | COOK RD | 25885 | FILTER BED | 4/13/2005 | F | 9/7/2005 |
| OLMF | COOK RD | 25902 | UNKNOWN | 3/22/2005 | F | 4/29/2004 |
| OLMF | COOK RD | 25973 | FILTER BED | 3/30/2005 | F | 5/4/2005 |
| OLMF | COOK RD | 26011 | FILTER BED | 3/29/2005 | F | 5/4/2005 |
| OLMF | COOK RD | 26287 | UNKNOWN | 4/26/2005 | F | 4/27/2005 |
| OLMF | COOK RD | 26329 | AERATION | 4/6/2005 | P | 11/29/2005 |
| OLMF | COOK RD | 26349 | AERATION | 4/6/2005 | P | 8/18/2005 |
| OLMF | COOK RD | 26485 | FILTER BED | 3/22/2005 | F | 3/21/2005 |
| OLMF | COOK RD | 26505 | FILTER BED | 5/3/2004 | P | 5/14/2003 |
| OLMF | COOK RD | 26745 | FILTER BED | 4/6/2005 | P | 4/24/1997 |
| OLMF | COOK RD | 26773 | UNKNOWN | 5/19/2005 | F | 7/7/2004 |
| OLMF | COOK RD | 26797 | UNKNOWN | 4/6/2005 | F | 3/22/2005 |
| OLMF | CRANAGE RD | 26210 | FILTER BED | 5/27/2005 | F | 7/14/2004 |

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|------|---------------|--------|------------|------------|-----|--------------|
| OLMF | CRANAGE RD | 26283 | FILTER BED | 4/14/2005 | P | 9/24/2002 |
| OLMF | CRANAGE RD | 26378 | UNKNOWN | 4/18/2005 | F | 7/1/2003 |
| OLMF | CRANAGE RD | 26391 | UNKNOWN | 4/18/2005 | F | 4/8/2003 |
| OLMF | CRANAGE RD | 26445 | AERATION | 11/9/2005 | F | 6/22/2004 |
| OLMF | CRANAGE RD | 26490 | AERATION | 3/30/2005 | P | 4/23/2004 |
| OLMF | CRANAGE RD | 26520 | UNKNOWN | 5/5/2005 | F | 3/10/2004 |
| OLMF | CRANAGE RD | 26722 | FILTER BED | 4/13/2005 | P | 6/20/2000 |
| OLMF | LEWIS RD | 7560 | UNKNOWN | 6/2/2005 | P | 10/15/2004 |
| OLMF | LEWIS RD | 7685 | AERATION | 5/26/2005 | P | 2/9/1999 |
| OLMF | LEWIS RD | 7780 | AERATION | 5/4/2005 | F | 11/6/2000 |
| OLMF | LEWIS RD | 7789 | AERATION | 5/25/2005 | P | 9/7/2000 |
| OLMF | LEWIS RD | 7790 | UNKNOWN | 5/24/2005 | F | 9/26/2003 |
| OLMF | LEWIS RD | 7828 | FILTER BED | 3/29/2005 | F | 10/18/2004 |
| OLMF | LEWIS RD | 7850 | UNKNOWN | 4/13/2005 | P | 6/9/2003 |
| OLMF | LEWIS RD | 7898 | FILTER BED | 11/22/2004 | F | 5/20/2004 |
| OLMF | LEWIS RD | 7946 | FILTER BED | 11/15/2004 | P | 4/28/2005 |
| OLMF | LEWIS RD | 8060 | AERATION | 8/18/2004 | P | 5/31/2002 |
| OLMF | LEWIS RD | 8132 | FILTER BED | 11/22/2004 | P | 7/31/1990 |
| OLMF | LEWIS RD | 8450 | FILTER BED | 5/26/2005 | F | 7/12/2004 |
| OLMF | LEWIS RD | 8490 | FILTER BED | 8/9/2004 | P | 10/18/2001 |
| OLMF | LEWIS RD | 8594 | FILTER BED | 5/25/2005 | P | 10/31/2002 |
| OLMF | LINDBERGH BLV | 8866 | AERATION | 6/29/2005 | P | |
| OLMF | LINDBERGH BLV | 9276 | FILTER BED | 4/28/2005 | F | 7/19/2001 |
| OLMF | MAPLEWAY DR | 7529 | AERATION | 4/5/2005 | P | 9/12/2000 |
| OLMF | MAPLEWAY DR | 7549 | AERATION | 3/30/2005 | P | 1/8/2003 |
| OLMF | MAPLEWAY DR | 7550 | FILTER BED | 4/5/2005 | P | 11/17/2004 |
| OLMF | MAPLEWAY DR | 7574 | FILTER BED | 4/5/2005 | F | 8/17/2005 |
| OLMF | MAPLEWAY DR | 7575 | AERATION | 3/30/2005 | P | 6/20/2003 |
| OLMF | MAPLEWAY DR | 7599 | AERATION | 3/30/2005 | P | 5/14/2003 |
| OLMF | MAPLEWAY DR | 7604 | FILTER BED | 4/18/2005 | P | 10/4/2004 |
| OLMF | MAPLEWAY DR | 7654 | FILTER BED | 5/24/2004 | F | 3/18/2004 |
| OLMF | MAPLEWAY DR | 7659 | UNKNOWN | 3/18/2005 | P | 11/29/2004 |
| OLMF | MAPLEWAY DR | 7684 | AERATION | 4/13/2005 | P | 4/11/2003 |
| OLMF | MAPLEWAY DR | 7728 | FILTER BED | 3/29/2005 | F | 3/12/2002 |
| OLMF | NOBOTTOM RD | 24699 | UNKNOWN | 11/23/2004 | F | 9/27/2000 |
| OLMF | NOBOTTOM RD | 24755 | UNKNOWN | 11/3/2004 | F | 10/14/2002 |

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|------|-------------|--------|------------|------------|-----|--------------|
| OLMF | NOBOTTOM RD | 24811 | FILTER BED | 8/9/2004 | P | 6/12/2003 |
| OLMF | NOBOTTOM RD | 24923 | FILTER BED | 11/10/2004 | P | 5/21/2002 |
| OLMF | NOBOTTOM RD | 24977 | FILTER BED | 11/3/2004 | F | 3/31/1999 |
| OLMF | NOBOTTOM RD | 25029 | FILTER BED | 7/29/2004 | P | 8-6-2004 |
| OLMF | NOBOTTOM RD | 25197 | FILTER BED | 11/10/2004 | F | 9/19/2005 |
| OLMF | NOBOTTOM RD | 25247 | AERATION | 8/26/2004 | P | 6/9/2000 |
| OLMF | RIVER RD | 7112 | UNKNOWN | 11/15/2004 | F | 6-8-2004 |
| OLMF | RIVER RD | 7124 | AERATION | 4-28/2004 | P | 10/3/2002 |
| OLMF | RIVER RD | 7125 | AERATION | 9-1/2005 | P | 9-13/2002 |
| OLMF | RIVER RD | 7150 | AERATION | 6/2/2005 | P | 9/16/2004 |
| OLMF | RIVER RD | 7200 | AERATION | 4/18/2005 | P | 6/1/2003 |
| OLMF | RIVER RD | 7220 | AERATION | 4/14/2005 | P | 4-22/2002 |
| OLMF | RIVER RD | 7244 | AERATION | 5/4/2005 | P | 4-1/2004 |
| OLMF | RIVER RD | 7253 | AERATION | 4/18/2005 | P | 2/5/2003 |
| OLMF | RIVER RD | 7301 | AERATION | 4/14/2005 | P | 5/22/2003 |
| OLMF | RIVER RD | 7321 | AERATION | 3/21/2005 | P | |
| OLMF | RIVER RD | 7339 | FILTER BED | 3/29/2005 | P | 4/26/2000 |
| OLMF | RIVER RD | 7344 | AERATION | 5/27/2005 | F | 6/16/2000 |
| OLMF | RIVER RD | 7353 | FILTER BED | 3/30/2005 | P | 6/10/2002 |
| OLMF | RIVER RD | 7395 | FILTER BED | 10/27/2004 | P | 5-23/2004 |
| OLMF | RIVER RD | 7400 | AERATION | 10/19/2004 | | 7/7/2005 |
| OLMF | RIVER RD | 7419 | FILTER BED | 4/28/2004 | F | 12/3/2001 |
| OLMF | RIVER RD | 7424 | FILTER BED | 3/29/2005 | F | 1/2/2004 |
| OLMF | RIVER RD | 7435 | UNKNOWN | 4/28/2004 | F | 7-3-2003 |
| OLMF | RIVER RD | 7461 | FILTER BED | 5/17/2004 | F | 11/6/2002 |
| OLMF | RIVER RD | 7472 | FILTER BED | 5/31/2005 | F | 4/27/2004 |
| OLMF | RIVER RD | 7473 | LEACHFIELD | 5/17/2004 | F | |
| OLMF | RIVER RD | 7503 | UNKNOWN | 10/27/2004 | F | 4/27/2004 |
| OLMF | RIVER RD | 7522 | UNKNOWN | 10/19/2004 | F | 6/3/2002 |
| OLMF | RIVER RD | 7539 | UNKNOWN | 10/19/2004 | F | 3/31/2001 |
| OLMF | RIVER RD | 7542 | UNKNOWN | 4/26/2004 | F | 9/18/2000 |
| OLMF | RIVER RD | 7557 | UNKNOWN | 10/27/2004 | F | 7/31/1988 |
| OLMF | RIVER RD | 7569 | UNKNOWN | 10/6/2004 | P | 9/29/2000 |
| OLMF | RIVER RD | 7585 | FILTER BED | 10/6/2004 | F | 5/11/2004 |
| OLMF | RIVER RD | 7596 | AERATION | 10/6/2004 | F | 4/29/2003 |
| OLMF | RIVER RD | 7601 | UNKNOWN | 6/1/2004 | F | 8/31/1983 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|------------|--------|------------|------------|-----|--------------|
| OLMF | RIVER RD | 7634 | FILTER BED | 5/24/2004 | F | 6/8/2004 |
| OLMF | RIVER RD | 7635 | AERATION | 7/22/2005 | F | 10/19/2000 |
| OLMF | RIVER RD | 7647 | UNKNOWN | 5/24/2004 | F | 3/29/2001 |
| OLMF | RIVER RD | 7659 | UNKNOWN | 5/24/2004 | F | 10/30/2003 |
| OLMF | WATER ST | 24761 | FILTER BED | 9/19/2005 | F | 10/28/2005 |
| OLMF | WATER ST | 25618 | UNKNOWN | 7/19/2005 | P | 5/30/2001 |
| OLMT | BAGLEY RD | 27038 | AERATION | 6/23/2005 | P | 12/3/2003 |
| OLMT | BAGLEY RD | 27044 | AERATION | 6/23/2005 | P | 8/15/2004 |
| OLMT | BAGLEY RD | 27046 | AERATION | 6/23/2005 | P | 3/1/2004 |
| OLMT | BAGLEY RD | 27068 | FILTER BED | 6/17/2005 | F | 9/23/2003 |
| OLMT | BAGLEY RD | 27161 | FILTER BED | 11/4/2005 | F | 6/4/2002 |
| OLMT | BAGLEY RD | 27213 | AERATION | 6/23/2005 | P | 1/1/1984 |
| OLMT | BAGLEY RD | 27226 | AERATION | 7/13/2005 | F | 9/13/2002 |
| OLMT | BAGLEY RD | 27230 | AERATION | 7/8/2005 | F | 3/14/2005 |
| OLMT | BAGLEY RD | 27234 | AERATION | 7/8/2005 | F | 11/20/2003 |
| OLMT | BAGLEY RD | 27254 | AERATION | 7/13/2005 | F | 9/15/2003 |
| OLMT | BAGLEY RD | 27301 | AERATION | 7/7/2005 | F | 1/1/1984 |
| OLMT | BAGLEY RD | 27305 | AERATION | 7/7/2005 | F | 7/19/2005 |
| OLMT | BAGLEY RD | 27321 | AERATION | 7/7/2005 | F | 7/11/2005 |
| OLMT | BAGLEY RD | 27322 | AERATION | 8/18/2005 | P | 8/10/2005 |
| OLMT | BAGLEY RD | 27358 | AERATION | 7/7/2005 | F | 9/5/2003 |
| OLMT | BAGLEY RD | 27389 | AERATION | 7/8/2005 | P | 4/10/2000 |
| OLMT | BARRETT RD | 24405 | FILTER BED | 10/24/2005 | P | 5/31/1986 |
| OLMT | BARRETT RD | 24411 | AERATION | 7/19/2005 | F | 6/8/2005 |
| OLMT | BARRETT RD | 24416 | AERATION | 7/19/2005 | F | 8/19/2003 |
| OLMT | BARRETT RD | 24420 | UNKNOWN | 11/9/2005 | F | 10/14/2004 |
| OLMT | BARRETT RD | 24439 | FILTER BED | 11/9/2005 | P | 6/26/2003 |
| OLMT | BARRETT RD | 24481 | UNKNOWN | 11/28/2005 | F | 9/23/2003 |
| OLMT | BARRETT RD | 24517 | UNKNOWN | 11/29/2005 | F | 4/26/2001 |
| OLMT | BARTON RD | 7152 | UNKNOWN | 6/24/2004 | F | 7/20/2004 |
| OLMT | BARTON RD | 7168 | AERATION | 10/5/2004 | F | 2/3/1999 |
| OLMT | BARTON RD | 7201 | AERATION | 10/5/2004 | F | 8/31/1999 |
| OLMT | BARTON RD | 7240 | UNKNOWN | 6/22/2004 | F | 10/26/2005 |
| OLMT | BARTON RD | 7248 | UNKNOWN | 7/7/2004 | F | 7/7/2004 |
| OLMT | BARTON RD | 7300 | AERATION | 10/5/2004 | P | 1/31/2005 |
| OLMT | BRONSON RD | 7447 | AERATION | 8/26/2004 | P | 9/17/2004 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|-------------|--------|------------|------------|-----|--------------|
| OLMT | BRONSON RD | 7456 | AERATION | 11/30/2005 | F | 10/3/2003 |
| OLMT | BRONSON RD | 7507 | AERATION | 8/26/2004 | P | 10/29/2001 |
| OLMT | BRONSON RD | 7534 | AERATION | 8/30/2004 | F | 9/28/2004 |
| OLMT | BRONSON RD | 7681 | AERATION | 8/30/2004 | F | 7/22/2003 |
| OLMT | BRONSON RD | 7698 | AERATION | 7/22/2004 | F | 5/6/2003 |
| OLMT | BRONSON RD | 7715 | AERATION | 7/22/2004 | P | 9/7/2004 |
| OLMT | BRONSON RD | 7730 | AERATION | 7/22/2004 | F | 8/3/2004 |
| OLMT | BRONSON RD | 7794 | AERATION | 7/22/2004 | P | 1/25/2005 |
| OLMT | BRONSON RD | 7825 | AERATION | 7/22/2004 | F | 11/15/2001 |
| OLMT | BRONSON RD | 7845 | AERATION | 8/18/2005 | F | 9/8/2005 |
| OLMT | COLUMBIA RD | 6266 | AERATION | 10/20/2004 | P | 5/19/1998 |
| OLMT | COLUMBIA RD | 6547 | AERATION | 11/10/2004 | P | 7/21/1999 |
| OLMT | COLUMBIA RD | 6686 | AERATION | 10/20/2004 | P | 12/15/2004 |
| OLMT | COLUMBIA RD | 6861 | AERATION | 11/10/2004 | P | 1/19/2001 |
| OLMT | COLUMBIA RD | 7030 | AERATION | 10/20/2004 | F | 6/27/2003 |
| OLMT | COOK RD | 26120 | AERATION | 9/28/2004 | P | 5/9/2005 |
| OLMT | COOK RD | 26164 | UNKNOWN | 5/21/2004 | F | 11/10/2003 |
| OLMT | COOK RD | 26286 | AERATION | 9/28/2004 | P | 3/5/2001 |
| OLMT | COOK RD | 26300 | UNKNOWN | 5/25/2004 | P | 3/18/2002 |
| OLMT | COOK RD | 26312 | AERATION | 9/28/2004 | P | 5/1/2005 |
| OLMT | COOK RD | 26350 | UNKNOWN | 5/28/2004 | F | 7/26/2004 |
| OLMT | COOK RD | 26390 | UNKNOWN | 6/21/2004 | F | 3/28/2003 |
| OLMT | COOK RD | 26400 | AERATION | 9/28/2004 | P | 9/21/2005 |
| OLMT | COOK RD | 26416 | FILTER BED | 6/3/2004 | F | 6/8/2004 |
| OLMT | COOK RD | 26450 | UNKNOWN | 5/28/2004 | P | 7/11/2003 |
| OLMT | COOK RD | 26602 | AERATION | 9/28/2004 | P | |
| OLMT | COOK RD | 26646 | FILTER BED | 6/3/2004 | P | 2/12/2002 |
| OLMT | COOK RD | 26663 | FILTER BED | 6/3/2004 | P | 6/22/2005 |
| OLMT | COOK RD | 26690 | UNKNOWN | 6/3/2004 | F | 9/23/2004 |
| OLMT | COOK RD | 26720 | FILTER BED | 6/23/2004 | F | 3/14/2001 |
| OLMT | COOK RD | 26744 | UNKNOWN | 6/21/2004 | F | 8/13/2003 |
| OLMT | COOK RD | 26836 | UNKNOWN | 7/1/2004 | F | 4/20/2004 |
| OLMT | COOK RD | 26878 | UNKNOWN | 7/1/2004 | F | 2/23/2000 |
| OLMT | COOK RD | 26880 | FILTER BED | 6/3/2004 | P | 7/16/2003 |
| OLMT | COOK RD | 26885 | UNKNOWN | 6/21/2004 | F | 12/17/2002 |
| OLMT | COOK RD | 26903 | UNKNOWN | 5/17/2004 | F | 7/28/1999 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|-------------|--------|------------|-----------|-----|--------------|
| OLMT | COOK RD | 26905 | AERATION | 9/28/2004 | F | 5/21/1996 |
| OLMT | COOK RD | 26980 | AERATION | 9/28/2004 | P | 5/3/2004 |
| OLMT | COOK RD | 26983 | AERATION | 9/28/2004 | P | 9/22/2005 |
| OLMT | COOK RD | 27070 | AERATION | 9/28/2004 | P | 9/1/2005 |
| OLMT | COOK RD | 27080 | AERATION | 8/16/2005 | F | 3/29/2001 |
| OLMT | COOK RD | 27083 | AERATION | 8/5/2004 | P | 3/22/2005 |
| OLMT | COOK RD | 27091 | AERATION | 9/28/2004 | F | 6/23/2005 |
| OLMT | COOK RD | 27097 | AERATION | 9/28/2004 | P | 6/28/1996 |
| OLMT | COOK RD | 27121 | AERATION | 8/5/2004 | F | 9/29/1999 |
| OLMT | COOK RD | 27143 | AERATION | 8/5/2004 | P | 4/23/2002 |
| OLMT | COOK RD | 27160 | AERATION | 8/3/2004 | P | 2/6/2004 |
| OLMT | COOK RD | 27162 | AERATION | 6/29/2004 | P | 3/23/2004 |
| OLMT | COOK RD | 27178 | AERATION | 6/29/2004 | P | 12/7/2004 |
| OLMT | COOK RD | 27182 | AERATION | 9/28/2004 | P | 5/15/2002 |
| OLMT | COOK RD | 27191 | AERATION | 9/28/2004 | F | 8/26/2002 |
| OLMT | COOK RD | 27234 | AERATION | 9/28/2004 | P | 8/14/2002 |
| OLMT | COOK RD | 27258 | AERATION | 9/28/2004 | P | 1/7/2005 |
| OLMT | COOK RD | 27270 | AERATION | 9/29/2004 | P | 8/30/2002 |
| OLMT | COOK RD | 27271 | AERATION | 9/29/2004 | P | 4/15/2003 |
| OLMT | COOK RD | 27294 | AERATION | 6/22/2004 | P | 10/10/2003 |
| OLMT | COOK RD | 27298 | AERATION | 9/29/2004 | F | 5/13/2002 |
| OLMT | COOK RD | 27300 | AERATION | 9/29/2004 | P | 4/18/2003 |
| OLMT | COOK RD | 27357 | AERATION | 10/5/2004 | P | 4/22/2003 |
| OLMT | COOK RD | 27375 | AERATION | 10/5/2004 | P | 5/1/2003 |
| OLMT | COOK RD | 27386 | AERATION | 10/5/2004 | P | 10/1/2003 |
| OLMT | COOK RD | 27389 | AERATION | 10/5/2004 | P | 6/28/2002 |
| OLMT | COOK RD | 27390 | AERATION | 10/5/2004 | P | 6/17/2005 |
| OLMT | COOK RD | 27393 | AERATION | 10/5/2004 | F | 9/3/2003 |
| OLMT | COOK RD | 27399 | AERATION | 10/5/2004 | P | 5/8/1999 |
| OLMT | COOK RD | 27403 | AERATION | 10/5/2004 | F | 6/21/2005 |
| OLMT | FERNHALL RD | 25883 | FILTER BED | 5/4/2004 | F | 9/8/2005 |
| OLMT | FERNHALL RD | 25894 | FILTER BED | 3/24/2005 | P | 1/31/2005 |
| OLMT | FITCH RD | 6299 | UNKNOWN | 2/18/2005 | F | 3/23/2004 |
| OLMT | FITCH RD | 6314 | FILTER BED | 2/9/2005 | P | 9/13/2005 |
| OLMT | FITCH RD | 6315 | UNKNOWN | 3/7/2005 | F | 5/5/2005 |
| OLMT | FITCH RD | 6331 | AERATION | 1/26/2005 | P | 3/18/2002 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|------------|--------|------------|-----------|-----|--------------|
| OLMT | FITCH RD | 6363 | AERATION | 1/20/2005 | F | 11/12/2003 |
| OLMT | FITCH RD | 6394 | UNKNOWN | 3/15/2005 | F | 9/7/2004 |
| OLMT | FITCH RD | 6413 | UNKNOWN | 3/23/2005 | F | 5/8/2003 |
| OLMT | FITCH RD | 6637 | AERATION | 1/13/2004 | P | 5/9/2001 |
| OLMT | FITCH RD | 6653 | AERATION | 1/13/2004 | P | 3/19/2003 |
| OLMT | FITCH RD | 6685 | AERATION | 1/20/2005 | P | 8/25/2004 |
| OLMT | FITCH RD | 6880 | UNKNOWN | 7/15/2005 | F | 6/30/2003 |
| OLMT | FITCH RD | 6977 | LEACHFIELD | 8/15/2005 | F | 10/17/2000 |
| OLMT | FITCH RD | 6992 | AERATION | 3/3/2005 | P | 6/17/2004 |
| OLMT | FITCH RD | 6993 | FILTER BED | 4/1/2005 | F | 5/17/2005 |
| OLMT | FITCH RD | 7009 | AERATION | 2/1/2005 | F | 3/31/2003 |
| OLMT | FITCH RD | 7025 | AERATION | 2/1/2005 | F | 2/18/2003 |
| OLMT | FITCH RD | 7040 | FILTER BED | 3/7/2005 | P | 3/10/2005 |
| OLMT | FITCH RD | 7043 | AERATION | 2/9/2005 | P | 7/26/2001 |
| OLMT | FITCH RD | 7058 | FILTER BED | 2/9/2005 | P | 7/2/2003 |
| OLMT | FITCH RD | 7059 | FILTER BED | 3/7/2005 | P | 2/15/2005 |
| OLMT | FITCH RD | 7075 | FILTER BED | 2/9/2005 | F | 5/7/2002 |
| OLMT | FITCH RD | 7090 | UNKNOWN | 2/1/2005 | F | 5/4/2005 |
| OLMT | FITCH RD | 7097 | AERATION | 1/26/2005 | P | 11/28/2001 |
| OLMT | FITCH RD | 7107 | AERATION | 1/26/2005 | P | 12/18/2002 |
| OLMT | FITCH RD | 7111 | AERATION | 1/26/2005 | F | 11/20/2003 |
| OLMT | FITCH RD | 7141 | FILTER BED | 6/15/2005 | P | 6/20/2005 |
| OLMT | FITCH RD | 7237 | FILTER BED | 2/10/2005 | P | 11/15/2001 |
| OLMT | FITCH RD | 7255 | AERATION | 1/26/2005 | P | 11/5/2001 |
| OLMT | FITCH RD | 7277 | UNKNOWN | 3/24/2005 | F | 4/18/2003 |
| OLMT | FITCH RD | 7339 | AERATION | 11/9/2005 | P | 5/9/2000 |
| OLMT | FITCH RD | 7361 | UNKNOWN | 3/31/2005 | F | 10/15/2004 |
| OLMT | FITCH RD | 7469 | FILTER BED | 2/10/2005 | P | 6/11/2001 |
| OLMT | FITCH RD | 7508 | AERATION | 2/10/2005 | P | 9/24/2003 |
| OLMT | FITCH RD | 7531 | FILTER BED | 4/16/2005 | F | 1/25/2005 |
| OLMT | FITCH RD | 7548 | LEACHFIELD | 4/16/2005 | F | 6/5/2003 |
| OLMT | FITCH RD | 7549 | UNKNOWN | 3/31/2005 | F | 3/25/1999 |
| OLMT | FITCH RD | 7640 | AERATION | 2/1/2005 | P | 2/14/2005 |
| OLMT | FITCH RD | 7706 | AERATION | 2/10/2005 | P | 6/22/2004 |
| OLMT | FITCH RD | 7725 | UNKNOWN | 2/10/2005 | P | 7/10/2001 |
| OLMT | FITCH RD | 7844 | AERATION | 2/10/2005 | P | 7/15/2005 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|--------------|--------|------------|------------|-----|--------------|
| OLMT | FITCH RD | 7996 | AERATION | 3/17/2005 | P | 8/27/2002 |
| OLMT | FITCH RD | 8014 | FILTER BED | 1/24/2005 | F | 4/29/2005 |
| OLMT | FITCH RD | 8015 | UNKNOWN | 4/16/2005 | F | 9/25/1997 |
| OLMT | FITCH RD | 8148 | AERATION | 3/3/2005 | P | 6/29/2000 |
| OLMT | JENNINGS RD | 8352 | AERATION | 7/28/2005 | F | 6/13/2005 |
| OLMT | JENNINGS RD | 8384 | AERATION | 7/28/2005 | F | 2/14/2005 |
| OLMT | JENNINGS RD | 8464 | AERATION | 7/28/2005 | P | 3/30/2004 |
| OLMT | JOHN RD | 25661 | FILTER BED | 5/24/2004 | P | 10/14/2004 |
| OLMT | JOHN RD | 25683 | FILTER BED | 1/20/2005 | F | 8/9/2000 |
| OLMT | JOHN RD | 25706 | AERATION | 3/15/2005 | P | 3/4/2005 |
| OLMT | JOHN RD | 25730 | AERATION | 3/15/2005 | F | 8/9/2000 |
| OLMT | JOHN RD | 25754 | UNKNOWN | 4/6/2005 | P | 8/20/2004 |
| OLMT | JOHN RD | 25803 | FILTER BED | 4/16/2005 | P | 3/14/2001 |
| OLMT | JOHN RD | 25850 | AERATION | 3/3/2005 | P | 3/23/2004 |
| OLMT | JOHN RD | 25894 | AERATION | 3/3/2005 | P | 12/18/2001 |
| OLMT | JOHN RD | 25915 | AERATION | 3/3/2005 | F | 1/15/2001 |
| OLMT | JOHN RD | 25960 | LEACHFIELD | 12/2/2004 | F | 5/6/2005 |
| OLMT | JOHN RD | 26812 | FILTER BED | 4/4/2005 | P | 8/25/2004 |
| OLMT | JOHN RD | 26813 | AERATION | 3/3/2005 | P | 5/6/2004 |
| OLMT | LEWIS RD | 5708 | AERATION | 10/14/2005 | P | 3/20/1993 |
| OLMT | LEWIS RD | 6212 | AERATION | 4/14/2005 | | 4/22/2005 |
| OLMT | LEWIS RD | 6675 | AERATION | 9/2/2005 | P | 8/11/2004 |
| OLMT | LEWIS RD | 6843 | UNKNOWN | 3/9/2004 | F | 4/28/2004 |
| OLMT | LEWIS RD | 7000 | AERATION | 9/2/2005 | P | 10/14/2003 |
| OLMT | LEWIS RD | 7094 | AERATION | 9/2/2005 | P | 10/31/1984 |
| OLMT | LEWIS RD | 7433 | AERATION | 10/3/2005 | P | 8/16/2004 |
| OLMT | LEWIS RD | 7449 | AERATION | 10/3/2005 | P | 2/10/2004 |
| OLMT | LEWIS RD | 7525 | AERATION | 9/13/2005 | P | 8/16/2005 |
| OLMT | LEWIS RD | 7541 | FILTER BED | 5/19/2005 | F | 5/23/2005 |
| OLMT | LEWIS RD | 7586 | AERATION | 7/26/2005 | P | 5/19/2005 |
| OLMT | LEWIS RD | 7587 | AERATION | 7/14/2005 | P | 10/1/2002 |
| OLMT | LEWIS RD | 7606 | LEACHFIELD | 4/6/2004 | P | 10/20/2003 |
| OLMT | MACKENZIE RD | 7103 | AERATION | 10/3/2005 | F | 7/29/1998 |
| OLMT | MACKENZIE RD | 7166 | AERATION | 10/3/2005 | P | 10/23/2003 |
| OLMT | NOBOTTOM RD | 24400 | AERATION | 7/14/2005 | P | 7/24/2002 |
| OLMT | NOBOTTOM RD | 24410 | AERATION | 7/14/2005 | P | |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|-------------|--------|------------|------------|-----|--------------|
| OLMT | NOBOTTOM RD | 24440 | AERATION | 7/26/2005 | P | 8/27/2003 |
| OLMT | NOBOTTOM RD | 24498 | AERATION | 7/14/2005 | P | 11/15/2003 |
| OLMT | NOBOTTOM RD | 24506 | AERATION | 7/14/2005 | F | 6/6/1996 |
| OLMT | NOBOTTOM RD | 24522 | AERATION | 7/14/2005 | F | 6/15/1996 |
| OLMT | NOBOTTOM RD | 24526 | AERATION | 7/14/2005 | P | 11/22/1997 |
| OLMT | NOBOTTOM RD | 24812 | AERATION | 7/22/2005 | P | 11/27/1998 |
| OLMT | NOBOTTOM RD | 24868 | AERATION | 8/8/2005 | P | 12/16/2003 |
| OLMT | NOBOTTOM RD | 25138 | UNKNOWN | 3/3/2004 | F | 10/5/2004 |
| OLMT | SCHADY RD | 27010 | UNKNOWN | 7/23/2004 | P | 4/26/2002 |
| OLMT | SCHADY RD | 27014 | AERATION | 7/30/2004 | P | 7/1/2004 |
| OLMT | SCHADY RD | 27022 | AERATION | 10/4/2005 | P | 11/5/2004 |
| OLMT | SCHADY RD | 27028 | AERATION | 10/26/2004 | P | 11/5/2001 |
| OLMT | SCHADY RD | 27030 | AERATION | 9/20/2004 | P | 4/16/2003 |
| OLMT | SCHADY RD | 27034 | AERATION | 7/29/2005 | P | 10/3/2003 |
| OLMT | SCHADY RD | 27161 | FILTER BED | 4/1/2004 | P | 9/30/1989 |
| OLMT | SCHADY RD | 27384 | AERATION | 6/2/2004 | P | 11/19/2003 |
| OLMT | SHARP RD | 8874 | AERATION | 10/3/2005 | P | |
| OLMT | SHARP RD | 8944 | AERATION | 9/13/2005 | P | 9/12/2005 |
| OLMT | SHARP RD | 9150 | AERATION | 6/2/2004 | P | 4/7/2004 |
| OLMT | SHARP RD | 9208 | AERATION | 11/28/2005 | P | |
| OLMT | SHARP RD | 9358 | AERATION | 6/2/2004 | P | 8/20/2004 |
| OLMT | SPAFFORD RD | 7094 | AERATION | 10/3/2005 | P | 9/16/2003 |
| OLMT | STEARNS RD | 6954 | AERATION | 4/30/2004 | P | 2/2/2004 |
| OLMT | STEARNS RD | 6980 | AERATION | 4/30/2004 | F | 10/20/2004 |
| OLMT | STEARNS RD | 6990 | AERATION | 4/30/2004 | P | 3/1/2004 |
| OLMT | STEARNS RD | 7045 | AERATION | 4/30/2004 | P | 8/2/2001 |
| OLMT | STEARNS RD | 7206 | AERATION | 4/29/2005 | F | 6/18/2004 |
| OLMT | STEARNS RD | 7224 | AERATION | 3/15/2005 | F | 3/18/2005 |
| OLMT | STEARNS RD | 7410 | AERATION | 4/29/2005 | P | 4/20/2004 |
| OLMT | STEARNS RD | 7429 | AERATION | 4/30/2004 | P | 4/1/2004 |
| OLMT | STEARNS RD | 7465 | AERATION | 8/3/2005 | F | 2/20/2004 |
| OLMT | STEARNS RD | 7500 | FILTER BED | 6/10/2005 | F | 10/15/2003 |
| OLMT | STEARNS RD | 7518 | AERATION | 4/30/2004 | P | 7/29/2003 |
| OLMT | STEARNS RD | 7608 | UNKNOWN | 6/16/2005 | F | 3/28/2003 |
| OLMT | STEARNS RD | 7644 | FILTER BED | 6/8/2005 | P | 3/31/2001 |
| OLMT | STEARNS RD | 7735 | AERATION | 4/30/2004 | P | 11/16/2004 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|---------------|--------|------------|-----------|-----|--------------|
| OLMT | STEARNS RD | 7766 | AERATION | 4/30/2004 | P | 11/24/2001 |
| OLMT | STEARNS RD | 7860 | AERATION | 4/30/2004 | P | 4/27/2001 |
| OLMT | STEARNS RD | 7895 | UNKNOWN | 8/4/2005 | F | 10/9/1995 |
| OLMT | STEARNS RD | 7931 | AERATION | 4/29/2005 | F | 10/22/2003 |
| OLMT | STEARNS RD | 8032 | FILTER BED | 3/5/2004 | P | 3/5/2002 |
| OLMT | STEARNS RD | 8050 | FILTER BED | 6/8/2005 | P | 10/31/2002 |
| OLMT | STEARNS RD | 8068 | FILTER BED | 6/8/2005 | P | 4/13/2004 |
| OLMT | STEARNS RD | 8086 | FILTER BED | 6/14/2005 | P | 10/1/2002 |
| OLMT | STEARNS RD | 8140 | AERATION | 4/29/2005 | P | 9/15/2003 |
| OLMT | STEARNS RD | 8509 | UNKNOWN | 6/24/2005 | P | 7/22/2003 |
| OLMT | STEARNS RD | 8545 | UNKNOWN | 7/11/2005 | P | 6/6/2005 |
| OLMT | STEARNS RD | 8581 | LEACHFIELD | 6/14/2005 | P | 2/4/2005 |
| OLMT | STEARNS RD | 8599 | UNKNOWN | 6/10/2005 | F | 9/25/2001 |
| OLMT | STEARNS RD | 8634 | AERATION | 4/29/2005 | P | 8/26/2004 |
| OLMT | STEARNS RD | 8655 | AERATION | 4/29/2005 | F | |
| OLMT | STEARNS RD | 8671 | AERATION | 4/29/2005 | F | 8/21/2003 |
| OLMT | USHER RD | 8811 | FILTER BED | 3/14/2005 | P | 6/13/2005 |
| OLMT | USHER RD | 8813 | AERATION | 3/14/2005 | F | 3/17/2005 |
| OLMT | USHER RD | 9239 | UNKNOWN | 5/11/2004 | F | 6/8/2005 |
| OLMT | W SPRAGUE RD | 27108 | FILTER BED | 3/11/2004 | P | 6/9/2005 |
| OLMT | W SPRAGUE RD | 27452 | FILTER BED | 3/2/2004 | P | |
| ORNG | BRAINARD RD | 3959 | UNKNOWN | 8/15/2005 | F | 4/22/2004 |
| ORNG | BRAINARD RD | 4155 | AERATION | 5/25/2004 | P | 2/19/1997 |
| ORNG | BRAINARD RD | 4179 | AERATION | 7/27/2004 | P | 6/13/2002 |
| ORNG | BRAINARD RD | 4189 | AERATION | 5/24/2005 | P | 9/18/2002 |
| ORNG | BRAINARD RD | 4220 | AERATION | 5/25/2004 | P | 5/10/2000 |
| ORNG | BRAINARD RD | 4290 | AERATION | 5/10/2005 | | 3/17/2003 |
| ORNG | BRAINARD RD | 4359 | AERATION | 5/25/2004 | P | 5/28/2003 |
| ORNG | BRAINARD RD | 4369 | AERATION | 5/25/2004 | P | 8/25/2000 |
| ORNG | BRAINARD RD | 4419 | FILTER BED | 5/14/2004 | F | 10/13/2003 |
| ORNG | BRAINARD RD | 4460 | AERATION | 5/25/2004 | P | 8/9/2004 |
| ORNG | BRAINARD RD | 4509 | AERATION | 5/25/2004 | P | 10/14/2002 |
| ORNG | BRAINARD RD | 4611 | AERATION | 5/25/2004 | P | 7/10/2003 |
| ORNG | BRAINARD RD | 4630 | AERATION | 3/24/2004 | P | 7/16/2004 |
| ORNG | E FAIRVIEW RD | 4809 | AERATION | 4/15/2004 | P | 7/8/2003 |
| ORNG | E WOODCREST R | 4909 | AERATION | 6/30/2004 | P | 6/1/2004 |

| CITY | STREET NAM | NUMBER | SECONDARY | VERT DATE | P/F | LAST CLEANED |
|------|---------------|--------|------------|------------|-----|--------------|
| ORNG | E WOODCREST R | 4940 | AERATION | 4/15/2004 | P | 10/28/2004 |
| ORNG | E WOODCREST R | 4970 | AERATION | 4/15/2004 | P | 7/23/2002 |
| ORNG | EMERY RD | 27050 | AERATION | 5/20/2004 | P | 4/21/2000 |
| ORNG | EMERY RD | 27429 | AERATION | 5/3/2004 | P | 10/26/2001 |
| ORNG | EMERY RD | 27500 | FILTER BED | 4/1/2005 | F | 11/13/2003 |
| ORNG | EMERY RD | 27649 | AERATION | 3/24/2004 | P | 7/2/2004 |
| ORNG | EMERY RD | 27849 | AERATION | 5/18/2005 | | 4/12/2005 |
| ORNG | EMERY RD | 29899 | AERATION | 5/20/2004 | P | 5/8/2001 |
| ORNG | EMERY RD | 30660 | AERATION | 5/20/2004 | P | 4/1/2003 |
| ORNG | EMERY RD | 31150 | AERATION | 5/20/2004 | P | 9/26/2002 |
| ORNG | FAIRVIEW RD | 31399 | AERATION | 5/3/2005 | P | 11/13/2001 |
| ORNG | FAIRVIEW RD | 31799 | AERATION | 4/15/2004 | P | 7/15/1998 |
| ORNG | HARVARD RD | 27899 | AERATION | 6/24/2005 | P | 9/12/2002 |
| ORNG | HARVARD RD | 28049 | AERATION | 6/24/2005 | P | 5/17/1996 |
| ORNG | HARVARD RD | 28100 | AERATION | 9/13/2005 | P | 7/7/2003 |
| ORNG | HARVARD RD | 28549 | AERATION | 8/23/2005 | P | 8/17/2005 |
| ORNG | HARVARD RD | 28600 | AERATION | 5/3/2004 | P | 9/6/2000 |
| ORNG | HARVARD RD | 28699 | AERATION | 6/15/2005 | | 5/27/2005 |
| ORNG | HARVARD RD | 29600 | FILTER BED | 4/19/2005 | F | 4/1/2005 |
| ORNG | HARVARD RD | 29700 | FILTER BED | 5/4/2004 | F | 8/15/2002 |
| ORNG | HARVARD RD | 30050 | AERATION | 5/3/2004 | F | 8/20/2004 |
| ORNG | HARVARD RD | 30100 | AERATION | 3/22/2004 | P | 9/27/2004 |
| ORNG | HIDDEN VALLEY | 28199 | AERATION | 5/3/2004 | P | 6/11/2004 |
| ORNG | HIDDEN VALLEY | 28350 | FILTER BED | 10/21/2005 | F | 5/14/2004 |
| ORNG | HIDDEN VALLEY | 28430 | AERATION | 5/11/2004 | | 10/24/2002 |
| ORNG | HIDDEN VALLEY | 28520 | AERATION | 4/26/2005 | P | 8/25/2005 |
| ORNG | HIDDEN VALLEY | 28599 | AERATION | 5/3/2004 | F | 12/3/2001 |
| ORNG | HIDDEN VALLEY | 28675 | AERATION | 3/22/2004 | P | 11/8/2004 |
| ORNG | HIDDEN VALLEY | 28770 | FILTER BED | 5/24/2004 | F | 3/15/2004 |
| ORNG | HIDDEN VALLEY | 29100 | AERATION | 4/13/2005 | P | 4/28/2004 |
| ORNG | HIDDEN VALLEY | 29180 | AERATION | 4/13/2005 | P | 6/1/2003 |
| ORNG | HIDDEN VALLEY | 29199 | AERATION | 8/16/2005 | P | 12/15/2004 |
| ORNG | HIDDEN VALLEY | 29349 | AERATION | 5/3/2004 | P | 7/12/2003 |
| ORNG | HIDDEN VALLEY | 29420 | AERATION | 4/13/2005 | P | 5/7/2004 |
| ORNG | HIDDEN VALLEY | 29425 | AERATION | 3/23/2005 | F | 5/10/2005 |
| ORNG | HIDDEN VALLEY | 29499 | AERATION | 3/23/2005 | P | 9/15/2004 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|---------------|--------|------------|------------|-----|--------------|
| ORNG | HIDDEN VALLEY | 29575 | AERATION | 3/23/2005 | F | 11/16/2005 |
| ORNG | JACKSON RD | 28600 | AERATION | 3/24/2004 | P | 10/10/2003 |
| ORNG | JACKSON RD | 28749 | AERATION | 4/27/2004 | | 5/1/2002 |
| ORNG | JACKSON RD | 28800 | LEACHFIELD | 5/11/2004 | F | 2/22/2005 |
| ORNG | JACKSON RD | 29000 | AERATION | 5/11/2004 | | 7/9/2003 |
| ORNG | JACKSON RD | 29350 | AERATION | 5/12/2004 | P | 7/25/2005 |
| ORNG | JACKSON RD | 29399 | AERATION | 4/9/2004 | P | 10/17/2005 |
| ORNG | JACKSON RD | 29400 | AERATION | 3-16/2004 | P | 7/8/2002 |
| ORNG | JACKSON RD | 29450 | AERATION | 5/12/2004 | P | 11/8/2001 |
| ORNG | JACKSON RD | 29500 | AERATION | 5/12/2004 | F | 5/27/2004 |
| ORNG | JACKSON RD | 29650 | AERATION | 4/15/2004 | P | 8/13/2003 |
| ORNG | JACKSON RD | 29699 | FILTER BED | 4/12/2004 | P | 5/24/2005 |
| ORNG | JACKSON RD | 29949 | AERATION | 1/12/2005 | P | 2/3/2004 |
| ORNG | JACKSON RD | 30049 | AERATION | 6/6/2005 | F | 4/18/2003 |
| ORNG | JACKSON RD | 30249 | FILTER BED | 5/12/2004 | P | 5/22/1997 |
| ORNG | JACKSON RD | 30250 | AERATION | 5/12/2004 | P | 11/3/2005 |
| ORNG | JACKSON RD | 30649 | AERATION | 3/22/2004 | P | 2/17/2005 |
| ORNG | JACKSON RD | 30799 | AERATION | 5/12/2004 | P | 8/6/2003 |
| ORNG | LANDER RD | 4059 | AERATION | 7/22/2005 | P | 8/12/1999 |
| ORNG | LANDER RD | 4139 | FILTER BED | 5/13/2004 | P | 3/18/2002 |
| ORNG | LANDER RD | 4150 | FILTER BED | 8/3/2004 | P | 3/29/2004 |
| ORNG | LANDER RD | 4209 | AERATION | 3/22/2004 | P | 2/28/2005 |
| ORNG | LANDER RD | 4230 | AERATION | 5/26/2004 | P | 4/15/2002 |
| ORNG | LANDER RD | 4250 | AERATION | 5/26/2004 | P | 9/17/2001 |
| ORNG | LANDER RD | 4259 | AERATION | 7/20/2004 | P | 8/10/2004 |
| ORNG | LANDER RD | 4270 | AERATION | 5/26/2004 | P | 6/4/2001 |
| ORNG | LANDER RD | 4450 | AERATION | 3/24/2004 | P | 10/3/2003 |
| ORNG | LANDER RD | 4570 | AERATION | 5/26/2004 | P | 9/26/2005 |
| ORNG | LANDER RD | 4619 | AERATION | 5/26/2004 | P | 10/7/2002 |
| ORNG | LANDER RD | 4629 | AERATION | 5/26/2004 | P | 4/15/2003 |
| ORNG | LANDER RD | 4729 | AERATION | 5/26/2004 | P | 3/1/2003 |
| ORNG | LANDER RD | 4760 | FILTER BED | 5/26/2004 | F | 8/11/2005 |
| ORNG | LANDER RD | 4800 | AERATION | 5/26/2004 | F | 6/10/2003 |
| ORNG | LANDER RD | 4805 | AERATION | 3/24/2004 | P | 6/16/2003 |
| ORNG | LANDER RD | 4809 | AERATION | 11/23/2004 | | 1/5/2005 |
| ORNG | LANDER RD | 4810 | AERATION | 5/20/2004 | P | 4/11/2000 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|---------------|--------|------------|------------|-----|--------------|
| ORNG | LANDER RD | 4829 | AERATION | 5/20/2004 | P | 9/2/2005 |
| ORNG | LANDER RD | 4919 | AERATION | 7/6/2004 | P | 9/23/2002 |
| ORNG | LANDER RD | 4950 | AERATION | 3/24/2004 | P | 5/22/2000 |
| ORNG | LANDER RD | 4960 | AERATION | 12/16/2004 | P | 10/31/2000 |
| ORNG | LANDER RD | 4969 | AERATION | 5/20/2004 | P | 9/13/2002 |
| ORNG | MILES RD | 30641 | AERATION | 5/3/2004 | P | 8/6/2003 |
| ORNG | MILES RD | 30699 | AERATION | 5/3/2004 | P | 8/6/2003 |
| ORNG | N HILLTOP RD | 29449 | AERATION | 4/9/2004 | P | 4/22/2002 |
| ORNG | N HILLTOP RD | 29799 | AERATION | 3/30/2005 | P | 10/9/1996 |
| ORNG | N HILLTOP RD | 29849 | AERATION | 7/13/2004 | P | 5/27/2003 |
| ORNG | N HILLTOP RD | 4260 | AERATION | 1/11/2005 | P | 8/9/2005 |
| ORNG | N HILLTOP RD | 4309 | AERATION | 4/9/2004 | P | 8/2/2004 |
| ORNG | ORANGE MEADO | 28650 | AERATION | 5/3/2004 | P | 4/9/2002 |
| ORNG | ORANGE MEADO | 4229 | FILTER BED | 5/3/2004 | F | 5/5/2004 |
| ORNG | ORANGE MEADO | 4230 | AERATION | 7/22/2004 | F | 6/23/2004 |
| ORNG | ORANGEDALE R | 4279 | AERATION | 4/9/2004 | P | 10/17/2005 |
| ORNG | ORANGEDALE R | 4330 | AERATION | 7/8/2004 | | 1/26/2005 |
| ORNG | ORANGEDALE R | 4350 | AERATION | 9/6/2005 | P | 6/17/2005 |
| ORNG | PIKE DR | 28749 | AERATION | 6/29/2004 | P | 3/17/2003 |
| ORNG | PIKE DR | 28750 | AERATION | 4/22/2004 | P | 2/26/2002 |
| ORNG | PIKE DR | 29299 | AERATION | 6/28/2004 | P | 8/24/2005 |
| ORNG | PIKE DR | 29449 | AERATION | 4/22/2004 | P | 2/1/2004 |
| ORNG | PIKE DR | 30000 | AERATION | 7/2/2004 | P | 4/1/2004 |
| ORNG | PIKE DR | 30100 | AERATION | 4/19/2005 | F | 9/18/2002 |
| ORNG | PINE CREST DR | 3860 | AERATION | 4/22/2004 | P | 5/2/2005 |
| ORNG | PINE CREST DR | 3885 | AERATION | 4/9/2004 | P | 9/3/2004 |
| ORNG | PINE CREST DR | 3889 | AERATION | 4/9/2004 | P | 9/3/2004 |
| ORNG | PINE CREST DR | 3900 | AERATION | 7/6/2004 | P | 11/4/2002 |
| ORNG | PINE CREST DR | 3939 | FILTER BED | 4/9/2004 | P | 11/7/2002 |
| ORNG | PINE CREST DR | 3940 | AERATION | 4/9/2004 | P | 9/3/1999 |
| ORNG | S HILLTOP RD | 4350 | AERATION | 7/12/2004 | | 7/16/2003 |
| ORNG | S HILLTOP RD | 4359 | FILTER BED | 10/28/2004 | F | 6/23/2003 |
| ORNG | S HILLTOP RD | 4360 | FILTER BED | 4/22/2004 | P | 10/21/1999 |
| ORNG | SMITHFIELD RD | 29850 | AERATION | 4/9/2004 | P | 11/15/2001 |
| ORNG | W WOODCREST R | 4909 | AERATION | 4/15/2004 | P | 5/19/1999 |
| ORNG | W WOODCREST R | 4939 | AERATION | 4/15/2004 | P | 9/10/2002 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|----------------|--------|------------|-----------|-----|--------------|
| ORNG | W WOODCREST R | 4940 | AERATION | 9/27/2004 | F | 8/12/1999 |
| ORNG | WALNUT HILLS R | 3639 | AERATION | 6/24/2005 | P | 4/1/2005 |
| ORNG | WALNUT HILLS R | 3710 | AERATION | 4/22/2004 | P | 9/30/2002 |
| ORNG | WALNUT HILLS R | 3729 | FILTER BED | 7/7/2005 | P | 12/1/2003 |
| ORNG | WALNUT HILLS R | 3739 | AERATION | 3/30/2005 | P | 8/31/1982 |
| ORNG | WALNUT HILLS R | 3746 | AERATION | 2/3/2004 | F | 11/10/2003 |
| ORNG | WALNUT HILLS R | 3780 | AERATION | 4/22/2004 | P | 9/23/2002 |
| ORNG | WALNUT HILLS R | 3809 | AERATION | 4/1/2004 | P | 6/3/2002 |
| ORNG | WALNUT HILLS R | 3839 | AERATION | 4/22/2004 | P | 6/15/2003 |
| ORNG | WOODCREST RD | 30949 | AERATION | 4/15/2004 | P | 8/1/2002 |
| ORNG | WOODCREST RD | 31099 | FILTER BED | 5/12/2005 | F | 3/2/1999 |
| ORNG | WOODCREST RD | 31149 | AERATION | 4/15/2004 | P | 10/10/2003 |
| ORNG | WOODCREST RD | 31300 | AERATION | 4/15/2004 | P | 3/25/2005 |
| ORNG | WOODCREST RD | 31499 | AERATION | 3/24/2004 | P | 10/29/2004 |
| ORNG | WOODCREST RD | 31599 | AERATION | 5/3/2005 | P | 10/20/2004 |
| PPKE | ALVORD PL | 2888 | AERATION | 6/30/2004 | P | 11/11/2004 |
| PPKE | ALVORD PL | 2889 | AERATION | 6/28/2004 | P | 7-28/2003 |
| PPKE | ALVORD PL | 2890 | AERATION | 6/28/2004 | P | |
| PPKE | ALVORD PL | 2891 | AERATION | 6/28/2004 | P | 4/1/2004 |
| PPKE | ALVORD PL | 2892 | AERATION | 6/29/2004 | P | 7/7/2005 |
| PPKE | ALVORD PL | 2900 | AERATION | 6/29/2004 | P | 7/29/2004 |
| PPKE | ALVORD PL | 2907 | AERATION | 6/29/2004 | P | 8/18/2005 |
| PPKE | BELCOURT RD | 27799 | FILTER BED | 7/20/2004 | F | 8/26/2003 |
| PPKE | BELCOURT RD | 27800 | FILTER BED | 7/23/2004 | F | 8/13/1998 |
| PPKE | BELCOURT RD | 27899 | FILTER BED | 8/9/2004 | P | 4/26/2002 |
| PPKE | BELCOURT RD | 27900 | AERATION | 7/23/2004 | P | 7/5/2005 |
| PPKE | BELCOURT RD | 27950 | AERATION | 5/3/2005 | P | 4/2/2003 |
| PPKE | BEL COURT RD | 27959 | FILTER BED | 4/26/2005 | F | 4/4/2005 |
| PPKE | BELCOURT RD | 27999 | FILTER BED | 8/12/2004 | P | 8/19/2004 |
| PPKE | BELCOURT RD | 28000 | AERATION | 7/12/2005 | P | 6/16/2005 |
| PPKE | BELCOURT RD | 28099 | AERATION | 3/24/2005 | P | 10/22/2002 |
| PPKE | BELCOURT RD | 28100 | AERATION | 8/9/2004 | P | 8/25/2005 |
| PPKE | BELCOURT RD | 28109 | FILTER BED | 8/24/2004 | P | 6/1/2004 |
| PPKE | BELCOURT RD | 28110 | FILTER BED | 7/22/2004 | P | 2/9/2004 |
| PPKE | BELCOURT RD | 28120 | AERATION | 8/2/2004 | P | 11/22/2002 |
| PPKE | BELCOURT RD | 28126 | AERATION | 8/2/2004 | P | 6/15/2000 |

| CITY | STREET NAM | NUMBER | SECONDARY | TEST DATE | P/F | LAST CLEANED |
|------|-------------|--------|------------|------------|-----|--------------|
| PPKE | BELCOURT RD | 28129 | AERATION | 5/23/2005 | | 6/17/2005 |
| PPKE | BELCOURT RD | 28139 | FILTER BED | 8/15/2004 | P | 6/16/2003 |
| PPKE | BELCOURT RD | 28149 | FILTER BED | 9/8/2004 | P | 6/1/2005 |
| PPKE | BELCOURT RD | 28176 | AERATION | 7/29/2004 | P | 10/14/2002 |
| PPKE | BELCOURT RD | 28189 | AERATION | 9/1/2004 | P | 7/24/2002 |
| PPKE | BELCOURT RD | 28225 | AERATION | 8/19/2004 | P | 6/1/2005 |
| PPKE | BELCOURT RD | 28226 | AERATION | 8/2/2004 | P | 10/11/2005 |
| PPKE | BELCOURT RD | 28249 | AERATION | 1/10/2005 | P | 5/13/2005 |
| PPKE | BELCOURT RD | 28250 | FILTER BED | 4/5/2004 | P | 12/4/2003 |
| PPKE | BELCOURT RD | 28325 | FILTER BED | 10/8/2004 | P | 9/2/2005 |
| PPKE | BELCOURT RD | 28326 | AERATION | 7/22/2004 | P | 5/13/2005 |
| PPKE | BELCOURT RD | 28375 | AERATION | 8/30/2004 | P | 10/14/2005 |
| PPKE | BELCOURT RD | 28400 | AERATION | 7/26/2004 | P | 11/7/2002 |
| PPKE | BELCOURT RD | 28425 | AERATION | 7/26/2004 | P | 5/20/2005 |
| PPKE | BELCOURT RD | 28525 | AERATION | 7/29/2004 | P | 9/22/2003 |
| PPKE | BELCOURT RD | 28550 | AERATION | 8/9/2004 | P | 7/20/2005 |
| PPKE | BELCOURT RD | 28599 | FILTER BED | 8/23/2004 | P | 6/1/2005 |
| PPKE | BELCOURT RD | 28600 | AERATION | 8/30/2004 | P | 6/15/2005 |
| PPKE | BELCOURT RD | 28800 | FILTER BED | 8/10/2004 | F | 12/23/2002 |
| PPKE | BELGRAVE RD | 27276 | AERATION | 10/20/2004 | P | 4/21/2003 |
| PPKE | BELGRAVE RD | 27289 | AERATION | 10/20/2004 | P | 3/25/2003 |
| PPKE | BELGRAVE RD | 2740 | FILTER BED | 9/1/2004 | F | 8/20/2003 |
| PPKE | BELGRAVE RD | 2741 | AERATION | 8/16/2004 | P | 11/12/2003 |
| PPKE | BELGRAVE RD | 2747 | FILTER BED | 8/26/2004 | F | 7/14/1997 |
| PPKE | BELGRAVE RD | 2750 | FILTER BED | 1/20/2005 | P | 4/30/2003 |
| PPKE | BELGRAVE RD | 2753 | AERATION | 8/25/2004 | P | 8/31/2005 |
| PPKE | BELGRAVE RD | 2760 | AERATION | 8/25/2004 | P | 10/7/2005 |
| PPKE | BELGRAVE RD | 2767 | AERATION | 8/25/2004 | P | 12/14/1996 |
| PPKE | BELGRAVE RD | 2770 | AERATION | 8/26/2004 | P | 8/23/2004 |
| PPKE | BELGRAVE RD | 2778 | FILTER BED | 9/7/2004 | P | 12/10/2003 |
| PPKE | BELGRAVE RD | 2779 | AERATION | 9/7/2004 | P | 6/20/2005 |
| PPKE | BELGRAVE RD | 2781 | FILTER BED | 9/7/2004 | P | 10/8/2003 |
| PPKE | BELGRAVE RD | 27825 | FILTER BED | 8/17/2004 | P | 4/29/2004 |
| PPKE | BELGRAVE RD | 2785 | AERATION | 1/11/2005 | P | 3/5/2004 |
| PPKE | BELGRAVE RD | 27876 | AERATION | 8/18/2004 | P | 8/10/2005 |
| PPKE | BELGRAVE RD | 2788 | AERATION | 1/28/2005 | | 7/7/2004 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|---------------|--------|------------|------------|-----|--------------|
| PPKE | BELGRAVE RD | 2789 | FILTER BED | 8/12/2004 | P | 4/16/2003 |
| PPKE | BELGRAVE RD | 2790 | AERATION | 8/16/2004 | P | 7/31/2002 |
| PPKE | BELGRAVE RD | 27925 | FILTER BED | 9/14/2004 | P | 4/1/2004 |
| PPKE | BELGRAVE RD | 2793 | AERATION | 8/30/2004 | P | 9/18/2000 |
| PPKE | BELGRAVE RD | 2794 | AERATION | 8/30/2004 | P | 8/26/2002 |
| PPKE | BELGRAVE RD | 27950 | AERATION | 8/30/2004 | P | 5/1/2005 |
| PPKE | BELGRAVE RD | 2797 | AERATION | 8/30/2004 | P | 5/14/2004 |
| PPKE | BELGRAVE RD | 27975 | AERATION | 8/30/2004 | P | 7/12/2004 |
| PPKE | BELGRAVE RD | 27976 | AERATION | 8/31/2004 | P | 7/7/2004 |
| PPKE | BELGRAVE RD | 2798 | AERATION | 8/31/2004 | P | 7/29/2004 |
| PPKE | BELGRAVE RD | 2800 | AERATION | 9/3/2004 | P | 4/3/2003 |
| PPKE | BELGRAVE RD | 2803 | AERATION | 9/9/2004 | P | 12/16/2003 |
| PPKE | BELGRAVE RD | 2806 | AERATION | 9/9/2004 | P | 9/23/2003 |
| PPKE | BELGRAVE RD | 2807 | AERATION | 9/9/2004 | P | 11/10/2003 |
| PPKE | BELGRAVE RD | 2810 | AERATION | 1/11/2005 | P | 10/29/2003 |
| PPKE | BELGRAVE RD | 28100 | AERATION | 9/9/2004 | P | 8/19/2003 |
| PPKE | BELGRAVE RD | 2811 | AERATION | 9/9/2004 | P | 9/14/2004 |
| PPKE | BELGRAVE RD | 2814 | AERATION | 9/9/2004 | P | 3/6/2004 |
| PPKE | BELGRAVE RD | 2818 | AERATION | 9/7/2004 | P | 1/13/2005 |
| PPKE | BELGRAVE RD | 28200 | FILTER BED | 9/23/2004 | P | 9/27/2004 |
| PPKE | BELGRAVE RD | 2828 | AERATION | 9/9/2004 | P | 3/24/2003 |
| PPKE | BOLINGBROOK R | 28500 | AERATION | 4/4/2005 | P | 10/7/2004 |
| PPKE | BOLINGBROOK R | 28526 | AERATION | 9/9/2004 | P | 9/7/2005 |
| PPKE | BOLINGBROOK R | 28549 | FILTER BED | 9/9/2004 | P | 3/1/2004 |
| PPKE | BOLINGBROOK R | 28600 | AERATION | 9/9/2004 | P | 8/30/2004 |
| PPKE | BOLINGBROOK R | 28649 | AERATION | 9/9/2004 | | 5/26/2005 |
| PPKE | BOLINGBROOK R | 28676 | FILTER BED | 3/25/2004 | P | 6/29/2005 |
| PPKE | BOLINGBROOK R | 28725 | AERATION | 11/22/2004 | P | 11/1/2003 |
| PPKE | BOLINGBROOK R | 28776 | FILTER BED | 11/23/2004 | P | 5/26/2005 |
| PPKE | BOLINGBROOK R | 28849 | FILTER BED | 11/17/2004 | F | 9/8/2000 |
| PPKE | BOLINGBROOK R | 28850 | AERATION | 10/7/2004 | P | 2/20/2004 |
| PPKE | BOLINGBROOK R | 28899 | AERATION | 10/7/2004 | P | 7/29/2003 |
| PPKE | BOLINGBROOK R | 28900 | AERATION | 10/1/2004 | P | 9/13/2001 |
| PPKE | BOLINGBROOK R | 28950 | AERATION | 1/13/2005 | | 6/8/2004 |
| PPKE | BOLINGBROOK R | 29025 | AERATION | 10/7/2004 | P | 4/25/2003 |
| PPKE | BOLINGBROOK R | 29099 | AERATION | 10/7/2004 | P | 5/25/2005 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|---------------|--------|------------|------------|-----|--------------|
| PPKE | BOLINGBROOK R | 29100 | FILTER BED | 8/9/2005 | P | 4/6/2004 |
| PPKE | BOLINGBROOK R | 29125 | AERATION | 9/1/2005 | | 5/24/2004 |
| PPKE | BOLINGBROOK R | 29225 | AERATION | 10/7/2004 | P | 5/19/2003 |
| PPKE | BOLINGBROOK R | 29226 | AERATION | 10/4/2004 | P | 6/4/2003 |
| PPKE | BOLINGBROOK R | 29249 | AERATION | 4/4/2005 | P | 5/15/2003 |
| PPKE | BOLINGBROOK R | 29276 | FILTER BED | 4/13/2005 | F | 6/19/2003 |
| PPKE | BOLINGBROOK R | 29325 | FILTER BED | 10/4/2004 | P | 2/7/2005 |
| PPKE | BOLINGBROOK R | 29326 | AERATION | 10/18/2004 | | 1/7/2005 |
| PPKE | BOLINGBROOK R | 29399 | FILTER BED | 2/7/2005 | P | 4/22/2004 |
| PPKE | BOLINGBROOK R | 29449 | AERATION | 12/20/2004 | | 9/6/2005 |
| PPKE | BOLINGBROOK R | 29499 | FILTER BED | 10/27/2004 | P | 4/6/2004 |
| PPKE | BOLINGBROOK R | 29500 | FILTER BED | 12/20/2004 | P | 8/24/2004 |
| PPKE | BOLINGBROOK R | 29549 | FILTER BED | 12/14/2004 | F | 8/7/2001 |
| PPKE | BOLINGBROOK R | 29550 | AERATION | 11/22/2004 | P | 9/13/2005 |
| PPKE | BOLINGBROOK R | 29600 | AERATION | 11/22/2004 | P | 10/12/2004 |
| PPKE | BOLINGBROOK R | 29699 | FILTER BED | 1/25/2005 | P | 12/30/2002 |
| PPKE | BOLINGBROOK R | 29700 | AERATION | 11/22/2004 | P | 4/1/2004 |
| PPKE | BOLINGBROOK R | 29825 | AERATION | 10/25/2004 | F | 9/23/2002 |
| PPKE | BOLINGBROOK R | 29855 | AERATION | 10/25/2004 | P | 4/14/2003 |
| PPKE | BOLINGBROOK R | 29856 | AERATION | 4/7/2004 | P | 9/1/2004 |
| PPKE | BOLINGBROOK R | 29870 | AERATION | 10/22/2004 | P | 8/8/2005 |
| PPKE | BOLINGBROOK R | 29875 | AERATION | 10/19/2004 | P | 11/8/2000 |
| PPKE | BOLINGBROOK R | 29880 | AERATION | 10/25/2004 | P | 4/1/2004 |
| PPKE | BOLINGBROOK R | 29891 | AERATION | 10/19/2004 | P | 7/24/2000 |
| PPKE | BOLINGBROOK R | 29900 | AERATION | 10/20/2004 | P | 6/11/2004 |
| PPKE | BOLINGBROOK R | 29909 | AERATION | 10/1/2004 | P | 5/17/2005 |
| PPKE | BOLINGBROOK R | 29910 | AERATION | 10/1/2004 | P | 4/23/2003 |
| PPKE | BOLINGBROOK R | 29915 | AERATION | 10/1/2004 | P | 4/11/2005 |
| PPKE | BOLINGBROOK R | 29916 | FILTER BED | 8/8/2005 | F | 8/19/2005 |
| PPKE | BOLINGBROOK R | 29923 | FILTER BED | 11/8/2004 | P | 11/15/2004 |
| PPKE | BOLINGBROOK R | 29930 | AERATION | 9/16/2004 | P | 9/8/2003 |
| PPKE | BOLINGBROOK R | 29937 | AERATION | 10/18/2004 | P | 8/1/2003 |
| PPKE | BOLINGBROOK R | 29949 | AERATION | 2/14/2005 | P | 5/3/2002 |
| PPKE | BOLINGBROOK R | 29956 | AERATION | 10/1/2004 | P | 8/26/2003 |
| PPKE | BOLINGBROOK R | 29959 | AERATION | 2/14/2005 | P | 5/6/2002 |
| PPKE | BOLINGBROOK R | 29966 | UNKNOWN | 9/30/2004 | P | 9/13/2004 |

| CITY | STREET NAM | NUMBER | SECONDARY | CERT DATE | P/F | LAST CLEANED |
|------|---------------|--------|------------|------------|-----|--------------|
| PPKE | BOLINGBROOK R | 29980 | AERATION | 10/1/2004 | P | 4/25/2000 |
| PPKE | BOLINGBROOK R | 29990 | AERATION | 10/1/2004 | P | 9/9/2004 |
| PPKE | BOLINGBROOK R | 29999 | AERATION | 10/1/2004 | P | 8/17/2005 |
| PPKE | BOLINGBROOK R | 30000 | AERATION | 9/28/2004 | F | 4/25/2003 |
| PPKE | BOLINGBROOK R | 30025 | AERATION | 9/14/2004 | | 6/16/2003 |
| PPKE | BOLINGBROOK R | 30046 | AERATION | 9/16/2004 | P | 10/7/2003 |
| PPKE | BOLINGBROOK R | 30049 | AERATION | 11/22/2004 | P | 8/13/2003 |
| PPKE | BOLINGBROOK R | 30060 | AERATION | 9/23/2004 | P | 10/1/2003 |
| PPKE | BOLINGBROOK R | 30065 | AERATION | 9/21/2004 | P | 4/28/2004 |
| PPKE | BOLINGBROOK R | 30076 | FILTER BED | 10/4/2004 | P | 6/30/2003 |
| PPKE | BOLINGBROOK R | 30100 | AERATION | 10/14/2004 | P | 11/1/2003 |
| PPKE | BOLINGBROOK R | 30110 | FILTER BED | 10/6/2004 | P | 9/15/2004 |
| PPKE | BOLINGBROOK R | 30125 | AERATION | 10/14/2004 | P | 9/2/2005 |
| PPKE | BOLINGBROOK R | 30126 | FILTER BED | 10/22/2004 | P | 4/25/2003 |
| PPKE | BOLINGBROOK R | 30150 | FILTER BED | 2/14/2005 | F | 7/20/2004 |
| PPKE | BOLINGBROOK R | 30175 | AERATION | 10/14/2004 | P | 12/4/2003 |
| PPKE | BOLINGBROOK R | 30226 | AERATION | 10/13/2004 | | 2/16/2004 |
| PPKE | BOLINGBROOK R | 30275 | FILTER BED | 11/24/2004 | P | 10/6/2003 |
| PPKE | BRAINARD RD | 2822 | FILTER BED | 5/28/2004 | F | 6/8/2004 |
| PPKE | BRAINARD RD | 2858 | FILTER BED | 5/11/2004 | F | 11/10/2003 |
| PPKE | BREMERTON RD | 3000 | AERATION | 12/9/2004 | P | 7/9/2003 |
| PPKE | BREMERTON RD | 3018 | AERATION | 12/9/2004 | P | 5/10/2004 |
| PPKE | BREMERTON RD | 3030 | AERATION | 4/27/2005 | P | 10/2/2002 |
| PPKE | BREMERTON RD | 3037 | AERATION | 12/9/2004 | P | 5/9/2003 |
| PPKE | BREMERTON RD | 3040 | AERATION | 12/9/2004 | P | 8/4/2005 |
| PPKE | BREMERTON RD | 3044 | AERATION | 9/22/2005 | P | 2/7/2005 |
| PPKE | BREMERTON RD | 3056 | AERATION | 1/13/2005 | P | 11/29/2004 |
| PPKE | BREMERTON RD | 3059 | FILTER BED | 11/21/2005 | P | 4/10/2004 |
| PPKE | BREMERTON RD | 3064 | AERATION | 12/9/2004 | P | 7/19/2004 |
| PPKE | BREMERTON RD | 3075 | AERATION | 12/9/2004 | P | 11/7/2002 |
| PPKE | BREMERTON RD | 3076 | AERATION | 8/30/2004 | P | 7/1/2005 |
| PPKE | BREMERTON RD | 3086 | AERATION | 12/9/2004 | P | 7/8/2004 |
| PPKE | BREMERTON RD | 3100 | FILTER BED | 12/16/2004 | P | 8/9/2004 |
| PPKE | BREMERTON RD | 3111 | AERATION | 1/10/2005 | P | 5/20/2004 |
| PPKE | BREMERTON RD | 3112 | AERATION | 1/7/2005 | P | 3/4/2003 |
| PPKE | BREMERTON RD | 3116 | FILTER BED | 1/7/2005 | P | 4/6/2000 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|--------------|--------|------------|------------|-----|--------------|
| PPKE | BREMERTON RD | 3120 | FILTER BED | 8/27/2005 | F | 10/14/2003 |
| PPKE | BREMERTON RD | 3121 | AERATION | 2/1/2005 | P | 10/14/2002 |
| PPKE | BREMERTON RD | 3122 | AERATION | 1/7/2005 | P | 8/28/2002 |
| PPKE | BREMERTON RD | 3123 | AERATION | 1/7/2005 | P | 8/4/2004 |
| PPKE | BREMERTON RD | 3124 | AERATION | 1/7/2005 | P | 11/10/2000 |
| PPKE | BREMERTON RD | 3125 | FILTER BED | 12/6/2004 | P | 10/8/2003 |
| PPKE | BREMERTON RD | 3126 | AERATION | 1/7/2005 | P | 4/1/2005 |
| PPKE | BREMERTON RD | 3128 | AERATION | 1/10/2005 | P | 6/23/2004 |
| PPKE | BREMERTON RD | 3131 | FILTER BED | 1/13/2005 | P | 11/4/2003 |
| PPKE | BREMERTON RD | 3132 | AERATION | 1/7/2005 | P | 4/29/2004 |
| PPKE | BREMERTON RD | 3217 | AERATION | 12/15/2004 | P | 9/18/2000 |
| PPKE | BREMERTON RD | 3218 | AERATION | 11/22/2004 | P | 6/10/2005 |
| PPKE | BREMERTON RD | 3225 | AERATION | 1/7/2005 | P | 7/2/2004 |
| PPKE | BREMERTON RD | 3238 | AERATION | 1/10/2005 | P | 4/30/2003 |
| PPKE | BREMERTON RD | 3239 | AERATION | 9/24/2004 | | 7/16/2004 |
| PPKE | BREMERTON RD | 3249 | AERATION | 6/29/2005 | P | 9/15/2003 |
| PPKE | BREMERTON RD | 3256 | AERATION | 12/22/2004 | P | 7/28/2004 |
| PPKE | BREMERTON RD | 3263 | AERATION | 1/7/2005 | P | 9/8/2003 |
| PPKE | BREMERTON RD | 3276 | AERATION | 1/27/2005 | | 9/30/2005 |
| PPKE | BREMERTON RD | 3284 | AERATION | 1/11/2005 | P | 6/8/2004 |
| PPKE | BREMERTON RD | 3288 | AERATION | 1/18/2005 | | 8/17/2004 |
| PPKE | BREMERTON RD | 3291 | AERATION | 5/12/2005 | | 6/8/2004 |
| PPKE | BREMERTON RD | 3300 | AERATION | 1/7/2005 | P | 6/1/2003 |
| PPKE | BREMERTON RD | 3311 | AERATION | 11/30/2004 | | 4/15/2003 |
| PPKE | BREMERTON RD | 3323 | FILTER BED | 1/11/2005 | P | 6/20/2002 |
| PPKE | BREMERTON RD | 3326 | AERATION | 1/7/2005 | P | 12/8/2003 |
| PPKE | BREWSTER RD | 2879 | AERATION | 1/18/2005 | P | 12/23/2003 |
| PPKE | BREWSTER RD | 2881 | AERATION | 1/13/2005 | P | 1/7/2005 |
| PPKE | BREWSTER RD | 2884 | AERATION | 1/18/2005 | P | 7/8/2004 |
| PPKE | BROOKWOOD DR | 30499 | AERATION | 1/13/2005 | P | 4/6/2004 |
| PPKE | BROOKWOOD DR | 30500 | AERATION | 1/24/2005 | P | 10/15/2004 |
| PPKE | BROOKWOOD DR | 30575 | AERATION | 1/13/2005 | P | 3/2/2004 |
| PPKE | BROOKWOOD DR | 30651 | AERATION | 1/13/2005 | P | 3/11/2003 |
| PPKE | BROOKWOOD DR | 30751 | AERATION | 1/18/2005 | P | 10/14/2004 |
| PPKE | BROOKWOOD DR | 30800 | AERATION | 1/18/2005 | P | 5/6/2005 |
| PPKE | BROOKWOOD DR | 30851 | AERATION | 1/18/2005 | P | 10/4/1996 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|--------------|--------|------------|------------|-----|--------------|
| PPKE | BROOKWOOD DR | 30900 | AERATION | 1/20/2005 | F | 8/13/2002 |
| PPKE | BROOKWOOD DR | 31001 | AERATION | 1/20/2005 | P | 11/5/2003 |
| PPKE | CAMBRIDGE LN | 27950 | AERATION | 1/20/2005 | P | 7/9/2003 |
| PPKE | CAMBRIDGE LN | 28000 | AERATION | 1/20/2005 | P | 8/3/2004 |
| PPKE | CAMBRIDGE LN | 28001 | FILTER BED | 1/31/2005 | P | 5/5/2003 |
| PPKE | CAMBRIDGE LN | 28050 | AERATION | 1/24/2005 | P | 5/3/2002 |
| PPKE | CAMBRIDGE LN | 28051 | AERATION | 1/24/2005 | P | 9/14/2004 |
| PPKE | CAMBRIDGE LN | 28101 | AERATION | 1/31/2005 | P | 7/13/2005 |
| PPKE | CAMBRIDGE LN | 28151 | FILTER BED | 2/22/2005 | P | 7/18/2003 |
| PPKE | CAMBRIDGE LN | 28201 | AERATION | 2/10/2005 | P | 6/1/2005 |
| PPKE | CAMBRIDGE LN | 28251 | FILTER BED | 2/15/2005 | F | 10/8/2003 |
| PPKE | CAMBRIDGE LN | 28350 | FILTER BED | 6/1/2005 | F | 8/26/2004 |
| PPKE | CAMBRIDGE LN | 28351 | AERATION | 1/18/2005 | P | 9/15/2004 |
| PPKE | CAMBRIDGE LN | 28400 | AERATION | 1/25/2005 | P | 2/6/2004 |
| PPKE | CAMBRIDGE LN | 28401 | UNKNOWN | 3/29/2005 | P | 10/15/2004 |
| PPKE | CAMBRIDGE LN | 28451 | AERATION | 1/31/2005 | P | 10/18/2005 |
| PPKE | CEDAR RD | 28700 | AERATION | 3/31/2005 | P | 5/10/2003 |
| PPKE | CEDAR RD | 29026 | FILTER BED | 4/21/2005 | F | 11/26/2003 |
| PPKE | CEDAR RD | 29450 | AERATION | 4/26/2005 | P | 8/7/2003 |
| PPKE | CEDAR RD | 29676 | FILTER BED | 3/15/2005 | F | 9/10/2004 |
| PPKE | CEDAR RD | 30726 | FILTER BED | 3/3/2005 | F | 6/24/2003 |
| PPKE | CEDAR RD | 30850 | AERATION | 2/14/2005 | P | 4/13/2004 |
| PPKE | CEDAR RD | 30926 | AERATION | 8/22/2005 | P | 5/6/2005 |
| PPKE | CEDAR RD | 31000 | AERATION | 2/14/2005 | P | 11/5/2002 |
| PPKE | CEDAR RD | 31100 | AERATION | 2/14/2005 | P | 9/8/2003 |
| PPKE | CEDAR RD | 31150 | AERATION | 2/14/2005 | P | 7/17/2003 |
| PPKE | CEDAR RD | 31200 | FILTER BED | 1/24/2005 | P | 4/14/2003 |
| PPKE | CEDAR RD | 31300 | AERATION | 2/14/2005 | P | 10/17/2005 |
| PPKE | CEDAR RD | 31540 | AERATION | 1/31/2005 | F | 4/10/2002 |
| PPKE | CEDAR RD | 31600 | AERATION | 12/10/2004 | | 4/17/2005 |
| PPKE | CEDAR RD | 31900 | AERATION | 3/7/2005 | P | 8/9/2004 |
| PPKE | CEDAR RD | 32100 | FILTER BED | 3/16/2005 | P | 4/12/2000 |
| PPKE | CEDAR RD | 32450 | AERATION | 3/7/2005 | P | 3/25/2003 |
| PPKE | CEDAR RD | 32500 | AERATION | 3/7/2005 | P | 7/3/2003 |
| PPKE | CEDAR RD | 32600 | AERATION | 5/20/2004 | F | 11/3/1998 |
| PPKE | CEDAR RD | 32750 | AERATION | 3/7/2005 | P | 10/8/2003 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|------------|--------|------------|-----------|-----|--------------|
| PPKE | CEDAR RD | 33050 | FILTER BED | 5/12/2005 | P | 1/1/2005 |
| PPKE | CEDAR RD | 33400 | FILTER BED | 4/7/2005 | F | 9/2/2004 |
| PPKE | CEDAR RD | 33550 | AERATION | 3/8/2005 | F | 8/1/2002 |
| PPKE | CEDAR RD | 33600 | FILTER BED | 2/10/2005 | P | 7/31/2003 |
| PPKE | CEDAR RD | 33700 | FILTER BED | 2/25/2005 | P | 7/25/2005 |
| PPKE | CEDAR RD | 33750 | AERATION | 2/10/2005 | P | 3/2/2000 |
| PPKE | CHATHAM RD | 2870 | AERATION | 7/12/2005 | | 7/22/2003 |
| PPKE | CHATHAM RD | 2872 | AERATION | 2/14/2005 | P | 7/9/2005 |
| PPKE | CHATHAM RD | 2873 | AERATION | 2/8/2005 | P | 4/24/2003 |
| PPKE | CHATHAM RD | 2874 | AERATION | 2/15/2005 | P | 10/20/2005 |
| PPKE | CHATHAM RD | 2875 | AERATION | 2/1/2005 | P | 3/8/2015 |
| PPKE | CHATHAM RD | 2880 | AERATION | 2/1/2005 | P | 9/27/2005 |
| PPKE | CHATHAM RD | 2885 | AERATION | 2/1/2005 | P | 6/1/2003 |
| PPKE | CHATHAM RD | 2890 | AERATION | 2/8/2005 | P | 4/21/2003 |
| PPKE | CHATHAM RD | 2893 | AERATION | 3/1/2005 | P | 8/22/2005 |
| PPKE | CONCORD RD | 2819 | AERATION | 1/20/2005 | P | 8/16/2004 |
| PPKE | CONCORD RD | 2825 | AERATION | 1/31/2005 | P | 10/1/2003 |
| PPKE | CONCORD RD | 2829 | AERATION | 1/31/2005 | P | 8/27/2003 |
| PPKE | CONCORD RD | 2830 | AERATION | 1/31/2005 | P | 9/5/2001 |
| PPKE | CONCORD RD | 2840 | AERATION | 2/10/2005 | P | 10/23/2002 |
| PPKE | CONCORD RD | 2849 | AERATION | 1/31/2005 | P | 10/2/2003 |
| PPKE | CONCORD RD | 2850 | AERATION | 1/31/2005 | P | 11/8/2004 |
| PPKE | CONCORD RD | 2859 | AERATION | 2/8/2005 | P | 3/17/2003 |
| PPKE | CONCORD RD | 2879 | AERATION | 5/24/2004 | | 7/15/2004 |
| PPKE | CONCORD RD | 2899 | AERATION | 3/8/2005 | P | 6/20/2003 |
| PPKE | COUNTRY LN | 10 | AERATION | 2/7/2005 | P | 8/16/2002 |
| PPKE | COUNTRY LN | 11 | AERATION | 3/8/2005 | P | 5/14/2004 |
| PPKE | COUNTRY LN | 12 | AERATION | 3/8/2005 | P | 4/28/2005 |
| PPKE | COUNTRY LN | 14 | AERATION | 3/8/2005 | P | 7/9/2003 |
| PPKE | COUNTRY LN | 15 | AERATION | 3/1/2005 | P | 3/5/2004 |
| PPKE | COUNTRY LN | 16 | AERATION | 3/8/2005 | P | 8/30/2004 |
| PPKE | COUNTRY LN | 18 | AERATION | 3/3/2005 | P | 8/21/2001 |
| PPKE | COUNTRY LN | 22 | AERATION | 1/24/2005 | P | 4/9/2003 |
| PPKE | COUNTRY LN | 24 | AERATION | 2/1/2005 | P | 10/13/2004 |
| PPKE | COUNTRY LN | 3 | AERATION | 2/15/2005 | P | 9/22/2004 |
| PPKE | COUNTRY LN | 4 | AERATION | 2/15/2005 | P | 7/19/2004 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|--------------|--------|------------|------------|-----|--------------|
| PPKE | COUNTRY LN | 5 | AERATION | 2/15/2005 | P | 3/10/2004 |
| PPKE | COUNTRY LN | 6 | AERATION | 3/17/2005 | P | 6/29/2004 |
| PPKE | COUNTRY LN | 7 | AERATION | 2/8/2005 | P | 10/3/2005 |
| PPKE | COUNTRY LN | 9 | AERATION | 1/24/2005 | P | 4/17/2002 |
| PPKE | CREEKSIDE DR | 31435 | AERATION | 2/15/2005 | P | 9/10/2004 |
| PPKE | CREEKSIDE DR | 31475 | AERATION | 2/15/2005 | P | 9/28/2005 |
| PPKE | CREEKSIDE DR | 31540 | AERATION | 2/24/2005 | | 8/4/2003 |
| PPKE | CREEKSIDE DR | 31545 | AERATION | 2/15/2005 | F | 9/12/2000 |
| PPKE | CREEKSIDE DR | 31615 | AERATION | 2/15/2005 | P | 5/10/2005 |
| PPKE | CREEKSIDE DR | 31675 | AERATION | 2/15/2005 | P | 4/1/2004 |
| PPKE | CREEKSIDE DR | 31680 | AERATION | 2/8/2005 | F | 9/26/2005 |
| PPKE | CREEKSIDE DR | 31715 | AERATION | 2/15/2005 | P | 9/25/2003 |
| PPKE | CREEKSIDE DR | 31720 | AERATION | 3/15/2005 | P | 8/10/2004 |
| PPKE | CREEKSIDE DR | 31745 | FILTER BED | 2/10/2005 | F | 8/3/2004 |
| PPKE | CREEKSIDE DR | 31760 | AERATION | 3/1/2005 | P | 10/11/2005 |
| PPKE | CREEKSIDE DR | 31775 | AERATION | 2/15/2005 | P | 8/6/2004 |
| PPKE | CREEKSIDE DR | 31835 | AERATION | 3/1/2005 | P | 5/26/2004 |
| PPKE | CREEKSIDE DR | 31875 | AERATION | 2/10/2005 | P | 6/9/2005 |
| PPKE | CREEKSIDE DR | 31880 | AERATION | 3/1/2005 | P | 11/18/2004 |
| PPKE | CREEKSIDE DR | 31895 | FILTER BED | 3/4/2004 | F | 5/22/2003 |
| PPKE | CREEKSIDE DR | 31920 | AERATION | 3/10/2005 | P | 3/30/2004 |
| PPKE | CREEKSIDE DR | 31935 | AERATION | 2/24/2005 | P | 10/16/2002 |
| PPKE | CREEKSIDE DR | 31960 | AERATION | 2/24/2005 | P | 7/24/2003 |
| PPKE | CREEKSIDE DR | 31975 | AERATION | 2/24/2005 | P | 6/13/2005 |
| PPKE | CREEKSIDE DR | 32000 | AERATION | 2/17/2005 | | 9/24/2004 |
| PPKE | CREEKSIDE DR | 32005 | AERATION | 3/1/2005 | | 7/21/2005 |
| PPKE | CREEKSIDE DR | 32035 | AERATION | 2/22/2005 | P | 10/21/2004 |
| PPKE | CREEKSIDE DR | 32055 | AERATION | 5/3/2004 | | 7/22/2004 |
| PPKE | CREEKSIDE DR | 32080 | FILTER BED | 11/17/2005 | F | 8/17/2005 |
| PPKE | CREEKSIDE DR | 32105 | FILTER BED | 3/24/2005 | P | 9/18/2003 |
| PPKE | CREEKSIDE DR | 32155 | AERATION | 2/17/2005 | P | 7/27/2004 |
| PPKE | CREEKSIDE DR | 32205 | FILTER BED | 2/22/2005 | P | 4/15/2003 |
| PPKE | CREEKSIDE DR | 32280 | AERATION | 2/17/2005 | P | 6/25/2003 |
| PPKE | CREEKSIDE DR | 32325 | AERATION | 2/17/2005 | P | 8/16/2004 |
| PPKE | CREEKSIDE DR | 32405 | AERATION | 2/17/2005 | P | 7/28/2005 |
| PPKE | EDGEDALE RD | 28425 | FILTER BED | 4/14/2005 | F | 6/26/2003 |

| CITY | STREET NAM | NUMBER | SECONDARY | VERT DATE | P/F | LAST CLEANED |
|------|-------------|--------|------------|-----------|-----|--------------|
| PPKE | EDGEDALE RD | 28430 | FILTER BED | 3/31/2005 | P | 12/10/2003 |
| PPKE | EDGEDALE RD | 28450 | AERATION | 3/15/2005 | P | 11/6/2000 |
| PPKE | EDGEDALE RD | 28475 | AERATION | 3/15/2005 | P | 6/6/2003 |
| PPKE | EDGEDALE RD | 28525 | UNKNOWN | 3/22/2005 | P | 11/18/2003 |
| PPKE | EDGEDALE RD | 28526 | AERATION | 3/15/2005 | P | 10/6/2003 |
| PPKE | EDGEDALE RD | 28575 | AERATION | 3/3/2005 | P | 9/2/2004 |
| PPKE | EDGEDALE RD | 28576 | FILTER BED | 8/2/2005 | P | 10/20/2004 |
| PPKE | EDGEDALE RD | 28626 | AERATION | 4/26/2005 | | 9/30/2004 |
| PPKE | EDGEDALE RD | 28649 | AERATION | 3/17/2005 | P | 10/17/2005 |
| PPKE | EDGEDALE RD | 28699 | AERATION | 3/17/2005 | P | 3/24/1998 |
| PPKE | EDGEDALE RD | 28750 | FILTER BED | 5/3/2005 | F | 12/15/2004 |
| PPKE | EDGEDALE RD | 28775 | AERATION | 3/10/2005 | P | 8/23/2003 |
| PPKE | EDGEDALE RD | 28800 | AERATION | 3/10/2005 | P | 12/5/2003 |
| PPKE | EDGEDALE RD | 28849 | AERATION | 3/10/2005 | P | 7/30/2003 |
| PPKE | EDGEDALE RD | 28899 | AERATION | 3/10/2005 | P | 3/4/2004 |
| PPKE | EDGEDALE RD | 28989 | AERATION | 3/10/2005 | P | 5/18/2005 |
| PPKE | EDGEDALE RD | 29000 | FILTER BED | 3/10/2005 | P | 6/1/2003 |
| PPKE | EDGEDALE RD | 29025 | FILTER BED | 3/10/2005 | P | 4/28/2005 |
| PPKE | EDGEDALE RD | 29149 | AERATION | 3/10/2005 | P | 8/1/2003 |
| PPKE | EDGEDALE RD | 29200 | AERATION | 3/10/2005 | P | 9/15/2004 |
| PPKE | EDGEDALE RD | 29226 | AERATION | 3/10/2005 | P | 4/28/2004 |
| PPKE | EDGEDALE RD | 29235 | AERATION | 3/21/2005 | P | 5/1/2004 |
| PPKE | EDGEDALE RD | 29325 | FILTER BED | 3/14/2005 | F | 6/18/2002 |
| PPKE | EDGEDALE RD | 29326 | FILTER BED | 4/20/2005 | P | 10/11/2002 |
| PPKE | EDGEDALE RD | 29399 | UNKNOWN | 3/22/2005 | P | 7/24/2002 |
| PPKE | EDGEDALE RD | 29400 | AERATION | 3/17/2005 | P | 5/1/2004 |
| PPKE | EDGEDALE RD | 29449 | AERATION | 3/17/2005 | P | 5/26/1999 |
| PPKE | EDGEDALE RD | 29450 | AERATION | 3/17/2005 | P | 9/10/2004 |
| PPKE | EDGEDALE RD | 29475 | AERATION | 3/3/2005 | P | 4/6/2005 |
| PPKE | EDGEDALE RD | 29500 | AERATION | 3/17/2005 | P | 5/20/2004 |
| PPKE | EDGEDALE RD | 29549 | AERATION | 3/21/2005 | P | 3/25/2004 |
| PPKE | EDGEDALE RD | 29550 | FILTER BED | 8/16/2005 | P | 7/21/2003 |
| PPKE | EDGEDALE RD | 29575 | FILTER BED | 5/24/2005 | F | 7/23/2004 |
| PPKE | EDGEDALE RD | 29600 | AERATION | 3/15/2005 | P | 6/6/2003 |
| PPKE | EDGEWOOD RD | 3025 | AERATION | 5/2/2005 | P | 6/3/2004 |
| PPKE | EDGEWOOD RD | 3046 | AERATION | 3/23/2005 | P | 9/25/2003 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|---------------|--------|------------|------------|-----|--------------|
| PPKE | EDGEWOOD RD | 3047 | AERATION | 4/4/2005 | P | 1/7/2005 |
| PPKE | EDGEWOOD RD | 30826 | AERATION | 3/31/2005 | P | 7/2/2003 |
| PPKE | EDGEWOOD RD | 30947 | AERATION | 6/14/2004 | P | 11/12/2003 |
| PPKE | EDGEWOOD RD | 31010 | AERATION | 3/24/2005 | P | 7/26/2005 |
| PPKE | EDGEWOOD RD | 31011 | FILTER BED | 8/2/2004 | P | 8/13/2005 |
| PPKE | EDGEWOOD RD | 31050 | AERATION | 3/8/2004 | P | 2/13/2004 |
| PPKE | EDGEWOOD RD | 31300 | AERATION | 3/24/2005 | P | 5/9/2003 |
| PPKE | EDGEWOOD RD | 31400 | AERATION | 11/29/2005 | P | 7/9/2001 |
| PPKE | EMERSON DR | 2731 | UNKNOWN | 9/12/2005 | P | 3/18/2004 |
| PPKE | FAIRMOUNT BLV | 28437 | FILTER BED | 10/20/2005 | F | 7/8/2004 |
| PPKE | FAIRMOUNT BLV | 28750 | AERATION | 5/11/2004 | P | 8/14/2003 |
| PPKE | FAIRMOUNT BLV | 29600 | AERATION | 4/21/2005 | | 7/15/2004 |
| PPKE | FAIRMOUNT BLV | 29799 | FILTER BED | 5/4/2005 | F | 10/8/2003 |
| PPKE | FAIRMOUNT BLV | 29800 | FILTER BED | 5/9/2005 | F | 9/3/2005 |
| PPKE | FAIRMOUNT BLV | 30003 | FILTER BED | 6/13/2005 | P | 8/6/2003 |
| PPKE | FAIRMOUNT BLV | 31000 | AERATION | 6/27/2005 | P | 4/1/2005 |
| PPKE | FAIRMOUNT BLV | 31099 | AERATION | 4/7/2005 | P | 9/25/2002 |
| PPKE | FAIRMOUNT BLV | 31150 | AERATION | 5/2/2005 | P | 11/21/2002 |
| PPKE | FAIRMOUNT BLV | 31299 | FILTER BED | 4/14/2005 | P | 5/12/1997 |
| PPKE | FAIRMOUNT BLV | 31500 | FILTER BED | 5/10/2005 | F | 10/20/2004 |
| PPKE | FAIRMOUNT BLV | 31999 | FILTER BED | 5/5/2005 | F | 2/26/2004 |
| PPKE | FAIRMOUNT BLV | 32400 | FILTER BED | 4/8/2005 | F | 6/11/2003 |
| PPKE | FAIRMOUNT BLV | 32600 | AERATION | 5/12/2005 | | 3/21/2003 |
| PPKE | FAIRMOUNT BLV | 33000 | FILTER BED | 4/22/2004 | P | 3/7/1997 |
| PPKE | FOREST DR | 3002 | AERATION | 5/10/2005 | P | 7/23/2003 |
| PPKE | FOREST DR | 3025 | AERATION | 5/5/2005 | P | 6/30/2004 |
| PPKE | FOREST DR | 3050 | AERATION | 5/10/2005 | P | 10/5/2005 |
| PPKE | FOX HOLLOW DR | 30850 | FILTER BED | 10/1/2004 | P | 11/21/2003 |
| PPKE | FOX HOLLOW DR | 30875 | AERATION | 10/1/2004 | P | 8/22/2003 |
| PPKE | FOX HOLLOW DR | 30876 | AERATION | 10/1/2004 | P | 12/2/2004 |
| PPKE | FOX HOLLOW DR | 30900 | AERATION | 7/26/2004 | P | 9/5/2000 |
| PPKE | FOX HOLLOW DR | 30951 | AERATION | 9/28/2004 | P | 11/20/2003 |
| PPKE | FOX HOLLOW DR | 31000 | AERATION | 9/28/2004 | P | 7/15/2004 |
| PPKE | FOX HOLLOW DR | 31050 | AERATION | 10/25/2004 | P | 10/9/2002 |
| PPKE | FOX HOLLOW DR | 31051 | AERATION | 1/13/2005 | P | 4/8/2003 |
| PPKE | FOX HOLLOW DR | 31150 | AERATION | 1/13/2005 | P | 10/27/2000 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|----------------|--------|------------|------------|-----|--------------|
| PPKE | FOX HOLLOW DR | 31151 | AERATION | 1/18/2005 | P | 5/30/2001 |
| PPKE | FOX HOLLOW DR | 31175 | AERATION | 7/18/2005 | P | 10/5/2004 |
| PPKE | FOX HOLLOW DR | 31200 | AERATION | 9/27/2004 | P | 7/6/2004 |
| PPKE | FOX HOLLOW DR | 3137 | AERATION | 8/2/2004 | P | 11/1/2002 |
| PPKE | FOX HOLLOW DR | 3142 | AERATION | 7/27/2004 | P | 4/1/2004 |
| PPKE | FOX HOLLOW DR | 3156 | AERATION | 1/19/2005 | | 5/17/2005 |
| PPKE | FOX HOLLOW DR | 3184 | AERATION | 9/21/2004 | P | 8/2/2005 |
| PPKE | FOX HOLLOW DR | 3187 | AERATION | 9/21/2004 | P | 6/9/2005 |
| PPKE | FOX HOLLOW DR | 3201 | AERATION | 9/21/2004 | P | 9/2/2004 |
| PPKE | FOX HOLLOW DR | 3205 | AERATION | 9/21/2004 | P | 10/12/2004 |
| PPKE | FOX HOLLOW DR | 3218 | AERATION | 7/27/2004 | P | 6/23/2004 |
| PPKE | FOX HOLLOW DR | 3225 | AERATION | 8/18/2004 | P | 7/26/2001 |
| PPKE | FOX HOLLOW DR | 3230 | AERATION | 8/26/2004 | P | 5/6/2003 |
| PPKE | FOX HOLLOW DR | 3233 | AERATION | 1/24/2005 | P | 6/9/1994 |
| PPKE | FOX HOLLOW DR | 3237 | AERATION | 8/18/2004 | P | 11/14/2002 |
| PPKE | FOX HOLLOW DR | 3244 | AERATION | 7/19/2004 | P | 5/1/2003 |
| PPKE | GATES MILLS BL | 28900 | AERATION | 1/28/2005 | P | 9/1/1998 |
| PPKE | GATES MILLS BL | 29175 | AERATION | 8/23/2004 | P | 3/27/2003 |
| PPKE | GATES MILLS BL | 29476 | FILTER BED | 7/11/2005 | F | 7/28/2003 |
| PPKE | GATES MILLS BL | 29526 | FILTER BED | 9/30/2005 | P | 6/24/2004 |
| PPKE | GATES MILLS BL | 29679 | AERATION | 10/19/2005 | F | 10/16/2000 |
| PPKE | GATES MILLS BL | 29720 | AERATION | 5/10/2005 | P | 8/1/2001 |
| PPKE | GATES MILLS BL | 29725 | AERATION | 5/9/2005 | F | 5/25/2005 |
| PPKE | GATES MILLS BL | 29775 | AERATION | 5/27/2005 | P | 2/10/2004 |
| PPKE | GATES MILLS BL | 29825 | AERATION | 2/18/2005 | F | 2/22/2005 |
| PPKE | GATES MILLS BL | 29876 | FILTER BED | 4/12/2005 | P | 9/19/2002 |
| PPKE | GATES MILLS BL | 30076 | FILTER BED | 8/2/2005 | F | 8/13/2002 |
| PPKE | GATES MILLS BL | 30199 | AERATION | 11/29/2005 | P | 3/3/2005 |
| PPKE | GATES MILLS BL | 30799 | AERATION | 9/20/2005 | P | 5/2/2003 |
| PPKE | GATES MILLS BL | 30800 | AERATION | 4/5/2004 | | 10/24/2004 |
| PPKE | GATES MILLS BL | 30899 | FILTER BED | 5/23/2005 | F | 10/11/2004 |
| PPKE | GATES MILLS BL | 31149 | AERATION | 4/21/2004 | P | 6/1/2004 |
| PPKE | GATES MILLS BL | 31150 | AERATION | 5/12/2005 | P | 9/9/2005 |
| PPKE | GATES MILLS BL | 31199 | AERATION | 4/14/2005 | P | 7/20/2001 |
| PPKE | GATES MILLS BL | 31400 | AERATION | 8/24/2005 | | 9/29/2005 |
| PPKE | GATES MILLS BL | 31450 | FILTER BED | 7/15/2004 | F | 8/9/2005 |

| CITY | STREET NAM | NUMBER | SECONDARY | CERT DATE | P/F | LAST CLEANED |
|------|----------------|--------|------------|------------|-----|--------------|
| PPKE | GATES MILLS BL | 31599 | FILTER BED | 5/9/2005 | F | 11/1/2004 |
| PPKE | GATES MILLS BL | 31750 | FILTER BED | 6/16/2005 | F | 10/28/2004 |
| PPKE | GATES MILLS BL | 31799 | FILTER BED | 6/8/2005 | F | 11/1/2002 |
| PPKE | GATES MILLS BL | 31800 | AERATION | 4/29/2005 | P | 10/24/2004 |
| PPKE | GATES MILLS BL | 31949 | FILTER BED | 6/20/2005 | F | 11/10/2003 |
| PPKE | GATES MILLS BL | 31999 | FILTER BED | 5/17/2005 | F | 11/30/1999 |
| PPKE | GATES MILLS BL | 32400 | FILTER BED | 5/23/2005 | P | 8/9/2002 |
| PPKE | GREENWOOD DR | 3650 | AERATION | 4/26/2005 | P | 7/14/2003 |
| PPKE | GREENWOOD DR | 3680 | FILTER BED | 5/19/2005 | P | 5/8/2002 |
| PPKE | GREENWOOD DR | 3681 | AERATION | 6/22/2005 | P | 12/12/2001 |
| PPKE | GREENWOOD DR | 3699 | AERATION | 6/22/2005 | P | 6/12/2001 |
| PPKE | GREENWOOD DR | 3701 | AERATION | 6/7/2005 | P | 8/29/2005 |
| PPKE | GREENWOOD DR | 3715 | FILTER BED | 5/13/2005 | F | 4/13/2004 |
| PPKE | KERSDALE RD | 2749 | FILTER BED | 10/12/2005 | F | 4/1/2005 |
| PPKE | KERSDALE RD | 2808 | AERATION | 5/2/2005 | P | 10/15/2003 |
| PPKE | KERSDALE RD | 2811 | AERATION | 5/2/2005 | P | 7/25/2005 |
| PPKE | KERSDALE RD | 2812 | AERATION | 5/2/2005 | P | 10/15/2005 |
| PPKE | KERSDALE RD | 2815 | AERATION | 5/2/2005 | P | 6/1/2005 |
| PPKE | KERSDALE RD | 2816 | AERATION | 5/16/2005 | P | 8/5/2005 |
| PPKE | KERSDALE RD | 2820 | FILTER BED | 5/27/2005 | P | 6/20/2003 |
| PPKE | KERSDALE RD | 2821 | FILTER BED | 8/29/2005 | F | 9/8/1999 |
| PPKE | KERSDALE RD | 2833 | UNKNOWN | 6/2/2005 | F | 5/9/2003 |
| PPKE | KERSDALE RD | 2844 | FILTER BED | 9/27/2005 | F | 7/17/2002 |
| PPKE | KERSDALE RD | 2861 | AERATION | 6/6/2005 | P | 11/1/2003 |
| PPKE | KERSDALE RD | 2870 | FILTER BED | 6/21/2005 | P | 7/22/2003 |
| PPKE | KERSDALE RD | 3006 | UNKNOWN | 6/22/2005 | F | 8/11/2004 |
| PPKE | KERSDALE RD | 3007 | FILTER BED | 6/2/2005 | P | 7/15/2004 |
| PPKE | KERSDALE RD | 3010 | AERATION | 8/15/2005 | P | 5/23/2002 |
| PPKE | KERSDALE RD | 3035 | FILTER BED | 4/29/2005 | P | 8/11/2004 |
| PPKE | KERSDALE RD | 3036 | AERATION | 6/1/2005 | P | 11/27/2001 |
| PPKE | KERSDALE RD | 3041 | AERATION | 6/8/2005 | P | 9/22/2000 |
| PPKE | KERSDALE RD | 3099 | FILTER BED | 6/6/2005 | F | 3/6/2004 |
| PPKE | KERSDALE RD | 3100 | AERATION | 5/13/2005 | P | 9/8/2004 |
| PPKE | KERSDALE RD | 3121 | AERATION | 5/3/2005 | P | 9/26/2005 |
| PPKE | KERSDALE RD | 3126 | AERATION | 8/2/2005 | F | 9/28/2004 |
| PPKE | KERSDALE RD | 3131 | AERATION | 6/13/2005 | P | 6/30/2003 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|-------------|--------|------------|------------|-----|--------------|
| PPKE | KERSDALE RD | 3132 | AERATION | 5/9/2005 | P | 8/12/2004 |
| PPKE | KERSDALE RD | 3142 | AERATION | 6/20/2005 | P | 10/12/2005 |
| PPKE | KERSDALE RD | 3156 | AERATION | 7/11/2005 | F | 5/23/2002 |
| PPKE | KERSDALE RD | 3169 | AERATION | 11/30/2004 | P | 10/31/2005 |
| PPKE | KERSDALE RD | 3170 | AERATION | 5/4/2005 | P | 6/16/2003 |
| PPKE | KERSDALE RD | 3187 | AERATION | 5/12/2005 | P | 7/28/2004 |
| PPKE | KERSDALE RD | 3188 | AERATION | 5/3/2005 | P | 10/17/2002 |
| PPKE | KERSDALE RD | 3195 | AERATION | 7/11/2005 | P | 2/29/2004 |
| PPKE | KERSDALE RD | 3196 | AERATION | 5/12/2005 | P | 4/1/2005 |
| PPKE | KERSDALE RD | 3211 | AERATION | 8/19/2004 | P | 6/24/2005 |
| PPKE | KERSDALE RD | 3212 | AERATION | 7/11/2005 | P | 5/18/2004 |
| PPKE | KERSDALE RD | 3221 | FILTER BED | 10/24/2005 | P | 7/15/2004 |
| PPKE | KERSDALE RD | 3222 | FILTER BED | 6/28/2004 | P | 8/20/2001 |
| PPKE | KERSDALE RD | 3237 | AERATION | 5/23/2005 | P | 11/1/2004 |
| PPKE | KERSDALE RD | 3238 | AERATION | 6/2/2005 | P | 10/20/2005 |
| PPKE | KERSDALE RD | 3249 | AERATION | 8/7/2004 | P | 11/16/2004 |
| PPKE | KERSDALE RD | 3261 | AERATION | 5/27/2005 | P | 8/11/2005 |
| PPKE | KERSDALE RD | 3262 | AERATION | 6/17/2005 | P | 6/10/2005 |
| PPKE | KERSDALE RD | 3334 | AERATION | 9/30/2005 | P | 10/29/2004 |
| PPKE | KERSDALE RD | 3355 | AERATION | 5/19/2005 | P | 8/5/2005 |
| PPKE | KERSDALE RD | 3360 | AERATION | 3/15/2005 | P | 1/20/2004 |
| PPKE | KERSDALE RD | 3387 | AERATION | 1/11/2005 | P | 3/2/2004 |
| PPKE | KERSDALE RD | 3390 | AERATION | 6/27/2005 | P | 5/13/2003 |
| PPKE | KERSDALE RD | 3405 | AERATION | 1/10/2005 | P | 11/19/2004 |
| PPKE | KERSDALE RD | 3406 | AERATION | 6/27/2005 | P | 7/28/2003 |
| PPKE | KERSDALE RD | 3425 | AERATION | 10/25/2004 | P | 6/18/2003 |
| PPKE | KERSDALE RD | 3444 | AERATION | 6/24/2005 | P | 8/4/2004 |
| PPKE | KERSDALE RD | 3455 | AERATION | 2/8/2005 | P | 10/28/2003 |
| PPKE | KERSDALE RD | 3460 | AERATION | 6/24/2005 | P | 6/30/2006 |
| PPKE | KERSDALE RD | 3467 | AERATION | 6/24/2005 | F | 6/18/2003 |
| PPKE | KERSDALE RD | 3474 | AERATION | 1/9/2004 | P | 3/5/2004 |
| PPKE | KERSDALE RD | 3479 | FILTER BED | 1/21/2004 | F | 12/15/2004 |
| PPKE | KERSDALE RD | 3488 | AERATION | 8/19/2004 | P | 4/1/2005 |
| PPKE | KERSDALE RD | 3500 | FILTER BED | 7/19/2004 | P | 10/21/2004 |
| PPKE | KERSDALE RD | 3526 | FILTER BED | 8/11/2005 | P | 5/9/1996 |
| PPKE | LANARK LN | 3419 | FILTER BED | 8/3/2005 | P | 7/6/2005 |

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|------|------------|--------|------------|------------|-----|--------------|
| PPKE | LANARK LN | 3420 | FILTER BED | 8/8/2005 | P | 7/6/2005 |
| PPKE | LANARK LN | 3427 | FILTER BED | 7/13/2005 | F | 8/5/2003 |
| PPKE | LANARK LN | 3428 | AERATION | 9/6/2005 | P | 5/19/2004 |
| PPKE | LANARK LN | 3435 | FILTER BED | 7/18/2005 | P | 8/12/2005 |
| PPKE | LANARK LN | 3436 | AERATION | 5/12/2005 | P | 4/1/2004 |
| PPKE | LANARK LN | 3445 | FILTER BED | 6/22/2005 | P | 8/7/2002 |
| PPKE | LANDER RD | 2412 | AERATION | 6/22/2005 | P | 2/4/2003 |
| PPKE | LANDER RD | 2450 | FILTER BED | 7/12/2005 | F | 7/19/2002 |
| PPKE | LANDER RD | 2475 | AERATION | 6/29/2004 | P | 8/13/2001 |
| PPKE | LANDER RD | 2561 | AERATION | 9/27/2005 | P | 10/28/2004 |
| PPKE | LANDER RD | 2631 | AERATION | 9/27/2005 | P | 10/4/1999 |
| PPKE | LANDER RD | 2728 | FILTER BED | 8/15/2005 | F | 8/24/2005 |
| PPKE | LANDER RD | 2799 | AERATION | 7/25/2005 | P | 5/12/2005 |
| PPKE | LANDER RD | 2840 | FILTER BED | 10/11/2005 | P | 7/22/2005 |
| PPKE | LANDER RD | 2860 | FILTER BED | 7/28/2005 | F | 9/13/2005 |
| PPKE | LANDER RD | 2865 | UNKNOWN | 10/20/2005 | F | 5/17/2004 |
| PPKE | LANDER RD | 2869 | AERATION | 9/6/2005 | P | 5/19/2005 |
| PPKE | LANDER RD | 2886 | FILTER BED | 7/8/2005 | P | 5/12/2005 |
| PPKE | LANDER RD | 2892 | AERATION | 9/27/2005 | P | 6/13/2003 |
| PPKE | LANDER RD | 2898 | AERATION | 9/20/2005 | F | 11/23/2004 |
| PPKE | LANDER RD | 2899 | AERATION | 9/20/2005 | P | 9/10/2003 |
| PPKE | LANDER RD | 3019 | AERATION | 5/20/2004 | | 6/24/2003 |
| PPKE | LANDER RD | 3033 | AERATION | 4/23/2004 | | 6/26/2002 |
| PPKE | LANDER RD | 3047 | AERATION | 2/23/2004 | P | 8/17/2004 |
| PPKE | LANDER RD | 3057 | AERATION | 4/5/2004 | P | 4/1/2004 |
| PPKE | LANDER RD | 3060 | AERATION | 4/7/2004 | P | 7/18/2005 |
| PPKE | LANDER RD | 3075 | AERATION | 3/29/2004 | P | 11/14/2005 |
| PPKE | LANDER RD | 3076 | AERATION | 4/12/2004 | P | 10/29/2004 |
| PPKE | LANDER RD | 3085 | AERATION | 9/7/2004 | | 7/23/2003 |
| PPKE | LANDER RD | 3086 | FILTER BED | 8/13/2004 | P | 11/11/2003 |
| PPKE | LANDER RD | 3130 | FILTER BED | 5/11/2004 | P | 3/17/2003 |
| PPKE | LANDER RD | 3161 | FILTER BED | 10/12/2005 | P | 8/8/2005 |
| PPKE | LANDER RD | 3180 | FILTER BED | 9/26/2005 | F | 8/9/2004 |
| PPKE | LANDER RD | 3189 | FILTER BED | 7/22/2004 | P | 8/10/1999 |
| PPKE | LANDER RD | 3220 | FILTER BED | 6/6/2005 | P | 4/1/2003 |
| PPKE | LANDER RD | 3258 | AERATION | 8/17/2004 | F | 7/22/1997 |

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|------|--------------|--------|------------|------------|-----|--------------|
| PPKE | LANDER RD | 3261 | AERATION | 7/25/2005 | P | 10/12/2005 |
| PPKE | LANDER RD | 3334 | AERATION | 7/25/2005 | | 10/11/2004 |
| PPKE | LANDER RD | 3361 | FILTER BED | 8/15/2005 | P | 5/13/2003 |
| PPKE | LANDER RD | 3496 | FILTER BED | 9/29/2005 | F | 5/1/2005 |
| PPKE | LANDERWOOD R | 30496 | FILTER BED | 7/28/2005 | P | 5/1/2005 |
| PPKE | LANDERWOOD R | 30500 | AERATION | 8/18/2005 | F | 7/31/2003 |
| PPKE | LANDERWOOD R | 30525 | AERATION | 8/18/2005 | P | 4/19/2000 |
| PPKE | LANDERWOOD R | 30550 | AERATION | 8/5/2005 | P | 9/1/2003 |
| PPKE | LANDERWOOD R | 30650 | FILTER BED | 9/20/2005 | F | 10/14/2004 |
| PPKE | LANDERWOOD R | 30749 | UNKNOWN | 9/28/2005 | F | 8/26/2004 |
| PPKE | LANDERWOOD R | 30825 | FILTER BED | 7/28/2005 | F | 4/7/2004 |
| PPKE | LANDERWOOD R | 30999 | UNKNOWN | 10/11/2005 | P | 5/20/2004 |
| PPKE | LANDERWOOD R | 31049 | AERATION | 9/19/2005 | P | 4/28/2004 |
| PPKE | LANDERWOOD R | 31076 | AERATION | 9/29/2005 | P | 10/11/2003 |
| PPKE | LANDERWOOD R | 31099 | AERATION | 5/3/2005 | P | 11/26/2003 |
| PPKE | LANDERWOOD R | 31176 | AERATION | 8/3/2005 | P | 10/28/2005 |
| PPKE | LANDERWOOD R | 31226 | AERATION | 10/3/2005 | P | 5/6/2004 |
| PPKE | LANDERWOOD R | 31251 | FILTER BED | 8/26/2005 | P | 11/9/2000 |
| PPKE | LANDERWOOD R | 3386 | AERATION | 8/13/2004 | P | 3/18/2005 |
| PPKE | LANDERWOOD R | 3399 | FILTER BED | 8/22/2005 | F | 7/16/2004 |
| PPKE | LANDERWOOD R | 3400 | FILTER BED | 8/29/2005 | P | 8/23/2004 |
| PPKE | LAWTON LN | 3386 | FILTER BED | 10/24/2005 | P | 7/9/2004 |
| PPKE | LAWTON LN | 3400 | AERATION | 9/1/2005 | P | 2/8/2005 |
| PPKE | LAWTON LN | 3409 | AERATION | 9/1/2005 | F | 7/7/2003 |
| PPKE | LAWTON LN | 3412 | AERATION | 7/28/2005 | P | 12/31/2004 |
| PPKE | LAWTON LN | 3419 | AERATION | 5/10/2005 | P | 5/22/1996 |
| PPKE | LAWTON LN | 3420 | AERATION | 7/20/2005 | P | 6/12/2003 |
| PPKE | LAWTON LN | 3432 | AERATION | 8/1/2005 | P | 7/15/2004 |
| PPKE | LAWTON LN | 3433 | FILTER BED | 3/29/2005 | P | 3/3/2004 |
| PPKE | LAWTON LN | 3445 | AERATION | 10/19/2004 | P | 4/29/2004 |
| PPKE | LAWTON LN | 3459 | AERATION | 7/22/2005 | P | 5/6/2005 |
| PPKE | LAWTON LN | 3460 | AERATION | 9/14/2005 | P | 7/20/2004 |
| PPKE | LAWTON LN | 3467 | AERATION | 8/2/2005 | P | 10/5/2001 |
| PPKE | LAWTON LN | 3471 | AERATION | 4/22/2004 | P | 7/13/2004 |
| PPKE | LAWTON LN | 3480 | AERATION | 9/12/2005 | P | 4/3/2003 |
| PPKE | LAWTON LN | 3500 | AERATION | 9/1/2005 | F | 12/23/2002 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|----------------|--------|------------|------------|-----|--------------|
| PPKE | LOMBARDY LN | 33626 | AERATION | 7/28/2005 | P | 8/1/2003 |
| PPKE | LOMBARDY LN | 33650 | AERATION | 10/14/2005 | P | 9/29/2003 |
| PPKE | LOMBARDY LN | 33651 | FILTER BED | 9/14/2005 | F | 10/6/2004 |
| PPKE | LOUIS DR | 1 | AERATION | 1/26/2005 | P | 8/9/2004 |
| PPKE | LOUIS DR | 2 | AERATION | 8/22/2005 | P | 4/1/2005 |
| PPKE | LOUIS DR | 4 | AERATION | 8/1/2005 | P | 9/7/2004 |
| PPKE | LOUIS DR | 7 | AERATION | 9/14/2005 | P | 11/15/2004 |
| PPKE | MEDFIELD RD | 2811 | AERATION | 7/18/2005 | F | 8/10/2005 |
| PPKE | MEDFIELD RD | 2819 | AERATION | 9/1/2005 | P | 4/18/2003 |
| PPKE | N WOODLAND R | 28200 | FILTER BED | 8/30/2004 | P | 5/4/2004 |
| PPKE | PARK LANE DR | 30925 | AERATION | 8/18/2005 | P | 4/29/2003 |
| PPKE | PEPPER RIDGE R | 9 | FILTER BED | 11/21/2005 | F | 10/15/2003 |
| PPKE | PEPPERWOOD LN | 15 | AERATION | 12/16/2004 | P | 3/1/2005 |
| PPKE | PEPPERWOOD LN | 16 | AERATION | 10/18/2004 | | 8/21/2002 |
| PPKE | PINETREE RD | 31250 | UNKNOWN | 3/29/2005 | P | 10/8/2005 |
| PPKE | PLYMOUTH RD | 2877 | FILTER BED | 3/23/2004 | F | 4/23/2002 |
| PPKE | PLYMOUTH RD | 2892 | AERATION | 6/24/2005 | P | 10/10/2002 |
| PPKE | PROVIDENCE RD | 30449 | FILTER BED | 4/5/2004 | P | 10/6/2004 |
| PPKE | S WOODLAND RD | 28350 | FILTER BED | 12/9/2004 | F | 8/12/2004 |
| PPKE | S WOODLAND RD | 28400 | AERATION | 7/18/2005 | F | 2/9/2001 |
| PPKE | S WOODLAND RD | 28549 | FILTER BED | 9/27/2005 | F | 5/28/2003 |
| PPKE | S WOODLAND RD | 28550 | FILTER BED | 10/26/2005 | P | 9/12/2002 |
| PPKE | S WOODLAND RD | 28800 | AERATION | 8/3/2005 | P | 7/6/2005 |
| PPKE | S WOODLAND RD | 28899 | AERATION | 5/13/2004 | P | 5/3/2005 |
| PPKE | S WOODLAND RD | 29399 | FILTER BED | 9/27/2005 | P | 9/10/2003 |
| PPKE | S WOODLAND RD | 30900 | FILTER BED | 4/12/2004 | P | 3/2/2004 |
| PPKE | S WOODLAND RD | 33299 | FILTER BED | 9/8/2005 | F | 12/6/2004 |
| PPKE | S WOODLAND RD | 33350 | AERATION | 10/25/2004 | P | 5/28/2002 |
| PPKE | SETTLERS LN | 28600 | AERATION | 10/3/2005 | P | 10/18/2002 |
| PPKE | SETTLERS LN | 28675 | AERATION | 4/4/2005 | P | 11/21/2002 |
| PPKE | SHAKER BLVD | 29650 | FILTER BED | 10/18/2005 | F | 7/1/2002 |
| PPKE | SHAKER BLVD | 30450 | AERATION | 8/22/2005 | F | 7/11/2003 |
| PPKE | SHAKER BLVD | 30549 | AERATION | 9/22/2004 | | 4/27/2004 |
| PPKE | SHAKER BLVD | 30615 | AERATION | 9/24/2004 | F | 10/14/2002 |
| PPKE | SHAKER BLVD | 31239 | AERATION | 7/12/2005 | P | 1/31/2005 |
| PPKE | SHAKER BLVD | 32019 | AERATION | 2/10/2004 | P | 4/1/2003 |

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|------|---------------|--------|------------|------------|-----|--------------|
| PPKE | SHAKER BLVD | 33000 | AERATION | 4/22/2004 | P | 12/2/2003 |
| PPKE | SOM CENTER RD | 3562 | FILTER BED | 8/29/2005 | P | 10/12/2004 |
| PPKE | SUMMIT LN | 31000 | FILTER BED | 5/14/2004 | P | 5/18/2004 |
| PPKE | THORNAPPLE LN | 3520 | AERATION | 9/2/2004 | P | 10/9/2001 |
| PPKE | THORNAPPLE LN | 3590 | AERATION | 7/28/2004 | P | 10/19/2004 |
| PPKE | TRILLIUM TRL | 31400 | AERATION | 7/23/2004 | P | 9/10/2004 |
| PPKE | TRILLIUM TRL | 31499 | AERATION | 7/19/2004 | P | 6/1/2003 |
| PPKE | TRILLIUM TRL | 31549 | AERATION | 11/19/2004 | P | 6/26/2004 |
| PPKE | TRILLIUM TRL | 31649 | AERATION | 8/12/2004 | P | 8/9/2004 |
| PPKE | TRILLIUM TRL | 31749 | AERATION | 8/12/2004 | P | 8/30/2004 |
| PPKE | WINDY HILL DR | 2461 | LEACHFIELD | 6/23/2004 | F | 3/24/2005 |
| PPKE | WINDY HILL DR | 2462 | LEACHFIELD | 7/19/2005 | P | 8/24/2005 |
| PPKE | WINDY HILL DR | 2643 | FILTER BED | 3/23/2005 | F | 9/21/2004 |
| PPKE | WOODLEIGH RD | 33075 | AERATION | 7/19/2004 | P | 9/12/2005 |
| PPKE | WOODLEIGH RD | 33076 | AERATION | 5/10/2005 | P | 6/27/2002 |
| PPKE | WOODLEIGH RD | 33600 | AERATION | 9/20/2004 | P | 10/21/2002 |
| PRMA | BONNY BLVD | 2835 | AERATION | 11/2/2005 | P | 3/17/2003 |
| PRMA | BONNY BLVD | 2870 | AERATION | 11/2/2005 | F | 10/14/2000 |
| PRMA | BROADROCK CT | 1000 | AERATION | 4/27/2005 | F | 3/1/2004 |
| PRMA | BROADROCK CT | 1001 | AERATION | 4/27/2005 | P | 5/14/2001 |
| PRMA | BROADROCK CT | 1039 | AERATION | 4/27/2005 | F | 8/5/2002 |
| PRMA | BROADROCK CT | 1050 | AERATION | 4/27/2005 | F | 9/23/2003 |
| PRMA | BROADROCK CT | 1069 | AERATION | 4/27/2005 | F | 6/13/1995 |
| PRMA | BROADROCK CT | 1100 | AERATION | 4/27/2005 | F | 9/1/1994 |
| PRMA | BROADROCK CT | 1130 | AERATION | 4/27/2005 | P | 5/25/1999 |
| PRMA | BROADROCK CT | 1149 | AERATION | 4/27/2005 | P | 10/24/2002 |
| PRMA | BROADROCK CT | 1150 | AERATION | 4/27/2005 | P | 11/14/2002 |
| PRMA | BROADROCK CT | 1199 | AERATION | 4/27/2005 | F | 10/29/2002 |
| PRMA | BROADROCK CT | 1200 | AERATION | 4/27/2005 | F | 6/29/2001 |
| PRMA | BROADROCK CT | 1239 | AERATION | 4/27/2005 | F | 6/8/2000 |
| PRMA | BROADROCK CT | 1240 | AERATION | 4/27/2005 | F | 9/5/2002 |
| PRMA | BROADROCK CT | 1279 | AERATION | 5/25/2005 | F | 3/12/2003 |
| PRMA | BROADROCK CT | 1280 | AERATION | 5/25/2005 | F | 5/12/2003 |
| PRMA | BROADROCK CT | 1319 | AERATION | 5/25/2005 | F | 10/25/2002 |
| PRMA | BROADROCK CT | 1320 | AERATION | 5/25/2005 | P | 4/3/2000 |
| PRMA | BROADROCK CT | 1359 | AERATION | 5/25/2005 | F | 8/22/2001 |

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|------|-----------------|--------|------------|------------|-----|--------------|
| PRMA | BROADROCK CT | 1360 | AERATION | 5/25/2005 | F | 5/12/2003 |
| PRMA | BROADROCK CT | 1399 | AERATION | 5/25/2005 | F | 6/8/2000 |
| PRMA | BROADROCK CT | 1400 | AERATION | 5/25/2005 | F | 5/31/2002 |
| PRMA | BROADROCK CT | 1439 | AERATION | 5/25/2005 | F | 6/13/2003 |
| PRMA | BROADROCK CT | 1440 | AERATION | 5/25/2005 | F | 3/20/2001 |
| PRMA | BROADROCK CT | 1479 | AERATION | 5/25/2005 | F | 2/25/2003 |
| PRMA | BROADROCK CT | 1480 | AERATION | 5/25/2005 | F | 10/19/1998 |
| PRMA | BROADROCK CT | 1519 | AERATION | 5/25/2005 | F | 7/6/1998 |
| PRMA | BROADROCK CT | 1520 | AERATION | 5/25/2005 | F | 7/25/1996 |
| PRMA | BROADROCK CT | 1559 | AERATION | 5/25/2005 | F | 4/9/2003 |
| PRMA | BROADROCK CT | 1560 | AERATION | 5/25/2005 | F | 6/30/1986 |
| PRMA | BROADVIEW RD | 5493 | AERATION | 8/2/2004 | F | 2/23/1999 |
| PRMA | BROADVIEW RD | 6750 | FILTER BED | 7/6/2005 | F | 8/1/1996 |
| PRMA | BROADVIEW RD | 6852 | AERATION | 10/28/2004 | P | 2/1/2005 |
| PRMA | BROADVIEW RD | 6912 | AERATION | 11/18/2004 | P | 10/30/2004 |
| PRMA | BROADVIEW RD | 6964 | AERATION | 10/28/2004 | F | 11/11/2004 |
| PRMA | BROADVIEW RD | 6970 | AERATION | 10/28/2004 | P | 5/1/2003 |
| PRMA | BROADVIEW RD | 7168 | AERATION | 10/26/2004 | F | 12/6/2003 |
| PRMA | BROOKDALE AV | 1706 | AERATION | 6/16/2005 | P | |
| PRMA | BROOKDALE AV | 1713 | UNKNOWN | 9/13/2004 | F | 10/13/1999 |
| PRMA | BROOKDALE AV | 1714 | AERATION | 6/16/2005 | F | 4/16/2001 |
| PRMA | BROOKDALE AV | 1722 | AERATION | 6/16/2005 | P | 7/5/2002 |
| PRMA | BROOKDALE AV | 1806 | AERATION | 6/16/2005 | P | 6/18/2003 |
| PRMA | CRAIGLEIGH DR | 8520 | AERATION | 8/2/2004 | P | 11/4/1997 |
| PRMA | DAVID AVE | 1505 | AERATION | 7/15/2004 | P | 8/14/2001 |
| PRMA | DENTZLER RD | 2321 | AERATION | 6/16/2005 | P | 12/3/2002 |
| PRMA | DENTZLER RD | 2361 | AERATION | 6/16/2005 | P | 4/1/2005 |
| PRMA | E BAGLEY RD | 12980 | AERATION | 7/13/2004 | P | 4/23/2001 |
| PRMA | FOREST HILLS BL | 6651 | AERATION | 11/1/2005 | P | 5/26/2005 |
| PRMA | FOREST HILLS BL | 6656 | AERATION | 10/26/2005 | P | 6/2/2003 |
| PRMA | FOREST HILLS BL | 6702 | AERATION | 10/26/2005 | F | 1/3/2003 |
| PRMA | GLENCAIRN DR | 7205 | AERATION | 6/16/2005 | P | 8/17/2004 |
| PRMA | GLENCAIRN DR | 7225 | AERATION | 6/16/2005 | P | 10/2/2002 |
| PRMA | GRANTWOOD DR | 2400 | FILTER BED | 8/19/2004 | P | 7/10/2000 |
| PRMA | GREEN VALLEY | 7601 | AERATION | 11/3/2005 | P | 10/1/2003 |
| PRMA | GRLEN VALLEY | 7604 | AERATION | 11/3/2005 | P | 7/1/2003 |

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|------|----------------|--------|------------|------------|-----|--------------|
| PRMA | GREEN VALLEY | 7691 | AERATION | 11/3/2005 | P | 10/7/2003 |
| PRMA | HOERTZ RD | 7535 | AERATION | 11/3/2005 | P | 9/13/2002 |
| PRMA | HOERTZ RD | 7558 | AERATION | 11/3/2005 | P | 2/10/2004 |
| PRMA | HOERTZ RD | 7561 | AERATION | 11/3/2005 | P | 9/14/2004 |
| PRMA | HOERTZ RD | 7587 | AERATION | 11/3/2005 | P | 9/25/2003 |
| PRMA | HOERTZ RD | 7655 | AERATION | 11/3/2005 | P | 3/30/2004 |
| PRMA | JOYCE DR | 7861 | AERATION | 6/7/2005 | F | 7/26/2004 |
| PRMA | KENILWORTH AV | 8222 | AERATION | 7/16/2004 | P | 1/14/2005 |
| PRMA | KENILWORTH AV | 8308 | AERATION | 7/16/2004 | P | 11/27/2000 |
| PRMA | KNOWLES DR | 3326 | AERATION | 7/15/2004 | F | 11/22/2003 |
| PRMA | MANHATTAN AV | 8103 | AERATION | 7/27/2005 | F | 10/23/2001 |
| PRMA | MARLBOROUGH | 8102 | AERATION | 9/28/2005 | F | 8/24/2001 |
| PRMA | MARLBOROUGH | 8311 | AERATION | 7/27/2005 | P | 7/1/2004 |
| PRMA | MARTIN DR | 12970 | AERATION | 6/14/2005 | P | 8/28/2003 |
| PRMA | MARTIN DR | 12984 | AERATION | 6/14/2005 | P | 2/4/2003 |
| PRMA | MELODY LN | 3135 | AERATION | 7/15/2004 | P | 5/23/2005 |
| PRMA | MELODY LN | 3200 | FILTER BED | 10/25/2005 | F | 7/5/2001 |
| PRMA | MELODY LN | 3240 | AERATION | 10/21/2004 | P | 11/1/2003 |
| PRMA | MILLERWOOD LN | 7624 | AERATION | 7/6/2005 | P | 3/11/2004 |
| PRMA | MILLERWOOD LN | 7625 | AERATION | 6/14/2005 | F | 10/19/2004 |
| PRMA | MILLERWOOD LN | 7639 | AERATION | 6/14/2005 | F | 9/3/2003 |
| PRMA | MILLERWOOD LN | 7640 | AERATION | 6/15/2005 | P | 3/11/2003 |
| PRMA | MILLERWOOD LN | 7650 | AERATION | 5/13/2005 | P | 4/21/2005 |
| PRMA | MILLERWOOD LN | 7660 | AERATION | 6/16/2005 | F | 10/26/2004 |
| PRMA | MILLERWOOD LN | 7679 | UNKNOWN | 6/29/2005 | P | 9/15/2004 |
| PRMA | N LINDEN LN | 7410 | AERATION | 6/28/2005 | P | 7/28/2004 |
| PRMA | N LINDEN LN | 7426 | AERATION | 6/28/2005 | P | 1/1/2004 |
| PRMA | N LINDEN LN | 7437 | AERATION | 6/28/2005 | P | 3/30/2004 |
| PRMA | N LINDEN LN | 7548 | AERATION | 5/10/2005 | P | 4/18/2003 |
| PRMA | N LINDEN LN | 7580 | AERATION | 6/28/2005 | F | 10/6/2005 |
| PRMA | N LINDEN LN | 7590 | AERATION | 4/29/2005 | P | 6/12/2003 |
| PRMA | N LINDEN LN | 7596 | AERATION | 6/28/2005 | F | 7/13/1990 |
| PRMA | N LINDEN LN | 7602 | AERATION | 6/28/2005 | P | 11/1/2001 |
| PRMA | N LINDEN LN | 7698 | AERATION | 6/28/2005 | F | 5/25/1999 |
| PRMA | N LINDEN LN | 7699 | AERATION | 6/28/2005 | P | 4/4/2002 |
| PRMA | OLD ROCKSIDE R | 1100 | AERATION | 6/22/2005 | F | 6/18/2002 |

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|------|----------------|--------|------------|------------|-----|--------------|
| PRMA | OLD ROCKSIDE R | 1103 | FILTER BED | 7/7/2005 | F | 12/2/2002 |
| PRMA | OLD ROCKSIDE R | 1303 | AERATION | 6/15/2005 | P | 2/27/2003 |
| PRMA | OLD ROCKSIDE R | 1441 | AERATION | 6/15/2005 | P | 9/1/2002 |
| PRMA | OLD ROCKSIDE R | 901 | AERATION | 6/29/2005 | P | 6/20/2000 |
| PRMA | OLD ROCKSIDE R | 961 | UNKNOWN | 8/25/2005 | F | 6/22/2005 |
| PRMA | ORCHARD PARK | 4807 | AERATION | 10/26/2005 | P | 9/27/2004 |
| PRMA | ORCHARD PARK | 4865 | AERATION | 10/26/2005 | F | 6/15/2004 |
| PRMA | ORCHARD PARK | 4909 | AERATION | 10/26/2005 | F | 3/1/2004 |
| PRMA | ORCHARD PARK | 4915 | AERATION | 10/26/2005 | P | 10/11/2001 |
| PRMA | ORCHARD PARK | 5153 | AERATION | 10/26/2005 | F | 12/15/2004 |
| PRMA | ORCHARD PARK | 5308 | AERATION | 10/26/2005 | F | 7/14/1999 |
| PRMA | ORCHARD PARK | 5309 | AERATION | 10/26/2005 | P | 3/2/2002 |
| PRMA | ORCHARDVIEW | 1106 | AERATION | 11/1/2005 | F | 4/1/2004 |
| PRMA | ORCHARDVIEW | 1112 | AERATION | 11/1/2005 | F | 4/2/2002 |
| PRMA | ORCHARDVIEW | 1117 | AERATION | 11/1/2005 | P | 4/2/2003 |
| PRMA | PARKHAVEN DR | 1520 | AERATION | 11/1/2005 | P | 9/3/1999 |
| PRMA | PARKHAVEN DR | 1521 | AERATION | 7/27/2004 | P | 4/8/2004 |
| PRMA | PARMAVIEW LN | 7791 | AERATION | 11/3/2005 | P | 5/1/2003 |
| PRMA | PARMAVIEW LN | 7831 | AERATION | 11/3/2005 | P | 10/1/2002 |
| PRMA | PARMAVIEW LN | 7885 | AERATION | 11/3/2005 | P | 2/25/2005 |
| PRMA | PLEASANT VIEW | 7587 | AERATION | 11/3/2005 | P | 7/18/2003 |
| PRMA | PLEASANT VIEW | 7590 | AERATION | 11/3/2005 | P | 7/25/2003 |
| PRMA | RIDGE RD | 7037 | FILTER BED | 7/12/2004 | P | 9/22/2003 |
| PRMA | RIDGE RD | 7240 | AERATION | 10/12/2005 | P | |
| PRMA | RIDGE RD | 7260 | AERATION | 10/12/2005 | P | 7/20/2005 |
| PRMA | RIDGE RD | 7270 | AERATION | 10/12/2005 | P | 8/16/2005 |
| PRMA | RIDGE RD | 7272 | AERATION | 10/12/2005 | P | 1/20/2005 |
| PRMA | RIDGE RD | 7500 | AERATION | 10/12/2005 | P | 5/21/1997 |
| PRMA | RIDGE RD | 7710 | AERATION | 10/12/2005 | F | 12/31/1984 |
| PRMA | RIDGE RD | 7711 | AERATION | 10/12/2005 | P | 9/4/2004 |
| PRMA | RIDGE RD | 7713 | AERATION | 10/12/2005 | P | 5/31/2000 |
| PRMA | RIDGE RD | 7717 | AERATION | 10/12/2005 | P | 8/10/2004 |
| PRMA | RIDGE RD | 7721 | AERATION | 10/12/2005 | F | 11/4/2005 |
| PRMA | RIDGE RD | 7880 | AERATION | 10/12/2005 | F | 4/1/2004 |
| PRMA | ROBERT ST | 7757 | AERATION | 11/2/2005 | P | 2/27/1999 |
| PRMA | S LINDEN LN | 7834 | AERATION | 6/7/2005 | F | 5/23/2002 |

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|------|---------------|--------|------------|------------|-----|--------------|
| PRMA | S LINDEN LN | 7890 | AERATION | 6/7/2005 | P | 7/30/2001 |
| PRMA | SUNRISE OV | 7575 | FILTER BED | 8/31/2005 | P | 5/5/2001 |
| PRMA | SUNRISE OV | 7578 | FILTER BED | 8/2/2005 | F | 5/23/2001 |
| PRMA | SUNRISE OV | 7587 | FILTER BED | 10/6/2005 | F | 5/30/2002 |
| PRMA | SUNRISE OV | 7599 | AERATION | 7/15/2004 | P | 2/10/2003 |
| PRMA | THEOTA AVE | 8124 | AERATION | 7/16/2004 | P | 9/15/2004 |
| PRMA | VALLEY VILLAS | 7461 | AERATION | 10/12/2005 | F | 5/1/1996 |
| PRMA | VALLEY VILLAS | 7470 | AERATION | 10/12/2005 | F | 7/1/2003 |
| PRMA | VALLEY VILLAS | 7480 | AERATION | 10/12/2005 | F | 7/1/2003 |
| PRMA | VALLEY VILLAS | 7481 | AERATION | 10/12/2005 | P | 10/1/2003 |
| PRMA | VALLEY VILLAS | 7490 | AERATION | 10/12/2005 | F | 4/1/2003 |
| PRMA | VALLEY VILLAS | 7500 | AERATION | 10/12/2005 | F | 9/15/2004 |
| PRMA | VALLEY VILLAS | 7501 | AERATION | 10/12/2005 | F | 7/29/1999 |
| PRMA | VALLEY VILLAS | 7510 | AERATION | 11/2/2005 | F | 7/11/2005 |
| PRMA | VALLEY VILLAS | 7511 | AERATION | 10/12/2005 | F | 6/18/2001 |
| PRMA | VALLEY VILLAS | 7520 | FILTER BED | 8/18/2004 | F | 8/15/2004 |
| PRMA | VALLEY VILLAS | 7521 | AERATION | 10/12/2005 | F | 8/13/2003 |
| PRMA | VALLEY VILLAS | 7540 | FILTER BED | 5/14/2004 | P | 8/29/2002 |
| PRMA | W 130 ST | 7189 | AERATION | 11/7/2005 | P | 4/20/1995 |
| PRMA | W 130 ST | 7195 | AERATION | 11/7/2005 | F | 3/5/2004 |
| PRMA | W 130 ST | 7211 | AERATION | 6/15/2005 | P | 6/1/2004 |
| PRMA | W 130 ST | 7219 | FILTER BED | 8/26/2004 | F | 6/1/2005 |
| PRMA | W 130 ST | 7227 | AERATION | 11/7/2005 | P | 11/4/2004 |
| PRMA | W 130 ST | 7245 | AERATION | 11/7/2005 | P | 12/1/2003 |
| PRMA | W 130 ST | 7575 | AERATION | 11/7/2005 | P | 8/1/2001 |
| PRMA | W 130 ST | 7601 | AERATION | 11/7/2005 | P | 5/3/2003 |
| PRMA | W 130 ST | 7667 | AERATION | 11/7/2005 | F | 6/3/2004 |
| PRMA | W 130 ST | 7701 | AERATION | 11/7/2005 | F | 12/6/2001 |
| PRMA | W 130 ST | 7705 | AERATION | 11/7/2005 | F | 10/31/1983 |
| PRMA | W 130 ST | 7711 | AERATION | 11/7/2005 | F | 9/18/2001 |
| PRMA | W 130 ST | 7741 | AERATION | 11/7/2005 | P | 5/17/2005 |
| PRMA | W 130 ST | 7745 | AERATION | 11/7/2005 | P | 9/10/2001 |
| PRMA | W 130 ST | 7761 | AERATION | 11/7/2005 | P | 7/1/2001 |
| PRMA | W 130 ST | 7799 | AERATION | 11/7/2005 | F | 4/13/1998 |
| PRMA | W 130 ST | 7809 | AERATION | 11/7/2005 | P | 5/21/1999 |
| PRMA | W 130 ST | 7817 | AERATION | 11/7/2005 | F | 7/18/1997 |

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|------|---------------|--------|------------|------------|-----|--------------|
| PRMA | W 84 ST | 5378 | AERATION | 11/2/2005 | P | 9/19/2003 |
| PRMA | W 84 ST | 5416 | AERATION | 9/28/2005 | F | 11/30/1990 |
| PRMA | W 84 ST | 5440 | AERATION | 11/29/2005 | P | 10/10/2005 |
| PRMA | W 84 ST | 5450 | AERATION | 9/28/2005 | P | 4/16/2001 |
| PRMA | W LINDEN LN | 12887 | FILTER BED | 6/28/2005 | F | 6/1/2005 |
| PRMA | W LINDEN LN | 12891 | FILTER BED | 5/23/2005 | F | 10/19/2000 |
| PRMA | W LINDEN LN | 12934 | AERATION | 6/14/2005 | P | 12/17/2002 |
| PRMA | W LINDEN LN | 12945 | AERATION | 6/14/2005 | P | 5/2/2005 |
| PRMA | W LINDEN LN | 12946 | AERATION | 7/13/2005 | F | 7/11/2005 |
| PRMA | W LINDEN LN | 12962 | AERATION | 5/11/2005 | P | 5/1/2002 |
| PRMA | W LINDEN LN | 12970 | AERATION | 6/14/2005 | F | 9/21/2000 |
| PRMA | W PLEASANT VA | 12608 | FILTER BED | 4/30/2004 | P | 3/16/2001 |
| PRMA | W RIDGEWOOD D | 4215 | AERATION | 5/19/2004 | F | 7/23/2003 |
| PRMA | W RIDGEWOOD D | 5602 | FILTER BED | 5/20/2004 | F | 7/29/2004 |
| PRMA | W SPRAGUE RD | 11780 | UNKNOWN | 12/1/2004 | P | 8/21/2001 |
| PRMA | W SPRAGUE RD | 12400 | AERATION | 6/15/2005 | P | 6/1/2003 |
| PRMA | YORK RD | 7261 | AERATION | 7/13/2004 | F | 10/1/2003 |
| PRMA | YORK RD | 7886 | AERATION | 8/10/2004 | P | 8/8/2002 |
| PRMH | EUREKA PKY | 9805 | AERATION | 3/30/2005 | F | 12/28/2001 |
| PRMH | EUREKA PKY | 9812 | FILTER BED | 5/19/2004 | P | 6/1/2004 |
| PRMH | EUREKA PKY | 9827 | FILTER BED | 5/25/2004 | P | 5/6/2004 |
| PRMH | EUREKA PKY | 9837 | FILTER BED | 3/30/2005 | F | 10/1/2003 |
| PRMH | FERNHURST AVE | 6328 | FILTER BED | 2/28/2005 | P | 6/1/2005 |
| PRMH | FERNHURST AVE | 6384 | LEACHFIELD | 9/10/2004 | P | 5/23/2001 |
| PRMH | FERNHURST AVE | 6391 | UNKNOWN | 3/21/2005 | P | 5/5/2003 |
| RHHT | SWETLAND BLV | 4908 | FILTER BED | 9/30/2005 | F | 8/24/2001 |
| SOLN | BAINBRIDGE RD | 40125 | AERATION | 6/24/2004 | P | 8/1/2005 |
| SOLN | CANNON RD | 31390 | AERATION | 5/16/2005 | P | 11/4/2002 |
| SOLN | LIBERTY RD | 6406 | AERATION | 5/31/2005 | F | 5/31/2005 |
| STRG | ALBION RD | 15485 | AERATION | 10/28/2004 | F | 5/7/2002 |
| STRG | ALBION RD | 15523 | AERATION | 10/28/2004 | F | 3/19/2001 |
| STRG | ALBION RD | 15563 | AERATION | 11/16/2004 | F | 3/30/2001 |
| STRG | ALBION RD | 15603 | AERATION | 10/28/2004 | P | 6/24/2005 |
| STRG | ALBION RD | 15644 | AERATION | 10/28/2004 | F | 6/7/2004 |
| STRG | ALBION RD | 15810 | UNKNOWN | 10/28/2004 | F | 7/22/2003 |
| STRG | ALBION RD | 15818 | AERATION | 11/16/2004 | P | 11/15/2005 |

| CITY | STREET NAM | NUMBER | SECONDARY | CERT DATE | P/F | LAST CLEANED |
|------|---------------|--------|------------|------------|-----|--------------|
| STRG | ALBION RD | 15854 | AERATION | 11/16/2004 | P | 5/14/2003 |
| STRG | ALBION RD | 15894 | AERATION | 11/18/2004 | P | 6/11/2004 |
| STRG | ALBION RD | 15939 | AERATION | 11/18/2004 | F | 7/21/1998 |
| STRG | ALBION RD | 15942 | AERATION | 11/18/2004 | F | 6/25/2003 |
| STRG | ALBION RD | 16519 | FILTER BED | 11/1/2005 | P | 9/26/2001 |
| STRG | ALBION RD | 16862 | AERATION | 11/23/2004 | F | 8/10/2000 |
| STRG | ALBION RD | 16905 | AERATION | 11/23/2004 | P | 11/2/2005 |
| STRG | ALBION RD | 17047 | AERATION | 11/23/2004 | F | 6/9/2003 |
| STRG | ALBION RD | 22815 | AERATION | 1/13/2005 | F | 7/22/2005 |
| STRG | BENBOW RD | 18185 | FILTER BED | 3/24/2005 | P | 6/17/2003 |
| STRG | BENBOW RD | 18319 | AERATION | 4/27/2005 | F | 8/21/2004 |
| STRG | BENBOW RD | 18362 | AERATION | 4/21/2005 | P | 2/11/2003 |
| STRG | BENBOW RD | 18489 | AERATION | 9/8/2005 | F | 2/23/2000 |
| STRG | BENBOW RD | 18492 | FILTER BED | 7/5/2005 | P | 12/23/2002 |
| STRG | BENBOW RD | 18538 | AERATION | 4/21/2005 | F | 4/2/2002 |
| STRG | BENBOW RD | 18583 | FILTER BED | 7/13/2005 | P | 5/1/2005 |
| STRG | BENBOW RD | 18629 | FILTER BED | 6/27/2005 | P | 7/22/1997 |
| STRG | BENBOW RD | 18757 | FILTER BED | 5/11/2005 | P | 10/8/2001 |
| STRG | BENBOW RD | 19204 | AERATION | 8/1/2005 | F | 5/24/2003 |
| STRG | BENBOW RD | 19338 | FILTER BED | 5/11/2005 | P | 4/1/2005 |
| STRG | BENBOW RD | 19382 | AERATION | 4/13/2005 | P | 12/16/2002 |
| STRG | BENBOW RD | 19474 | FILTER BED | 5/19/2005 | F | 5/31/2005 |
| STRG | BIG CREEK PKY | 18796 | UNKNOWN | 4/27/2005 | F | 4/19/2001 |
| STRG | BLAZEY TRL | 12199 | UNKNOWN | 10/18/2004 | F | 8/4/2000 |
| STRG | BLAZEY TRL | 12238 | AERATION | 3/25/2004 | F | 4/1/2004 |
| STRG | BLAZEY TRL | 12239 | AERATION | 3/25/2004 | P | 8/12/2004 |
| STRG | BLAZEY TRL | 12243 | AERATION | 9/22/2004 | F | 5/29/2003 |
| STRG | BLAZEY TRL | 12291 | AERATION | 3/25/2004 | F | 10/15/2002 |
| STRG | BLAZEY TRL | 12337 | AERATION | 3/25/2004 | F | 7/26/2001 |
| STRG | BLAZEY TRL | 13168 | AERATION | 5/2/2005 | F | 2/16/1994 |
| STRG | BLAZEY TRL | 13252 | AERATION | 3/29/2004 | F | 5/14/2004 |
| STRG | BLAZEY TRL | 13257 | AERATION | 3/24/2004 | F | 1/2/2002 |
| STRG | BLAZEY TRL | 13260 | AERATION | 4/14/2004 | F | 5/10/2004 |
| STRG | BLAZEY TRL | 13297 | AERATION | 4/14/2004 | F | 7/9/2001 |
| STRG | BLAZEY TRL | 13337 | FILTER BED | 9/29/2004 | F | 12/15/2004 |
| STRG | BLAZEY TRL | 13345 | AERATION | 4/14/2004 | F | 6/2/1999 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|------------|--------|------------|------------|-----|--------------|
| STRG | BLAZEY TRL | 13464 | AERATION | 4/19/2004 | F | 10/11/2002 |
| STRG | BLAZEY TRL | 13504 | AERATION | 5/10/2004 | P | 9/3/2003 |
| STRG | BLAZEY TRL | 13512 | AERATION | 4/19/2004 | P | 10/30/2003 |
| STRG | BLAZEY TRL | 13553 | FILTER BED | 10/7/2004 | P | 5/1/2003 |
| STRG | BLAZEY TRL | 13588 | FILTER BED | 9/29/2004 | F | 8/11/2005 |
| STRG | BLAZEY TRL | 13596 | AERATION | 4/22/2004 | F | 5/1/2004 |
| STRG | BLAZEY TRL | 13637 | AERATION | 11/29/2004 | P | 7/9/2003 |
| STRG | BLAZEY TRL | 13676 | AERATION | 4/22/2004 | F | 1/2/2004 |
| STRG | BLAZEY TRL | 13720 | FILTER BED | 11/29/2004 | f | 4/23/2001 |
| STRG | BLAZEY TRL | 13757 | AERATION | 11/22/2004 | F | 4/23/2001 |
| STRG | BLAZEY TRL | 13887 | FILTER BED | 11/15/2004 | F | 6/30/1986 |
| STRG | BLAZEY TRL | 13930 | AERATION | 4/27/2004 | P | 3/17/2004 |
| STRG | BLAZEY TRL | 14007 | FILTER BED | 11/22/2004 | P | 5/5/1997 |
| STRG | BOSTON RD | 19330 | AERATION | 12/16/2004 | P | 7/2/2002 |
| STRG | BOSTON RD | 20346 | AERATION | 3/18/2005 | F | 5/23/2005 |
| STRG | BOSTON RD | 20476 | AERATION | 3/18/2005 | F | 7/31/1987 |
| STRG | BOSTON RD | 20606 | AERATION | 3/18/2005 | P | 12/15/2004 |
| STRG | BOSTON RD | 20644 | AERATION | 3/18/2005 | P | 8/18/2000 |
| STRG | BOSTON RD | 20644 | AERATION | 3/18/2005 | P | 8/18/2000 |
| STRG | BOSTON RD | 21368 | AERATION | 4/5/2005 | P | 9/16/2004 |
| STRG | BOSTON RD | 22042 | AERATION | 3/29/2005 | P | 10/5/1998 |
| STRG | BOSTON RD | 22112 | AERATION | 3/29/2005 | P | 2/17/2005 |
| STRG | BOSTON RD | 22690 | AERATION | 4/12/2005 | P | |
| STRG | BOSTON RD | 22752 | AERATION | 4/12/2005 | P | 5/1/2001 |
| STRG | BOSTON RD | 22894 | AERATION | 3/29/2005 | P | 3/30/1996 |
| STRG | BOWMAN DR | 19293 | AERATION | 1/19/2005 | P | 10/20/1998 |
| STRG | BOWMAN DR | 19319 | AERATION | 10/13/2005 | F | 10/24/1994 |
| STRG | BOWMAN DR | 19355 | AERATION | 9/8/2005 | F | 6/9/2005 |
| STRG | BOWMAN DR | 19652 | AERATION | 12/8/2004 | P | 8/30/2004 |
| STRG | BOWMAN DR | 19688 | AERATION | 1/19/2005 | P | 5/30/2001 |
| STRG | DRAKE RD | 13633 | AERATION | 11/8/2004 | P | 4/1/2002 |
| STRG | DRAKE RD | 13801 | AERATION | 11/8/2004 | P | 7/6/2004 |
| STRG | DRAKE RD | 13838 | AERATION | 11/8/2004 | P | 10/18/2005 |
| STRG | DRAKE RD | 13843 | AERATION | 12/8/2004 | P | 11/16/2004 |
| STRG | DRAKE RD | 13930 | AERATION | 11/8/2004 | P | 8/15/2002 |
| STRG | DRAKE RD | 14139 | AERATION | 11/8/2004 | F | 11/15/2004 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|--------------|--------|------------|------------|-----|--------------|
| STRG | DRAKE RD | 14179 | AERATION | 11/8/2004 | P | 4/1/2004 |
| STRG | DRAKE RD | 14518 | AERATION | 11/8/2004 | F | 11/16/2004 |
| STRG | DRAKE RD | 14558 | AERATION | 11/8/2004 | F | 11/16/2004 |
| STRG | DRAKE RD | 14594 | AERATION | 11/8/2004 | F | 5/29/2003 |
| STRG | DRAKE RD | 14855 | AERATION | 11/18/2004 | P | 7/16/2002 |
| STRG | DRAKE RD | 15403 | AERATION | 11/15/2004 | F | 2/23/2000 |
| STRG | DRAKE RD | 15531 | AERATION | 11/15/2004 | P | 9/5/2003 |
| STRG | DRAKE RD | 19445 | AERATION | 11/29/2004 | P | 5/13/2003 |
| STRG | DRAKE RD | 19517 | AERATION | 11/10/2004 | P | 9/15/2004 |
| STRG | DRAKE RD | 19520 | AERATION | 11/10/2004 | P | 5/19/2004 |
| STRG | DRAKE RD | 19578 | AERATION | 11/29/2004 | P | 1/12/2004 |
| STRG | DRAKE RD | 19818 | AERATION | 11/10/2004 | P | 7/15/2004 |
| STRG | DRAKE RD | 19852 | AERATION | 11/10/2004 | F | 11/22/2002 |
| STRG | DRAKE RD | 20881 | AERATION | 11/29/2005 | P | 11/15/2004 |
| STRG | DRAKE RD | 20909 | AERATION | 11/15/2004 | P | 8/1/2001 |
| STRG | FAIR RD | 8400 | UNKNOWN | 5/3/2005 | F | 5/10/2005 |
| STRG | FETZER DR | 17328 | AERATION | 8/25/2005 | P | 1/26/2005 |
| STRG | FETZER DR | 17430 | AERATION | 3/16/2005 | P | 7/15/2003 |
| STRG | HOWE RD | 19156 | AERATION | 10/18/2004 | P | 3/17/2004 |
| STRG | HOWE RD | 19200 | AERATION | 10/18/2004 | F | 10/21/2004 |
| STRG | HOWE RD | 19430 | AERATION | 10/18/2004 | F | 5/5/2004 |
| STRG | HOWE RD | 19605 | AERATION | 10/18/2004 | F | 4/30/1989 |
| STRG | HOWE RD | 19688 | FILTER BED | 6/24/2004 | P | 5/27/2004 |
| STRG | HOWE RD | 19693 | AERATION | 11/3/2004 | P | 9/30/1988 |
| STRG | HOWE RD | 19700 | AERATION | 12/8/2004 | P | 8/1/2002 |
| STRG | HOWE RD | 19734 | FILTER BED | 8/10/2004 | F | 6/1/2004 |
| STRG | HUNT RD | 19288 | FILTER BED | 4/19/2005 | F | 3/31/2005 |
| STRG | HUNT RD | 19340 | AERATION | 11/1/2005 | F | 3/7/2000 |
| STRG | HUNT RD | 19433 | AERATION | 3/29/2005 | P | 3/21/2005 |
| STRG | HUNT RD | 19436 | AERATION | 4/27/2005 | P | 8/15/2004 |
| STRG | HUNT RD | 19482 | AERATION | 4/19/2005 | P | 3/21/2005 |
| STRG | HUNT RD | 19483 | FILTER BED | 3/29/2005 | P | 6/24/2005 |
| STRG | JAMES WAY DR | 19643 | UNKNOWN | 3/21/2005 | F | 9/9/2003 |
| STRG | JAMES WAY DR | 19739 | UNKNOWN | 3/9/2004 | | 3/30/2004 |
| STRG | JANETTE AVE | 12290 | FILTER BED | 11/29/2004 | F | 4/5/2004 |
| STRG | JANETTE AVE | 12426 | AERATION | 4/30/2004 | F | 6/6/2001 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|-------------|--------|------------|------------|-----|--------------|
| STRG | JANETTE AVE | 12524 | UNKNOWN | 12/9/2004 | F | 10/3/2003 |
| STRG | JANETTE AVE | 12571 | FILTER BED | 12/3/2004 | F | 9/24/2003 |
| STRG | JANETTE AVE | 12615 | FILTER BED | 10/14/2004 | F | 4/10/2001 |
| STRG | JANETTE AVE | 12622 | UNKNOWN | 11/22/2004 | F | 4/1/2003 |
| STRG | JANETTE AVE | 12668 | UNKNOWN | 11/8/2004 | F | 6/18/2002 |
| STRG | MARKS RD | 10001 | UNKNOWN | 7/8/2005 | F | 9/14/2004 |
| STRG | MARKS RD | 14817 | AERATION | 1/19/2005 | P | 9/21/2001 |
| STRG | MARKS RD | 14915 | UNKNOWN | 9/15/2005 | F | 10/10/2005 |
| STRG | MARKS RD | 14961 | AERATION | 1/19/2005 | F | 8/29/2002 |
| STRG | MARKS RD | 15057 | AERATION | 4/12/2005 | F | 8/9/2004 |
| STRG | MARKS RD | 15153 | UNKNOWN | 10/11/2005 | F | 9/16/2005 |
| STRG | MARKS RD | 15209 | UNKNOWN | 7/14/2005 | F | 5/22/2002 |
| STRG | MARKS RD | 15247 | AERATION | 3/18/2005 | F | 5/30/2003 |
| STRG | MARKS RD | 15449 | AERATION | 3/18/2005 | F | 5/18/1998 |
| STRG | MARKS RD | 17607 | FILTER BED | 9/29/2005 | P | 4/11/1998 |
| STRG | MARKS RD | 18187 | FILTER BED | 9/13/2005 | F | 6/14/1995 |
| STRG | MARKS RD | 18719 | UNKNOWN | 11/7/2005 | F | 8/28/2003 |
| STRG | MARKS RD | 8133 | UNKNOWN | 8/3/2005 | F | 8/26/2005 |
| STRG | MARKS RD | 8445 | FILTER BED | 8/10/2005 | F | 6/29/2005 |
| STRG | MARKS RD | 8487 | UNKNOWN | 9/13/2005 | F | 11/3/2004 |
| STRG | MARKS RD | 8495 | UNKNOWN | 8/17/2005 | F | 6/16/2005 |
| STRG | MARKS RD | 9533 | UNKNOWN | 7/8/2005 | F | 1/23/1996 |
| STRG | MARKS RD | 9577 | UNKNOWN | 8/15/2005 | F | 6/20/2005 |
| STRG | PRIEM RD | 9307 | AERATION | 4/5/2005 | P | 12/13/2004 |
| STRG | PRIEM RD | 9531 | AERATION | 1/13/2005 | F | 7/8/1999 |
| STRG | PRIEM RD | 9617 | AERATION | 9/29/2005 | F | 7/13/2004 |
| STRG | PRIEM RD | 9665 | AERATION | 4/5/2005 | F | 2/16/1999 |
| STRG | PRIEM RD | 9897 | AERATION | 1/13/2005 | F | 2/23/2005 |
| STRG | PROSPECT RD | 19431 | AERATION | 11/15/2004 | F | 1/28/2002 |
| STRG | PROSPECT RD | 19558 | AERATION | 11/15/2004 | P | 8/14/2003 |
| STRG | PROSPECT RD | 19782 | AERATION | 11/15/2004 | P | 10/19/2001 |
| STRG | PROSPECT RD | 19783 | AERATION | 11/15/2004 | P | 9/27/2004 |
| STRG | ROYALTON RD | 21487 | UNKNOWN | 11/7/2005 | F | 12/5/2003 |
| STRG | ROYALTON RD | 22122 | AERATION | 5/31/2005 | F | 5/12/1998 |
| STRG | RUTH DR | 13429 | AERATION | 5/24/2004 | P | 3/27/2003 |
| STRG | RUTH DR | 13505 | AERATION | 5/24/2004 | F | 6/1/2003 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|------------|--------|------------|------------|-----|--------------|
| STRG | RUTH DR | 13512 | FILTER BED | 9/29/2004 | F | 4/1/2005 |
| STRG | RUTH DR | 13553 | FILTER BED | 10/18/2004 | F | 12/1/2003 |
| STRG | RUTH DR | 13633 | AERATION | 4/30/2004 | F | 4/1/2004 |
| STRG | W 130 ST | 10550 | AERATION | 12/9/2004 | F | 6/7/2005 |
| STRG | W 130 ST | 10590 | AERATION | 12/9/2004 | P | 10/5/2004 |
| STRG | W 130 ST | 10630 | AERATION | 12/9/2004 | P | 5/1/2004 |
| STRG | W 130 ST | 10638 | AERATION | 12/9/2004 | F | 12/22/2004 |
| STRG | W 130 ST | 10798 | AERATION | 4/21/2005 | P | 12/14/2004 |
| STRG | W 130 ST | 10882 | AERATION | 12/16/2004 | P | 3/17/2004 |
| STRG | W 130 ST | 10890 | AERATION | 12/16/2004 | P | 5/17/2000 |
| STRG | W 130 ST | 10932 | UNKNOWN | 6/2/2005 | F | 7/14/2003 |
| STRG | W 130 ST | 10976 | AERATION | 4/7/2005 | P | 7/19/2005 |
| STRG | W 130 ST | 11020 | AERATION | 12/16/2004 | P | 10/26/2001 |
| STRG | W 130 ST | 11024 | FILTER BED | 6/8/2005 | F | 6/5/2003 |
| STRG | W 130 ST | 11156 | AERATION | 12/16/2004 | F | 4/11/2001 |
| STRG | W 130 ST | 11252 | UNKNOWN | 5/24/2005 | F | 1/1/2004 |
| STRG | W 130 ST | 11342 | AERATION | 12/16/2004 | F | 3/17/2004 |
| STRG | W 130 ST | 11424 | FILTER BED | 7/25/2005 | F | 3/2/2002 |
| STRG | W 130 ST | 11702 | FILTER BED | 5/10/2005 | P | 12/17/2004 |
| STRG | W 130 ST | 12478 | UNKNOWN | 5/10/2005 | F | 11/15/2004 |
| STRG | W 130 ST | 12524 | AERATION | 9/29/2004 | P | 11/15/2004 |
| STRG | W 130 ST | 12570 | FILTER BED | 9/30/2004 | F | 6/1/2003 |
| STRG | W 130 ST | 12574 | UNKNOWN | 4/26/2005 | F | 5/23/2005 |
| STRG | W 130 ST | 12900 | AERATION | 9/28/2004 | F | 5/1/2004 |
| STRG | W 130 ST | 12906 | FILTER BED | 9/12/2005 | I | 6/11/2003 |
| STRG | W 130 ST | 12950 | AERATION | 10/28/2004 | P | 4/17/2002 |
| STRG | W 130 ST | 13140 | AERATION | 12/8/2004 | P | 6/18/1993 |
| STRG | W 130 ST | 13462 | UNKNOWN | 5/24/2005 | P | 10/18/2001 |
| STRG | W 130 ST | 14938 | AERATION | 12/8/2004 | P | 1/26/2005 |
| STRG | W 130 ST | 14982 | AERATION | 12/8/2004 | P | 1/25/2002 |
| STRG | W 130 ST | 15024 | AERATION | 12/8/2004 | | 4/28/2005 |
| STRG | W 130 ST | 15162 | AERATION | 12/8/2004 | P | 11/25/2002 |
| STRG | W 130 ST | 15202 | AERATION | 12/8/2004 | P | 6/27/2005 |
| STRG | W 130 ST | 15248 | AERATION | 12/8/2004 | P | 11/6/2000 |
| STRG | W 130 ST | 15290 | AERATION | 12/8/2004 | P | 9/24/2003 |
| STRG | W 130 ST | 15332 | AERATION | 12/8/2004 | P | 6/23/2005 |

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|------|-------------|--------|------------|------------|-----|--------------|
| STRG | W 130 ST | 15340 | AERATION | 12/8/2004 | P | 7/13/2000 |
| STRG | W 130 ST | 15384 | AERATION | 12/8/2004 | P | 8/18/1999 |
| STRG | W 130 ST | 15426 | AERATION | 12/8/2004 | P | 3/17/2004 |
| STRG | W 130 ST | 15600 | AERATION | 9/22/2005 | P | 9/8/1999 |
| STRG | W 130 ST | 15916 | FILTER BED | 11/17/2004 | P | 10/15/2004 |
| STRG | W 130 ST | 16048 | FILTER BED | 7/1/2005 | F | 5/28/2004 |
| STRG | W 130 ST | 16090 | AERATION | 11/29/2005 | P | 3/7/2000 |
| STRG | W 130 ST | 16582 | AERATION | 7/8/2005 | P | 4/17/2000 |
| STRG | W 130 ST | 16980 | FILTER BED | 8/10/2004 | F | 5/26/2005 |
| STRG | W 130 ST | 17158 | AERATION | 9/27/2005 | F | 2/1/2002 |
| STRG | W 130 ST | 17424 | AERATION | 9/1/2005 | P | 6/11/2001 |
| STRG | WEBSTER RD | 10033 | AERATION | 5/5/2005 | P | 6/30/2003 |
| STRG | WEBSTER RD | 10122 | AERATION | 9/12/2005 | F | 11/10/2004 |
| STRG | WEBSTER RD | 10164 | AERATION | 9/6/2005 | F | 4/11/2005 |
| STRG | WEBSTER RD | 10204 | AERATION | 9/6/2005 | F | 9/12/2003 |
| STRG | WEBSTER RD | 10205 | AERATION | 5/2/2005 | P | 3/17/2004 |
| STRG | WEBSTER RD | 10298 | AERATION | 4/1/2005 | P | 10/11/2000 |
| STRG | WEBSTER RD | 10342 | AERATION | 3/16/2005 | F | 6/1/2003 |
| STRG | WEBSTER RD | 10566 | AERATION | 4/21/2005 | P | 4/2/2004 |
| STRG | WEBSTER RD | 12243 | AERATION | 10/28/2004 | F | 9/15/2004 |
| STRG | WEBSTER RD | 12292 | AERATION | 6/29/2004 | F | 10/14/1997 |
| STRG | WEBSTER RD | 12436 | AERATION | 8/24/2004 | F | 10/1/2004 |
| STRG | WEBSTER RD | 12860 | AERATION | 9/22/2004 | P | 6/30/2005 |
| STRG | WEBSTER RD | 12903 | AERATION | 6/30/2004 | F | 9/19/2005 |
| STRG | WEBSTER RD | 12947 | AERATION | 6/30/2004 | F | 10/31/2003 |
| STRG | WEBSTER RD | 13229 | AERATION | 6/15/2004 | P | 3/10/2000 |
| STRG | WEBSTER RD | 13571 | AERATION | 5/2/2005 | P | 11/5/2001 |
| STRG | WESTWOOD DR | 21186 | FILTER BED | 5/17/2004 | P | 5/20/2004 |
| STRG | WESTWOOD DR | 21822 | FILTER BED | 8/15/2005 | F | 10/1/2000 |
| STRG | WESTWOOD DR | 22227 | AERATION | 10/20/2005 | F | 8/20/2003 |
| STRG | WILLOW LN | 21082 | AERATION | 9/30/2004 | F | 7/9/2003 |
| STRG | WILLOW LN | 21187 | FILTER BED | 11/7/2005 | F | 8/15/2004 |
| STRG | WILLOW LN | 21264 | AERATION | 9/30/2004 | F | 4/19/2002 |
| STRG | WILLOW LN | 21300 | AERATION | 9/30/2004 | F | 8/1/2003 |
| STRG | WILLOW LN | 21409 | AERATION | 10/27/2004 | F | 7/14/2003 |
| STRG | WILLOW LN | 21453 | FILTER BED | 5/10/2004 | P | 1/30/2004 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|--------------|--------|------------|------------|-----|--------------|
| SVHL | BROADVIEW RD | 6563 | UNKNOWN | 8/27/2004 | F | 1/23/2004 |
| SVHL | BROADVIEW RD | 6655 | UNKNOWN | 4/27/2005 | P | 3/29/2001 |
| SVHL | BROADVIEW RD | 7099 | FILTER BED | 10/6/2004 | F | 11/5/2001 |
| SVHL | BROADVIEW RD | 7143 | FILTER BED | 3/24/2005 | P | 3/14/2003 |
| SVHL | CHERRY LN | 1099 | AERATION | 11/28/2005 | P | 6/7/2003 |
| SVHL | CHERRY LN | 1915 | FILTER BED | 8/12/2004 | P | 8/15/2004 |
| SVHL | CHERRY LN | 1966 | FILTER BED | 8/26/2004 | F | 6/1/2001 |
| SVHL | CHERRY LN | 2053 | FILTER BED | 6/16/2004 | P | 7/14/2004 |
| SVHL | CHERRY LN | 291 | FILTER BED | 8/17/2004 | F | 4/28/2001 |
| SVHL | CHERRY LN | 369 | FILTER BED | 8/10/2004 | F | 7/15/2003 |
| SVHL | CHERRY LN | 623 | FILTER BED | 8/12/2004 | F | 6/6/2002 |
| SVHL | GLENELLA DR | 6882 | FILTER BED | 8/27/2004 | F | 3/1/2003 |
| SVHL | GLENELLA DR | 6901 | FILTER BED | 8/25/2004 | F | 7/21/2004 |
| SVHL | GLENELLA DR | 6902 | AERATION | 9/9/2004 | P | 5/28/2003 |
| SVHL | HILLSIDE RD | 1275 | LEACHFIELD | 9/24/2004 | F | 1/3/2004 |
| SVHL | HILLSIDE RD | 1363 | FILTER BED | 9/29/2004 | F | 8/30/2002 |
| SVHL | HILLSIDE RD | 1378 | AERATION | 11/28/2005 | P | 4/3/2003 |
| SVHL | HILLSIDE RD | 1418 | LEACHFIELD | 8/11/2004 | F | 8/16/2004 |
| SVHL | HILLSIDE RD | 1549 | AERATION | 10/13/2004 | P | 11/15/2004 |
| SVHL | HILLSIDE RD | 1556 | LEACHFIELD | 8/18/2004 | F | 6/5/2001 |
| SVHL | HILLSIDE RD | 162 | FILTER BED | 8/25/2004 | F | 10/15/2003 |
| SVHL | HILLSIDE RD | 1996 | UNKNOWN | 8/18/2005 | F | 8/22/2005 |
| SVHL | HILLSIDE RD | 2441 | AERATION | 11/28/2005 | F | 10/1/2001 |
| SVHL | HILLSIDE RD | 285 | UNKNOWN | 10/13/2004 | F | 10/1/2003 |
| SVHL | HILLSIDE RD | 351 | AERATION | 11/28/2005 | F | 2/22/2005 |
| SVHL | HILLSIDE RD | 665 | AERATION | 9/29/2004 | P | 10/16/1999 |
| SVHL | HILLSIDE RD | 755 | AERATION | 11/28/2005 | P | 10/16/1999 |
| SVHL | HILLSIDE RD | 810 | UNKNOWN | 9/29/2004 | F | 10/14/2002 |
| SVHL | HILLSIDE RD | 954 | FILTER BED | 9/16/2004 | F | 4/20/1999 |
| SVHL | HILLSIDE RD | 98 | AERATION | 11/16/2004 | P | 10/10/2005 |
| SVHL | MARY LN | 2693 | FILTER BED | 8/2/2005 | F | 3/1/2003 |
| SVHL | MARY LN | 2700 | FILTER BED | 2/22/2005 | P | 6/5/2003 |
| SVHL | NEMET DR | 1075 | FILTER BED | 9/14/2004 | F | 6/24/2004 |
| SVHL | NEMET DR | 1104 | FILTER BED | 8/22/2005 | P | 5/3/1999 |
| SVHL | NEMET DR | 1161 | FILTER BED | 8/31/2005 | F | 10/14/2004 |
| SVHL | NEMET DR | 1280 | FILTER BED | 6/15/2005 | P | 5/24/2004 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|-------------|--------|------------|------------|-----|--------------|
| SVHL | NEMET DR | 1293 | FILTER BED | 6/15/2005 | F | 4/12/2002 |
| SVHL | NEMET DR | 1324 | FILTER BED | 6/16/2005 | F | 7/11/2005 |
| SVHL | NEMET DR | 1337 | FILTER BED | 6/21/2005 | F | 4/15/2000 |
| SVHL | NEMET DR | 138 | AERATION | 9/9/2004 | P | 2/1/2004 |
| SVHL | NEMET DR | 1458 | FILTER BED | 6/24/2005 | P | 3/27/2001 |
| SVHL | NEMET DR | 1469 | FILTER BED | 9/23/2004 | F | 6/11/2001 |
| SVHL | NEMET DR | 1513 | AERATION | 9/9/2004 | P | 11/5/2004 |
| SVHL | NEMET DR | 1552 | FILTER BED | 7/11/2005 | F | 8/4/2003 |
| SVHL | NEMET DR | 1598 | FILTER BED | 7/13/2005 | P | 7/14/2003 |
| SVHL | NEMET DR | 1601 | FILTER BED | 7/18/2005 | F | 10/1/2003 |
| SVHL | NEMET DR | 1646 | UNKNOWN | 4/1/2005 | P | 6/1/2003 |
| SVHL | NEMET DR | 1692 | FILTER BED | 7/19/2005 | F | 3/28/2002 |
| SVHL | NEMET DR | 1738 | FILTER BED | 7/13/2005 | F | 8/1/2003 |
| SVHL | NEMET DR | 1741 | FILTER BED | 6/16/2005 | P | 9/6/2001 |
| SVHL | NEMET DR | 1786 | FILTER BED | 7/19/2005 | F | 6/1/2003 |
| SVHL | NEMET DR | 1787 | FILTER BED | 4/4/2005 | P | 10/19/2004 |
| SVHL | NEMET DR | 197 | FILTER BED | 12/8/2004 | F | 10/15/2004 |
| SVHL | NEMET DR | 241 | FILTER BED | 10/27/2004 | F | 4/2/2002 |
| SVHL | NEMET DR | 329 | FILTER BED | 10/17/2005 | F | 4/23/1991 |
| SVHL | NEMET DR | 402 | FILTER BED | 8/25/2004 | F | 4/2/1997 |
| SVHL | NEMET DR | 461 | FILTER BED | 8/2/2005 | F | 9/15/2004 |
| SVHL | NEMET DR | 490 | FILTER BED | 10/26/2004 | F | 1/25/2002 |
| SVHL | NEMET DR | 505 | FILTER BED | 8/29/2005 | F | 7/6/1999 |
| SVHL | NEMET DR | 593 | FILTER BED | 12/6/2004 | F | 10/26/2000 |
| SVHL | NEMET DR | 622 | FILTER BED | 11/2/2005 | F | 5/17/2005 |
| SVHL | NEMET DR | 681 | FILTER BED | 11/22/2004 | F | 11/15/2004 |
| SVHL | NEMET DR | 855 | FILTER BED | 11/24/2004 | F | 5/30/2002 |
| SVHL | NEMET DR | 909 | FILTER BED | 8/10/2005 | F | 10/15/2004 |
| SVHL | NEMET DR | 943 | FILTER BED | 8/2/2005 | F | 2/2/2002 |
| SVHL | NEMET DR | 972 | FILTER BED | 11/8/2004 | F | 2/26/2002 |
| SVHL | NEMET DR | 987 | FILTER BED | 11/9/2004 | F | 5/16/2005 |
| SVHL | OAK LN | 7136 | AERATION | 1/19/2005 | F | 7/1/1995 |
| SVHL | OAK LN | 7174 | AERATION | 10/28/2004 | P | 11/7/2001 |
| SVHL | OAK LN | 7186 | FILTER BED | 10/28/2004 | F | 8/3/2001 |
| SVHL | ROCKSIDE RD | 3983 | UNKNOWN | 11/24/2004 | F | 6/1/2005 |
| SVHL | S MARY LN | 2375 | FILTER BED | 9/27/2004 | F | 11/1/2002 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|----------------|--------|------------|------------|-----|--------------|
| SVHL | S MARY LN | 2449 | FILTER BED | 5/5/2005 | F | 9/10/2002 |
| SVHL | S MARY LN | 2450 | FILTER BED | 9/17/2004 | F | 5/11/2001 |
| SVHL | S MARY LN | 2600 | AERATION | 9/16/2004 | P | 8/22/2002 |
| SVHL | SEVEN HILLS BL | 7047 | FILTER BED | 4/4/2005 | P | 4/14/2003 |
| SVHL | SEVEN HILLS BL | 7055 | FILTER BED | 5/3/2005 | P | 7/30/2005 |
| SVHL | SEVEN HILLS BL | 7085 | AERATION | 1/19/2005 | P | 7/6/2005 |
| SVHL | SEVEN HILLS BL | 7095 | FILTER BED | 11/12/2004 | F | 3/31/2003 |
| SVHL | SEVEN HILLS BL | 7115 | FILTER BED | 11/12/2004 | F | 4/17/2001 |
| SVHL | SEVEN HILLS BL | 7193 | AERATION | 7/28/2004 | P | |
| SVHL | SHADY LANE DR | 2240 | UNKNOWN | 4/4/2005 | P | 4/21/2003 |
| SVHL | SHADY LANE DR | 2263 | FILTER BED | 10/27/2004 | F | 11/2/2004 |
| SVHL | SHADY LANE DR | 2364 | FILTER BED | 4/4/2005 | P | 10/10/2005 |
| SVHL | SHADY LANE DR | 3014 | AERATION | 10/26/2004 | P | 5/2/2005 |
| SVHL | SHADY LANE DR | 3050 | AERATION | 1/19/2005 | P | |
| SVHL | SKYVIEW DR | 131 | AERATION | 1/21/2005 | P | 11/9/2004 |
| SVHL | SKYVIEW DR | 132 | FILTER BED | 10/7/2004 | F | 2/12/2003 |
| SVHL | SKYVIEW DR | 165 | UNKNOWN | 12/10/2004 | F | 3/27/2003 |
| SVHL | SKYVIEW DR | 198 | AERATION | 1/19/2005 | P | 6/25/2003 |
| SVHL | SKYVIEW DR | 232 | FILTER BED | 1/21/2005 | P | 8/5/2004 |
| SVHL | SKYVIEW DR | 265 | FILTER BED | 12/16/2004 | F | 6/22/2004 |
| SVHL | SKYVIEW DR | 361 | FILTER BED | 12/7/2004 | F | 3/14/2003 |
| SVHL | SKYVIEW DR | 400 | AERATION | 1/19/2005 | P | 8/15/2005 |
| SVHL | SKYVIEW DR | 98 | FILTER BED | 11/16/2005 | P | 5/16/2003 |
| SVHL | SUMMITVIEW DR | 7279 | AERATION | 12/22/2004 | P | 12/8/2004 |
| SVHL | TWILIGHT DR | 1024 | FILTER BED | 12/22/2004 | P | 12/10/2004 |
| SVHL | TWILIGHT DR | 197 | FILTER BED | 12/10/2004 | F | 6/14/2004 |
| SVHL | TWILIGHT DR | 321 | FILTER BED | 4/18/2005 | F | 5/1/2005 |
| SVHL | TWILIGHT DR | 518 | FILTER BED | 12/15/2004 | F | 9/1/2003 |
| SVHL | TWILIGHT DR | 667 | FILTER BED | 11/16/2004 | F | 11/9/2000 |
| SVHL | TWILIGHT DR | 718 | UNKNOWN | 11/24/2004 | F | 10/18/2005 |
| SVHL | TWILIGHT DR | 791 | UNKNOWN | 11/22/2004 | F | 10/1/2003 |
| SVHL | TWILIGHT DR | 818 | FILTER BED | 11/22/2004 | F | 4/1/2003 |
| SVHL | TWILIGHT DR | 840 | FILTER BED | 6/7/2005 | F | 3/21/2001 |
| SVHL | TWILIGHT DR | 866 | FILTER BED | 6/24/2005 | F | 4/16/1999 |
| VALV | CANAL RD | 7051 | AERATION | 11/2/2005 | F | 4/1/2004 |
| VALV | CANAL RD | 7393 | UNKNOWN | 8/4/2004 | P | 7/29/2003 |

| CITY | STREET NAM | NUMBER | SECONDARY | ERT DATE | P/F | LAST CLEANED |
|------|---------------|--------|------------|------------|-----|--------------|
| VALV | CANAL RD | 7397 | AERATION | 4/6/2005 | P | 7/29/2003 |
| VALV | CANAL RD | 7449 | AERATION | 11/2/2005 | F | 6/1/2004 |
| VALV | CANAL RD | 7461 | AERATION | 11/2/2005 | P | 10/7/2004 |
| VALV | SWEET VALLEY | 10300 | FILTER BED | 4/19/2005 | F | 3/14/2005 |
| VALV | TINKERS CREEK | 11400 | AERATION | 11/3/2005 | F | 7/14/2004 |
| VALV | TINKERS CREEK | 11424 | LEACHFIELD | 6/7/2005 | P | 6/8/2005 |
| VALV | TINKERS CREEK | 11450 | AERATION | 11/3/2005 | F | 11/5/2003 |
| VALV | TINKERS CREEK | 11505 | AERATION | 11/3/2005 | P | 3/9/2005 |
| VALV | TINKERS CREEK | 11613 | AERATION | 11/3/2005 | P | 3/13/2002 |
| VALV | TINKERS CREEK | 11715 | AERATION | 6/1/2005 | P | 5/11/2004 |
| VALV | TINKERS CREEK | 11722 | LEACHFIELD | 4/19/2005 | P | 5/3/2005 |
| VALV | TINKERS CREEK | 11735 | UNKNOWN | 4/29/2005 | P | 5/3/2005 |
| VALV | TINKERS CREEK | 11746 | LEACHFIELD | 3/30/2005 | P | 10/15/2002 |
| VALV | TINKERS CREEK | 11751 | LEACHFIELD | 4/29/2005 | P | 7/10/2002 |
| VALV | TINKERS CREEK | 11977 | AERATION | 11/3/2005 | P | 6/8/2004 |
| VALV | TINKERS CREEK | 12240 | AERATION | 3/30/2005 | P | |
| VALV | TINKERS CREEK | 12445 | AERATION | 3/22/2005 | P | |
| VALV | TINKERS CREEK | 12460 | LEACHFIELD | 3/23/2005 | P | 10/14/2004 |
| VALV | TINKERS CREEK | 12501 | LEACHFIELD | 6/10/2005 | P | 5/9/2005 |
| VALV | TINKERS CREEK | 12551 | AERATION | 11/3/2005 | P | 8/1/2003 |
| VALV | TINKERS CREEK | 12655 | FILTER BED | 3/22/2005 | P | 8/15/2004 |
| VALV | TINKERS CREEK | 12823 | AERATION | 11/30/2005 | P | 11/18/2005 |
| VALV | TINKERS CREEK | 12855 | FILTER BED | 7/6/2004 | P | 8/27/2004 |
| VALV | TINKERS CREEK | 13002 | UNKNOWN | 3/22/2005 | P | 4/24/2003 |
| VALV | TINKERS CREEK | 13150 | AERATION | 11/17/2005 | P | 3/19/1997 |
| VALV | TINKERS CREEK | 13311 | LEACHFIELD | 4/1/2005 | P | 7/22/2004 |
| VALV | TINKERS CREEK | 13704 | UNKNOWN | 8/11/2004 | P | 4/13/2001 |
| VALV | TINKERS CREEK | 13901 | LEACHFIELD | 4/15/2004 | P | 8/12/2003 |
| VALV | TINKERS CREEK | 13906 | LEACHFIELD | 5/11/2005 | P | 9/14/2005 |
| WAHL | DUNHAM RD | 6975 | FILTER BED | 7/27/2004 | P | 9/28/1999 |
| WAHL | MCLELLAN | 7698 | UNKNOWN | 10/8/2004 | F | |
| WAHL | SAGAMORE RD | 16111 | FILTER BED | 4/8/2004 | P | 6/1/2005 |
| WAHL | SAGAMORE RD | 17115 | AERATION | 7/6/2004 | P | 9/15/2004 |
| WARH | AURORA RD | 21110 | UNKNOWN | 8/17/2005 | P | 9/5/2003 |
| WARH | AURORA RD | 21114 | UNKNOWN | 8/24/2005 | F | 6/5/2003 |
| WARH | AURORA RD | 21118 | UNKNOWN | 8/31/2005 | F | 9/5/2003 |

| CITY | STREET NAM | NUMBER | SECONDARY | CERT DATE | P/F | LAST CLEANED |
|-------------|-------------------|---------------|------------------|------------------|------------|---------------------|
| WARH | JENNINGS ST | 23317 | AERATION | 8/16/2004 | P | 6/1/2003 |
| WARH | SPRINGFIELD RD | 4897 | LEACHFIELD | 8/10/2004 | P | 8/26/2002 |

LEPF ASSESSMENTS

| CITY | STREET NAME | NUMBER | SECONDARY | ASS DTE | LAST CLEANED |
|------|------------------|--------|------------|------------|--------------|
| BDFD | COLUMBUS RD | 656 | AERATION | 1/31/2005 | 7/12/1995 |
| BKPK | SHELDON RD | 18696 | FILTER BED | 7/15/2004 | 3/30/2005 |
| BNVL | CANNON RD | 35054 | FILTER BED | 11/15/2005 | 6/13/2002 |
| BNVL | CANNON RD | 35072 | UNKNOWN | 11/15/2005 | 5/18/2004 |
| BNVL | CANNON RD | 35080 | FILTER BED | 11/15/2005 | 7/14/2005 |
| BNVL | CANNON RD | 35088 | UNKNOWN | 11/15/2005 | 7/22/2005 |
| BNVL | CANNON RD | 35122 | FILTER BED | 11/29/2005 | 4/30/2002 |
| BNVL | CHAGRIN RIVER RD | 6105 | UNKNOWN | 5/26/2004 | 11/22/2004 |
| BNVL | CHAGRIN RIVER RD | 6115 | AERATION | 4/13/2004 | |
| BNVL | CHAGRIN RIVER RD | 6123 | AERATION | 4/13/2004 | 3/10/2004 |
| BNVL | OVERLOOK RD | 10 | FILTER BED | 11/29/2005 | 8/24/2004 |
| BNVL | OVERLOOK RD | 11 | FILTER BED | 11/29/2005 | 10/30/2003 |
| BNVL | OVERLOOK RD | 12 | FILTER BED | 11/29/2005 | 5/12/2005 |
| BNVL | PINE RIVER DR | 35 | LEACHFIELD | 4/14/2005 | 2/11/2005 |
| BNVL | OLON RD | 35954 | AERATION | 8/24/2005 | 6/11/2002 |
| BRCK | BARR RD | 10115 | FILTER BED | 3/7/2005 | 7/29/2005 |
| BRCK | BARR RD | 10124 | FILTER BED | 3/7/2005 | 6/30/2005 |
| BRCK | BARR RD | 10143 | FILTER BED | 3/7/2005 | 12/27/2002 |
| BRCK | BARR RD | 10144 | UNKNOWN | 3/7/2005 | 9/4/1998 |
| BRCK | BARR RD | 10174 | FILTER BED | 3/7/2005 | 7/19/2001 |
| BRCK | BARR RD | 10193 | FILTER BED | 8/10/2005 | 3/23/2002 |
| BRCK | BARR RD | 10221 | FILTER BED | 8/10/2005 | 12/14/2004 |
| BRCK | BARR RD | 10233 | FILTER BED | 3/7/2005 | 4/22/2002 |
| BRCK | BARR RD | 10240 | FILTER BED | 3/7/2005 | 7/15/2004 |
| BRCK | BARR RD | 10247 | FILTER BED | 8/10/2005 | 3/7/2003 |
| BRCK | BARR RD | 10257 | FILTER BED | 8/10/2005 | 7/20/2004 |
| BRCK | BARR RD | 10340 | FILTER BED | 8/10/2005 | 7/6/2004 |
| BRCK | BARR RD | 10400 | FILTER BED | 8/10/2005 | 7/16/2001 |
| BRCK | BARR RD | 9435 | FILTER BED | 1/26/2005 | 4/7/2003 |
| BRCK | BARR RD | 9603 | FILTER BED | 1/26/2005 | 6/11/2004 |
| BRCK | BARR RD | 9651 | FILTER BED | 1/26/2005 | 12/31/2002 |
| BRCK | BARR RD | 9667 | LEACHFIELD | 1/26/2005 | 6/1/2003 |
| BRCK | BARR RD | 9713 | FILTER BED | 1/26/2005 | 5/1/2003 |
| BRCK | BARR RD | 9721 | FILTER BED | 1/26/2005 | 9/2/2003 |

| <u>CITY</u> | <u>STREET NAME</u> | <u>NUMBER</u> | <u>SECONDARY</u> | <u>ASS DTE</u> | <u>LAST CLEANED</u> |
|-------------|--------------------|---------------|------------------|----------------|---------------------|
| BRCK | BARR RD | 9729 | FILTER BED | 1/26/2005 | 3/28/2001 |
| BRCK | BARR RD | 9739 | AERATION | 1/26/2005 | 10/11/2004 |
| BRCK | BARR RD | 9846 | FILTER BED | 5/17/2005 | 5/29/1999 |
| BRCK | BARR RD | 9862 | UNKNOWN | 5/17/2005 | 8/13/2001 |
| BRCK | BARR RD | 9878 | FILTER BED | 5/17/2005 | 4/1/2001 |
| BRCK | BARR RD | 9906 | FILTER BED | 5/17/2005 | 8/19/2002 |
| BRCK | BARR RD | 9934 | FILTER BED | 5/17/2005 | 4/18/2000 |
| BRCK | CALVIN DR | 12157 | FILTER BED | 5/23/2005 | 6/24/2005 |
| BRCK | CALVIN DR | 12200 | FILTER BED | 5/23/2005 | 10/23/2000 |
| BRCK | CALVIN DR | 12207 | FILTER BED | 5/23/2005 | 4/23/2002 |
| BRCK | CALVIN DR | 12222 | FILTER BED | 5/23/2005 | 1/1/2004 |
| BRCK | CALVIN DR | 12257 | FILTER BED | 5/23/2005 | 6/14/2005 |
| BRCK | CALVIN DR | 12264 | FILTER BED | 5/31/2005 | 7/14/2003 |
| BRCK | CALVIN DR | 12407 | UNKNOWN | 7/6/2005 | 8/1/2003 |
| BRCK | CALVIN DR | 12421 | FILTER BED | 7/6/2005 | 11/5/2005 |
| BRCK | CALVIN DR | 12435 | UNKNOWN | 7/6/2005 | 4/10/2003 |
| BRCK | CALVIN DR | 12440 | FILTER BED | 7/6/2005 | 10/11/2004 |
| BRCK | CALVIN DR | 12452 | AERATION | 7/6/2005 | 7/28/2005 |
| BRCK | DEERFIELD LN | 10014 | AERATION | 5/17/2005 | 4/15/2004 |
| BRCK | DEERFIELD LN | 10037 | AERATION | 5/17/2005 | 12/16/2004 |
| BRCK | DEWEY RD | 10408 | FILTER BED | 6/13/2005 | 11/1/2002 |
| BRCK | ECHO HILL DR | 10178 | FILTER BED | 9/14/2004 | 7/14/2004 |
| BRCK | HIGHLAND DR | 9662 | UNKNOWN | 7/27/2005 | 3/27/2001 |
| BRCK | PARKVIEW RD | 11510 | FILTER BED | 8/22/2005 | 6/14/2004 |
| BRCK | PARKVIEW RD | 11838 | FILTER BED | 8/22/2005 | 6/15/2004 |
| BRCK | PARKVIEW RD | 12112 | UNKNOWN | 8/22/2005 | 6/23/2001 |
| BRCK | PARKVIEW RD | 12124 | FILTER BED | 8/22/2005 | 6/24/1999 |
| BRCK | SNOWVILLE RD | 11034 | UNKNOWN | 2/7/2005 | 5/21/2001 |
| BRCK | SNOWVILLE RD | 11310 | FILTER BED | 9/24/2004 | 7/20/2005 |
| BRCK | SNOWVILLE RD | 8704 | UNKNOWN | 2/9/2005 | 12/1/2003 |
| BRNL | COIT RD | 12415 | AERATION | 7/27/2005 | 8/7/2002 |
| BVHT | E WALLINGS RD | 4921 | FILTER BED | 9/8/2005 | 3/26/1999 |
| BVHT | HARRIS RD | 4310 | UNKNOWN | 9/27/2004 | 10/8/1997 |
| BVHT | SKYLINE DR | 7929 | FILTER BED | 5/13/2005 | 4/9/2001 |
| BVHT | SKYLINE DR | 7950 | FILTER BED | 5/13/2005 | 7/14/2005 |
| BVHT | SKYLINE DR | 7951 | FILTER BED | 5/13/2005 | 5/18/2001 |

| CITY | STREET NAME | NUMBER | SECONDARY | ASS DTE | LAST CLEANED |
|-------------|--------------------|---------------|------------------|----------------|---------------------|
| BVHT | SKYLINE DR | 7962 | UNKNOWN | 5/13/2005 | 4/25/2005 |
| BVHT | SKYLINE DR | 7971 | UNKNOWN | 5/13/2005 | 6/1/2005 |
| BVHT | SKYLINE DR | 7990 | FILTER BED | 5/3/2005 | 8/10/1998 |
| BVHT | SKYLINE DR | 7995 | UNKNOWN | 5/11/2005 | 4/1/2003 |
| BVHT | SKYLINE DR | 7998 | FILTER BED | 5/11/2005 | 6/2/2004 |
| BVHT | SKYLINE DR | 8005 | FILTER BED | 5/11/2005 | 9/20/2004 |
| BVHT | SKYLINE DR | 8008 | UNKNOWN | 5/11/2005 | 4/28/2004 |
| BVHT | W SPRAGUE RD | 2243 | UNKNOWN | 9/2/2005 | 2/24/1999 |
| EUCL | LAKE SHORE BLVD | 24555 | FILTER BED | 5/11/2005 | 4/13/2001 |
| GARH | E 94 ST | 5480 | UNKNOWN | 2/18/2005 | 12/30/2003 |
| GARH | E 96 ST | 5510 | UNKNOWN | 2/18/2005 | 8/31/2001 |
| GARH | MOUNTVIEW AVE | 10512 | UNKNOWN | 2/18/2005 | 7/16/2004 |
| GARH | MOUNTVIEW AVE | 10520 | AERATION | 2/18/2005 | 3/26/1999 |
| GARH | MOUNTVIEW AVE | 10612 | UNKNOWN | 2/18/2005 | 8/12/1999 |
| GARH | OVERLOOK RD | 4921 | UNKNOWN | 2/18/2005 | 11/9/2002 |
| GMIL | BATTLES RD | 506 | UNKNOWN | 9/27/2004 | 7/9/2004 |
| GMIL | BATTLES RD | 510 | UNKNOWN | 9/27/2004 | 7/3/2003 |
| GMIL | BATTLES RD | 540 | UNKNOWN | 9/27/2004 | 7/30/2004 |
| GMIL | BATTLES RD | 550 | FILTER BED | 11/9/2004 | 6/27/2002 |
| GMIL | BATTLES RD | 599 | UNKNOWN | 9/27/2004 | 4/1/1989 |
| GMIL | BATTLES RD | 600 | FILTER BED | 11/9/2004 | 10/1/2004 |
| GMIL | BATTLES RD | 7800 | UNKNOWN | 9/27/2004 | 11/8/2004 |
| GMIL | BATTLES RD | 7860 | UNKNOWN | 9/27/2004 | 6/14/2001 |
| GMIL | BATTLES RD | 7880 | FILTER BED | 9/27/2004 | 7/10/2003 |
| GMIL | BATTLES RD | 7910 | AERATION | 11/29/2004 | 7/27/2001 |
| GMIL | BERKSHIRE RD | 1602 | FILTER BED | 4/27/2005 | 3/20/2003 |
| GMIL | BERKSHIRE RD | 1608 | UNKNOWN | 9/29/2004 | 4/29/2003 |
| GMIL | BERKSHIRE RD | 1632 | AERATION | 8/30/2004 | 6/15/2004 |
| GMIL | BERKSHIRE RD | 1638 | AERATION | 9/29/2004 | 5/9/2005 |
| GMIL | BERKSHIRE RD | 1690 | UNKNOWN | 9/29/2004 | 9/10/2000 |
| GMIL | BERKSHIRE RD | 1949 | UNKNOWN | 9/29/2004 | 11/9/2004 |
| GMIL | BRIGHAM RD | 7803 | FILTER BED | 6/11/2004 | 11/2/2004 |
| GMIL | CARDINAL LN | 1430 | FILTER BED | 10/29/2004 | 2/20/2004 |
| GMIL | CHELSEA LN | 7500 | FILTER BED | 5/13/2005 | 5/26/2005 |
| GMIL | CHESTNUT RUN | 999 | FILTER BED | 5/26/2004 | 12/4/2000 |
| GMIL | DORCHESTER RD | 34249 | FILTER BED | 6/21/2005 | 9/28/2004 |

| CITY | STREET NAME | NUMBER | SECONDARY | ASS DTE | LAST CLEANED |
|-------------|--------------------|---------------|------------------|----------------|---------------------|
| GMIL | DORCHESTER RD | 36799 | FILTER BED | 6/13/2005 | 8/10/2001 |
| GMIL | GATES MILLS BLVD | 6699 | AERATION | 4/5/2004 | 7/3/2002 |
| GMIL | GATES MILLS BLVD | 6728 | FILTER BED | 10/29/2004 | 8/3/2005 |
| GMIL | GATES MILLS BLVD | 6733 | FILTER BED | 10/29/2004 | 6/26/1998 |
| GMIL | GATES MILLS BLVD | 6825 | FILTER BED | 10/29/2004 | 6/19/2003 |
| GMIL | GATES MILLS ESTA | 7879 | UNKNOWN | 8/9/2005 | 10/20/1999 |
| GMIL | GATES MILLS ESTA | 7940 | LEACHFIELD | 9/17/2004 | 9/13/2004 |
| GMIL | GATES RD | 6936 | UNKNOWN | 11/9/2004 | 6/19/2002 |
| GMIL | GATES RD | 6979 | AERATION | 6/2/2004 | 5/15/2002 |
| GMIL | GATES RD | 7099 | AERATION | 6/17/2004 | 9/17/2003 |
| GMIL | HAWTHORNE FAR | 440 | AERATION | 11/3/2004 | 11/1/2004 |
| GMIL | HILLCREEK LN | 7101 | FILTER BED | 11/10/2004 | 8/25/2004 |
| GMIL | OLD MILL RD | 7790 | FILTER BED | 10/22/2004 | 6/25/2003 |
| GMIL | OLD MILL RD | 7815 | FILTER BED | 10/22/2004 | 12/3/2001 |
| GMIL | OLD MILL RD | 7905 | FILTER BED | 11/3/2004 | 5/3/2004 |
| GMIL | OLD MILL RD | 7960 | UNKNOWN | 10/22/2004 | 5/15/2000 |
| GMIL | RIVERVIEW RD | 433 | UNKNOWN | 5/13/2005 | 6/14/2005 |
| GMIL | RIVERVIEW RD | 464 | AERATION | 3/18/2005 | 4/4/2005 |
| GMIL | ROBINWOOD LN | 7122 | AERATION | 4/11/2005 | 4/11/2000 |
| GMIL | ROBINWOOD LN | 7142 | FILTER BED | 4/11/2005 | 10/5/1999 |
| GMIL | ROBINWOOD LN | 7200 | AERATION | 4/11/2005 | 5/28/2003 |
| GMIL | SADDLEBACK LN | 7464 | FILTER BED | 11/24/2004 | 5/15/2003 |
| GMIL | SADDLEBACK LN | 7479 | FILTER BED | 9/28/2004 | 4/16/2003 |
| GMIL | SADDLEBACK LN | 7589 | FILTER BED | 11/24/2004 | 12/10/2002 |
| GMIL | SUGAR BUSH LN | 7830 | AERATION | 5/26/2004 | 10/19/2005 |
| GMIL | TIMBERIDGE TRL | 381 | FILTER BED | 11/24/2004 | 6/11/2002 |
| GMIL | TIMBERIDGE TRL | 397 | FILTER BED | 11/24/2004 | 6/3/2002 |
| GMIL | TIMBERIDGE TRL | 429 | FILTER BED | 3/21/2005 | 6/16/1999 |
| GMIL | TIMBERIDGE TRL | 437 | FILTER BED | 9/28/2004 | 6/11/2002 |
| GMIL | TIMBERIDGE TRL | 445 | FILTER BED | 11/24/2004 | 11/3/2003 |
| GMIL | TIMBERIDGE TRL | 450 | AERATION | 2/7/2005 | 10/5/2004 |
| GMIL | TIMBERIDGE TRL | 469 | FILTER BED | 11/24/2004 | 4/7/2004 |
| GMIL | WEST HILL DR | 1020 | FILTER BED | 11/10/2004 | 4/2/1992 |
| GMIL | WEST HILL DR | 1199 | UNKNOWN | 9/29/2004 | 9/27/2004 |
| GMIL | WEST HILL DR | 1200 | FILTER BED | 11/10/2004 | 11/1/2004 |
| GMIL | WEST HILL DR | 1249 | UNKNOWN | 9/29/2004 | 12/6/2004 |

| CITY | STREET NAME | NUMBER | SECONDARY | ASS DTE | LAST CLEANED |
|-------------|--------------------|---------------|------------------|----------------|---------------------|
| GMIL | WOODSTOCK RD | 1790 | AERATION | 3/18/2004 | 2/1/1993 |
| HUNV | WHISPERWOOD LN | 4 | FILTER BED | 8/18/2005 | 7/11/2005 |
| INDP | ASTER DR | 5912 | UNKNOWN | 4/26/2005 | |
| MAYH | CEDAR RD | 31155 | AERATION | 11/15/2005 | 10/31/2000 |
| MAYH | CEDAR RD | 31203 | FILTER BED | 11/15/2005 | 12/9/2002 |
| MAYH | CEDAR RD | 31691 | FILTER BED | 11/15/2005 | 3/10/2005 |
| MAYH | CEDAR RD | 32199 | FILTER BED | 11/15/2005 | 7/26/2004 |
| MAYH | CEDAR RD | 33065 | FILTER BED | 8/18/2004 | 6/15/2001 |
| MAYH | GATES MILLS BLVD | 6389 | FILTER BED | 5/10/2005 | 7/1/2005 |
| MAYH | GATES MILLS BLVD | 6425 | FILTER BED | 11/15/2005 | 5/31/1989 |
| MAYV | EASTGATE DR | 6736 | AERATION | 11/16/2005 | 1/7/2005 |
| MAYV | ECHO DR | 660 | AERATION | 4/18/2005 | 6/1/2004 |
| MAYV | ECHO DR | 668 | AERATION | 4/18/2005 | 5/1/2003 |
| MAYV | ECHO DR | 675 | AERATION | 4/18/2005 | 7/1/2004 |
| MAYV | MEADOWOOD DR | 657 | UNKNOWN | 7/14/2004 | 8/9/1993 |
| MAYV | N AINTREE PARK | 891 | UNKNOWN | 11/4/2005 | 10/13/2004 |
| MAYV | RAVINE DR | 6919 | UNKNOWN | 8/2/2004 | 4/17/2004 |
| MAYV | ROBLEY LN | 657 | AERATION | 11/21/2005 | 4/14/2003 |
| MAYV | ROBLEY LN | 670 | UNKNOWN | 8/10/2004 | 9/23/2004 |
| MAYV | ROBLEY LN | 681 | UNKNOWN | 7/20/2004 | 7/2/2003 |
| MAYV | ROBLEY LN | 686 | UNKNOWN | 7/20/2004 | 6/23/2003 |
| MAYV | ROBLEY LN | 694 | AERATION | 11/21/2005 | 12/3/2002 |
| MAYV | THORNAPPLE DR | 6684 | FILTER BED | 11/9/2005 | 5/21/2003 |
| MAYV | THORNAPPLE DR | 6747 | AERATION | 11/21/2005 | 3/18/2004 |
| MAYV | THORNAPPLE DR | 6750 | FILTER BED | 9/2/2005 | 5/6/2003 |
| MAYV | WHITE RD | 6438 | UNKNOWN | 9/2/2005 | 6/1/2005 |
| MAYV | WILSON MILLS RD | 6858 | AERATION | 11/4/2005 | 3/5/2002 |
| MAYV | WILSON MILLS RD | 6917 | AERATION | 11/16/2005 | 9/15/2004 |
| MAYV | WILSON MILLS RD | 6933 | FILTER BED | 4/29/2005 | 5/8/2002 |
| MAYV | WILSON MILLS RD | 6941 | FILTER BED | 4/29/2005 | 10/18/2004 |
| MAYV | WILSON MILLS RD | 6979 | AERATION | 11/16/2005 | 3/11/2004 |
| MAYV | WILSON MILLS RD | 7045 | AERATION | 11/16/2005 | 7/1/2003 |
| MAYV | WILSON MILLS RD | 7075 | UNKNOWN | 4/29/2005 | 10/17/2005 |
| MAYV | ZORN LN | 509 | AERATION | 11/21/2005 | 8/5/2002 |
| MAYV | ZORN LN | 552 | FILTER BED | 6/2/2004 | 10/19/2004 |
| MIDH | BIG CREEK PKY | 6705 | FILTER BED | 8/11/2004 | 8/1/2003 |

| CITY | STREET NAME | NUMBER | SECONDARY | ASS DTE | LAST CLEANED |
|-------------|--------------------|---------------|------------------|----------------|---------------------|
| MOHL | ASPENWOOD DR | 135 | AERATION | 2/12/2004 | 7/23/2004 |
| MOHL | ASPENWOOD DR | 145 | AERATION | 2/12/2004 | 6/6/2005 |
| MOHL | BENTLEYVILLE RD | 299 | AERATION | 2/9/2004 | 5/9/2000 |
| MOHL | BENTLEYVILLE RD | 338 | AERATION | 2/19/2004 | 7/29/2002 |
| MOHL | BENTLEYVILLE RD | 418 | AERATION | 2/19/2004 | 3/19/2004 |
| MOHL | BERKELEY AVE | 38209 | AERATION | 2/24/2004 | 6/10/2004 |
| MOHL | CANYON RD | 185 | AERATION | 2/24/2004 | 4/3/2003 |
| MOHL | CANYON RD | 190 | AERATION | 2/24/2004 | 8/15/2002 |
| MOHL | CHAGRIN BLVD | 35320 | AERATION | 3/2/2004 | 8/1/2005 |
| MOHL | DEEPWOOD DR | 6075 | AERATION | 3/8/2004 | 7/2/2005 |
| MOHL | ELLENDALE RD | 3890 | AERATION | 2/24/2004 | 8/23/2005 |
| MOHL | ELLENDALE RD | 4026 | AERATION | 3/5/2004 | 11/9/2004 |
| MOHL | FARMCOTE DR | 40 | AERATION | 3/8/2004 | 6/23/1987 |
| MOHL | FARMCOTE DR | 60 | AERATION | 3/8/2004 | 6/14/2005 |
| MOHL | FOX GLEN RD | 50 | AERATION | 3/8/2004 | 7/24/2002 |
| MOHL | GILES RD | 4093 | AERATION | 3/8/2004 | 2/17/1999 |
| MOHL | GILES RD | 4198 | AERATION | 3/23/2004 | 7/8/2005 |
| MOHL | GILES RD | 4265 | AERATION | 3/23/2004 | 2/11/2004 |
| MOHL | HEMLOCK LN | 25 | AERATION | 3/29/2004 | 7/10/2001 |
| MOHL | HIRAM TRL | 32170 | AERATION | 2/19/2004 | 6/3/2002 |
| MOHL | HUNTING TRL | 95 | AERATION | 2/28/2005 | 11/24/2004 |
| MOHL | MEADOWOOD LN | 242 | FILTER BED | 6/30/2005 | 11/1/1988 |
| MOHL | MURWOOD DR | 125 | AERATION | 4/29/2005 | 4/1/2005 |
| MOHL | OLD PLANK LN | 41 | AERATION | 5/11/2004 | 4/29/2002 |
| MOHL | STERNCREST DR | 90 | FILTER BED | 2/8/2005 | 2/10/2005 |
| MOHL | WILTSHIRE RD | 3812 | FILTER BED | 11/8/2005 | 9/3/2004 |
| MOHL | WILTSHIRE RD | 3951 | AERATION | 8/16/2005 | 8/29/2002 |
| NROY | AKINS RD | 11713 | AERATION | 1/21/2005 | 12/18/2001 |
| NROY | AKINS RD | 11725 | UNKNOWN | 3/1/2005 | 12/6/2003 |
| NROY | AKINS RD | 3448 | LEACHFIELD | 8/8/2005 | 10/18/1994 |
| NROY | AKINS RD | 3450 | FILTER BED | 8/8/2005 | 9/25/2001 |
| NROY | AKINS RD | 3479 | AERATION | 8/8/2005 | 6/26/2000 |
| NROY | AKINS RD | 3554 | FILTER BED | 8/8/2005 | 5/1/2003 |
| NROY | AKINS RD | 3566 | FILTER BED | 8/8/2005 | 5/8/2003 |
| NROY | AKINS RD | 3778 | UNKNOWN | 8/8/2005 | 5/27/2001 |
| NROY | BENNETT RD | 17325 | FILTER BED | 3/1/2005 | 8/5/2002 |

| CITY | STREET NAME | NUMBER | SECONDARY | ASS DTE | LAST CLEANED |
|-------------|--------------------|---------------|------------------|----------------|---------------------|
| NROY | BENNETT RD | 17337 | FILTER BED | 3/1/2005 | 9/26/2003 |
| NROY | BENNETT RD | 17349 | FILTER BED | 3/1/2005 | 11/30/2001 |
| NROY | BENNETT RD | 17358 | UNKNOWN | 3/8/2005 | 4/1/2001 |
| NROY | BENNETT RD | 17366 | FILTER BED | 3/1/2005 | 7/14/2005 |
| NROY | BENNETT RD | 18066 | AERATION | 1/18/2005 | 11/1/2001 |
| NROY | BENNETT RD | 18533 | AERATION | 1/18/2005 | 1/28/2005 |
| NROY | BENNETT RD | 18545 | AERATION | 1/18/2005 | 10/16/2001 |
| NROY | CADY RD | 7426 | FILTER BED | 11/21/2005 | 3/17/2005 |
| NROY | EDGERTON RD | 3409 | FILTER BED | 7/30/2004 | 7/27/2004 |
| NROY | EDGERTON RD | 3448 | FILTER BED | 7/22/2004 | 4/30/1984 |
| NROY | STATE RD | 16766 | FILTER BED | 7/22/2005 | 2/9/2004 |
| OLMF | INLAND DR | 7596 | FILTER BED | 2/16/2005 | 6/12/2003 |
| OLMF | NOBOTTOM RD | 24699 | UNKNOWN | 11/10/2004 | 9/27/2000 |
| OLMT | BARRETT RD | 24555 | FILTER BED | 10/14/2005 | 10/2/2003 |
| OLMT | BARTON RD | 7249 | UNKNOWN | 7/9/2004 | 4/4/2001 |
| OLMT | BRONSON RD | 7825 | AERATION | 8/18/2005 | 11/15/2001 |
| OLMT | COOK RD | 26878 | UNKNOWN | 6/17/2004 | 2/23/2000 |
| OLMT | COOK RD | 26886 | UNKNOWN | 6/17/2004 | 10/15/2004 |
| OLMT | COOK RD | 26887 | UNKNOWN | 6/16/2004 | 3/31/2004 |
| OLMT | FERNHALL RD | 25915 | FILTER BED | 3/31/2005 | 4/15/1999 |
| OLMT | FERNHALL RD | 25916 | FILTER BED | 3/31/2005 | 2/24/2004 |
| OLMT | FITCH RD | 6283 | LEACHFIELD | 3/17/2005 | 5/13/2003 |
| OLMT | FITCH RD | 6347 | LEACHFIELD | 3/31/2005 | 3/10/2004 |
| OLMT | FITCH RD | 6379 | FILTER BED | 2/10/2005 | 8/30/2004 |
| OLMT | FITCH RD | 6684 | FILTER BED | 6/7/2005 | 3/27/2003 |
| OLMT | FITCH RD | 6961 | UNKNOWN | 3/23/2005 | 10/30/2002 |
| OLMT | FITCH RD | 6965 | UNKNOWN | 3/23/2005 | 4/12/1999 |
| OLMT | FITCH RD | 7161 | FILTER BED | 2/10/2005 | |
| OLMT | FITCH RD | 7295 | FILTER BED | 2/10/2005 | 4/28/2003 |
| OLMT | FITCH RD | 8103 | UNKNOWN | 4/4/2005 | 4/16/2001 |
| OLMT | JOHN RD | 25802 | UNKNOWN | 4/16/2005 | 8/30/2004 |
| OLMT | JOHN RD | 26789 | FILTER BED | 4/4/2005 | 2/28/2005 |
| OLMT | LEWIS RD | 7582 | AERATION | 9/13/2005 | 5/3/2004 |
| OLMT | STEARNS RD | 7447 | UNKNOWN | 7/28/2005 | 8/31/2004 |
| OLMT | STEARNS RD | 7553 | FILTER BED | 6/24/2005 | 9/23/2004 |
| OLMT | STEARNS RD | 7626 | FILTER BED | 6/16/2005 | 8/18/2004 |

| CITY | STREET NAME | NUMBER | SECONDARY | ASS DTE | LAST CLEANED |
|-------------|--------------------|---------------|------------------|----------------|---------------------|
| OLMT | STEARNS RD | 7698 | FILTER BED | 6/8/2005 | 9/13/2004 |
| OLMT | STEARNS RD | 7806 | UNKNOWN | 7/18/2005 | 8/31/1984 |
| ORNG | BRAINARD RD | 3959 | UNKNOWN | 8/2/2005 | 4/22/2004 |
| ORNG | E WOODCREST RD | 4910 | UNKNOWN | 5/3/2005 | 3/7/2002 |
| ORNG | E WOODCREST RD | 4939 | UNKNOWN | 5/3/2005 | 5/7/1999 |
| ORNG | FAIRVIEW RD | 31299 | AERATION | 3/23/2005 | 6/3/2003 |
| ORNG | FAIRVIEW RD | 31600 | AERATION | 3/23/2005 | 3/19/2003 |
| ORNG | HARVARD RD | 27349 | UNKNOWN | 4/19/2005 | 3/24/1997 |
| ORNG | HARVARD RD | 28699 | AERATION | 6/6/2005 | 5/27/2005 |
| ORNG | HIDDEN VALLEY D | 28599 | AERATION | 5/3/2004 | 12/3/2001 |
| ORNG | HIDDEN VALLEY D | 29199 | AERATION | 4/13/2005 | 12/15/2004 |
| ORNG | HIDDEN VALLEY D | 29260 | AERATION | 4/13/2005 | 7/21/2004 |
| ORNG | LANDER RD | 4480 | UNKNOWN | 7/12/2004 | 5/16/2001 |
| ORNG | LANDER RD | 4879 | FILTER BED | 4/8/2004 | 4/20/2004 |
| ORNG | ORANGEDALE RD | 4279 | AERATION | 4/9/2004 | 10/17/2005 |
| ORNG | W WOODCREST RD | 4969 | AERATION | 5/3/2005 | 9/3/2004 |
| ORNG | W WOODCREST RD | 4970 | AERATION | 5/3/2005 | 12/31/2002 |
| ORNG | WALNUT HILLS RD | 3729 | FILTER BED | 6/15/2005 | 12/1/2003 |
| ORNG | WOODCREST RD | 31100 | LEACHFIELD | 5/12/2005 | 6/30/2005 |
| ORNG | WOODCREST RD | 31500 | UNKNOWN | 5/3/2005 | 5/31/2005 |
| PPKE | ALVORD PL | 2899 | FILTER BED | 6/29/2004 | 10/15/2002 |
| PPKE | BELCOURT RD | 27849 | FILTER BED | 1/10/2005 | 7/17/2003 |
| PPKE | BELCOURT RD | 28109 | FILTER BED | 8/9/2004 | 6/1/2004 |
| PPKE | BELCOURT RD | 28129 | AERATION | 4/5/2005 | 6/17/2005 |
| PPKE | BELCOURT RD | 28149 | FILTER BED | 8/12/2004 | 6/1/2005 |
| PPKE | BELCOURT RD | 28189 | AERATION | 8/12/2004 | 7/24/2002 |
| PPKE | BELCOURT RD | 28249 | AERATION | 8/19/2004 | 5/13/2005 |
| PPKE | BELCOURT RD | 28325 | FILTER BED | 8/23/2004 | 9/2/2005 |
| PPKE | BELCOURT RD | 28375 | AERATION | 8/23/2004 | 10/14/2005 |
| PPKE | BELCOURT RD | 28450 | FILTER BED | 1/10/2005 | 8/12/2004 |
| PPKE | BELCOURT RD | 28500 | FILTER BED | 1/10/2005 | 7/16/2004 |
| PPKE | BELGRAVE RD | 27299 | UNKNOWN | 10/18/2005 | |
| PPKE | BELGRAVE RD | 2737 | FILTER BED | 1/11/2005 | 11/1/2003 |
| PPKE | BELGRAVE RD | 2750 | FILTER BED | 8/25/2004 | 4/30/2003 |
| PPKE | BELGRAVE RD | 2779 | AERATION | 8/26/2004 | 6/20/2005 |
| PPKE | BELGRAVE RD | 2781 | FILTER BED | 8/26/2004 | 10/8/2003 |

| CITY | STREET NAME | NUMBER | SECONDARY | ASS DTE | LAST CLEANED |
|-------------|--------------------|---------------|------------------|----------------|---------------------|
| PPKE | BELGRAVE RD | 2785 | AERATION | 8/30/2004 | 3/5/2004 |
| PPKE | BELGRAVE RD | 2788 | AERATION | 8/30/2004 | 7/7/2004 |
| PPKE | BELGRAVE RD | 2804 | FILTER BED | 1/11/2005 | 7/1/2004 |
| PPKE | BELGRAVE RD | 28049 | AERATION | 12/16/2004 | 11/9/2004 |
| PPKE | BELGRAVE RD | 28050 | FILTER BED | 1/11/2005 | 8/9/2005 |
| PPKE | BELGRAVE RD | 2810 | AERATION | 9/9/2004 | 10/29/2003 |
| PPKE | BELGRAVE RD | 2825 | FILTER BED | 9/21/2004 | 8/10/2004 |
| PPKE | BELGRAVE RD | 2828 | AERATION | 9/7/2004 | 3/24/2003 |
| PPKE | BOLINGBROOK RD | 28500 | AERATION | 9/9/2004 | 10/7/2004 |
| PPKE | BOLINGBROOK RD | 28649 | AERATION | 8/26/2004 | 5/26/2005 |
| PPKE | BOLINGBROOK RD | 28726 | FILTER BED | 9/28/2005 | 9/24/2001 |
| PPKE | BOLINGBROOK RD | 28775 | AERATION | 11/16/2004 | 1/5/2005 |
| PPKE | BOLINGBROOK RD | 28949 | FILTER BED | 10/25/2004 | 9/12/1995 |
| PPKE | BOLINGBROOK RD | 28950 | AERATION | 10/7/2004 | 6/8/2004 |
| PPKE | BOLINGBROOK RD | 29100 | FILTER BED | 7/12/2005 | 4/6/2004 |
| PPKE | BOLINGBROOK RD | 29125 | AERATION | 8/10/2005 | 5/24/2004 |
| PPKE | BOLINGBROOK RD | 29126 | FILTER BED | 7/12/2005 | 9/10/2004 |
| PPKE | BOLINGBROOK RD | 29249 | AERATION | 11/23/2004 | 5/15/2003 |
| PPKE | BOLINGBROOK RD | 29276 | FILTER BED | 11/30/2004 | 6/19/2003 |
| PPKE | BOLINGBROOK RD | 29399 | FILTER BED | 11/30/2004 | 4/22/2004 |
| PPKE | BOLINGBROOK RD | 29449 | AERATION | 11/30/2004 | 9/6/2005 |
| PPKE | BOLINGBROOK RD | 29475 | AERATION | 11/30/2004 | 6/1/2003 |
| PPKE | BOLINGBROOK RD | 29500 | FILTER BED | 11/30/2004 | 8/24/2004 |
| PPKE | BOLINGBROOK RD | 29549 | FILTER BED | 11/30/2004 | 8/7/2001 |
| PPKE | BOLINGBROOK RD | 29699 | FILTER BED | 12/9/2004 | 12/30/2002 |
| PPKE | BOLINGBROOK RD | 29856 | AERATION | 4/5/2004 | 9/1/2004 |
| PPKE | BOLINGBROOK RD | 29869 | FILTER BED | 2/14/2005 | 6/11/2003 |
| PPKE | BOLINGBROOK RD | 29880 | AERATION | 10/19/2004 | 4/1/2004 |
| PPKE | BOLINGBROOK RD | 29900 | AERATION | 10/18/2004 | 6/11/2004 |
| PPKE | BOLINGBROOK RD | 29916 | FILTER BED | 10/1/2004 | 8/19/2005 |
| PPKE | BOLINGBROOK RD | 29949 | AERATION | 10/1/2004 | 5/3/2002 |
| PPKE | BOLINGBROOK RD | 29959 | AERATION | 10/1/2004 | 5/6/2002 |
| PPKE | BOLINGBROOK RD | 29980 | AERATION | 2/27/2004 | 4/25/2000 |
| PPKE | BOLINGBROOK RD | 30049 | AERATION | 10/1/2004 | 8/13/2003 |
| PPKE | BOLINGBROOK RD | 30089 | AERATION | 2/14/2005 | 5/27/2005 |
| PPKE | BOLINGBROOK RD | 30150 | FILTER BED | 1/25/2005 | 7/20/2004 |

| CITY | STREET NAME | NUMBER | SECONDARY | ASS DTE | LAST CLEANED |
|-------------|--------------------|---------------|------------------|----------------|---------------------|
| PPKE | BOLINGBROOK RD | 30275 | FILTER BED | 10/7/2004 | 10/6/2003 |
| PPKE | BRAINARD RD | 2850 | FILTER BED | 11/30/2005 | 9/1/2003 |
| PPKE | BREMERTON RD | 3033 | FILTER BED | 7/20/2005 | 4/2/2005 |
| PPKE | BREMERTON RD | 3056 | AERATION | 12/9/2004 | 11/29/2004 |
| PPKE | BREMERTON RD | 3111 | AERATION | 1/7/2005 | 5/20/2004 |
| PPKE | BREMERTON RD | 3120 | FILTER BED | 7/20/2005 | 10/14/2003 |
| PPKE | BREMERTON RD | 3129 | FILTER BED | 1/10/2005 | 6/7/2004 |
| PPKE | BREMERTON RD | 3131 | FILTER BED | 12/6/2004 | 11/4/2003 |
| PPKE | BREMERTON RD | 3238 | AERATION | 1/7/2005 | 4/30/2003 |
| PPKE | BREMERTON RD | 3249 | AERATION | 1/7/2005 | 9/15/2003 |
| PPKE | BREMERTON RD | 3276 | AERATION | 1/7/2005 | 9/30/2005 |
| PPKE | BREMERTON RD | 3281 | AERATION | 1/7/2005 | 6/8/2004 |
| PPKE | BREMERTON RD | 3291 | AERATION | 4/21/2005 | 6/8/2004 |
| PPKE | BREMERTON RD | 3318 | FILTER BED | 4/21/2005 | 5/20/2004 |
| PPKE | BREWSTER RD | 2879 | AERATION | 1/13/2005 | 12/23/2003 |
| PPKE | BREWSTER RD | 2884 | AERATION | 1/13/2005 | 7/8/2004 |
| PPKE | BROOKWOOD DR | 30500 | AERATION | 1/13/2005 | 10/15/2004 |
| PPKE | CAMBRIDGE LN | 27951 | UNKNOWN | 7/25/2005 | 9/6/2002 |
| PPKE | CAMBRIDGE LN | 28100 | UNKNOWN | 1/24/2005 | 8/9/2004 |
| PPKE | CAMBRIDGE LN | 28101 | AERATION | 1/25/2005 | 7/13/2005 |
| PPKE | CAMBRIDGE LN | 28150 | FILTER BED | 2/7/2005 | 6/27/2003 |
| PPKE | CAMBRIDGE LN | 28151 | FILTER BED | 1/25/2005 | 7/18/2003 |
| PPKE | CAMBRIDGE LN | 28251 | FILTER BED | 1/25/2005 | 10/8/2003 |
| PPKE | CAMBRIDGE LN | 28301 | AERATION | 1/25/2004 | 6/1/2005 |
| PPKE | CAMBRIDGE LN | 28350 | FILTER BED | 1/25/2005 | 8/26/2004 |
| PPKE | CAMBRIDGE LN | 28401 | UNKNOWN | 1/31/2005 | 10/15/2004 |
| PPKE | CEDAR RD | 28230 | FILTER BED | 2/8/2005 | 8/5/2002 |
| PPKE | CEDAR RD | 28350 | FILTER BED | 2/8/2005 | 7/1/2003 |
| PPKE | CEDAR RD | 28950 | FILTER BED | 3/10/2005 | 12/1/2003 |
| PPKE | CEDAR RD | 29026 | FILTER BED | 3/10/2005 | 11/26/2003 |
| PPKE | CEDAR RD | 29676 | FILTER BED | 2/15/2005 | 9/10/2004 |
| PPKE | CEDAR RD | 30600 | AERATION | 2/15/2005 | 8/9/2004 |
| PPKF | CEDAR RD | 30776 | FILTER BED | 2/14/2005 | 3/10/2004 |
| PPKE | CEDAR RD | 31350 | FILTER BED | 2/14/2005 | 12/5/2002 |
| PPKE | CEDAR RD | 31700 | FILTER BED | 3/7/2005 | 4/15/2004 |
| PPKE | CEDAR RD | 32000 | FILTER BED | 3/7/2005 | 5/26/2000 |

| CITY | STREET NAME | NUMBER | SECONDARY | ASS DTE | LAST CLEANED |
|-------------|--------------------|---------------|------------------|----------------|---------------------|
| PPKE | CEDAR RD | 33050 | FILTER BED | 4/4/2005 | 1/1/2005 |
| PPKE | CEDAR RD | 33100 | FILTER BED | 3/8/2005 | 10/28/2002 |
| PPKE | CEDAR RD | 33400 | FILTER BED | 3/8/2005 | 9/2/2004 |
| PPKE | CEDAR RD | 33650 | AERATION | 3/8/2005 | 9/2/2003 |
| PPKE | CHAGRIN BLVD | 31599 | FILTER BED | 3/3/2005 | 10/15/2004 |
| PPKE | CHAGRIN BLVD | 31699 | FILTER BED | 3/3/2005 | 10/15/2005 |
| PPKE | CHAGRIN BLVD | 31799 | FILTER BED | 3/3/2005 | 10/15/2004 |
| PPKE | CHATHAM RD | 2870 | AERATION | 2/8/2005 | 7/22/2003 |
| PPKE | CHATHAM RD | 2872 | AERATION | 2/8/2005 | 7/9/2005 |
| PPKE | CHATHAM RD | 2874 | AERATION | 2/1/2005 | 10/20/2005 |
| PPKE | CHATHAM RD | 2886 | FILTER BED | 2/7/2005 | 10/18/2004 |
| PPKE | CHATHAM RD | 2890 | AERATION | 2/7/2005 | 4/21/2003 |
| PPKE | CHATHAM RD | 2893 | AERATION | 2/1/2005 | 8/22/2005 |
| PPKE | CHATHAM RD | 2896 | AERATION | 2/1/2005 | 11/11/2003 |
| PPKE | CONCORD RD | 2839 | AERATION | 1/31/2005 | 8/5/2005 |
| PPKE | CONCORD RD | 2840 | AERATION | 2/1/2005 | 10/23/2002 |
| PPKE | CONCORD RD | 2859 | AERATION | 1/31/2005 | 3/17/2003 |
| PPKE | CONCORD RD | 2869 | AERATION | 1/31/2005 | 12/14/1998 |
| PPKE | CONCORD RD | 2879 | AERATION | 1/31/2005 | 7/15/2004 |
| PPKE | CONCORD RD | 2889 | UNKNOWN | 1/31/2005 | 8/29/1994 |
| PPKE | COUNTRY LN | 1 | AERATION | 2/7/2005 | 7/19/2005 |
| PPKE | COUNTRY LN | 16 | AERATION | 3/3/2005 | 8/30/2004 |
| PPKE | COUNTRY LN | 20 | AERATION | 2/15/2005 | 5/20/2004 |
| PPKE | COUNTRY LN | 5 | AERATION | 2/8/2005 | 3/10/2004 |
| PPKE | CREEKSIDE DR | 31850 | FILTER BED | 3/1/2005 | 3/11/2005 |
| PPKE | CREEKSIDE DR | 31860 | FILTER BED | 3/1/2005 | 10/14/2004 |
| PPKE | CREEKSIDE DR | 32005 | AERATION | 2/22/2005 | 7/21/2005 |
| PPKE | CREEKSIDE DR | 32080 | FILTER BED | 2/22/2005 | 8/17/2005 |
| PPKE | CREEKSIDE DR | 32105 | FILTER BED | 2/22/2005 | 9/18/2003 |
| PPKE | CREEKSIDE DR | 32180 | FILTER BED | 2/22/2005 | 5/12/2003 |
| PPKE | CREEKSIDE DR | 32255 | FILTER BED | 2/17/2005 | 10/16/2003 |
| PPKE | CREEKSIDE DR | 32355 | FILTER BED | 2/17/2005 | 8/1/2003 |
| PPKE | CREEKSIDE DR | 32380 | AERATION | 2/17/2005 | 2/7/2005 |
| PPKE | EDGEDALE RD | 28425 | FILTER BED | 3/15/2005 | 6/26/2003 |
| PPKE | EDGEDALE RD | 28499 | FILTER BED | 3/15/2005 | 1/14/2004 |
| PPKE | EDGEDALE RD | 28626 | AERATION | 3/17/2005 | 9/30/2004 |

| CITY | STREET NAME | NUMBER | SECONDARY | ASS DTE | LAST CLEANED |
|-------------|--------------------|---------------|------------------|----------------|---------------------|
| PPKE | EDGEDALE RD | 28650 | AERATION | 3/17/2005 | 9/8/2000 |
| PPKE | EDGEDALE RD | 28700 | FILTER BED | 4/29/2005 | 8/10/2005 |
| PPKE | EDGEDALE RD | 28749 | AERATION | 3/21/2005 | 11/5/2001 |
| PPKE | EDGEDALE RD | 28750 | FILTER BED | 3/21/2005 | 12/15/2004 |
| PPKE | EDGEDALE RD | 29099 | FILTER BED | 3/10/2005 | 5/25/2005 |
| PPKE | EDGEDALE RD | 29100 | AERATION | 3/10/2005 | 9/15/2004 |
| PPKE | EDGEDALE RD | 29250 | AERATION | 3/21/2005 | 11/1/2005 |
| PPKE | EDGEDALE RD | 29326 | FILTER BED | 3/21/2005 | 10/11/2002 |
| PPKE | EDGEDALE RD | 29549 | AERATION | 3/17/2005 | 3/25/2004 |
| PPKE | EDGEDALE RD | 29550 | FILTER BED | 3/17/2005 | 7/21/2003 |
| PPKE | EDGEWOOD RD | 3011 | FILTER BED | 3/21/2005 | 9/15/2003 |
| PPKE | EDGEWOOD RD | 3047 | AERATION | 3/24/2005 | 1/7/2005 |
| PPKE | EDGEWOOD RD | 30826 | AERATION | 3/24/2005 | 7/2/2003 |
| PPKE | EDGEWOOD RD | 31010 | AERATION | 3/24/2005 | 7/26/2005 |
| PPKE | EDGEWOOD RD | 31200 | AERATION | 3/24/2005 | 11/25/2002 |
| PPKE | EDGEWOOD RD | 31387 | AERATION | 3/31/2005 | 6/3/2004 |
| PPKE | EDGEWOOD RD | 31650 | AERATION | 3/31/2005 | 2/17/2005 |
| PPKE | EMERSON DR | 2731 | UNKNOWN | 5/26/2005 | 3/18/2004 |
| PPKE | FAIRMOUNT BLVD | 29550 | FILTER BED | 4/8/2005 | 11/26/2002 |
| PPKE | FAIRMOUNT BLVD | 29999 | UNKNOWN | 4/8/2005 | 4/6/2004 |
| PPKE | FAIRMOUNT BLVD | 30003 | FILTER BED | 4/8/2005 | 8/6/2003 |
| PPKE | FAIRMOUNT BLVD | 30949 | FILTER BED | 5/19/2005 | 6/13/2003 |
| PPKE | FAIRMOUNT BLVD | 31150 | AERATION | 4/7/2005 | 11/21/2002 |
| PPKE | FAIRMOUNT BLVD | 31299 | FILTER BED | 4/7/2005 | 5/12/1997 |
| PPKE | FAIRMOUNT BLVD | 31750 | FILTER BED | 4/7/2005 | 7/14/2004 |
| PPKE | FAIRMOUNT BLVD | 32050 | UNKNOWN | 4/7/2005 | 11/5/2001 |
| PPKE | FOREST DR | 2987 | AERATION | 5/2/2005 | 3/30/2004 |
| PPKE | FOREST DR | 3000 | AERATION | 5/5/2005 | 9/2/2004 |
| PPKE | FOREST DR | 3002 | AERATION | 5/5/2005 | 7/23/2003 |
| PPKE | FOREST DR | 3050 | AERATION | 5/5/2005 | 10/5/2005 |
| PPKE | FOX HOLLOW DR | 31050 | AERATION | 9/28/2004 | 10/9/2002 |
| PPKE | FOX HOLLOW DR | 31051 | AERATION | 9/28/2004 | 4/8/2003 |
| PPKE | FOX HOLLOW DR | 31150 | AERATION | 10/1/2004 | 10/27/2000 |
| PPKE | FOX HOLLOW DR | 31151 | AERATION | 1/13/2005 | 5/30/2001 |
| PPKE | FOX HOLLOW DR | 31175 | AERATION | 1/13/2005 | 10/5/2004 |
| PPKE | FOX HOLLOW DR | 31200 | AERATION | 9/21/2004 | 7/6/2004 |

| <u>CITY</u> | <u>STREET NAME</u> | <u>NUMBER</u> | <u>SECONDARY</u> | <u>ASS DTE</u> | <u>LAST CLEANED</u> |
|-------------|--------------------|---------------|------------------|----------------|---------------------|
| PPKE | FOX HOLLOW DR | 3156 | AERATION | 9/21/2004 | 5/17/2005 |
| PPKE | FOX HOLLOW DR | 3163 | AERATION | 1/13/2005 | 11/1/2003 |
| PPKE | FOX HOLLOW DR | 3220 | FILTER BED | 1/13/2005 | 9/9/2004 |
| PPKE | FOX HOLLOW DR | 3230 | AERATION | 8/18/2004 | 5/6/2003 |
| PPKE | FOX HOLLOW DR | 3233 | AERATION | 1/13/2005 | 6/9/1994 |
| PPKE | FOX HOLLOW DR | 3237 | AERATION | 7/19/2004 | 11/14/2002 |
| PPKE | GATES MILLS BLVD | 29476 | FILTER BED | 5/31/2005 | 7/28/2003 |
| PPKE | GATES MILLS BLVD | 29526 | FILTER BED | 5/10/2005 | 6/24/2004 |
| PPKE | GATES MILLS BLVD | 29626 | FILTER BED | 5/10/2005 | 9/6/2005 |
| PPKE | GATES MILLS BLVD | 29629 | FILTER BED | 5/10/2005 | 6/23/2003 |
| PPKE | GATES MILLS BLVD | 29776 | FILTER BED | 5/10/2005 | 8/27/2004 |
| PPKE | GATES MILLS BLVD | 29826 | FILTER BED | 5/27/2005 | 6/10/2005 |
| PPKE | GATES MILLS BLVD | 29959 | FILTER BED | 6/20/2005 | 9/17/2001 |
| PPKE | GATES MILLS BLVD | 29976 | FILTER BED | 5/27/2005 | 2/14/2005 |
| PPKE | GATES MILLS BLVD | 30140 | FILTER BED | 5/27/2005 | 7/14/2004 |
| PPKE | GATES MILLS BLVD | 30200 | FILTER BED | 7/12/2005 | 6/1/2005 |
| PPKE | GATES MILLS BLVD | 30849 | FILTER BED | 6/20/2005 | 9/9/2004 |
| PPKE | GATES MILLS BLVD | 31099 | FILTER BED | 5/13/2005 | 11/21/2001 |
| PPKE | GATES MILLS BLVD | 31289 | FILTER BED | 5/2/2005 | 2/13/2004 |
| PPKE | GATES MILLS BLVD | 31349 | FILTER BED | 7/11/2005 | 8/20/2002 |
| PPKE | GATES MILLS BLVD | 31549 | FILTER BED | 4/12/2005 | 6/19/2003 |
| PPKE | GATES MILLS BLVD | 31550 | FILTER BED | 4/21/2005 | 3/28/2005 |
| PPKE | GATES MILLS BLVD | 31599 | FILTER BED | 4/12/2005 | 11/1/2004 |
| PPKE | GATES MILLS BLVD | 31600 | UNKNOWN | 4/21/2005 | 2/26/2002 |
| PPKE | GATES MILLS BLVD | 31700 | UNKNOWN | 4/29/2005 | 6/28/2004 |
| PPKE | GATES MILLS BLVD | 31750 | FILTER BED | 4/29/2005 | 10/28/2004 |
| PPKE | GATES MILLS BLVD | 31799 | FILTER BED | 4/29/2005 | 11/1/2002 |
| PPKE | GATES MILLS BLVD | 31949 | FILTER BED | 4/12/2005 | 11/10/2003 |
| PPKE | GATES MILLS BLVD | 31999 | FILTER BED | 4/12/2005 | 11/30/1999 |
| PPKE | GREENWOOD DR | 3699 | AERATION | 6/7/2005 | 6/12/2001 |
| PPKE | KERSDALE RD | 2742 | UNKNOWN | 5/13/2004 | 2/1/2004 |
| PPKE | KERSDALE RD | 2821 | FILTER BED | 5/16/2005 | 9/8/1999 |
| PPKE | KERSDALE RD | 2833 | UNKNOWN | 5/16/2005 | 5/9/2003 |
| PPKE | KERSDALE RD | 2851 | FILTER BED | 5/16/2005 | 12/2/2003 |
| PPKE | KERSDALE RD | 2861 | AERATION | 5/27/2005 | 11/1/2003 |
| PPKE | KERSDALE RD | 2870 | FILTER BED | 5/27/2005 | 7/22/2003 |

| CITY | STREET NAME | NUMBER | SECONDARY | ASS DTE | LAST CLEANED |
|-------------|--------------------|---------------|------------------|----------------|---------------------|
| PPKE | KERSDALE RD | 2880 | AERATION | 5/27/2005 | 9/18/2003 |
| PPKE | KERSDALE RD | 3006 | UNKNOWN | 5/31/2005 | 8/11/2004 |
| PPKE | KERSDALE RD | 3024 | FILTER BED | 6/1/2005 | 5/9/2005 |
| PPKE | KERSDALE RD | 3060 | FILTER BED | 6/8/2005 | 7/15/2004 |
| PPKE | KERSDALE RD | 3099 | FILTER BED | 5/13/2005 | 3/6/2004 |
| PPKE | KERSDALE RD | 3131 | AERATION | 6/8/2005 | 6/30/2003 |
| PPKE | KERSDALE RD | 3141 | FILTER BED | 6/8/2005 | 7/7/1998 |
| PPKE | KERSDALE RD | 3155 | FILTER BED | 6/20/2005 | 4/18/2003 |
| PPKE | KERSDALE RD | 3250 | FILTER BED | 7/11/2005 | 3/23/2005 |
| PPKE | KERSDALE RD | 3439 | FILTER BED | 6/27/2005 | 6/7/1995 |
| PPKE | KERSDALE RD | 3455 | AERATION | 1/10/2005 | 10/28/2003 |
| PPKE | KERSDALE RD | 3512 | FILTER BED | 6/24/2005 | 4/1/2005 |
| PPKE | KERSDALE RD | 3526 | FILTER BED | 8/5/2005 | 5/9/1996 |
| PPKE | LANARK LN | 3419 | FILTER BED | 6/27/2005 | 7/6/2005 |
| PPKE | LANARK LN | 3420 | FILTER BED | 6/27/2005 | 7/6/2005 |
| PPKE | LANARK LN | 3427 | FILTER BED | 6/27/2005 | 8/5/2003 |
| PPKE | LANARK LN | 3435 | FILTER BED | 6/27/2005 | 8/12/2005 |
| PPKE | LANDER RD | 2425 | FILTER BED | 6/22/2005 | 5/9/2002 |
| PPKE | LANDER RD | 2441 | AERATION | 6/22/2005 | 7/12/2004 |
| PPKE | LANDER RD | 2450 | FILTER BED | 6/22/2005 | 7/19/2002 |
| PPKE | LANDER RD | 2755 | FILTER BED | 9/27/2005 | 7/1/2003 |
| PPKE | LANDER RD | 2762 | FILTER BED | 9/27/2005 | 7/16/2005 |
| PPKE | LANDER RD | 2820 | FILTER BED | 9/28/2005 | 6/7/2001 |
| PPKE | LANDER RD | 2840 | FILTER BED | 9/28/2005 | 7/22/2005 |
| PPKE | LANDER RD | 2860 | FILTER BED | 7/28/2005 | 9/13/2005 |
| PPKE | LANDER RD | 2865 | UNKNOWN | 9/28/2005 | 5/17/2004 |
| PPKE | LANDER RD | 3019 | AERATION | 4/19/2004 | 6/24/2003 |
| PPKE | LANDER RD | 3085 | AERATION | 4/22/2004 | 7/23/2003 |
| PPKE | LANDER RD | 3086 | FILTER BED | 4/19/2004 | 11/11/2003 |
| PPKE | LANDER RD | 3130 | FILTER BED | 9/20/2005 | 3/17/2003 |
| PPKE | LANDER RD | 3237 | FILTER BED | 9/20/2005 | 10/14/2005 |
| PPKE | LANDER RD | 3287 | FILTER BED | 8/30/2005 | 6/2/2005 |
| PPKE | LANDER RD | 3356 | FILTER BED | 8/30/2005 | 9/22/2003 |
| PPKE | LANDER RD | 3496 | FILTER BED | 8/30/2005 | 5/1/2005 |
| PPKE | LANDER RD | 3645 | FILTER BED | 8/30/2005 | 11/8/2001 |
| PPKE | LANDER RD | 3649 | FILTER BED | 8/30/2005 | 11/8/2001 |

| CITY | STREET NAME | NUMBER | SECONDARY | ASS DTE | LAST CLEANED |
|-------------|--------------------|---------------|------------------|----------------|---------------------|
| PPKE | LANDERWOOD RD | 30650 | FILTER BED | 8/18/2005 | 10/14/2004 |
| PPKE | LANDERWOOD RD | 30699 | UNKNOWN | 9/19/2005 | 4/7/2005 |
| PPKE | LANDERWOOD RD | 30749 | UNKNOWN | 9/19/2005 | 8/26/2004 |
| PPKE | LANDERWOOD RD | 30825 | FILTER BED | 7/25/2005 | 4/7/2004 |
| PPKE | LANDERWOOD RD | 30899 | UNKNOWN | 9/19/2005 | 6/16/2004 |
| PPKE | LANDERWOOD RD | 30999 | UNKNOWN | 9/19/2005 | 5/20/2004 |
| PPKE | LANDERWOOD RD | 31076 | AERATION | 9/19/2005 | 10/11/2003 |
| PPKE | LANDERWOOD RD | 31126 | AERATION | 9/14/2005 | 6/12/1998 |
| PPKE | LANDERWOOD RD | 31226 | AERATION | 9/12/2005 | 5/6/2004 |
| PPKE | LAWTON LN | 3386 | FILTER BED | 9/12/2005 | 7/9/2004 |
| PPKE | LAWTON LN | 3460 | AERATION | 9/12/2005 | 7/20/2004 |
| PPKE | LOMBARDY LN | 33651 | FILTER BED | 9/6/2005 | 10/6/2004 |
| PPKE | LOUIS DR | 6 | UNKNOWN | 11/21/2005 | 10/26/2005 |
| PPKE | LOUIS DR | 7 | AERATION | 9/7/2005 | 11/15/2004 |
| PPKE | LOUIS DR | 8 | FILTER BED | 9/2/2005 | 4/19/2004 |
| PPKE | MEDFIELD RD | 2827 | FILTER BED | 11/21/2005 | 8/25/1994 |
| PPKE | MEDFIELD RD | 2831 | FILTER BED | 8/11/2005 | 8/1/2003 |
| PPKE | MEDFIELD RD | 2850 | UNKNOWN | 9/1/2005 | 6/11/2002 |
| PPKE | MEDFIELD RD | 2900 | AERATION | 1/20/2004 | 4/7/2003 |
| PRMA | BROOKDALE AVE | 1608 | FILTER BED | 6/16/2005 | 10/15/2004 |
| PRMA | BROOKDALE AVE | 1615 | FILTER BED | 6/16/2005 | 6/1/2004 |
| PRMA | BROOKDALE AVE | 1700 | FILTER BED | 6/16/2005 | 8/1/2000 |
| PRMA | BROOKDALE AVE | 1803 | FILTER BED | 6/16/2005 | 12/2/2004 |
| PRMA | BROOKDALE AVE | 1814 | FILTER BED | 6/16/2005 | 11/1/1998 |
| PRMA | GLENCAIRN DR | 7226 | AERATION | 6/16/2005 | 6/13/2001 |
| PRMA | JOYCE DR | 7869 | FILTER BED | 6/7/2005 | 10/28/2003 |
| PRMA | MANHATTAN AVE | 8110 | UNKNOWN | 7/27/2005 | 4/19/2005 |
| PRMA | MARLBOROUGH A | 8012 | FILTER BED | 7/27/2005 | 4/1/2001 |
| PRMA | MARLBOROUGH A | 8025 | UNKNOWN | 7/27/2005 | 7/26/1999 |
| PRMA | MARTIN DR | 12955 | LEACHFIELD | 6/14/2005 | 5/1/2004 |
| PRMA | MARTIN DR | 12961 | UNKNOWN | 6/14/2005 | 8/26/1999 |
| PRMA | MELODY LN | 3120 | FILTER BED | 10/24/2005 | 9/11/2003 |
| PRMA | MILLERWOOD LN | 7657 | UNKNOWN | 6/14/2005 | 5/1/1992 |
| PRMA | MILLERWOOD LN | 7679 | UNKNOWN | 6/14/2005 | 9/15/2004 |
| PRMA | N LINDEN LN | 7410 | AERATION | 6/16/2005 | 7/28/2004 |
| PRMA | N LINDEN LN | 7426 | AERATION | 1/22/2004 | 1/1/2004 |

| <u>CITY</u> | <u>STREET NAME</u> | <u>NUMBER</u> | <u>SECONDARY</u> | <u>ASS DTE</u> | <u>LAST CLEANED</u> |
|-------------|--------------------|---------------|------------------|----------------|---------------------|
| PRMA | OLD ROCKSIDE RD | 1003 | FILTER BED | 6/15/2005 | 10/15/2002 |
| PRMA | OLD ROCKSIDE RD | 1100 | AERATION | 6/15/2005 | 6/18/2002 |
| PRMA | OLD ROCKSIDE RD | 1103 | FILTER BED | 6/15/2005 | 12/2/2002 |
| PRMA | OLD ROCKSIDE RD | 1122 | AERATION | 6/15/2005 | 10/15/2002 |
| PRMA | OLD ROCKSIDE RD | 1153 | FILTER BED | 6/15/2005 | 1/27/2004 |
| PRMA | OLD ROCKSIDE RD | 1200 | LEACHFIELD | 6/15/2005 | 7/20/2000 |
| PRMA | OLD ROCKSIDE RD | 1250 | UNKNOWN | 6/15/2005 | 7/20/2000 |
| PRMA | OLD ROCKSIDE RD | 1300 | UNKNOWN | 6/15/2005 | 6/1/2005 |
| PRMA | OLD ROCKSIDE RD | 1350 | UNKNOWN | 6/15/2005 | 6/15/2005 |
| PRMA | OLD ROCKSIDE RD | 1400 | UNKNOWN | 6/15/2005 | 11/1/2000 |
| PRMA | OLD ROCKSIDE RD | 1425 | UNKNOWN | 6/15/2005 | 10/11/2004 |
| PRMA | OLD ROCKSIDE RD | 1515 | UNKNOWN | 6/15/2005 | 3/15/2002 |
| PRMA | OLD ROCKSIDE RD | 961 | UNKNOWN | 6/29/2005 | 6/22/2005 |
| PRMA | RIDGE RD | 7037 | FILTER BED | 7/12/2004 | 9/22/2003 |
| PRMA | RIDGE RD | 7525 | UNKNOWN | 7/13/2005 | 9/1/2004 |
| PRMA | S LINDEN LN | 7810 | UNKNOWN | 6/7/2005 | |
| PRMA | SUNRISE OV | 7561 | FILTER BED | 7/27/2005 | 7/15/2004 |
| PRMA | SUNRISE OV | 7567 | FILTER BED | 7/27/2005 | 5/2/2005 |
| PRMA | SUNRISE OV | 7575 | FILTER BED | 7/27/2005 | 5/5/2001 |
| PRMA | SUNRISE OV | 7578 | FILTER BED | 7/27/2005 | 5/23/2001 |
| PRMA | SUNRISE OV | 7581 | FILTER BED | 7/27/2005 | 10/1/2004 |
| PRMA | SUNRISE OV | 7584 | FILTER BED | 7/27/2005 | 8/22/2005 |
| PRMA | SUNRISE OV | 7587 | FILTER BED | 7/27/2005 | 5/30/2002 |
| PRMA | SUNRISE OV | 7590 | FILTER BED | 7/27/2005 | 7/11/2001 |
| PRMA | SUNRISE OV | 7593 | FILTER BED | 7/27/2005 | 3/18/2005 |
| PRMA | SUNRISE OV | 7594 | FILTER BED | 7/27/2005 | 11/4/2005 |
| PRMA | SUNRISE OV | 7597 | UNKNOWN | 7/27/2005 | 8/2/2003 |
| PRMA | SUNRISE OV | 7598 | FILTER BED | 7/27/2005 | 6/28/2001 |
| PRMA | SUNRISE OV | 7599 | AERATION | 7/27/2005 | 2/10/2003 |
| PRMA | SUNRISE OV | 7600 | FILTER BED | 7/27/2005 | 5/10/2003 |
| PRMA | SUNRISE OV | 7605 | FILTER BED | 7/27/2005 | 7/11/2001 |
| PRMA | W 84 ST | 5454 | FILTER BED | 9/28/2005 | 1/1/2005 |
| PRMA | W 84 ST | 5472 | UNKNOWN | 9/28/2005 | 12/15/2004 |
| PRMA | W LINDEN LN | 12887 | FILTER BED | 6/14/2005 | 6/1/2005 |
| PRMA | W LINDEN LN | 12922 | FILTER BED | 6/14/2005 | 1/20/1998 |
| PRMA | W LINDEN LN | 12966 | FILTER BED | 6/16/2005 | 8/16/2004 |

| CITY | STREET NAME | NUMBER | SECONDARY | ASS DTE | LAST CLEANED |
|-------------|--------------------|---------------|------------------|----------------|---------------------|
| PRMA | W SPRAGUE RD | 12972 | FILTER BED | 6/22/2005 | 5/19/2003 |
| RIHT | BELLASTON RD | 102 | UNKNOWN | 3/14/2005 | 11/23/2004 |
| RIHT | RICHMOND RD | 372 | UNKNOWN | 3/14/2005 | 4/6/2000 |
| RIHT | RICHMOND RD | 374 | FILTER BED | 3/14/2005 | 4/6/2000 |
| STRG | ALBION RD | 13676 | UNKNOWN | 9/27/2005 | |
| STRG | ALBION RD | 15016 | AERATION | 10/28/2004 | 10/7/2005 |
| STRG | ALBION RD | 15401 | AERATION | 10/28/2004 | 5/19/2003 |
| STRG | ALBION RD | 15477 | AERATION | 11/16/2004 | 5/1/2003 |
| STRG | ALBION RD | 15902 | AERATION | 11/23/2004 | 5/1/2005 |
| STRG | BENBOW RD | 18408 | FILTER BED | 5/16/2005 | 11/12/2003 |
| STRG | BENBOW RD | 18492 | FILTER BED | 5/16/2005 | 12/23/2002 |
| STRG | BENBOW RD | 18583 | FILTER BED | 5/16/2005 | 5/1/2005 |
| STRG | BENBOW RD | 18629 | FILTER BED | 5/25/2005 | 7/22/1997 |
| STRG | BENBOW RD | 18717 | FILTER BED | 4/21/2005 | 9/16/2004 |
| STRG | BENBOW RD | 18757 | FILTER BED | 5/10/2005 | 10/8/2001 |
| STRG | BENBOW RD | 19110 | FILTER BED | 5/10/2005 | 10/21/1996 |
| STRG | BENBOW RD | 19204 | AERATION | 7/26/2005 | 5/24/2003 |
| STRG | BENBOW RD | 19218 | FILTER BED | 9/27/2005 | 3/26/2003 |
| STRG | BENBOW RD | 19474 | FILTER BED | 5/10/2005 | 5/31/2005 |
| STRG | BENBOW RD | 19564 | FILTER BED | 4/5/2005 | 8/7/2003 |
| STRG | BENBOW RD | 19740 | FILTER BED | 5/10/2005 | 12/11/2001 |
| STRG | BLAZEY TRL | 12238 | AERATION | 3/24/2004 | 4/1/2004 |
| STRG | BLAZEY TRL | 12242 | AERATION | 3/25/2004 | 9/28/2004 |
| STRG | BLAZEY TRL | 12290 | AERATION | 3/29/2004 | 11/1/2003 |
| STRG | BLAZEY TRL | 12291 | AERATION | 5/10/2004 | 10/15/2002 |
| STRG | BLAZEY TRL | 12340 | AERATION | 3/29/2004 | 9/28/2002 |
| STRG | BLAZEY TRL | 12381 | AERATION | 3/29/2004 | 12/30/2002 |
| STRG | BLAZEY TRL | 13212 | AERATION | 3/29/2004 | 1/23/2001 |
| STRG | BLAZEY TRL | 13385 | AERATION | 4/19/2004 | 5/31/1986 |
| STRG | BLAZEY TRL | 13420 | AERATION | 4/19/2004 | 5/4/2000 |
| STRG | BLAZEY TRL | 13593 | FILTER BED | 11/22/2004 | 8/20/2004 |
| STRG | BOSTON RD | 19214 | AERATION | 3/18/2005 | 10/13/2005 |
| STRG | BOSTON RD | 21368 | AERATION | 3/21/2005 | 9/16/2004 |
| STRG | BOSTON RD | 21560 | AERATION | 3/21/2005 | 5/1/2002 |
| STRG | BOSTON RD | 21594 | AERATION | 3/21/2005 | 4/28/2005 |
| STRG | BOWMAN DR | 19194 | FILTER BED | 11/30/2005 | 6/17/2005 |

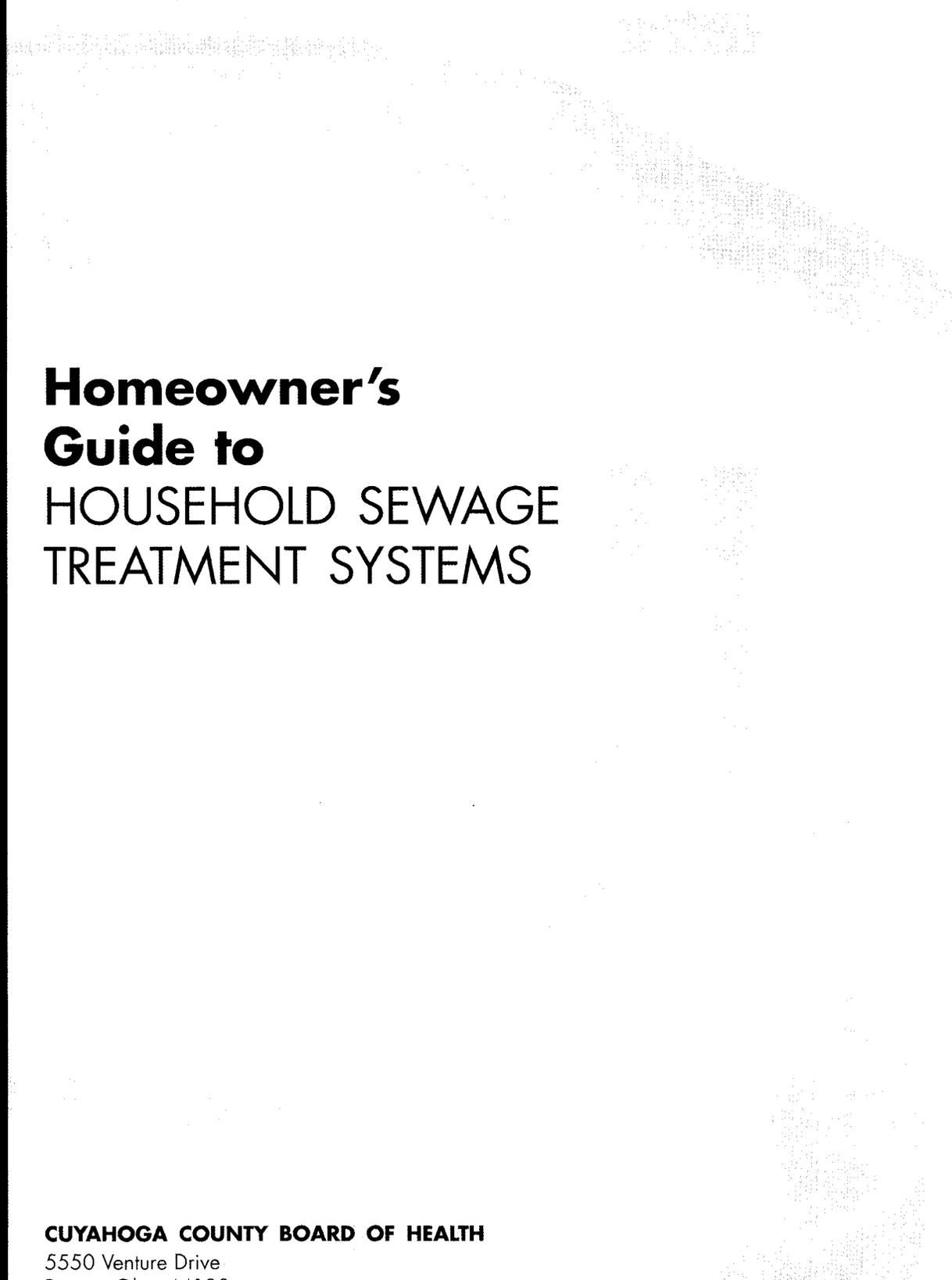
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|-------------|--------------------|---------------|------------------|----------------|---------------------|
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| STRG | BOWMAN DR | 19418 | FILTER BED | 11/22/2005 | 7/31/2000 |
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| STRG | BOWMAN DR | 19621 | AERATION | 1/19/2005 | 10/17/2000 |
| STRG | BOWMAN DR | 19818 | AERATION | 4/5/2005 | 5/8/2001 |
| STRG | DRAKE RD | 14594 | AERATION | 11/16/2005 | 5/29/2003 |
| STRG | GREENBRIER DR | 17386 | FILTER BED | 11/7/2005 | 10/12/2004 |
| STRG | GREENBRIER DR | 17428 | FILTER BED | 11/16/2005 | 11/7/2001 |
| STRG | GREENBRIER DR | 17470 | FILTER BED | 11/22/2005 | 4/28/2004 |
| STRG | HUNT RD | 19297 | AERATION | 4/27/2005 | 5/9/2000 |
| STRG | HUNT RD | 19386 | AERATION | 4/27/2005 | 3/17/2004 |
| STRG | HUNT RD | 19408 | FILTER BED | 11/1/2005 | 4/16/2004 |
| STRG | HUNT RD | 19437 | FILTER BED | 10/26/2004 | 9/23/2004 |
| STRG | JAMES WAY DR | 19651 | AERATION | 5/24/2005 | 3/31/1984 |
| STRG | JAMES WAY DR | 19739 | UNKNOWN | 3/29/2004 | 3/30/2004 |
| STRG | JANETTE AVE | 12712 | UNKNOWN | 12/16/2004 | 2/15/1993 |
| STRG | MARKS RD | 15153 | UNKNOWN | 7/21/2005 | 9/16/2005 |
| STRG | MARKS RD | 15201 | UNKNOWN | 7/21/2005 | 3/26/2003 |
| STRG | MARKS RD | 15247 | AERATION | 4/5/2005 | 5/30/2003 |
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| STRG | MARKS RD | 18719 | UNKNOWN | 8/25/2005 | 8/28/2003 |
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| STRG | MARKS RD | 9485 | FILTER BED | 7/28/2005 | 5/1/2002 |
| STRG | MARKS RD | 9577 | UNKNOWN | 7/28/2005 | 6/20/2005 |
| STRG | PRIEM RD | 9483 | AERATION | 9/22/2005 | 5/1/2000 |

| CITY | STREET NAME | NUMBER | SECONDARY | ASS DTE | LAST CLEANED |
|------|-------------|--------|------------|------------|--------------|
| STRG | PRIEM RD | 9617 | AERATION | 4/5/2005 | 7/13/2004 |
| STRG | PRIEM RD | 9799 | AERATION | 1/13/2005 | 4/30/1997 |
| STRG | PRIEM RD | 9939 | AERATION | 1/13/2005 | 10/25/2002 |
| STRG | ROYALTON RD | 21705 | AERATION | 8/10/2005 | 12/11/2003 |
| STRG | ROYALTON RD | 21856 | AERATION | 5/25/2005 | 5/10/2005 |
| STRG | ROYALTON RD | 22044 | AERATION | 5/31/2005 | 12/3/2002 |
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| STRG | W 130 ST | 11786 | AERATION | 5/24/2005 | 4/2/2002 |
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| STRG | W 130 ST | 12060 | FILTER BED | 5/24/2005 | 3/14/2000 |
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| STRG | W 130 ST | 12758 | AERATION | 9/29/2004 | 11/15/2004 |
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| STRG | W 130 ST | 13090 | UNKNOWN | 5/24/2005 | 5/17/2005 |
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| STRG | W 130 ST | 17158 | AERATION | 11/22/2005 | 2/1/2002 |
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| STRG | WEBSTER RD | 10164 | AERATION | 10/31/2005 | 4/11/2005 |
| STRG | WEBSTER RD | 10204 | AERATION | 10/31/2005 | 9/12/2003 |
| STRG | WEBSTER RD | 10476 | AERATION | 4/1/2005 | 5/12/2001 |
| STRG | WEBSTER RD | 12242 | AERATION | 6/29/2004 | 6/30/1988 |
| STRG | WEBSTER RD | 12386 | AERATION | 6/29/2004 | 5/9/2000 |
| STRG | WILLOW LN | 21113 | FILTER BED | 11/29/2005 | 7/29/2004 |
| STRG | WILLOW LN | 21148 | FILTER BED | 11/29/2005 | 7/5/2005 |
| STRG | WILLOW LN | 21149 | FILTER BED | 11/29/2005 | 3/18/1998 |
| SVHL | CHERRY LN | 1762 | FILTER BED | 8/18/2004 | 6/1/2003 |

| CITY | STREET NAME | NUMBER | SECONDARY | ASS DTE | LAST CLEANED |
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| SVHL | CHERRY LN | 672 | FILTER BED | 11/28/2005 | 4/8/2004 |
| SVHL | CHERRY LN | 691 | FILTER BED | 11/28/2005 | 11/15/2005 |
| SVHL | CHERRY LN | 740 | FILTER BED | 11/28/2005 | 4/10/1997 |
| SVHL | CHERRY LN | 759 | FILTER BED | 11/28/2005 | 3/1/2003 |
| SVHL | CHERRY LN | 808 | FILTER BED | 11/28/2005 | 10/15/2004 |
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| SVHL | CHERRY LN | 876 | FILTER BED | 11/28/2005 | 11/15/1999 |
| SVHL | CHERRY LN | 895 | FILTER BED | 11/28/2005 | 12/10/2002 |
| SVHL | CHERRY LN | 944 | FILTER BED | 11/28/2005 | 9/10/2005 |
| SVHL | CHERRY LN | 963 | FILTER BED | 11/28/2005 | 4/16/1999 |
| SVHL | HILLSIDE RD | 1089 | FILTER BED | 8/24/2004 | 1/11/2005 |
| SVHL | HILLSIDE RD | 1453 | LEACHFIELD | 10/13/2004 | 9/30/2005 |
| SVHL | HILLSIDE RD | 473 | UNKNOWN | 9/29/2004 | 12/1/1998 |
| SVHL | HILLSIDE RD | 485 | UNKNOWN | 9/30/2004 | 7/1/2003 |
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| SVHL | NEMET DR | 1236 | FILTER BED | 6/7/2005 | 1/25/2002 |
| SVHL | NEMET DR | 1249 | FILTER BED | 6/7/2005 | 3/7/2002 |
| SVHL | NEMET DR | 1280 | FILTER BED | 6/7/2005 | 5/24/2004 |
| SVHL | NEMET DR | 1293 | FILTER BED | 6/7/2005 | 4/12/2002 |
| SVHL | NEMET DR | 1324 | FILTER BED | 6/7/2005 | 7/11/2005 |
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| SVHL | NEMET DR | 1557 | FILTER BED | 7/6/2005 | 12/5/2002 |
| SVHL | NEMET DR | 1598 | FILTER BED | 7/6/2005 | 7/14/2003 |
| SVHL | NEMET DR | 1601 | FILTER BED | 7/6/2005 | 10/1/2003 |
| SVHL | NEMET DR | 1692 | FILTER BED | 7/6/2005 | 3/28/2002 |
| SVHL | NEMET DR | 1693 | UNKNOWN | 7/6/2005 | 4/19/2002 |
| SVHL | NEMET DR | 1738 | FILTER BED | 7/6/2005 | 8/1/2003 |
| SVHL | NEMET DR | 1786 | FILTER BED | 7/6/2005 | 6/1/2003 |
| SVHL | NEMET DR | 1845 | UNKNOWN | 7/20/2005 | 4/3/2002 |
| SVHL | NEMET DR | 1846 | FILTER BED | 7/20/2005 | 7/27/2001 |

| CITY | STREET NAME | NUMBER | SECONDARY | ASS DTE | LAST CLEANED |
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| SVHL | NEMET DR | 314 | FILTER BED | 10/3/2005 | 4/27/2000 |
| SVHL | NEMET DR | 329 | FILTER BED | 10/3/2005 | 4/23/1991 |
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| SVHL | NEMET DR | 505 | FILTER BED | 7/20/2005 | 7/6/1999 |
| SVHL | NEMET DR | 534 | FILTER BED | 10/18/2005 | 3/23/1999 |
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| SVHL | NEMET DR | 622 | FILTER BED | 10/18/2005 | 5/17/2005 |
| SVHL | NEMET DR | 637 | FILTER BED | 10/18/2005 | 4/12/2003 |
| SVHL | NEMET DR | 666 | FILTER BED | 10/18/2005 | 11/19/1998 |
| SVHL | NEMET DR | 909 | FILTER BED | 7/20/2005 | 10/15/2004 |
| SVHL | NEMET DR | 928 | FILTER BED | 7/20/2005 | 6/30/1986 |
| SVHL | NEMET DR | 943 | FILTER BED | 7/20/2005 | 2/2/2002 |
| SVHL | ROCKSIDE RD | 930 | UNKNOWN | 12/6/2004 | |
| SVHL | SHADY LANE DR | 2364 | FILTER BED | 11/12/2004 | 10/10/2005 |
| SVHL | TWILIGHT DR | 144 | FILTER BED | 2/22/2005 | 7/22/2003 |
| SVHL | TWILIGHT DR | 321 | FILTER BED | 12/20/2004 | 5/1/2005 |
| VALV | SWEET VALLEY DR | 10408 | FILTER BED | 4/19/2005 | 5/31/2005 |
| VALV | TINKERS CREEK RD | 11405 | UNKNOWN | 5/9/2005 | 7/16/2004 |
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| WAHL | DUNHAM RD | 6980 | FILTER BED | 4/26/2005 | 11/1/1994 |
| WAHL | SAGAMORE RD | 17115 | AERATION | 12/6/2004 | 9/15/2004 |
| WARH | AURORA RD | 21110 | UNKNOWN | 8/3/2005 | 9/5/2003 |
| WARH | AURORA RD | 21114 | UNKNOWN | 8/3/2005 | 6/5/2003 |
| WARH | AURORA RD | 21118 | UNKNOWN | 8/3/2005 | 9/5/2003 |
| WARH | AURORA RD | 21122 | UNKNOWN | 8/3/2005 | 5/31/2001 |

Appendix B



**Homeowner's
Guide to
HOUSEHOLD SEWAGE
TREATMENT SYSTEMS**

CUYAHOGA COUNTY BOARD OF HEALTH

5550 Venture Drive
Parma, Ohio 44130
Tel: 216.201.2020
Fax: 216.676.1317
www.CCBH.net

Your Sewage System IS YOUR RESPONSIBILITY

Did you know that as a homeowner you're responsible for maintaining your sewage system? Did you know that maintaining your sewage system protects your investment in your home? Did you know that you should periodically inspect your system and pump out your septic tank? If properly designed, constructed and maintained, your sewage system can provide long-term, effective treatment of household wastewater. If your sewage system isn't maintained, you might need to replace it, costing you thousands of dollars. A malfunctioning system can contaminate both groundwater that might be a source of drinking water as well as surface water. And if you sell your home, your sewage system must be in good working order.

This guide will help you care for your sewage system. It will help you understand how your system works and what steps you can take as a homeowner to ensure your system will work properly. To help you learn more, consult the resources that are listed throughout this booklet. A helpful checklist is also included at the end of the booklet to help you keep track of your sewage system maintenance.

TOP THREE THINGS YOU CAN DO TO PROTECT YOUR SEWAGE SYSTEM

- **Do not** build anything over or within ten feet of any part of your sewage system.
- **Do not** allow anyone to drive heavy vehicles like cars or trucks over any portion of the system. Pipes and tanks may be damaged or crushed. The soil in the filtration or leaching field may be compacted, which would minimize its ability to filter and absorb sewage.
- **Do not** plant any shallow rooted trees or shrubs, like willows or soft maples, near any portion of the system. Their roots will grow and travel laterally underground. As they seek water, they can grow into pipes causing blockages.

How does my sewage system work?

THE COMPONENTS

Pipe from the home

All of your household wastewater flows through your plumbing and exits your home through a pipe to the septic tank. The contents of this sewer pipe should include the wastewater from all of the drains inside the home - sinks, toilets, showers, utility tubs, etc. Stormwater or groundwater that does not need to be treated by the sewage system should not enter this pipe. Drainage from downspouts, sump pumps, etc. will send too much water to the system and possibly shorten its lifespan.

Septic tank

The septic tank performs the first step of the wastewater treatment process. The septic tank is a solid watertight tank designed specifically to accept all wastewater from the home. Some installations may have one tank or two tanks in series. All tanks should feature inlet and outlet baffles, along with an access manhole for cleaning.

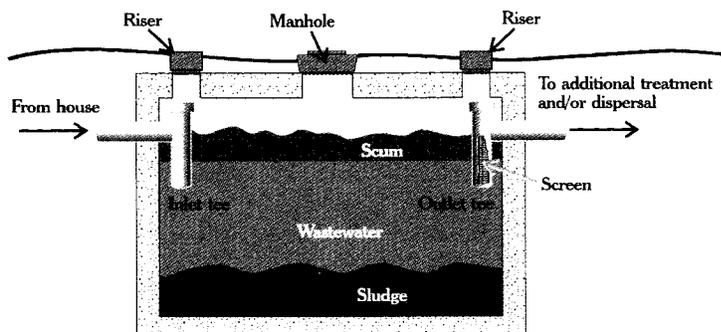
The inlet baffle ensures that entering wastewater mixes with the liquid contents of the tank to begin bacterial breakdown of organic materials and separation of solids. The inlet baffle also prevents the floating scum layer from floating back and clogging the inlet pipe.

The outlet baffle ensures that only liquid is able to leave the tank and enter the secondary treatment portion of your system. If the scum layer reaches the outlet pipe, the pipe would quickly become plugged.

The contents of the septic tank stratifies into three layers:

- Floating Scum Layer - soaps, greases, toilet paper, etc.
- Liquid layer - water, other liquids, and suspended solids
- Sludge - heavy organic and inorganic materials settle to the bottom of the tank.

Bacteria that naturally occur in the sewage which enters the tank are necessary to break down organic materials in wastewater. This is often referred to as primary treatment. Pathogens in the waste are not destroyed in the septic tank. The septic tank and its bacteria prepare the wastewater for treatment by the remainder of your system.



To prevent buildup, sludge and floating scum need to be removed through periodic pumping of the septic tank. County regulations require that septic tanks be pumped out at least once every three years. If you have a large family you probably need to have it pumped more often.

The access lid for your septic tank is required to be kept to grade. This allows the tank to be easily located, pumped, and inspected. If your tank is not to grade, an extension riser can be installed at the time of your next cleaning.

What are OFF-LOT and ON-LOT Household Sewage Treatment Systems?

There is a misconception that all Household Sewage Treatment Systems are leachfields. Leachfields function as "on-lot" systems where the wastewater flows from the septic tank into the soil. The wastewater percolates into the soil, which provides final treatment by removing harmful bacteria, viruses, and nutrients. Suitable soil is necessary for successful wastewater treatment.

In Cuyahoga County, and much of Ohio, the soils are too severe to allow for proper percolation into the ground. The soils will not accept these volumes of water and can not provide the necessary treatment. For this reason, the majority of systems used in the past in this area are "off-lot" sewage treatment systems. These systems are designed to discharge the treated effluent from the sewage system back into the environment via a creek, storm sewer or ditch.

Filter Beds

Although their design may have changed over the years, filter bed systems have been installed in Cuyahoga County for decades. Filter beds installed prior to the early 1970's typically utilized gravel as a filtration media. These older beds consisted of clay tile pipes laid on top of a 15 to 24 inch thick bed of large gravel. A clay tile line was also placed below the gravel bed to act as a collection pipe. Wastewater from the septic tank would drain into the top pipes, filter through the gravel and be collected in the bottom line. This effluent was then discharged to the environment. Many of these systems are still in use today.

Unfortunately, these old gravel beds did not function well and did not have the ability to properly filter the sewage prior to discharging it to a ditch, stream or storm sewer. For this reason, approved filter sand has been utilized as the actual filtration media in more modern filter bed systems. Perforated pipe is laid in gravel both above and below the filter sand. The sand has a filtration capability that is far superior to that of gravel.

Filter bed systems installed in the last few decades typically use a splitter box, also known as a distribution box. This box contains a flow diversion device that directs the flow of wastewater to one side of the filter bed or the other. This allows one part of the bed to rest, while the other is in use. This may help extend the life span of your filter bed system. The flow diverter should be switched to alternate flow at least annually. For this reason, the flow diversion box must be kept to grade. If you do not know where it is located, contact your septic pumper, installer, or the Board of Health.

Aeration Systems

If you utilize a home aeration system, special care is required. The motor, which provides aeration to the system, must operate continuously. If it does not, the oxygen required by the microorganisms that thrive in the aeration system will not be sufficient and they will begin to die. These "sewage bugs" help to break down the organic matter in the wastewater and biologically convert it to stable substances in the form of gases and liquids. The aeration and mixing of the wastewater ensures that it comes in contact with the microorganisms so thorough treatment can occur.

Several aeration system designs also incorporate the use of filters to provide additional treatment. These filters need to be checked and cleaned on a routine basis to work effectively. If these filters become clogged, then the wastewater has no place to travel within that system. This can cause a possible backup. It can also cause solids to clog the motor, shortening its life span. Untreated waste may eventually leave the system and enter the environment.

Aeration systems have mechanical components, which will also need to be serviced and eventually replaced. Since much of the additional care and maintenance required with these systems is beyond the expertise of the average homeowner, various companies have been certified by the original manufacturers to offer extended service contracts.

MODERN AERATION SYSTEMS

... have an alarm box that is situated in a conspicuous location in your home.

- An alarm will typically sound if a motor is not operating or if you are having a backup within the tank.
- Once this alarm sounds, you should contact the service provider whose name appears on the alarm box.
- You should also conserve water usage until a technician arrives to repair your system.
- You can still flush your toilets and use water sparingly during this time.
- Refrain from washing laundry or conducting other activities that generate a large volume of wastewater.

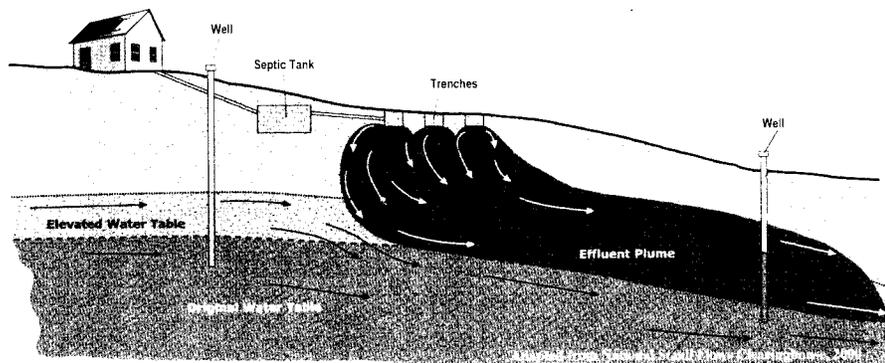
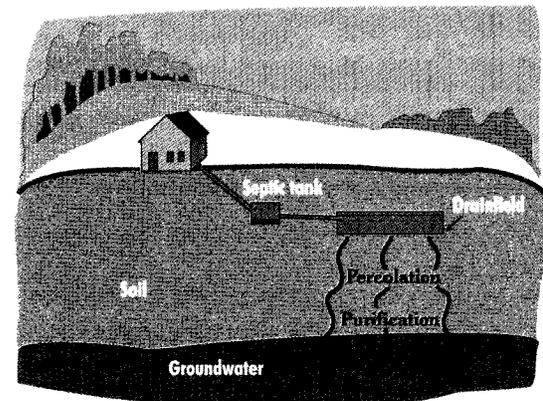
A back up into your home or ponding of wastewater on your lawn could result.

Leachfields

The typical sewage system installed throughout the country for decades has utilized a septic tank and a leaching tile field. By design, the sewage flows out of the tank and into either a clay tile or perforated pipe that is laid in trenches. The wastewater then drains from the pipes and enters the soil where it must be filtered and absorbed. This effluent must be properly filtered so that it does not pose a threat to ground water.

Leaching tile fields work well in areas with well drained, sandy soils. Unfortunately, much of Cuyahoga County consists of relatively poorly drained clay soils. These soils typically have little absorption capacity. The soil permeability - the rate at which water percolates into the soil - is very slow. Poorly drained soils are typically saturated with water during wet weather and stay wet for long periods of time after a heavy rain.

Leaching tile fields are designed to keep all of the effluent on lot. If your system utilizes a leachfield and is instead discharging off lot, your system is not operating properly. Leachfields will fail once the soil can no longer absorb the water that is being sent there from the septic tank. Once this occurs, the wastewater will either pond on top of the ground or find an alternative path and be discharged onto the ground at another location.



Evapotranspiration Fields (E-T)

An evapotranspiration system, or shallow leaching system, receives effluent from the septic tank and disposes of it by a combination of evaporation at the soil surface and transpiration to plants. There is also dissipation into the soil, but it can be limited depending on the severity of the soil structure.

The evapotranspiration system design incorporates a large leaching field preceded by an aeration system or mounded sand filter bed. The trenches are shallow to allow for the evaporation and transpiration of the treated wastewater. The best soil available is typically near the surface, where the plant roots are located

Mounds

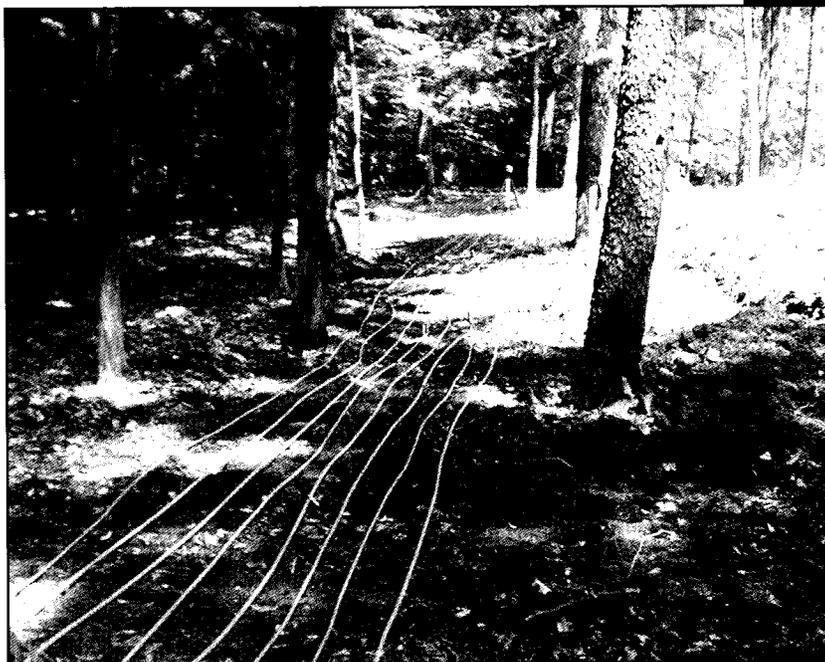
A septic tank mound system can be utilized for treating and disposing of domestic wastewater in areas unsuitable for conventional septic tank soil absorption systems. Mounds are pressure-dosed sand filters placed above, and discharging directly to, the natural soil. Their main purpose is to provide additional treatment to the wastewater before it enters the natural environment. Mound systems are designed to overcome site restrictions such as:

- Soils that have a very slow or extremely rapid permeability
- Shallow soil cover over creviced or porous bedrock
- A high water table.

The three components of a mound system are a pretreatment unit(s), dosing chamber, and the elevated mound. The pretreatment unit is usually a septic tank, which removes solids from the wastewater. An aeration system may also be utilized to improve the quality of wastewater reaching the mound. The dosing chamber follows the septic tank and contains a pump, which uses pressure to evenly distribute the wastewater over the infiltration surface of the mound. The mound is made up of a soil cover that can support vegetation. Below the soil is a fabric-covered coarse gravel aggregate in which a network of small diameter perforated pipe is placed. The network of perforated pipe is designed to distribute the effluent evenly through the gravel. Here it trickles down to the sand media and hence, into the plowed basal area (natural soil). Treatment occurs through physical, biological, and chemical means as the wastewater filters down through the sand and the natural soil.

Drip Irrigation

In a drip irrigation system the wastewater leaves the pretreatment unit and is pumped to a series of small diameter distribution piping. Several ounces of wastewater leave the piping through many emitter openings spaced evenly throughout the system. This allows for frequent, low pressure applications of the treated wastewater to the top layer of the soil, which is the most biologically active zone. This system can be utilized to overcome a number of site limitations and can potentially allow some difficult lots to be developed.



WHY SHOULD I **maintain my sewage system?**

When sewage systems are properly designed, constructed, and maintained, they effectively reduce or eliminate most human health or environmental threats posed by pollutants in household wastewater. However, they require regular maintenance or they can fail. Sewage systems need to be monitored to ensure that they work properly throughout their service lives.

Saving Money

A key reason to maintain your sewage system is to save money! Failing septic systems are expensive to repair or replace, and poor maintenance is often the culprit. Your system will need routine pumping. Pumping frequently will depend on how many people live in the house and the size of the system. A non-functioning sewage system can lower your property value and could pose a legal liability.

Protecting health and the environment

Other reasons for safe treatment of sewage include preventing the spread of infection or disease and protecting water resources. Typical pollutants in household wastewater include nitrogen, phosphorus, and disease-causing bacteria and viruses. If a sewage system is working properly, it will effectively remove most of these pollutants.

With one-fourth of U.S. homes currently using household sewage systems, more than 4 billion gallons of wastewater per day is dispersed below the ground surface or into the surface waters. Over a million sewage systems are currently in use in the state of Ohio. Inadequately treated sewage from these systems can be a cause of groundwater and surface water contamination. It poses a significant threat to drinking water and human health because it can contaminate drinking water wells and cause diseases and infections in people and animals. Improperly treated sewage that contaminates nearby surface waters also increases the chance of swimmers contracting a variety of infectious diseases. These range from eye and ear infections to acute gastrointestinal illnesses and hepatitis.

HOW DO I **maintain my sewage system?**

Inspect and pump frequently

You should have your sewage system pumped once every three years. If you have an aeration system, you should consider obtaining a service contract from the distributor of that particular system. This maintenance contract allows for routine inspections of all mechanical components of your system. For newer filter bed systems, the beds should be alternated on an annual basis at the distribution box. This allows for the alternating of the beds and will provide optimal life expectancy for your filter bed system. If you do not know where this box is located, contact the Board of Health for assistance.

Use water efficiently

Average indoor water use in the typical single-family home is almost 70 gallons per person per day. Leaky sinks and toilets can waste as much as 200 gallons each day. The more water a household conserves, the less water enters the sewage system. Efficient water use can improve the operation of the sewage system and reduce the risk of failure.

High-efficiency toilets and showerheads

Toilet use accounts for 25 to 30 percent of household water use. Do you know how many gallons of water your toilet uses to empty the bowl? Most older homes have toilets with 3.5 to 5-gallon reservoirs, while newer high-efficiency toilets use 1.6 gallons of water or less per flush. If you have problems with your sewage system being flooded with household water, consider reducing the volume of water in the toilet tank if you don't have a high-efficiency model. The use of high-efficiency showerheads can also dramatically minimize the volume of water the system receives on a daily basis.

Products not to be put into your sewage system

Even though sewage systems thrive on wastewater, certain chemicals can harm the delicate balance in a septic tank and should not be run through the system. They include:

- Paints, thinners, and solvents
- Drain cleaners
- Motor oil, kerosene and gasoline
- Floor wax and chlorine bleach

Other materials may not chemically harm the system, but may cause a blockage or clog pipes. These items will not break down and can not be digested by microorganisms. The following materials should never be flushed down the toilet or run down the drain:

- Grease, cooking oil and animal fat
- Cotton balls and cotton swabs
- Sanitary napkins and tampons
- Condoms
- Plastics
- Coffee grounds

Garbage disposals

Eliminating the use of a garbage disposal can reduce the amount of grease and solids entering the septic tank and possibly clogging components of your sewage system. A garbage disposal grinds up kitchen scraps, suspends them in water, and sends the mixture to the septic tank. Once in the septic tank, some of the materials are broken down by bacterial action, but most of the grindings flow through the tank and into the secondary treatment component of your sewage system. This can cause filter beds and filters in aeration units to clog.

USE WATER EFFICIENTLY!

- Install high-efficiency toilets and showerheads
- Fill the bathtub with only as much water as you need
- Turn off faucets while shaving or brushing your teeth
- Run the dishwasher and clothes washer only when they're full
- Use toilets to flush sanitary waste only (not kitty litter, diapers, or other trash)
- Make sure all faucets are completely turned off when not in use
- Maintain your plumbing to eliminate leaks
- Install aerators in the faucets in your kitchen and bathroom

Operation and Maintenance Program

Along with requested point of sale inspections and complaint investigations, the Cuyahoga County Board of Health conducts operational maintenance inspections of home sewage treatment systems throughout the health district. Since the effluent from home sewage systems has been identified as a major contributor to non-point source pollution in our waterways, an on-going inspection and maintenance program is a necessity.

Since the inception of the Operation and Maintenance Program, many educational seminars have been conducted for homeowners who utilize household sewage systems. The Board of Health continues to stress homeowner education as the key to a successful Operation and Maintenance Program. Countywide stream monitoring and sampling of surface water continue to assist in prioritizing areas determined to be adversely impacted by pollution sources. Many of the sewage systems in use today are of an antiquated design and were installed over 30 years ago. Evaluation results have shown that less than a third of these older systems are operating in a satisfactory manner. Most are not capable of properly treating and disposing of the household wastewater generated on a daily basis. This results in several hundred gallons of partially treated effluent, or in some cases, raw sewage leaving each failing system every day. To help identify and eliminate these sources of pollution, sewage system evaluations continue to be scheduled and conducted in communities throughout Cuyahoga County.

Working with Communities

The Operation and Maintenance Program encompasses an overall water quality and watershed based approach in hopes of minimizing water quality problems emanating from failing household sewage systems. As sewage systems are evaluated in a community, the data gathered is provided to local officials. This information can then be utilized to help determine the most effective means of eliminating pollution sources in a specific area. In many circumstances, the design and installation of a sanitary sewer is a feasible solution for eliminating failing sewage systems. Where sanitary sewers are determined not to be feasible, the repair or replacement of failing home sewage treatment systems will be on going.

Many municipalities have completed preliminary studies and have determined that the installation of sanitary sewers in sections of their communities is not feasible. Topographical limitations, large lot sizes or frontages, and sparse population in an area may result in a sewer project not being practical. In these communities, the Board of Health continues to collaborate with homeowners to repair or replace failing home sewage treatment systems. To date, several thousand failing or improperly working sewage treatment systems have either been repaired or replaced throughout Cuyahoga County. These activities have resulted in dramatic improvement in the water quality in those areas. In many cases, the cost to homeowners for the construction of a sanitary sewer is often comparable to the cost of replacing the existing sewage treatment system. Likewise over 4000 systems have been eliminated from use as a result of the installation of sanitary sewers since the inception of the Operation and Maintenance Program.

The Cuyahoga County Board of Health has also developed a regional storm water program to assist our 55 designated Phase II Storm Water Communities within our jurisdiction, and to also assist communities throughout the State of Ohio. This program was created and expanded from our existing Household Sewage Operation and Maintenance Program and Water Quality Monitoring Programs. This program allows the Board of Health to provide specific functions for these communities to assist them in reaching their Storm Water Management Program Goals. These activities includes educational outreach and participation, illicit discharge detection, MS4 inventories, dry weather flow surveys, water quality monitoring of MS4 outfalls and investigative activities to locate illicit sources of pollution to a communities MS4 system.

Water Quality Program

The Cuyahoga County Board of Health conducts an extensive water quality program. The focus of this program is an overall watershed based approach when dealing with water quality issues. Activities within this program include:

- Identifying and eliminating public health nuisances and hazards in our surface waters
- Surveying the various watersheds throughout the county
- Supporting the Household Sewage, Storm Water, Semi-public Sewage, Bathing Beach and Parks & Recreation Programs
- Educating the public on Non-Point Source Pollution issues
- Participating in local watershed protection groups and meetings

Stream Monitoring

The Board of Health has conducted a stream monitoring program since the late 1980's. This program allows for the chemical and biological monitoring of water quality in our watersheds. The information collected from this program has documented the need for the Board of Health's Operation and Maintenance Program for Household Sewage Treatment Systems. To date, thousands of water quality samples have been collected. Likewise, over 50 permanent water quality monitoring sites have been established within the various watersheds in Cuyahoga County. This data is used to obtain general baseline conditions and to identify problem areas potentially being impacted by sources of water pollution.

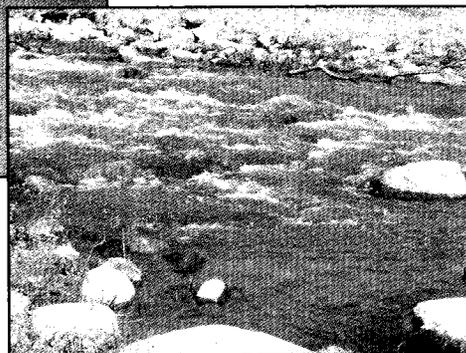
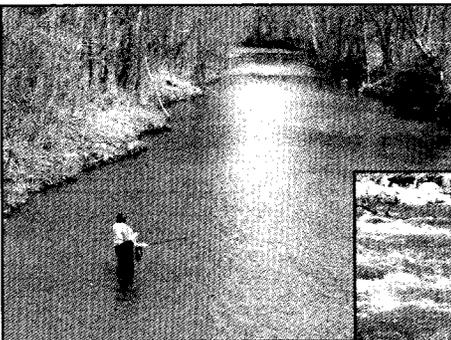
The Board of Health also employs college interns over the summer months to perform various studies on specific sub-watersheds. These studies enable college students with an interest in environmental health the opportunity to receive real work experience by performing biological and chemical monitoring of surface waters. If you would like more information about this program or are interested in becoming an intern, please contact the Board of Health.

Stream Surveys

Intensive surveys are performed on specific watersheds.

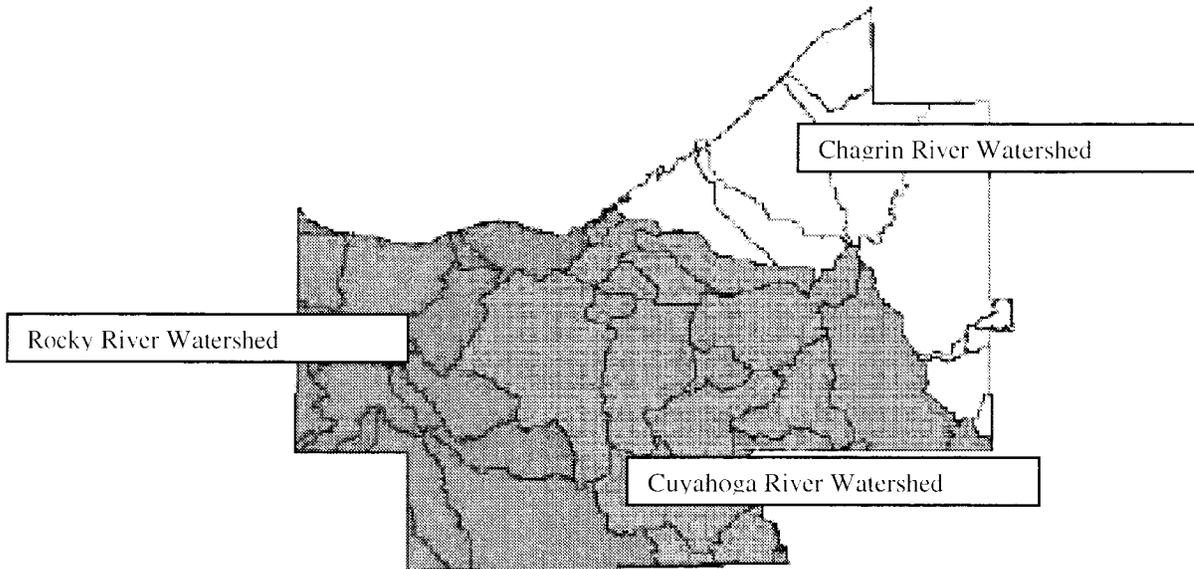
Survey methods include:

- Bacteriological and chemical analysis
- Macroinvertebrate sampling
- Qualitative Habitat Evaluation Index (QHEI) analysis
- Headwater Habitat Evaluation Index (HHEI) analysis



Appendix C

Watersheds in Cuyahoga County



What is a watershed?

It's the land that water flows across or under on its way to a stream, river, or lake. The landscape is made up of many interconnected basins, or watersheds. Within each watershed, all water runs to the lowest point – a stream, river or lake. On its way, water travels over the surface and across farm fields, forest land, suburban lawns, and city streets, or it seeps into the soil and travels as ground water.

Everyone lives in a watershed. In Cuyahoga County, we all live in the Lake Erie Watershed. This is then divided into smaller watersheds. In Cuyahoga County, the three main watersheds are the Rocky River, Cuyahoga River and the Chagrin River Watersheds. All three of these watersheds flow into Lake Erie. These watersheds, like most of Northeast Ohio, were shaped by glacial activity. Many areas of the watersheds, particularly along its steep hillsides and stream banks, contain loose sand and gravel that naturally erode at a high rate. Other areas of the watershed have clay soils that do not easily absorb water, allowing much of the rainfall and snowmelt to runoff quickly. As a result of this glacial past, Cuyahoga County watersheds has varied topography and naturally high rates of both flooding and erosion.

SEPTIC TANK

How the tank works

The contents of the septic tank stratify into three layers:

- Floating Scum Layer - soaps, greases, toilet paper, etc.
- Liquid layer - water, other liquids, and suspended solids
- Sludge - heavy organic and inorganic materials settle to the bottom of the tank.

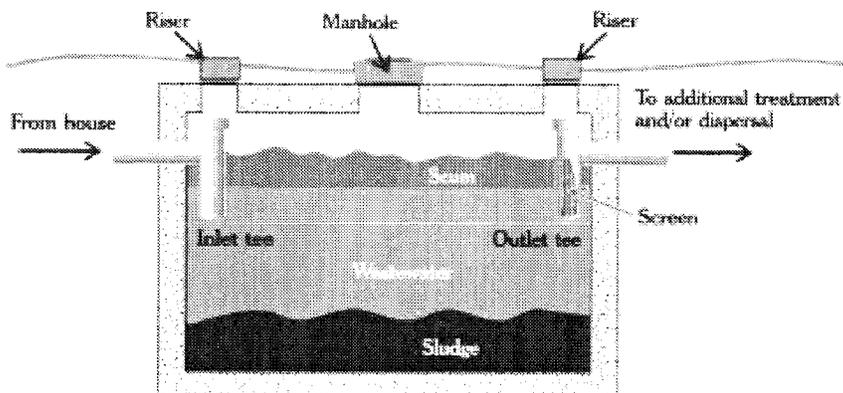
Bacteria that naturally occur in the sewage which enters the tank are necessary to break down organic materials in wastewater. This is often referred to as primary treatment. Pathogens in the waste are not destroyed in the septic tank. The septic tank and its bacteria prepare the wastewater for treatment by the remainder of your system.

Components of the tank

The septic tank performs the first step of the wastewater treatment process. The septic tank is a solid watertight tank designed specifically to accept all wastewater from the home. Some installations may have one tank or two tanks in series. All tanks should feature inlet and outlet baffles, along with an access manhole for cleaning.

The inlet baffle ensures that entering wastewater mixes with the liquid contents of the tank to begin bacterial breakdown of organic materials and separation of solids. The inlet baffle also prevents the floating scum layer from floating back and clogging the inlet pipe.

The outlet baffle ensures that only liquid is able to leave the tank and enter the secondary treatment portion of your system. If the scum layer reaches the outlet pipe, the pipe would quickly become plugged.



AERATION SYSTEMS

If you utilize a home aeration system, special care is required. The motor, which provides aeration to the system, must operate continuously. If it does not, the oxygen required by the microorganisms that thrive in the aeration system will not be sufficient and they will begin to die. These “sewage bugs” help to break down the organic matter in the wastewater and biologically convert it to stable substances in the form of gases and liquids. The aeration and mixing of the wastewater ensures that it comes in contact with the microorganisms so thorough treatment can occur.

Several aeration system designs also incorporate the use of filters to provide additional treatment. These filters need to be checked and cleaned on a routine basis to work effectively. If these filters become clogged, then the wastewater has no place to travel within that system. This can cause a possible backup. It can also cause solids to clog the motor, shortening its life span. Untreated waste may eventually leave the system and enter the environment.

Aeration systems have mechanical components, which will also need to be serviced and eventually replaced. Since much of the additional care and maintenance required with these systems is beyond the expertise of the average homeowner, various companies have been certified by the original manufacturers to offer extended service contracts.

Modern aeration systems have an alarm box that is situated in a conspicuous location in your home. This alarm box will let you know if there is a problem with the system. An alarm will typically sound if a motor is not operating or if you are having a backup within the tank. Once this alarm sounds, you should contact the service provider whose name appears on the alarm box. You should also conserve water usage until a technician arrives to repair your system. You can still flush your toilets and use water sparingly during this time. Refrain from washing laundry or conducting other activities that generate a large volume of wastewater. A back up into your home or ponding of wastewater on your lawn could result.

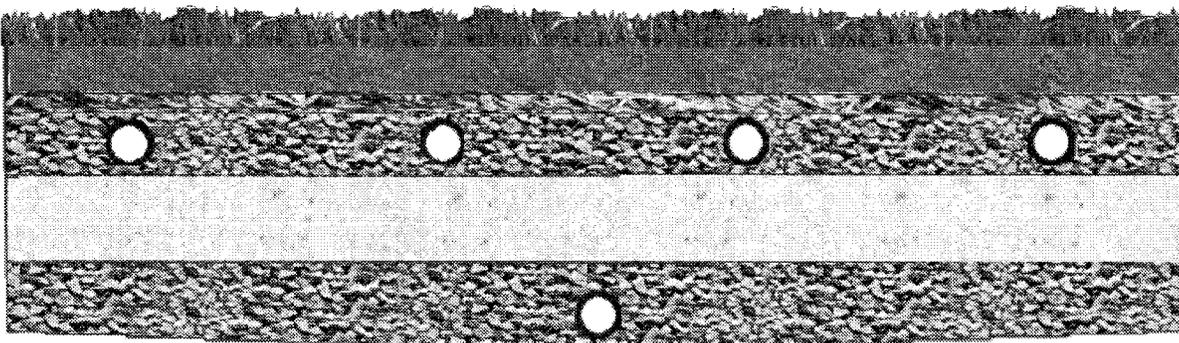
If you have any questions regarding the maintenance of your aeration system, please contact the Board of Health or the manufacturer’s representative for assistance.

FILTER BED SYSTEMS

Although their design may have changed over the years, filter bed systems have been installed in Cuyahoga County for decades. Filter beds installed prior to the early 1970's typically utilized gravel as a filtration media. The beds consisted of clay tile pipes laid on top of a 15 to 24 inch thick bed of large gravel. A clay tile line was also placed below the gravel bed to act as a collection pipe. Wastewater from the septic tank would drain into the top pipes, filter through the gravel and be collected in the bottom line. This effluent was then discharged to the environment. Many of these systems are still in use today.

Unfortunately, these old gravel beds did not function well and did not have the ability to properly filter the sewage prior to discharging it to a ditch, stream or storm sewer. For this reason, approved filter sand has been utilized as the actual filtration media in more modern filter bed systems. Perforated pipe is laid in gravel both above and below the filter sand. The sand has a filtration capability that is far superior to that of gravel.

Filter bed systems installed in the last few decades typically use a splitter box, also know as a distribution box. This box contains a flow diversion device that directs the flow of wastewater to one side of the filter bed or the other. This allows one part of the bed to rest, while the other is in use. This may help extend the life span of your filter bed system. The flow diverter should be switched to alternate flow at least annually. For this reason, the flow diversion box must be kept to grade. If you do not know where it is located, contact your septic pumper, installer, or the Board of Health.

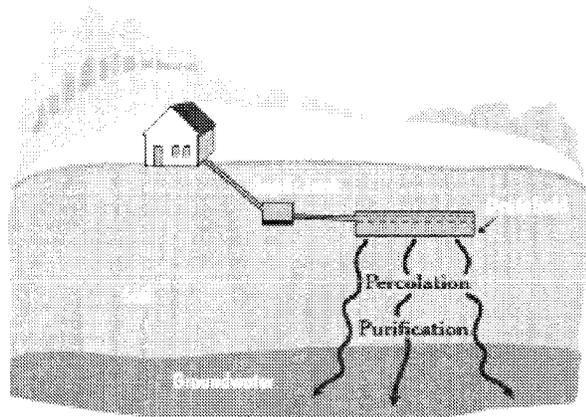


LEACHING TILE FIELD

The typical sewage system installed throughout the country for decades has utilized a septic tank and a leaching tile field. By design, the sewage flows out of the tank and into either a clay tile or perforated pipe that is laid in trenches. The wastewater then drains from the pipes and enters the soil where it must be filtered and absorbed. This effluent must be properly filtered so that it does not pose a threat to ground water.

Leaching tile fields work well in areas with well drained, sandy soils. Unfortunately, much of Cuyahoga County consists of relatively poorly drained clay soils. These soils typically have little absorption capacity. The soil permeability - the rate at which water percolates into the soil - is very slow. Poorly drained soils are typically saturated with water during wet weather and stay wet for long periods of time after a heavy rain.

Leaching tile fields are designed to keep all of the effluent on lot. If your system utilizes a leachfield and is instead discharging off lot, your system is not operating properly. Leachfields will fail once the soil can no longer absorb the water that is being sent there from the septic tank. Once this occurs, the wastewater will either pond on top of the ground or find an alternative path and be discharged onto the ground at another location.



Appendix D

Pepper Creek Water Quality Monitoring Project Summer 2004

Cuyahoga County Board of Health



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Preface

During the months of May, June, and July a water quality assessment of Pepper Creek was carried out by summer intern, Sarah Beganyi under the supervision of Harry Stark and Donna Childs. This project evaluated the chemical, biological and physical properties of Pepper Creek.

This project began in May by assessing the Qualitative Habitat Evaluation Index (QHEI) of Cahoon Creek. After QHEI was completed, Donna Childs and Sarah Beganyi selected chemical/biological sampling points of interest. Sampling parameters included temperature, dissolved oxygen, specific conductance, pH, fecal coliform, total phosphorus and ammonia nitrogen, which were collected at ten locations. Macroinvertebrate testing was also performed at five sites along the creek.

This assessment studied the effect of suburbanization on water quality. Pepper Creek is surrounded by suburban residential development except for the eastern section which flows through a sparsely populated area.

Description and Location of Pepper Creek

Pepper Creek is recognized by the Ohio Environmental Protection Agency (OEPA) as a Primary Contact Stream. There are more details on this in the fecal coliform section.

Pepper Creek is located in Northeast Ohio. The tributaries start in the Pepper Pike area; they connect in Pepper Pike and run to the Chagrin River thru Hunting Valley. See map in Fig. 1.

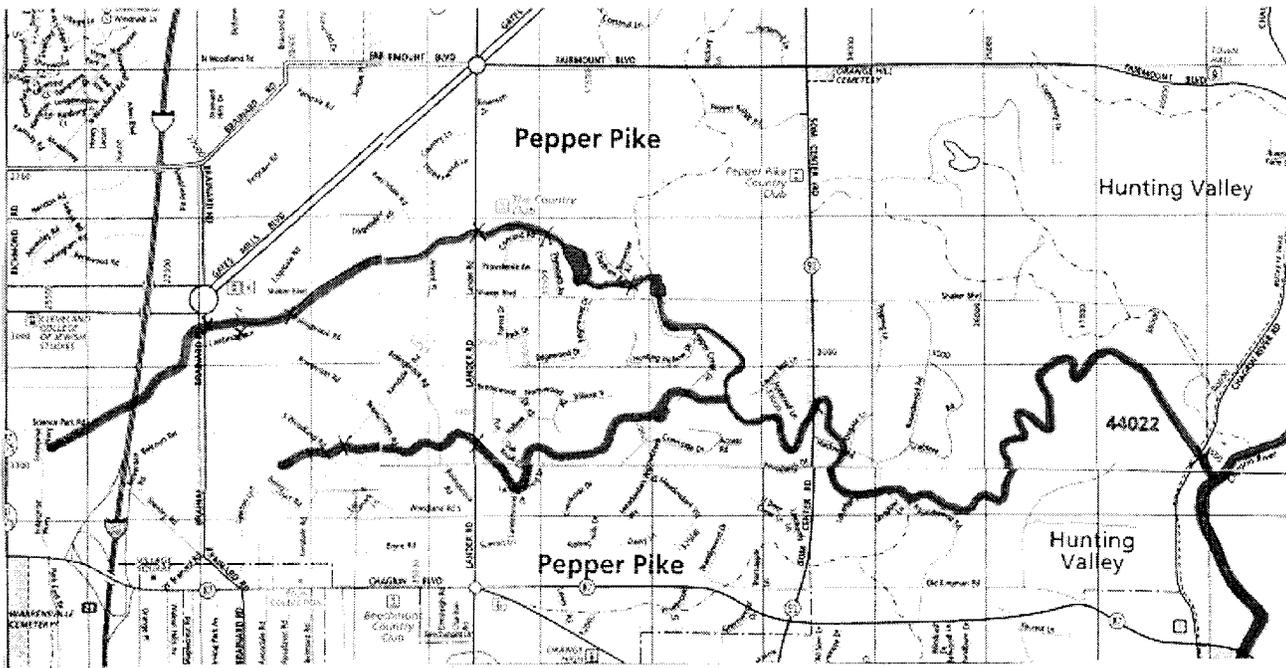


Fig. 1: The tributaries to Pepper Creek begin in Pepper Pike. The creek runs through Hunting Valley and into the Chagrin River.

The Qualitative Habitat Evaluation Index (QHEI)

Introduction

The Qualitative Habitat Evaluation Index (QHEI) was created by Edward T. Rankin from the Ohio Environmental Protection Agency (OEPA) to assess the physical characteristics of a stream that provide useful coverage and shelter for aquatic communities. The QHEI examines six metrics which are scored separately and then added together to provide the overall QHEI score. These metrics include substrate quality, instream cover, channel morphology, riparian zone, pool and riffle quality, and the gradient. Final QHEI scores range from zero to one hundred, with higher scores indicating superior habitats. Scores from zero to forty five indicate the stream has a poor potential to support an aquatic community, while streams scoring between forty five and sixty may or may not be capable of supporting a healthy aquatic community. Scores higher than seventy-five indicate the physical ability to support fish species that favor exceptional warm water habitats (Edward Rankin, OEPA). See score sheet Fig. 2 and Fig. 3.



Qualitative Habitat Evaluation Index Field Sheet QHEI Score:

River Code: _____ RM: _____ Stream: _____

Date: _____ Location: _____

Scorer's Full Name: _____ Affiliation: _____

1) SUBSTRATE (Check ONLY Two Substrate TYPE BOXES; Estimate % present)

| TYPE | POOL RIFFLE | POOL RIFFLE | SUBSTRATE ORIGIN | SUBSTRATE QUALITY |
|--|--|--|--|---|
| <input type="checkbox"/> BLDR (SIBS) [10] | <input type="checkbox"/> GRAVEL [7] | Check ONE (OR 2 & AVERAGE) | | Check ONE (OR 2 & AVERAGE) |
| <input type="checkbox"/> SHOULDER [9] | <input type="checkbox"/> SAND [8] | <input type="checkbox"/> LIMESTONE [1] | SILT: | <input type="checkbox"/> SILT HEAVY (-2) |
| <input type="checkbox"/> COBBLE [8] | <input type="checkbox"/> BEDROCK [5] | <input type="checkbox"/> TILLS [1] | | <input type="checkbox"/> SILT MODERATE [1] Substrate |
| <input type="checkbox"/> HARDPAN [4] | <input type="checkbox"/> DETRITUS [3] | <input type="checkbox"/> WETLANDS [0] | | <input type="checkbox"/> SILT NORMAL [0] |
| <input type="checkbox"/> MUCK [2] | <input type="checkbox"/> ARTIFICIAL [0] | <input type="checkbox"/> HARDPAH [0] | | <input type="checkbox"/> SILT FREE [1] |
| <input type="checkbox"/> SILT [2] | NOTE: Ignore Sludge Originating From Point Sources | | <input type="checkbox"/> SANDSTONE [0] | EMBEDDED |
| | | | | <input type="checkbox"/> EXTENSIVE [2] Max 20 |
| | | | | <input type="checkbox"/> MODERATE [-1] |
| NUMBER OF SUBSTRATE TYPES: <input type="checkbox"/> 4 or More [2] | | | | <input type="checkbox"/> NORMAL [0] |
| (High Quality Only, Score 5 or +) <input type="checkbox"/> 3 or Less [0] | | | | <input type="checkbox"/> NONE [1] |
| COMMENTS: _____ | | | | <input type="checkbox"/> COAL FINES [-2] |

2) INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

| (Structure) | TYPE: Score All That Apply | AMOUNT: (Check ONLY One or check 2 and AVERAGE) |
|---|--|---|
| <input type="checkbox"/> UNDERCUT BANKS [1] | <input type="checkbox"/> POOLS > 70 cm [2] | <input type="checkbox"/> EXTENSIVE > 75% [11] Cover |
| <input type="checkbox"/> OVERHANGING VEGETATION [1] | <input type="checkbox"/> ROOTWADS [1] | <input type="checkbox"/> MODERATE 25-75% [7] Max 20 |
| <input type="checkbox"/> SHALLOWS (IN SLOW WATER) [1] | <input type="checkbox"/> BOULDERS [1] | <input type="checkbox"/> SPARSE 5-25% [3] |
| <input type="checkbox"/> ROOTMATS [1] | COMMENTS: _____ | <input type="checkbox"/> NEARLY ABSENT < 5% [1] |

3) CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

| SINOUSITY | DEVELOPMENT | CHANNELIZATION | STABILITY | MODIFICATIONS/OTHER |
|---------------------------------------|--|--|---------------------------------------|---|
| <input type="checkbox"/> HIGH [4] | <input type="checkbox"/> EXCELLENT [7] | <input type="checkbox"/> NONE [6] | <input type="checkbox"/> HIGH [3] | <input type="checkbox"/> SNAGGING |
| <input type="checkbox"/> MODERATE [3] | <input type="checkbox"/> GOOD [5] | <input type="checkbox"/> RECOVERED [4] | <input type="checkbox"/> MODERATE [2] | <input type="checkbox"/> RELOCATION |
| <input type="checkbox"/> LOW [2] | <input type="checkbox"/> FAIR [3] | <input type="checkbox"/> RECOVERING [3] | <input type="checkbox"/> LOW [1] | <input type="checkbox"/> CANOPY REMOVAL |
| <input type="checkbox"/> NONE [1] | <input type="checkbox"/> POOR [1] | <input type="checkbox"/> RECENT OR NO RECOVERY [1] | | <input type="checkbox"/> DREDGING |
| | | | | <input type="checkbox"/> IMPOUND. |
| | | | | <input type="checkbox"/> ISLANDS |
| | | | | <input type="checkbox"/> LEVEED |
| | | | | <input type="checkbox"/> BANK SHAPING |
| | | | | <input type="checkbox"/> ONE SIDE CHANNEL MODIFICATIONS |

COMMENTS: _____

4) RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) ^R River Right; Looking Downstream

| RIPARIAN WIDTH | FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) | BANK EROSION |
|--|---|--|
| L R (Per Bank) | L R (Most Predominant Per Bank) | L R (Per Bank) |
| <input type="checkbox"/> WIDE > 50m [4] | <input type="checkbox"/> FOREST, SWAMP [3] | <input type="checkbox"/> CONSERVATION TILLAGE [1] |
| <input type="checkbox"/> MODERATE 10-50m [3] | <input type="checkbox"/> SHRUB OR OLD FIELD [2] | <input type="checkbox"/> URBAN OR INDUSTRIAL [0] |
| <input type="checkbox"/> NARROW 5-10 m [2] | <input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1] | <input type="checkbox"/> OPEN PASTURE, ROWCROP [0] |
| <input type="checkbox"/> VERY NARROW < 5 m [1] | <input type="checkbox"/> FENCED PASTURE [1] | <input type="checkbox"/> MINING/CONSTRUCTION [0] |
| <input type="checkbox"/> NONE [0] | | <input type="checkbox"/> NONE/LITTLE [3] |
| COMMENTS: _____ | | <input type="checkbox"/> MODERATE [2] |
| | | <input type="checkbox"/> HEAVY/SEVERE [1] |

5) POOL/GLIDE AND RIFFLE/RUN QUALITY

| MAX. DEPTH | MORPHOLOGY | CURRENT VELOCITY (POOLS & RIFFLES) |
|--|--|---|
| (Check 1 ONLY) | (Check 1 or 2 & AVERAGE) | (Check All That Apply) |
| <input type="checkbox"/> > 1m [5] | <input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2] | <input type="checkbox"/> EDDIES [1] |
| <input type="checkbox"/> 0.7-1m [4] | <input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1] | <input type="checkbox"/> TORRENTIAL [-1] |
| <input type="checkbox"/> 0.4-0.7m [2] | <input type="checkbox"/> POOL WIDTH < RIFFLE W. [0] | <input type="checkbox"/> FAST [1] |
| <input type="checkbox"/> 0.2-0.4m [1] | COMMENTS: _____ | <input type="checkbox"/> MODERATE [1] |
| <input type="checkbox"/> < 0.2m (POOL=0) | | <input type="checkbox"/> SLOW [1] |
| | | <input type="checkbox"/> INTERSTITIAL [-1] |
| | | <input type="checkbox"/> INTERMITTENT [-2] |
| | | <input type="checkbox"/> VERY FAST [1] |

| RIFFLE DEPTH | RUN DEPTH | RIFFLE/RUN SUBSTRATE | RIFFLE/RUN EMBEDDEDNESS |
|---|---------------------------------------|---|--|
| <input type="checkbox"/> Best Areas > 10 cm [2] | <input type="checkbox"/> MAX > 50 [2] | <input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2] | <input type="checkbox"/> NONE [2] |
| <input type="checkbox"/> Best Areas 5-10 cm [1] | <input type="checkbox"/> MAX < 50 [1] | <input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1] | <input type="checkbox"/> LOW [1] |
| <input type="checkbox"/> Best Areas < 5 cm (RIFFLE=0) | | <input type="checkbox"/> UNSTABLE (Fine Gravel, Sand) [0] | <input type="checkbox"/> MODERATE [0] |
| COMMENTS: _____ | | | <input type="checkbox"/> EXTENSIVE [-1] |
| | | <input type="checkbox"/> NO RIFFLE (metric=0) | |

5) GRADIENT (ft/m): _____ DRAINAGE AREA (sq. mi.): _____ %POOL: %GLIDE:

%RIFFLE: %RUN:

** Best available metric to large stream is riparian & precipitation. If ripples only are used.

Fig. 2: QHEI Score Sheet (Front)
Pepper Creek Water Quality Project 2004

Is Sampling Reach Representative of the Stream (Y/N) ___ If Not, Explain: _____

Subjective Rating (1-10)

Aesthetic Rating (1-10)

Gradient: - Low - Moderate - High

Gear: _____ Distance: _____ Water Clarity: _____ Water Stage: _____ Canopy - % Open: _____

First Sampling Pass: _____

| Stream Measurements: | | | | | | | | | |
|----------------------|---------------|---------------|--------------------|---------------------|--------------------|--------------------|-----------------|-------|----------------|
| Average Width | Average Depth | Maximum Depth | Av. Bankfull Width | Bankfull Mean Depth | Bankfull Max Ratio | Bankfull Max Depth | Floodprone Area | Width | Entrench Ratio |
| | | | | | | | | | |

Major Suspected Sources of Impacts (Check All That Apply):

- None
- Industrial
- WWTP
- Ag
- Livestock
- Silviculture
- Construction
- Urban Runoff
- CSDs
- Suburban Impacts
- Mining
- Channelization
- Riparian Removal
- Landfills
- Natural
- Dams
- Other Flow Alteration
- Other: _____

Stream Drawing:

Instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3. Where: 0 - Cover type absent; 1 - Cover type present in very small amounts or if more common of marginal quality; 2 - Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 - Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well developed rootwads in deep/fast water, or deep, well-defined, functional pools.

- Yes/No
- Is Stream Ephemeral (no pools totally dry or only damp spots)?
 - Is there water upstream? How Far: _____
 - Is There Water Close Downstream? How Far: _____
 - Is Dry Channel Mostly Natural?

Fig. 3: QHEI Score Sheet (Back)

Metrics and Scoring

Substrate is measured in many ways; by recognizing the predominant substrate types and total number of types present, its origin, quality, and embeddedness. The two most predominant substrate types (i.e. boulder, cobble, sand, gravel, etc.) are selected for each section, with more stable substrates scoring more points. In a case where one substrate dominates 75-80% of the bottom, only one substrate is chosen and scored twice. Points are also given for a high variety of substrates (four or more). Substrate origin refers to the material from which the substrate developed. Quality is measured by the silt heaviness, with less siltation scoring more points. Heavy silt can negatively affect aquatic plants and animals and block stream flow. Embeddedness is the degree to which cobble, gravel and boulder substrates are surrounded, impacted or covered by fine materials. The maximum score for the substrate metric is 20.

Common substrates for the headwaters of Pepper Creek include gravel (mixture of rounded coarse material from 2-64mm in diameter) and sand (materials 0.06-2.0mm in diameter; gritty texture). Other common substrates for Pepper Creek include cobble (stones from 64-256mm in diameter), bedrock (solid rock forming a continuous surface), and silt (0.004-0.06mm in diameter; fine material generally feels "greasy" when rubbed between fingers).

Instream Cover measures the variety and amount of available shelter for fish and macroinvertebrates. Examples of instream cover include undercut banks, overhanging vegetation, rootmats (thin masses of roots that hang from the bank in the water), rootwads

(large tree roots that hang in the water), large boulders, aquatic plants, deep pools, slow shallows, and woody debris (tree trunks, branches, etc.). The amount estimates the percentage of cover for the entire stream stretch. Instream cover should be functional. The maximum score for the instream cover metric is 20.

Common instream cover for Pepper Creek includes rootwads (the root of a tree submerged in the water), rootmats (fine fibrous roots submerged in the water), overhanging vegetation, undercut banks, woody debris and boulders. The amount ranged from sparse to extensive in different areas of the stream.

Channel Morphology refers to the stream's shape as indicated by sinuosity, development, channelization, and stability. Sinuosity describes the degree to which the stream meanders. A straight channel has no sinuosity, while a very sinuous stream has many bends. Development refers to the quality of riffle and pool complexes. Channelization shows how well a stream has recovered from human-made channel modifications, and stability defines the resistance of the stream banks and channel to change. The maximum score for this metric is 20.

The *Riparian Zone* metric measures the quality of the buffer zone between the stream and the surrounding landscape. The riparian width is the amount of natural land use on each stream bank, while the flood plain quality refers to the land use type that extends beyond the riparian zone. Bank erosion is also assessed. This metric scores the right and left banks separately, and then takes the average for the final score. The maximum score for this metric is 10.

Pool/glide and Riffle Quality measures the quality of the riffle and pool complexes. This metric is split into two parts, with a maximum score of 12 for pool/current development, and a maximum score of 8 for riffle/run quality.

The *Gradient* is measured by using a USGS 7.5 minute topographic map. To calculate the gradient, measure the stream length and the elevation drop. Gradient is the amount of feet dropped divided by the total length of the stream segment. The maximum score for the gradient metric is 10.

QHEI of Pepper Creek

This project assessed the QHEI of Pepper Creek. One QHEI field sheet was filled out approximately every 500 to 600 feet of stream length. Overall, thirty eight field sheets were completed for the north and south tributaries and the main branch of Pepper Creek. See Table 1, Table 2, and Table 3 for results.

North Trib

| Site Number | Substrate | Cover | Channel | Riparian | Pool/Current | Riffle/Run | Gradient | QHEI Score |
|-------------|-----------|----------|----------|----------|--------------|------------|----------|------------|
| 1 | 11 | 15 | 7.5 | 5.5 | 3 | 0 | 8 | 50 |
| 2 | 9 | 7 | 7.5 | 6 | 3 | 0 | 8 | 40.5 |
| 3 | 12 | 3 | 5.5 | 5 | 3 | 0 | 8 | 36.5 |
| 4 | 9 | 5 | 9.5 | 5 | 3 | 1 | 8 | 40.5 |
| 5 | 10.5 | 5 | 9.5 | 6 | 4 | 2 | 8 | 45 |
| 6 | 12.5 | 8 | 11.5 | 7 | 5 | 2.5 | 8 | 54.5 |
| 7 | 14 | 11 | 15 | 8 | 4 | 2.5 | 8 | 62.5 |
| 8 | 13 | 11 | 15 | 8 | 4 | 2.5 | 8 | 61.5 |
| 9 | 12 | 10 | 10.5 | 4.5 | 4 | 0.5 | 8 | 49.5 |
| 10 | 12 | 9 | 15.5 | 5 | 9 | 2 | 8 | 60.5 |
| 11 | 12 | 8 | 15.5 | 5 | 8 | 2 | 6 | 56.5 |
| 12 | 11 | 11 | 11 | 6 | 5 | 2 | 6 | 52 |
| 13 | 12 | 8 | 8.5 | 5.5 | 6 | 0 | 6 | 46 |
| 14 | 13 | 11 | 12 | 6 | 5 | 2 | 6 | 55 |
| 15 | 12 | 11 | 19 | 7 | 8 | 3 | 6 | 66 |
| 16 | 11.5 | 12 | 20 | 7 | 9 | 3 | 6 | 68.5 |
| 17 | 12 | 11 | 19 | 6.5 | 10 | 3 | 6 | 67.5 |
| Averages | 11.67647 | 9.176471 | 12.47059 | 6.058824 | 5.470588 | 1.647059 | 7.176471 | 53.67647 |

Table 1: QHEI results for Pepper Creek North Tributary.

South Trib

| Site Number | Substrate | Cover | Channel | Riparian | Pool/Current | Riffle/Run | Gradient | QHEI Score |
|-------------|-----------|----------|----------|----------|--------------|------------|----------|------------|
| 1 | 12 | 15 | 12 | 7 | 4 | 0 | 8 | 58 |
| 2 | 12 | 7 | 11 | 4.5 | 5 | 1 | 8 | 48.5 |
| 3 | 12 | 10 | 11.5 | 5 | 4 | 0.5 | 8 | 51 |
| 4 | 12 | 10 | 11 | 5.5 | 5 | 0.5 | 8 | 52 |
| 5 | 13 | 10 | 11 | 5 | 4 | 0 | 8 | 51 |
| 6 | 12 | 9 | 11 | 6 | 4 | 0 | 8 | 50 |
| 7 | 11 | 10 | 13 | 6 | 5 | 2 | 8 | 55 |
| 8 | 11 | 10 | 13 | 6 | 5 | 2 | 8 | 55 |
| 9 | 13 | 11 | 17 | 8 | 3 | 4 | 8 | 64 |
| 10 | 11 | 11 | 11.5 | 6 | 5 | 1 | 8 | 53.5 |
| 11 | 11.5 | 8 | 14 | 6 | 5 | 1 | 8 | 53.5 |
| Averages | 11.86364 | 10.09091 | 12.36364 | 5.909091 | 4.454545 | 1.090909 | 8 | 53.77273 |

Table 2: QHEI results for Pepper Creek South Tributary.

Main Branch

| Site Number | Substrate | Cover | Channel | Riparian | Pool/Current | Riffle/Run | Gradient | QHEI Score |
|-------------|-----------|-------|---------|----------|--------------|------------|----------|------------|
| 1 | 12 | 12 | 18 | 6.5 | 11 | 4 | 8 | 71.5 |
| 2 | 12 | 9 | 18 | 7 | 5 | 4 | 8 | 63 |
| 3 | 11 | 9 | 11 | 5.5 | 5 | 2 | 8 | 51.5 |
| 6 | 11 | 12 | 18 | 8 | 10 | 5 | 8 | 72 |
| 7 | 10 | 7 | 19 | 8 | 8 | 3 | 8 | 63 |
| 8 | 7 | 10 | 18 | 8 | 4 | 4 | 8 | 59 |
| 9 | 14 | 8 | 15 | 7 | 4 | 4 | 8 | 60 |
| 10 | 13 | 7 | 11.5 | 7 | 3 | 4 | 8 | 53.5 |
| Averages | 11.25 | 9.25 | 16.0625 | 7.125 | 6.25 | 3.75 | 8 | 61.6875 |

Table 3: QHEI results for Pepper Creek Main Branch.

Interpretation of Results

The overall average QHEI score for Pepper Creek was 55.5, suggesting that it may or may not have the potential to support an aquatic community. QHEI was developed for large streams to indicate its ability to support fish populations. Although Pepper Creek had some deep pools, it was not large enough to score in the high range. Other factors contributing to its fair score include the substrate, channel morphology and lack of natural riparian areas. The predominant substrate in parts of Pepper Creek was bedrock, which is not a functional fish habitat. Much of Pepper Creek runs through residential areas, which leads to increased sediment loads from storm sewer run-off. Channel modifications were also common. Many stream stretches had retaining walls and/or riprap to prevent erosion. In these areas especially, sinuosity was low because the stream was recovering from channelization. The channel morphology throughout the headwaters of Pepper Creek is poor, but gradually improves downstream toward its confluence with the Chagrin River. While Pepper Creek's average QHEI score suggests that it may or may not have the potential to support an aquatic community, small fish populations are present in deep pools suggesting that areas of this creek are indeed suitable fish habitats. See Fig. 4 for a graph of QHEI scores.

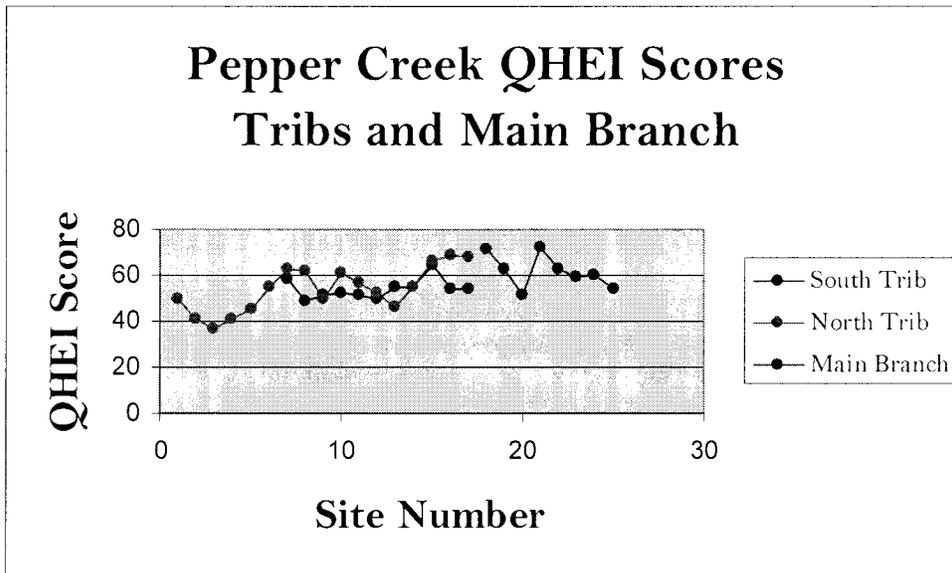


Fig. 4

Macroinvertebrate Sampling

Introduction

The macroinvertebrate population of a stream is influenced by its water quality. Benthic macroinvertebrates are organisms without a backbone such as arthropods, mollusks, and worms that live in the substrate on the stream bottom. These organisms are collected in the riffle areas of the stream where the water contains enough oxygen for them to survive. The organisms are divided into three groups based on their sensitivity to oxygen depletion. Group One taxa, which are the most sensitive, receive three points. Organisms in this group include

water penny larvae, mayfly nymphs, stonefly nymphs, dobsonfly larvae, caddisfly larvae, riffle beetle adults, and gilled snails. Group Two Taxa are worth two points. These organisms include damselfly nymphs, dragonfly nymphs, crane fly larvae, beetle larvae, crayfish, scuds, clams, and sowbugs. The pollution tolerant Group Three taxa receive only one point, and include blackfly larvae, aquatic worms, midge larvae, pouch snails, and leeches.

Macroinvertebrate Sampling on Pepper Creek

Five sampling locations were chosen in riffle areas along Pepper Creek. For this project, the Ohio Department of Natural Resources (ODNR) score sheet and sampling protocol was used. One person held a net downstream of a riffle area while another rubbed all rocks roughly three feet upstream so that everything living on them flowed into the net. Then, they kicked up the stream bottom to collect the organisms living in the smaller substrates. The net was picked up and placed on a white shower curtain where both participants collected the macroinvertebrates with tweezers and placed them in a container of water. When all of the organisms had been collected, they were tallied on the ODNR score sheet according to taxonomical group. Final scores indicate the quality of the macroinvertebrate population as follows: 23 or higher = Excellent; 22 – 17 = Good; 11 – 16 = Fair; 10 or less = Poor. See Table 4 for results.

| Pepper Creek Macro | Score |
|--------------------------|-------|
| N. Trib Shaker Rd. | 15 |
| Kersdale and S. Woodland | 17 |
| City Hall | 14 |
| Pepper Creek | 13 |
| Chagrin River Rd. | 13 |
| Average | 14.4 |

Table 4: Macroinvertebrate Results

Interpretation of Results

A total of five locations were sampled for macroinvertebrates along Pepper Creek, with an average score of “Fair”. While this score can be attributed to mediocre water quality, it can also be due to habitat problems. The same factors that lowered Pepper Creek’s QHEI scores would also negatively impact the macroinvertebrate population. For example, bedrock substrate is a poor habitat for macroinvertebrates, but has no bearing on the actual quality of the water.

Chemical Sampling

Introduction

Chemical and bacteriological sampling was conducted at ten locations along Pepper Creek. These points were chosen based on location, appearance, accessibility, and proximity to possible pollution sources. See map in Fig. 5, and Fig. 6 for sampling locations. See map in Fig. 5, and Fig. 6 for sampling locations.

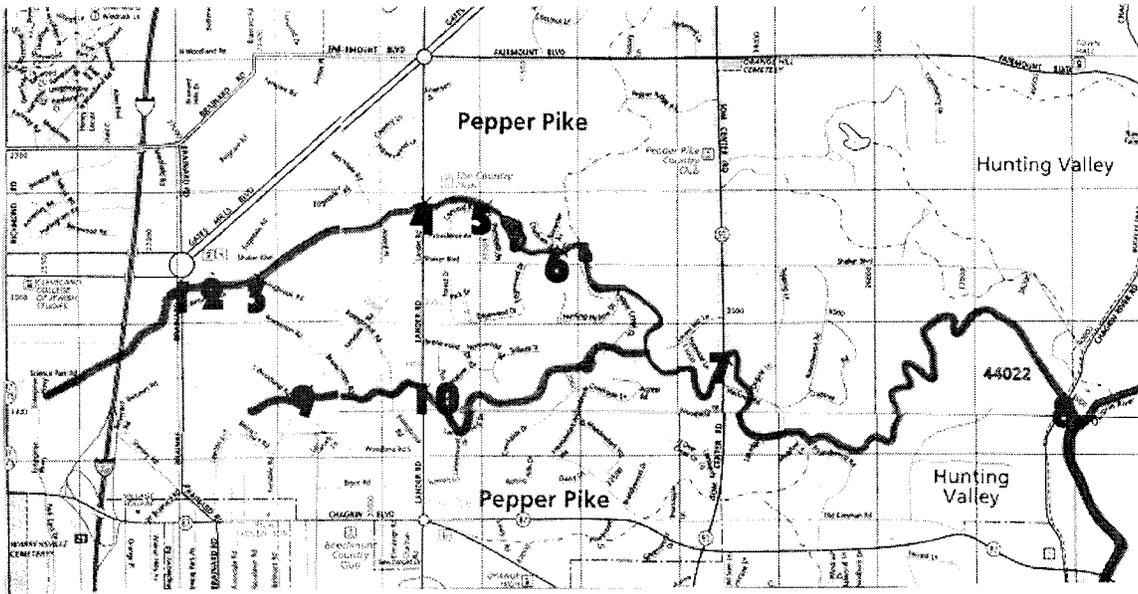


Fig. 5: Sampling Locations of Pepper Creek

1. Cambridge Trib
Cambridge and Brainard Rd. (Pepper Pike)
2. North Trib Brainard Rd.
Brainard Rd. Near Park (Pepper Pike)
3. North Trib Bolingbrook Outfall
Bolingbrook Rd. (Pepper Pike)
4. North Trib Lander Rd.
Lander Rd. (Pepper Pike)
5. North Trib Downstream of Country Club
Lander Rd. and Country Club (Pepper Pike)
6. North Trib Chatham Outfall
Chatham and Shaker Rd. (Pepper Pike)
7. Main Branch SOM Center Rd.
SOM Center Rd. and Hackney (Hunting Valley)
8. Main Branch Chagrins River Rd.
Chagrins River Rd. (Hunting Valley)
9. South Trib Kersdale Rd.
Kersdale Rd. and South Woodland (Pepper Pike)
10. South Trib Lander Rd.
Lander Rd. (Pepper Pike)

Fig. 6
Sampling
Points and
Locations

Fecal Coliform Standards

Fecal coliform are a type of bacteria found in the intestines of warm blooded animals, and are therefore used as an indicator organism for sewage pollution. High levels of this organism are linked to health risks caused by other more harmful bacteria or viruses.

The Ohio EPA (OEPA) has designated Pepper Creek as a primary contact stream, meaning its waters are suitable for full body submersion. Primary contact waterways must meet OEPA's fecal coliform standard which states that the geometric mean of five samples taken within a thirty day period shall not exceed 1,000 fecal coliform colonies per 100 milliliters (ml) of sample. It further states that no more than ten percent of the samples taken during the same period shall exceed 2,000 colonies/100 ml (Ohio Administrative Code 3745-1-07).

Fecal Coliform Sampling Procedures

The sites selected for this project were sampled a total of five times within a thirty day period. All samples were collected directly from Pepper Creek except for the ones labeled "North Trib. Bolingbrook Outfall" and "North Trib. Chatham Outfall", which were collected from storm sewer outfalls entering the creek. Samples were collected in 100 ml autoclaved Nalgene bacterial analysis bottles preserved with sodium thiosulfate. Bottles were lowered into the water facing upstream with a gloved hand. The lids were replaced tightly and the bottles were kept in a cooler at 4° Celsius and transported to the Cuyahoga County Sanitary Engineers Laboratory in Valley View. The membrane filter technique, or "plate count" method, was used to give the fecal coliform counts. Fecal coliform results are shown in Table 5.

Fecal Coliform Results by site for Pepper Creek.

| Sampling Points | 7/19/2004 | 7/20/2004 | 7/21/2004 | 8/3/2004 | 8/4/2004 | Geometric Mean |
|---|-----------|-----------|-----------|----------|----------|----------------|
| 1. Cambridge Tributary | 929 | 1513 | 944 | 2175 | 3291 | 1568.638 |
| 2. North Tributary Brainard Road | 500 | 903 | 827 | 1125 | 8733 | 1296.868 |
| 3. North Tributary Bolingbrook Outfall | 220 | 602 | 2200 | 5200 | 4600 | 1474.486 |
| 4. North Tributary Lander Road | 30462 | 10667 | 4400 | 2500 | 4933 | 7067.42 |
| 5. North Tributary Downstream of Country Club | 420 | 370 | 112 | 653 | 2200 | 478.1905 |
| 6. North Tributary Chatam Outfall | 1436 | 4900 | 61200 | 2439 | 2600 | 4866.956 |
| 7. Main Branch SOM Center Road | 1150 | 280 | 217 | 390 | 520 | 426.8514 |
| 8. Main Branch Chagrin River Road | 164 | 86 | 100 | 185 | 460 | 164.382 |
| 9. South Tributary Kersdale Road | 7692 | 3300 | 712 | 800 | 3950 | 2245.66 |
| 10. South Tributary Lander Road | 2400 | 5125 | 5000 | 1000 | 9600 | 3582.855 |

Table 5: Sampling on 8/4/2004 was during wet weather. Geometric Means highlighted in red exceeded the OEPA's standards for primary contact streams. Sampling point 5 has one day highlighted in red, but it did not exceed 2,000 colonies in more than ten percent of the sample; therefore, sampling point number 5 still meets the OEPA's standards.

Interpretation of Results

Eight out of ten sampling points exceeded the OEPA's water quality standards for primary contact streams. Failing household sewage treatment systems (HSTS) are the likely source of this water quality violation. The village of Pepper Pike currently contains 1,488 HSTS in areas that are not serviced by sanitary sewers, and Hunting Valley contains 623 systems.

Because most soil in Cuyahoga County is rated severe for on-lot sewage disposal, most of these systems discharge their effluent (via storm sewer outfalls, ditches, etc.) into Pepper Creek. Current regulations governing HSTS installations went into effect in 1977, and systems installed before that date were usually undersized and crudely constructed. Fecal coliform levels were highest in residential areas. In the downstream section of the creek where there was little residential development (sampling sites # 7 and 8), the levels were low. See map in Fig. 5.

Ammonia and Phosphorous

In addition to fecal coliform, ammonia nitrogen and total phosphorous samples were analyzed at the same ten sampling sites. High levels of these nutrients could indicate fertilizer, sewage, or industrial pollution. Surface water standards for ammonia nitrogen vary depending upon on the temperature, time of year, and pH (Ohio Administrative Code Chapter 3745-1-07). There are no current surface water standards for total phosphorous, but OEPA wastewater discharge permits usually require that effluent levels remain under 1 milligram per liter. See Table 6.

Ammonia and Phosphorous Results

| 8/4/2004 | | |
|---|---------|-------------------|
| Sampling Points | Ammonia | Total Phosphorous |
| 1. Cambridge Tributary | 0.17 | 0.26 |
| 2. North Tributary Brainard Road | 0.10 | 0.04 |
| 3. North Tributary Bolingbrook Outfall | 1.2 | 0.73 |
| 4. North Tributary Lander Road | 0.08 | 0.14 |
| 5. North Tributary Downstream of Country Club | 0.04 | 0.39 |
| 6. North Tributary Chatam Outfall | 0.18 | 0.81 |
| 7. Main Branch SOM Center Road | 0.14 | 0.35 |
| 8. Main Branch Chagrin River Road | 0.04 | 0.15 |
| 9. South Tributary Kersdale Road | 0.18 | 0.24 |
| 10. South Tributary Lander Road | 0.24 | 0.43 |

Table 6

Interpretation of Results

Ammonia levels should fall below 1.9 in the months of March to November when the temperature is 21° C and the pH is 7.2 to 7.7. All of the samples fell within the standards. Likewise, the total phosphorous levels at all sampling locations were low.

Dissolved Oxygen

Oxygen depletion is caused by excessive organics and nutrient loading in a waterway. Higher water temperatures also decrease oxygen levels in a stream. Therefore, low levels of dissolved oxygen can indicate both pollution and habitat degradation. Aquatic organisms need dissolved oxygen to survive. Dissolved oxygen levels below 5 mg/l put a significant stress on the aquatic life living in the stream. When the oxygen level falls below 2 mg/l, it is almost impossible for aerobic organisms to survive, and can result in large fish kills. See Table 7 for results.

Dissolved Oxygen (mg/L)

| Sampling Points | 8/4/2004 |
|--|----------|
| 1. Cambridge Tributary | 6.64 |
| 2. North Trib Brainard Road | 8.03 |
| 3. North Trib Bolingbrook Outfall | 7.81 |
| 4. North Trib Lander Rd. | 8.77 |
| 5. North Trib Downstream of Country Club | 8.25 |
| 6. North Trib Chatam Outfall | 7.51 |
| 7. Main Branch SOM Center Road | 5.51 |
| 8. Main Branch Chagrin River Road | 7.93 |
| 9. South Trib Kersdale Road | 7.04 |
| 10. South Trib Lander Road | 7.85 |

Table 7

Interpretation of Results

All of the sampling points were above the deadly range for dissolved oxygen. The sites with slightly lower dissolved oxygen levels had few riffle areas which may contribute to the lack of dissolved oxygen.

Specific Conductance

Conductivity measures electrical conductance in the water. High levels indicate more use of the water, which generally occurs in more highly populated regions. High conductivity readings sometimes correlate with high bacteria readings, dissolved solid readings, or other chemical readings. The range for conductivity of surface waters is from 100 to 10,000 μ S/cm (microSiemens per centimeter). See Table 8.

Specific Conductance

| Sampling Points | 8/4/2004 |
|--|----------|
| 1. Cambridge Tributary | 2992 |
| 2. North Trib Brainard Road | 2857 |
| 3. North Trib Bolingbrook Outfall | 2642 |
| 4. North Trib Lander Rd. | 2293 |
| 5. North Trib Downstream of Country Club | 548 |
| 6. North Trib Chatam Outfall | 1150 |
| 7. Main Branch SOM Center Road | 952 |
| 8. Main Branch Chagrin River Road | 806 |
| 9. South Trib Kersdale Road | 980 |
| 10. South Trib Lander Road | 1008 |

Table 8

Interpretation of Results

All of the results fell within an acceptable range. There was no significant correlation between fecal coliform levels and conductivity. Generally, when fecal coliform levels are high, conductivity levels are high, but high conductivity levels can also be obtained when fecal levels are low.

Conclusion

This study was carried out to assess the physical (QHEI), biological (macroinvertebrate population), and bacteriological/chemical health of Pepper Creek. Both the QHEI and the macroinvertebrate scores were in the fair range, suggesting that the creek has been negatively impacted by urbanization. Fecal coliform levels were also high in the creek, indicating a potential public health nuisance from sewage pollution.

The surrounding suburban land use negatively affects stream habitat in many ways. Storm sewer systems designed to prevent roadways from flooding are responsible for increased sporadic stream flows, which can wash away macroinvertebrate populations and also increase erosion and sediment loadings. The destruction of the natural riparian buffer leaves the creek further unprotected from lawn, roof-top, and pavement run-off. The manicured lawns bordering much of the creek do not provide the necessary root system to prevent erosion and absorb the sediment and chemicals that are present in urban rainwater run-off. Shade trees are sparse, which increases summer water temperatures and limits the sources of instream cover for fish and macroinvertebrates. Channel modifications (retaining walls, rip-rap) decrease sinuosity and inhibit natural riffle/pool development. All these factors decrease the creek's ability to support healthy aquatic communities.

Pepper Creek failed to meet its OEPA designation as a primary contact waterway due to high fecal coliform bacteria levels in several locations. Improperly functioning household sewage treatment systems (HSTS) are the likely source of this pollution. The Cuyahoga County Board of Health (CCBH) is working with both communities in the Pepper Creek watershed (Pepper Pike and Hunting Valley) to upgrade failing HSTS. When failing systems are identified by CCBH inspectors, the homeowners must replace them with systems meeting the current standards. In addition, the village of Pepper Pike plans to install sanitary sewers in portions of the watershed, which will further improve the water quality of Pepper Creek.

Resources

Ohio Administrative Code 3745-1-07. "Water Quality Standards"

Ohio Administrative Code 3745-1-07. "Ammonia and Nitrogen Criteria"

Ohio Department of Natural Resources Macroinvertebrate Guide.

Ohio Environmental Protection Agency (OEPA). 1994. Volume One: Regulations- Water Standards, Air Standards, Solid Waste, Permits, Procedural, and Miscellaneous 1994-2 Edition. Anderson Publishing Co. Cincinnati, OH.

Rankin, Edward T. 1989. The Qualitative Habitat Evaluation Index (QHEI): Rationale, Methods, and Application. OEPA Division of Water Quality Planning and Assessment Ecological Analysis Section. Columbus, OH.

Pepper Creek Water Quality Monitoring Project Summer 2004

Cuyahoga County Board of Health



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Preface

During the months of May, June, and July a water quality assessment of Pepper Creek was carried out by summer intern, Sarah Beganyi under the supervision of Harry Stark and Donna Childs. This project evaluated the chemical, biological and physical properties of Pepper Creek.

This project began in May by assessing the Qualitative Habitat Evaluation Index (QHEI) of Cahoon Creek. After QHEI was completed, Donna Childs and Sarah Beganyi selected chemical/biological sampling points of interest. Sampling parameters included temperature, dissolved oxygen, specific conductance, pH, fecal coliform, total phosphorus and ammonia nitrogen, which were collected at ten locations. Macroinvertebrate testing was also performed at five sites along the creek.

This assessment studied the effect of suburbanization on water quality. Pepper Creek is surrounded by suburban residential development except for the eastern section which flows through a sparsely populated area.

Description and Location of Pepper Creek

Pepper Creek is recognized by the Ohio Environmental Protection Agency (OEPA) as a Primary Contact Stream. There are more details on this in the fecal coliform section.

Pepper Creek is located in Northeast Ohio. The tributaries start in the Pepper Pike area; they connect in Pepper Pike and run to the Chagrin River thru Hunting Valley. See map in Fig. 1.

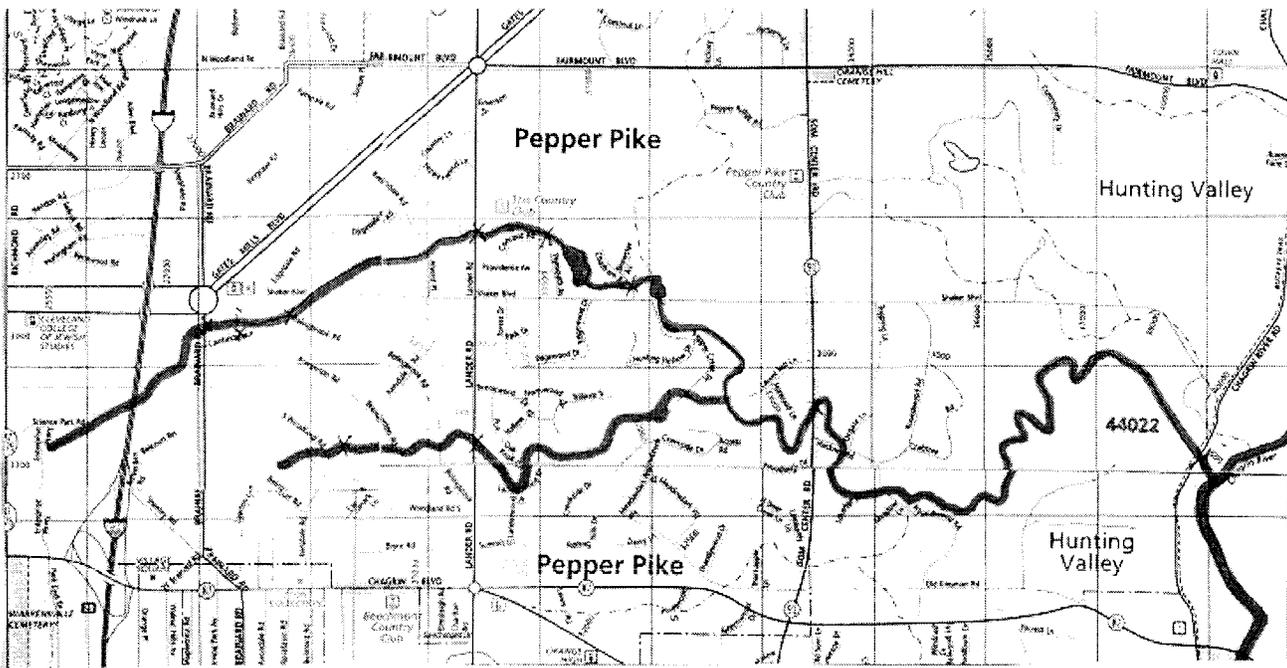


Fig. 1: The tributaries to Pepper Creek begin in Pepper Pike. The creek runs through Hunting Valley and into the Chagrin River.

The Qualitative Habitat Evaluation Index (QHEI)

Introduction

The Qualitative Habitat Evaluation Index (QHEI) was created by Edward T. Rankin from the Ohio Environmental Protection Agency (OEPA) to assess the physical characteristics of a stream that provide useful coverage and shelter for aquatic communities. The QHEI examines six metrics which are scored separately and then added together to provide the overall QHEI score. These metrics include substrate quality, instream cover, channel morphology, riparian zone, pool and riffle quality, and the gradient. Final QHEI scores range from zero to one hundred, with higher scores indicating superior habitats. Scores from zero to forty five indicate the stream has a poor potential to support an aquatic community, while streams scoring between forty five and sixty may or may not be capable of supporting a healthy aquatic community. Scores higher than seventy-five indicate the physical ability to support fish species that favor exceptional warm water habitats (Edward Rankin, OEPA). See score sheet Fig. 2 and Fig. 3.



Qualitative Habitat Evaluation Index Field Sheet QHEI Score:

River Code: _____ RM: _____ Stream: _____

Date: _____ Location: _____

Scorer's Full Name: _____ Affiliation: _____

1) SUBSTRATE (Check ONLY Two Substrate TYPE BOXES; Estimate % present)

| | | | | | |
|--|--|--|--|--|---|
| TYPE | POOL RIFFLE | POOL RIFFLE | SUBSTRATE ORIGIN | SUBSTRATE QUALITY | |
| <input type="checkbox"/> <input type="checkbox"/> SLDR (SUBS) [10] _____ | <input type="checkbox"/> <input type="checkbox"/> GRAVEL [7] _____ | Check ONE (OR 2 & AVERAGE) | | Check ONE (OR 2 & AVERAGE) | <input type="text"/> Substrate <input type="text"/> Max 20 |
| <input type="checkbox"/> <input type="checkbox"/> SHOULDER [9] _____ | <input type="checkbox"/> <input type="checkbox"/> SAND [6] _____ | <input type="checkbox"/> <input type="checkbox"/> LIMESTONE [1] SILT: | <input type="checkbox"/> <input type="checkbox"/> SILT HEAVY (-2) | <input type="checkbox"/> <input type="checkbox"/> SILT MODERATE [-1] | |
| <input type="checkbox"/> <input type="checkbox"/> COBBLE [8] _____ | <input type="checkbox"/> <input type="checkbox"/> BEDROCK [5] _____ | <input type="checkbox"/> <input type="checkbox"/> TILLS [1] | <input type="checkbox"/> <input type="checkbox"/> SILT NORMAL [0] | <input type="checkbox"/> <input type="checkbox"/> SILT FREE [1] | |
| <input type="checkbox"/> <input type="checkbox"/> HARDPAN [4] _____ | <input type="checkbox"/> <input type="checkbox"/> DETRITUS [3] _____ | <input type="checkbox"/> <input type="checkbox"/> WETLANDS [0] | <input type="checkbox"/> <input type="checkbox"/> HARDPAN [0] | <input type="checkbox"/> <input type="checkbox"/> EXTENSIVE [-2] | |
| <input type="checkbox"/> <input type="checkbox"/> MUCK [2] _____ | <input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [0] _____ | <input type="checkbox"/> <input type="checkbox"/> SANDSTONE [0] EMBEDDED | <input type="checkbox"/> <input type="checkbox"/> SANDSTONE [0] EMBEDDED | <input type="checkbox"/> <input type="checkbox"/> MODERATE [-1] | |
| <input type="checkbox"/> <input type="checkbox"/> SILT [2] _____ | NOTE: Ignore Sledge Grading From Point Sources | <input type="checkbox"/> <input type="checkbox"/> RIP/RAP [0] NESS: | <input type="checkbox"/> <input type="checkbox"/> LACUSTRINE [0] | <input type="checkbox"/> <input type="checkbox"/> NORMAL [0] | |
| NUMBER OF SUBSTRATE TYPES (High Quality Only, Score 5 or +) | | <input type="checkbox"/> <input type="checkbox"/> 4 or More [2] | <input type="checkbox"/> <input type="checkbox"/> SHALE [-1] | <input type="checkbox"/> <input type="checkbox"/> NONE [1] | |
| | | <input type="checkbox"/> <input type="checkbox"/> 3 or Less [0] | <input type="checkbox"/> <input type="checkbox"/> COAL FINES [-2] | | |

2) INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

| | | | |
|-----------------------------------|-----------------------------------|---|--|
| (Structure) | TYPE: Score All That Occur | AMOUNT: Check ONLY One or check 2 and AVERAGE! | |
| ____ UNDERCUT BANKS [1] | ____ POOLS > 70 cm [2] | ____ OXBOWS, BACKWATERS [1] | <input type="checkbox"/> <input type="checkbox"/> EXTENSIVE > 75% [11] |
| ____ OVERHANGING VEGETATION [1] | ____ ROOTWADS [1] | ____ AQUATIC MACROPHYTES [1] | <input type="checkbox"/> <input type="checkbox"/> MODERATE 25-75% [7] |
| ____ SHALLOWS (IN SLOW WATER) [1] | ____ BOULDERS [1] | ____ LOGS OR WOODY DEBRIS [1] | <input type="checkbox"/> <input type="checkbox"/> SPARSE 5-25% [3] |
| ____ ROOTWADS [1] | COMMENTS: _____ | | <input type="checkbox"/> <input type="checkbox"/> NEARLY ABSENT < 5% [1] |

3) CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

| | | | | | |
|--|---|---|--|--|---|
| SINOUSITY | DEVELOPMENT | CHANNELIZATION | STABILITY | MODIFICATIONS/OTHER | |
| <input type="checkbox"/> <input type="checkbox"/> HIGH [4] | <input type="checkbox"/> <input type="checkbox"/> EXCELLENT [7] | <input type="checkbox"/> <input type="checkbox"/> NONE [6] | <input type="checkbox"/> <input type="checkbox"/> HIGH [3] | <input type="checkbox"/> <input type="checkbox"/> SNAGGING | <input type="text"/> Channel <input type="text"/> Max 20 |
| <input type="checkbox"/> <input type="checkbox"/> MODERATE [3] | <input type="checkbox"/> <input type="checkbox"/> GOOD [5] | <input type="checkbox"/> <input type="checkbox"/> RECOVERED [4] | <input type="checkbox"/> <input type="checkbox"/> MODERATE [2] | <input type="checkbox"/> <input type="checkbox"/> RELOCATION | |
| <input type="checkbox"/> <input type="checkbox"/> LOW [2] | <input type="checkbox"/> <input type="checkbox"/> FAIR [3] | <input type="checkbox"/> <input type="checkbox"/> RECOVERING [3] | <input type="checkbox"/> <input type="checkbox"/> LOW [1] | <input type="checkbox"/> <input type="checkbox"/> CANOPY REMOVAL | |
| <input type="checkbox"/> <input type="checkbox"/> NONE [1] | <input type="checkbox"/> <input type="checkbox"/> POOR [1] | <input type="checkbox"/> <input type="checkbox"/> RECENT OR NO RECOVERY [1] | | <input type="checkbox"/> <input type="checkbox"/> DREDGING | |
| | | | | <input type="checkbox"/> <input type="checkbox"/> BANK SHAPING | |
| | | | | <input type="checkbox"/> <input type="checkbox"/> ONE SIDE CHANNEL MODIFICATIONS | |

4) RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) [?] River Right Looking Downstream

| | | | | |
|---|--|---|--|--|
| RIPARIAN WIDTH | FLOOD PLAIN QUALITY (LAST 100 Meters Riparian) | BANK EROSION | | |
| L R (Per Bank) | L R (Most Predominant Per Bank) | L R (Per Bank) | <input type="text"/> Riparian <input type="text"/> Max 10 | |
| <input type="checkbox"/> <input type="checkbox"/> WIDE > 50m [4] | <input type="checkbox"/> <input type="checkbox"/> FOREST, SWAMP [3] | <input type="checkbox"/> <input type="checkbox"/> CONSERVATION TILLAGE [1] | | <input type="checkbox"/> <input type="checkbox"/> NONE/LITTLE [3] |
| <input type="checkbox"/> <input type="checkbox"/> MODERATE 10-50m [3] | <input type="checkbox"/> <input type="checkbox"/> SHRUB OR OLD FIELD [2] | <input type="checkbox"/> <input type="checkbox"/> URBAN OR INDUSTRIAL [0] | | <input type="checkbox"/> <input type="checkbox"/> MODERATE [2] |
| <input type="checkbox"/> <input type="checkbox"/> NARROW 5-10 m [2] | <input type="checkbox"/> <input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1] | <input type="checkbox"/> <input type="checkbox"/> OPEN PASTURE, ROWCROP [0] | | <input type="checkbox"/> <input type="checkbox"/> HEAVY/SEVERE [1] |
| <input type="checkbox"/> <input type="checkbox"/> VERY NARROW < 5 m [1] | <input type="checkbox"/> <input type="checkbox"/> FENCED PASTURE [1] | <input type="checkbox"/> <input type="checkbox"/> MINING/CONSTRUCTION [0] | | |
| <input type="checkbox"/> <input type="checkbox"/> NONE [0] | | | | |

5) POOL/GLIDE AND RIFFLE/RUN QUALITY

| | | | | |
|---|---|--|--|---|
| MAX. DEPTH | MORPHOLOGY | CURRENT VELOCITY (POOLS & RIFFLES!) | | |
| (Check 1 ONLY!) | (Check 1 or 2 & AVERAGE) | (Check All That Apply) | <input type="text"/> Pool/Current <input type="text"/> Max 12 | |
| <input type="checkbox"/> <input type="checkbox"/> > 1m [5] | <input type="checkbox"/> <input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2] | <input type="checkbox"/> <input type="checkbox"/> EDDIES [1] | | <input type="checkbox"/> <input type="checkbox"/> TORRENTIAL [-1] |
| <input type="checkbox"/> <input type="checkbox"/> 0.7-1m [4] | <input type="checkbox"/> <input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1] | <input type="checkbox"/> <input type="checkbox"/> FAST [1] | | <input type="checkbox"/> <input type="checkbox"/> INTERSTITIAL [-1] |
| <input type="checkbox"/> <input type="checkbox"/> 0.4-0.7m [2] | <input type="checkbox"/> <input type="checkbox"/> POOL WIDTH < RIFFLE W. [0] | <input type="checkbox"/> <input type="checkbox"/> MODERATE [1] | | <input type="checkbox"/> <input type="checkbox"/> INTERMITTENT [-2] |
| <input type="checkbox"/> <input type="checkbox"/> 0.2-0.4m [1] | | <input type="checkbox"/> <input type="checkbox"/> SLOW [1] | | <input type="checkbox"/> <input type="checkbox"/> VERY FAST [1] |
| <input type="checkbox"/> <input type="checkbox"/> < 0.2m (POOL=0) | COMMENTS: _____ | | | |

CHECK ONE OR CHECK 2 AND AVERAGE

| | | | | |
|--|--|--|--|---|
| RIFFLE DEPTH | RUN DEPTH | RIFFLE/RUN SUBSTRATE | RIFFLE/RUN EMBEDDEDNESS | |
| <input type="checkbox"/> <input type="checkbox"/> Best Areas > 10 cm [2] | <input type="checkbox"/> <input type="checkbox"/> MAX > 50 [2] | <input type="checkbox"/> <input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2] | <input type="checkbox"/> <input type="checkbox"/> NONE [2] | <input type="text"/> Riffle/Run <input type="text"/> Max 8 |
| <input type="checkbox"/> <input type="checkbox"/> Best Areas 5-10 cm [1] | <input type="checkbox"/> <input type="checkbox"/> MAX < 50 [1] | <input type="checkbox"/> <input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1] | <input type="checkbox"/> <input type="checkbox"/> LOW [1] | |
| <input type="checkbox"/> <input type="checkbox"/> Best Areas < 5 cm (RIFFLE=0) | | <input type="checkbox"/> <input type="checkbox"/> UNSTABLE (Fine Gravel, Sand) [0] | <input type="checkbox"/> <input type="checkbox"/> MODERATE [0] | |
| COMMENTS: _____ | | <input type="checkbox"/> <input type="checkbox"/> NO RIFFLE (Metric=0) | <input type="checkbox"/> <input type="checkbox"/> EXTENSIVE [-1] | <input type="text"/> Gradient <input type="text"/> Max 10 |

6) GRADIENT (ft/m): _____ DRAINAGE AREA (sq. mi.): _____

| | |
|-------------------------------|------------------------------|
| %POOL: <input type="text"/> | %GLIDE: <input type="text"/> |
| %RIFFLE: <input type="text"/> | %RUN: <input type="text"/> |

Fig. 2: QHEI Score Sheet (Front) Pepper Creek Water Quality Project 2004

Is Sampling Reach Representative of the Stream (Y/N) _____ If Not, Explain: _____

Subjective Rating (1-10):

Aesthetic Rating (1-10):

Gradient:

- Low - Moderate - High

| Gear | Distance | Water Clarity | Water Stage | Canopy % Open |
|---------------------|----------|---------------|-------------|---------------|
| First Sampling Pass | | | | |

| Stream Measurements: | | | | | | | |
|----------------------|---------------|---------------|------------------------|---------------------|--------------------|--------------------|-----------------------------|
| Average Width | Average Depth | Maximum Depth | Average Bankfull Width | Bankfull Mean Depth | Bankfull W/D Ratio | Bankfull Max Depth | Floodprone Area Width Ratio |
| | | | | | | | |

Major Suspected Sources of Impacts (Check All That Apply):

- None
- Industrial
- WWTP
- Ag
- Livestock
- Silviculture
- Construction
- Urban Runoff
- CSOs
- Suburban Impacts
- Mining
- Channelization
- Riparian Removal
- Landfills
- Natural
- Dams
- Other Flow Alteration
- Other: _____

Stream Drawing:

Instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3. Where: 0 - Cover type absent; 1 - Cover type present in very small amounts or if more common of marginal quality; 2 - Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 - Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well-developed rootwads in deep/fast water, or deep, well-defined, functional pools.

Yes/No

Is Stream Ephemeral (no pools, totally dry, or only damp spots)?

Is there water upstream? How Far: _____

Is There Water Close Downstream? How Far: _____

Is Dry Channel Mostly Natural?

Fig. 3: QHEI Score Sheet (Back)

Metrics and Scoring

Substrate is measured in many ways; by recognizing the predominant substrate types and total number of types present, its origin, quality, and embeddedness. The two most predominant substrate types (i.e. boulder, cobble, sand, gravel, etc.) are selected for each section, with more stable substrates scoring more points. In a case where one substrate dominates 75-80% of the bottom, only one substrate is chosen and scored twice. Points are also given for a high variety of substrates (four or more). Substrate origin refers to the material from which the substrate developed. Quality is measured by the silt heaviness, with less siltation scoring more points. Heavy silt can negatively affect aquatic plants and animals and block stream flow. Embeddedness is the degree to which cobble, gravel and boulder substrates are surrounded, impacted or covered by fine materials. The maximum score for the substrate metric is 20.

Common substrates for the headwaters of Pepper Creek include gravel (mixture of rounded coarse material from 2-64mm in diameter) and sand (materials 0.06-2.0mm in diameter; gritty texture). Other common substrates for Pepper Creek include cobble (stones from 64-256mm in diameter), bedrock (solid rock forming a continuous surface), and silt (0.004-0.06mm in diameter; fine material generally feels "greasy" when rubbed between fingers).

Instream Cover measures the variety and amount of available shelter for fish and macroinvertebrates. Examples of instream cover include undercut banks, overhanging vegetation, rootmats (thin masses of roots that hang from the bank in the water), rootwads

(large tree roots that hang in the water), large boulders, aquatic plants, deep pools, slow shallows, and woody debris (tree trunks, branches, etc.). The amount estimates the percentage of cover for the entire stream stretch. Instream cover should be functional. The maximum score for the instream cover metric is 20.

Common instream cover for Pepper Creek includes rootwads (the root of a tree submerged in the water), rootmats (fine fibrous roots submerged in the water), overhanging vegetation, undercut banks, woody debris and boulders. The amount ranged from sparse to extensive in different areas of the stream.

Channel Morphology refers to the stream's shape as indicated by sinuosity, development, channelization, and stability. Sinuosity describes the degree to which the stream meanders. A straight channel has no sinuosity, while a very sinuous stream has many bends. Development refers to the quality of riffle and pool complexes. Channelization shows how well a stream has recovered from human-made channel modifications, and stability defines the resistance of the stream banks and channel to change. The maximum score for this metric is 20.

The *Riparian Zone* metric measures the quality of the buffer zone between the stream and the surrounding landscape. The riparian width is the amount of natural land use on each stream bank, while the flood plain quality refers to the land use type that extends beyond the riparian zone. Bank erosion is also assessed. This metric scores the right and left banks separately, and then takes the average for the final score. The maximum score for this metric is 10.

Pool/glide and Riffle Quality measures the quality of the riffle and pool complexes. This metric is split into two parts, with a maximum score of 12 for pool/current development, and a maximum score of 8 for riffle/run quality.

The *Gradient* is measured by using a USGS 7.5 minute topographic map. To calculate the gradient, measure the stream length and the elevation drop. Gradient is the amount of feet dropped divided by the total length of the stream segment. The maximum score for the gradient metric is 10.

QHEI of Pepper Creek

This project assessed the QHEI of Pepper Creek. One QHEI field sheet was filled out approximately every 500 to 600 feet of stream length. Overall, thirty eight field sheets were completed for the north and south tributaries and the main branch of Pepper Creek. See Table 1, Table 2, and Table 3 for results.

| North Trib | | | | | | | | |
|-------------|-----------|----------|----------|----------|--------------|------------|----------|------------|
| Site Number | Substrate | Cover | Channel | Riparian | Pool/Current | Riffle/Run | Gradient | QHEI Score |
| 1 | 11 | 15 | 7.5 | 5.5 | 3 | 0 | 8 | 50 |
| 2 | 9 | 7 | 7.5 | 6 | 3 | 0 | 8 | 40.5 |
| 3 | 12 | 3 | 5.5 | 5 | 3 | 0 | 8 | 36.5 |
| 4 | 9 | 5 | 9.5 | 5 | 3 | 1 | 8 | 40.5 |
| 5 | 10.5 | 5 | 9.5 | 6 | 4 | 2 | 8 | 45 |
| 6 | 12.5 | 8 | 11.5 | 7 | 5 | 2.5 | 8 | 54.5 |
| 7 | 14 | 11 | 15 | 8 | 4 | 2.5 | 8 | 62.5 |
| 8 | 13 | 11 | 15 | 8 | 4 | 2.5 | 8 | 61.5 |
| 9 | 12 | 10 | 10.5 | 4.5 | 4 | 0.5 | 8 | 49.5 |
| 10 | 12 | 9 | 15.5 | 5 | 9 | 2 | 8 | 60.5 |
| 11 | 12 | 8 | 15.5 | 5 | 8 | 2 | 6 | 56.5 |
| 12 | 11 | 11 | 11 | 6 | 5 | 2 | 6 | 52 |
| 13 | 12 | 8 | 8.5 | 5.5 | 6 | 0 | 6 | 46 |
| 14 | 13 | 11 | 12 | 6 | 5 | 2 | 6 | 55 |
| 15 | 12 | 11 | 19 | 7 | 8 | 3 | 6 | 66 |
| 16 | 11.5 | 12 | 20 | 7 | 9 | 3 | 6 | 68.5 |
| 17 | 12 | 11 | 19 | 6.5 | 10 | 3 | 6 | 67.5 |
| Averages | 11.67647 | 9.176471 | 12.47059 | 6.058824 | 5.470588 | 1.647059 | 7.176471 | 53.67647 |

Table 1: QHEI results for Pepper Creek North Tributary.

| South Trib | | | | | | | | |
|-------------|-----------|----------|----------|----------|--------------|------------|----------|------------|
| Site Number | Substrate | Cover | Channel | Riparian | Pool/Current | Riffle/Run | Gradient | QHEI Score |
| 1 | 12 | 15 | 12 | 7 | 4 | 0 | 8 | 58 |
| 2 | 12 | 7 | 11 | 4.5 | 5 | 1 | 8 | 48.5 |
| 3 | 12 | 10 | 11.5 | 5 | 4 | 0.5 | 8 | 51 |
| 4 | 12 | 10 | 11 | 5.5 | 5 | 0.5 | 8 | 52 |
| 5 | 13 | 10 | 11 | 5 | 4 | 0 | 8 | 51 |
| 6 | 12 | 9 | 11 | 6 | 4 | 0 | 8 | 50 |
| 7 | 11 | 10 | 13 | 6 | 5 | 2 | 8 | 55 |
| 8 | 11 | 10 | 13 | 6 | 5 | 2 | 8 | 55 |
| 9 | 13 | 11 | 17 | 8 | 3 | 4 | 8 | 64 |
| 10 | 11 | 11 | 11.5 | 6 | 5 | 1 | 8 | 53.5 |
| 11 | 11.5 | 8 | 14 | 6 | 5 | 1 | 8 | 53.5 |
| Averages | 11.86364 | 10.09091 | 12.36364 | 5.909091 | 4.454545 | 1.090909 | 8 | 53.77273 |

Table 2: QHEI results for Pepper Creek South Tributary.

| Main Branch | | | | | | | | |
|-------------|-----------|-------|---------|----------|--------------|------------|----------|------------|
| Site Number | Substrate | Cover | Channel | Riparian | Pool/Current | Riffle/Run | Gradient | QHEI Score |
| 1 | 12 | 12 | 18 | 6.5 | 11 | 4 | 8 | 71.5 |
| 2 | 12 | 9 | 18 | 7 | 5 | 4 | 8 | 63 |
| 3 | 11 | 9 | 11 | 5.5 | 5 | 2 | 8 | 51.5 |
| 6 | 11 | 12 | 18 | 8 | 10 | 5 | 8 | 72 |
| 7 | 10 | 7 | 19 | 8 | 8 | 3 | 8 | 63 |
| 8 | 7 | 10 | 18 | 8 | 4 | 4 | 8 | 59 |
| 9 | 14 | 8 | 15 | 7 | 4 | 4 | 8 | 60 |
| 10 | 13 | 7 | 11.5 | 7 | 3 | 4 | 8 | 53.5 |
| Averages | 11.25 | 9.25 | 16.0625 | 7.125 | 6.25 | 3.75 | 8 | 61.6875 |

Table 3: QHEI results for Pepper Creek Main Branch.

Interpretation of Results

The overall average QHEI score for Pepper Creek was 55.5, suggesting that it may or may not have the potential to support an aquatic community. QHEI was developed for large streams to indicate its ability to support fish populations. Although Pepper Creek had some deep pools, it was not large enough to score in the high range. Other factors contributing to its fair score include the substrate, channel morphology and lack of natural riparian areas. The predominant substrate in parts of Pepper Creek was bedrock, which is not a functional fish habitat. Much of Pepper Creek runs through residential areas, which leads to increased sediment loads from storm sewer run-off. Channel modifications were also common. Many stream stretches had retaining walls and/or riprap to prevent erosion. In these areas especially, sinuosity was low because the stream was recovering from channelization. The channel morphology throughout the headwaters of Pepper Creek is poor, but gradually improves downstream toward its confluence with the Chagrin River. While Pepper Creek's average QHEI score suggests that it may or may not have the potential to support an aquatic community, small fish populations are present in deep pools suggesting that areas of this creek are indeed suitable fish habitats. See Fig. 4 for a graph of QHEI scores.

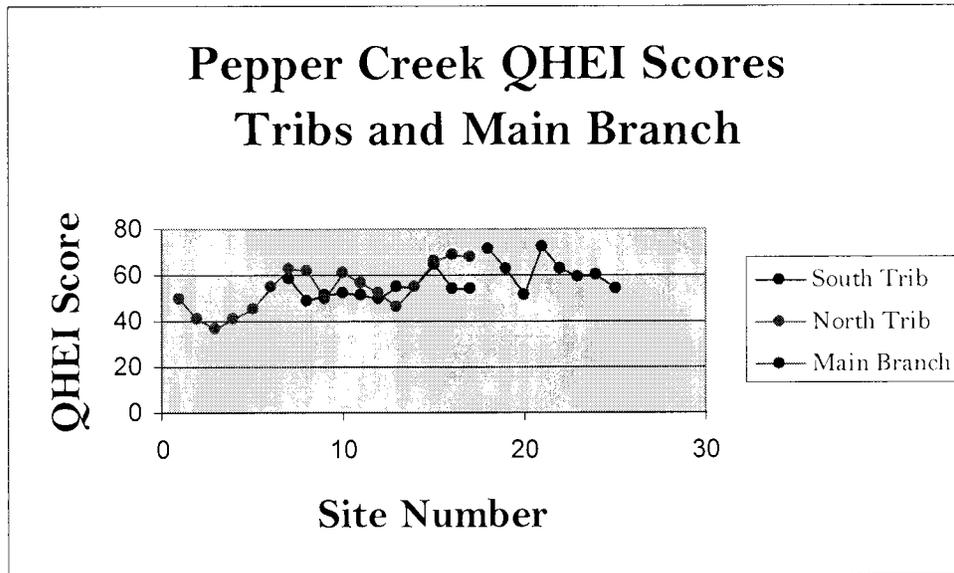


Fig. 4

Macroinvertebrate Sampling

Introduction

The macroinvertebrate population of a stream is influenced by its water quality. Benthic macroinvertebrates are organisms without a backbone such as arthropods, mollusks, and worms that live in the substrate on the stream bottom. These organisms are collected in the riffle areas of the stream where the water contains enough oxygen for them to survive. The organisms are divided into three groups based on their sensitivity to oxygen depletion. Group One taxa, which are the most sensitive, receive three points. Organisms in this group include

water penny larvae, mayfly nymphs, stonefly nymphs, dobsonfly larvae, caddisfly larvae, riffle beetle adults, and gilled snails. Group Two Taxa are worth two points. These organisms include damselfly nymphs, dragonfly nymphs, crane fly larvae, beetle larvae, crayfish, scuds, clams, and sowbugs. The pollution tolerant Group Three taxa receive only one point, and include blackfly larvae, aquatic worms, midge larvae, pouch snails, and leeches.

Macroinvertebrate Sampling on Pepper Creek

Five sampling locations were chosen in riffle areas along Pepper Creek. For this project, the Ohio Department of Natural Resources (ODNR) score sheet and sampling protocol was used. One person held a net downstream of a riffle area while another rubbed all rocks roughly three feet upstream so that everything living on them flowed into the net. Then, they kicked up the stream bottom to collect the organisms living in the smaller substrates. The net was picked up and placed on a white shower curtain where both participants collected the macroinvertebrates with tweezers and placed them in a container of water. When all of the organisms had been collected, they were tallied on the ODNR score sheet according to taxonomical group. Final scores indicate the quality of the macroinvertebrate population as follows: 23 or higher = Excellent; 22 – 17 = Good; 11 – 16 = Fair; 10 or less = Poor. See Table 4 for results.

| Pepper Creek Macro | Score |
|--------------------------|-------|
| N. Trib Shaker Rd. | 15 |
| Kersdale and S. Woodland | 17 |
| City Hall | 14 |
| Pepper Creek | 13 |
| Chagrin River Rd. | 13 |
| Average | 14.4 |

Table 4: Macroinvertebrate Results

Interpretation of Results

A total of five locations were sampled for macroinvertebrates along Pepper Creek, with an average score of “Fair”. While this score can be attributed to mediocre water quality, it can also be due to habitat problems. The same factors that lowered Pepper Creek’s QHEI scores would also negatively impact the macroinvertebrate population. For example, bedrock substrate is a poor habitat for macroinvertebrates, but has no bearing on the actual quality of the water.

Chemical Sampling

Introduction

Chemical and bacteriological sampling was conducted at ten locations along Pepper Creek. These points were chosen based on location, appearance, accessibility, and proximity to possible pollution sources. See map in Fig. 5, and Fig. 6 for sampling locations. See map in Fig. 5, and Fig. 6 for sampling locations.

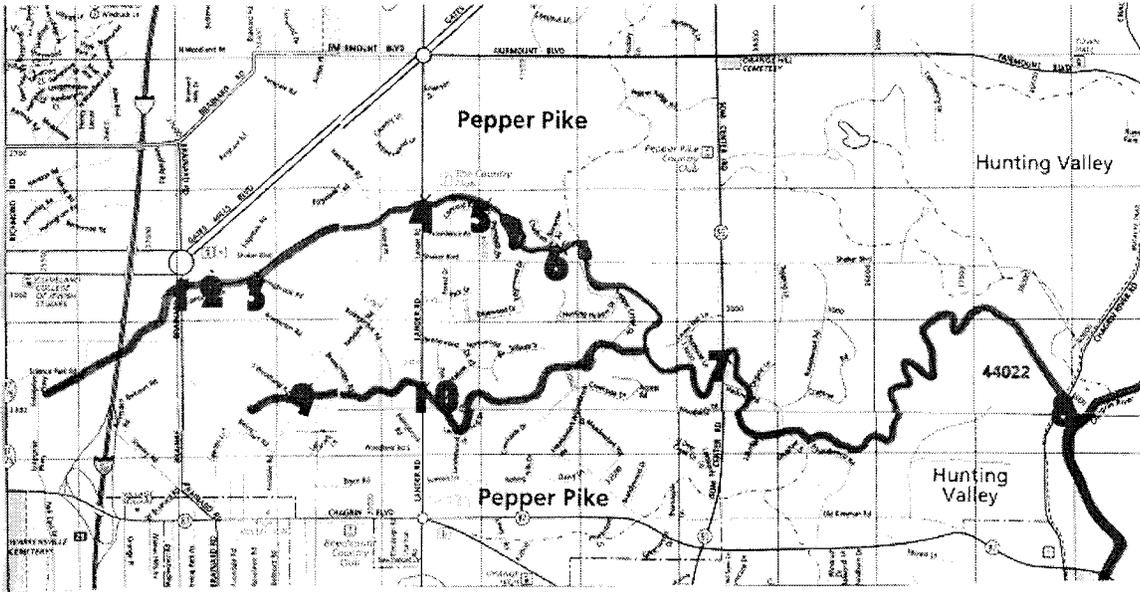


Fig. 5: Sampling Locations of Pepper Creek

1. Cambridge Trib
Cambridge and Brainard Rd. (Pepper Pike)
2. North Trib Brainard Rd.
Brainard Rd. Near Park (Pepper Pike)
3. North Trib Bolingbrook Outfall
Bolingbrook Rd. (Pepper Pike)
4. North Trib Lander Rd.
Lander Rd. (Pepper Pike)
5. North Trib Downstream of Country Club
Lander Rd. and Country Club (Pepper Pike)
6. North Trib Chatham Outfall
Chatham and Shaker Rd. (Pepper Pike)
7. Main Branch SOM Center Rd.
SOM Center Rd. and Hackney (Hunting Valley)
8. Main Branch Chagriner River Rd.
Chagriner River Rd. (Hunting Valley)
9. South Trib Kersdale Rd.
Kersdale Rd. and South Woodland (Pepper Pike)
10. South Trib Lander Rd.
Lander Rd. (Pepper Pike)

Fig. 6
Sampling
Points and
Locations

Fecal Coliform Standards

Fecal coliform are a type of bacteria found in the intestines of warm blooded animals, and are therefore used as an indicator organism for sewage pollution. High levels of this organism are linked to health risks caused by other more harmful bacteria or viruses.

The Ohio EPA (OEPA) has designated Pepper Creek as a primary contact stream, meaning its waters are suitable for full body submersion. Primary contact waterways must meet OEPA's fecal coliform standard which states that the geometric mean of five samples taken within a thirty day period shall not exceed 1,000 fecal coliform colonies per 100 milliliters (ml) of sample. It further states that no more than ten percent of the samples taken during the same period shall exceed 2,000 colonies/100 ml (Ohio Administrative Code 3745-1-07).

Fecal Coliform Sampling Procedures

The sites selected for this project were sampled a total of five times within a thirty day period. All samples were collected directly from Pepper Creek except for the ones labeled "North Trib. Bolingbrook Outfall" and "North Trib. Chatham Outfall", which were collected from storm sewer outfalls entering the creek. Samples were collected in 100 ml autoclaved Nalgene bacterial analysis bottles preserved with sodium thiosulfate. Bottles were lowered into the water facing upstream with a gloved hand. The lids were replaced tightly and the bottles were kept in a cooler at 4° Celsius and transported to the Cuyahoga County Sanitary Engineers Laboratory in Valley View. The membrane filter technique, or "plate count" method, was used to give the fecal coliform counts. Fecal coliform results are shown in Table 5.

Fecal Coliform Results by site for Pepper Creek.

| Sampling Points | 7/19/2004 | 7/20/2004 | 7/21/2004 | 8/3/2004 | 8/4/2004 | Geometric Mean |
|---|-----------|-----------|-----------|----------|----------|----------------|
| 1. Cambridge Tributary | 929 | 1513 | 944 | 2175 | 3291 | 1568.638 |
| 2. North Tributary Brainard Road | 500 | 903 | 827 | 1125 | 8733 | 1296.868 |
| 3. North Tributary Bolingbrook Outfall | 220 | 602 | 2200 | 5200 | 4600 | 1474.486 |
| 4. North Tributary Lander Road | 30462 | 10667 | 4400 | 2500 | 4933 | 7067.42 |
| 5. North Tributary Downstream of Country Club | 420 | 370 | 112 | 653 | 2200 | 478.1905 |
| 6. North Tributary Chatam Outfall | 1436 | 4900 | 61200 | 2439 | 2600 | 4866.956 |
| 7. Main Branch SOM Center Road | 1150 | 280 | 217 | 390 | 520 | 426.8514 |
| 8. Main Branch Chagrin River Road | 164 | 86 | 100 | 185 | 460 | 164.382 |
| 9. South Tributary Kersdale Road | 7692 | 3300 | 712 | 800 | 3950 | 2245.66 |
| 10. South Tributary Lander Road | 2400 | 5125 | 5000 | 1000 | 9600 | 3582.855 |

Table 5: Sampling on 8/4/2004 was during wet weather. Geometric Means highlighted in red exceeded the OEPA's standards for primary contact streams. Sampling point 5 has one day highlighted in red, but it did not exceed 2,000 colonies in more than ten percent of the sample; therefore, sampling point number 5 still meets the OEPA's standards.

Interpretation of Results

Eight out of ten sampling points exceeded the OEPA's water quality standards for primary contact streams. Failing household sewage treatment systems (HSTS) are the likely source of this water quality violation. The village of Pepper Pike currently contains 1,488 HSTS in areas that are not serviced by sanitary sewers, and Hunting Valley contains 623 systems.

Because most soil in Cuyahoga County is rated severe for on-lot sewage disposal, most of these systems discharge their effluent (via storm sewer outfalls, ditches, etc.) into Pepper Creek. Current regulations governing HSTS installations went into effect in 1977, and systems installed before that date were usually undersized and crudely constructed. Fecal coliform levels were highest in residential areas. In the downstream section of the creek where there was little residential development (sampling sites # 7 and 8), the levels were low. See map in Fig. 5.

Ammonia and Phosphorous

In addition to fecal coliform, ammonia nitrogen and total phosphorous samples were analyzed at the same ten sampling sites. High levels of these nutrients could indicate fertilizer, sewage, or industrial pollution. Surface water standards for ammonia nitrogen vary depending upon on the temperature, time of year, and pH (Ohio Administrative Code Chapter 3745-1-07). There are no current surface water standards for total phosphorous, but OEPA wastewater discharge permits usually require that effluent levels remain under 1 milligram per liter. See Table 6.

Ammonia and Phosphorous Results

| 8/4/2004 | | |
|---|---------|-------------------|
| Sampling Points | Ammonia | Total Phosphorous |
| 1. Cambridge Tributary | 0.17 | 0.26 |
| 2. North Tributary Brainard Road | 0.10 | 0.04 |
| 3. North Tributary Bolingbrook Outfall | 1.2 | 0.73 |
| 4. North Tributary Lander Road | 0.08 | 0.14 |
| 5. North Tributary Downstream of Country Club | 0.04 | 0.39 |
| 6. North Tributary Chatam Outfall | 0.18 | 0.81 |
| 7. Main Branch SOM Center Road | 0.14 | 0.35 |
| 8. Main Branch Chagrin River Road | 0.04 | 0.15 |
| 9. South Tributary Kersdale Road | 0.18 | 0.24 |
| 10. South Tributary Lander Road | 0.24 | 0.43 |

Table 6

Interpretation of Results

Ammonia levels should fall below 1.9 in the months of March to November when the temperature is 21° C and the pH is 7.2 to 7.7. All of the samples fell within the standards. Likewise, the total phosphorous levels at all sampling locations were low.

Dissolved Oxygen

Oxygen depletion is caused by excessive organics and nutrient loading in a waterway. Higher water temperatures also decrease oxygen levels in a stream. Therefore, low levels of dissolved oxygen can indicate both pollution and habitat degradation. Aquatic organisms need dissolved oxygen to survive. Dissolved oxygen levels below 5 mg/l put a significant stress on the aquatic life living in the stream. When the oxygen level falls below 2 mg/l, it is almost impossible for aerobic organisms to survive, and can result in large fish kills. See Table 7 for results.

Dissolved Oxygen (mg/L)

| Sampling Points | 8/4/2004 |
|--|----------|
| 1. Cambridge Tributary | 6.64 |
| 2. North Trib Brainard Road | 8.03 |
| 3. North Trib Bolingbrook Outfall | 7.81 |
| 4. North Trib Lander Rd. | 8.77 |
| 5. North Trib Downstream of Country Club | 8.25 |
| 6. North Trib Chatam Outfall | 7.51 |
| 7. Main Branch SOM Center Road | 5.51 |
| 8. Main Branch Chagrin River Road | 7.93 |
| 9. South Trib Kersdale Road | 7.04 |
| 10. South Trib Lander Road | 7.85 |

Table 7

Interpretation of Results

All of the sampling points were above the deadly range for dissolved oxygen. The sites with slightly lower dissolved oxygen levels had few riffle areas which may contribute to the lack of dissolved oxygen.

Specific Conductance

Conductivity measures electrical conductance in the water. High levels indicate more use of the water, which generally occurs in more highly populated regions. High conductivity readings sometimes correlate with high bacteria readings, dissolved solid readings, or other chemical readings. The range for conductivity of surface waters is from 100 to 10,000 μ S/cm (microSiemens per centimeter). See Table 8.

Specific Conductance

| Sampling Points | 8/4/2004 |
|--|----------|
| 1. Cambridge Tributary | 2992 |
| 2. North Trib Brainard Road | 2857 |
| 3. North Trib Bolingbrook Outfall | 2642 |
| 4. North Trib Lander Rd. | 2293 |
| 5. North Trib Downstream of Country Club | 548 |
| 6. North Trib Chatam Outfall | 1150 |
| 7. Main Branch SOM Center Road | 952 |
| 8. Main Branch Chagrin River Road | 806 |
| 9. South Trib Kersdale Road | 980 |
| 10. South Trib Lander Road | 1008 |

Table 8

Interpretation of Results

All of the results fell within an acceptable range. There was no significant correlation between fecal coliform levels and conductivity. Generally, when fecal coliform levels are high, conductivity levels are high, but high conductivity levels can also be obtained when fecal levels are low.

Conclusion

This study was carried out to assess the physical (QHEI), biological (macroinvertebrate population), and bacteriological/chemical health of Pepper Creek. Both the QHEI and the macroinvertebrate scores were in the fair range, suggesting that the creek has been negatively impacted by urbanization. Fecal coliform levels were also high in the creek, indicating a potential public health nuisance from sewage pollution.

The surrounding suburban land use negatively affects stream habitat in many ways. Storm sewer systems designed to prevent roadways from flooding are responsible for increased sporadic stream flows, which can wash away macroinvertebrate populations and also increase erosion and sediment loadings. The destruction of the natural riparian buffer leaves the creek further unprotected from lawn, roof-top, and pavement run-off. The manicured lawns bordering much of the creek do not provide the necessary root system to prevent erosion and absorb the sediment and chemicals that are present in urban rainwater run-off. Shade trees are sparse, which increases summer water temperatures and limits the sources of instream cover for fish and macroinvertebrates. Channel modifications (retaining walls, rip-rap) decrease sinuosity and inhibit natural riffle/pool development. All these factors decrease the creek's ability to support healthy aquatic communities.

Pepper Creek failed to meet its OEPA designation as a primary contact waterway due to high fecal coliform bacteria levels in several locations. Improperly functioning household sewage treatment systems (HSTS) are the likely source of this pollution. The Cuyahoga County Board of Health (CCBH) is working with both communities in the Pepper Creek watershed (Pepper Pike and Hunting Valley) to upgrade failing HSTS. When failing systems are identified by CCBH inspectors, the homeowners must replace them with systems meeting the current standards. In addition, the village of Pepper Pike plans to install sanitary sewers in portions of the watershed, which will further improve the water quality of Pepper Creek.

Resources

Ohio Administrative Code 3745-1-07. "Water Quality Standards"

Ohio Administrative Code 3745-1-07. "Ammonia and Nitrogen Criteria"

Ohio Department of Natural Resources Macroinvertebrate Guide.

Ohio Environmental Protection Agency (OEPA). 1994. Volume One: Regulations- Water Standards, Air Standards, Solid Waste, Permits, Procedural, and Miscellaneous 1994-2 Edition. Anderson Publishing Co. Cincinnati, OH.

Rankin, Edward T. 1989. The Qualitative Habitat Evaluation Index (QHEI): Rationale, Methods, and Application. OEPA Division of Water Quality Planning and Assessment Ecological Analysis Section. Columbus, OH.

Appendix E

Cahoon Creek Water Quality Monitoring Project Summer 2004

Cuyahoga County Board of Health



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Preface

During the months of May, June, and July of 2004, a water quality assessment of Cahoon Creek was carried out by summer intern, Sarah Beganyi under the supervision of Harry Stark and Donna Childs. This project evaluated the chemical, biological and physical properties of Cahoon Creek.

This project began in May by assessing the Qualitative Habitat Evaluation Index (QHEI) of Cahoon Creek. After QHEI was completed, Donna Childs and Sarah Beganyi selected chemical/biological sampling points of interest. Sampling parameters included temperature, dissolved oxygen, specific conductance, pH, fecal coliform, total phosphorus and ammonia nitrogen, which were collected at ten locations. Macroinvertebrate testing was also performed at five sites along the creek.

This assessment studied the effect of suburbanization on water quality. Cahoon Creek is completely surrounded by suburban residential areas except for the western tributary which begins in the Bradley Woods Reservation of Cleveland Metroparks.

Description and Location of Cahoon Creek

Cahoon Creek is located in the northwestern section of Cuyahoga County in Northeast Ohio. Two tributaries begin in the North Olmsted just north of Lorain Rd. and converge southeast of the intersection of Center Ridge Rd. and Dover Center Rd. in Westlake. The main branch then flows northward through Westlake and Bay Village, where it empties into Lake Erie at Cahoon Memorial Park. See map in Fig. 1.

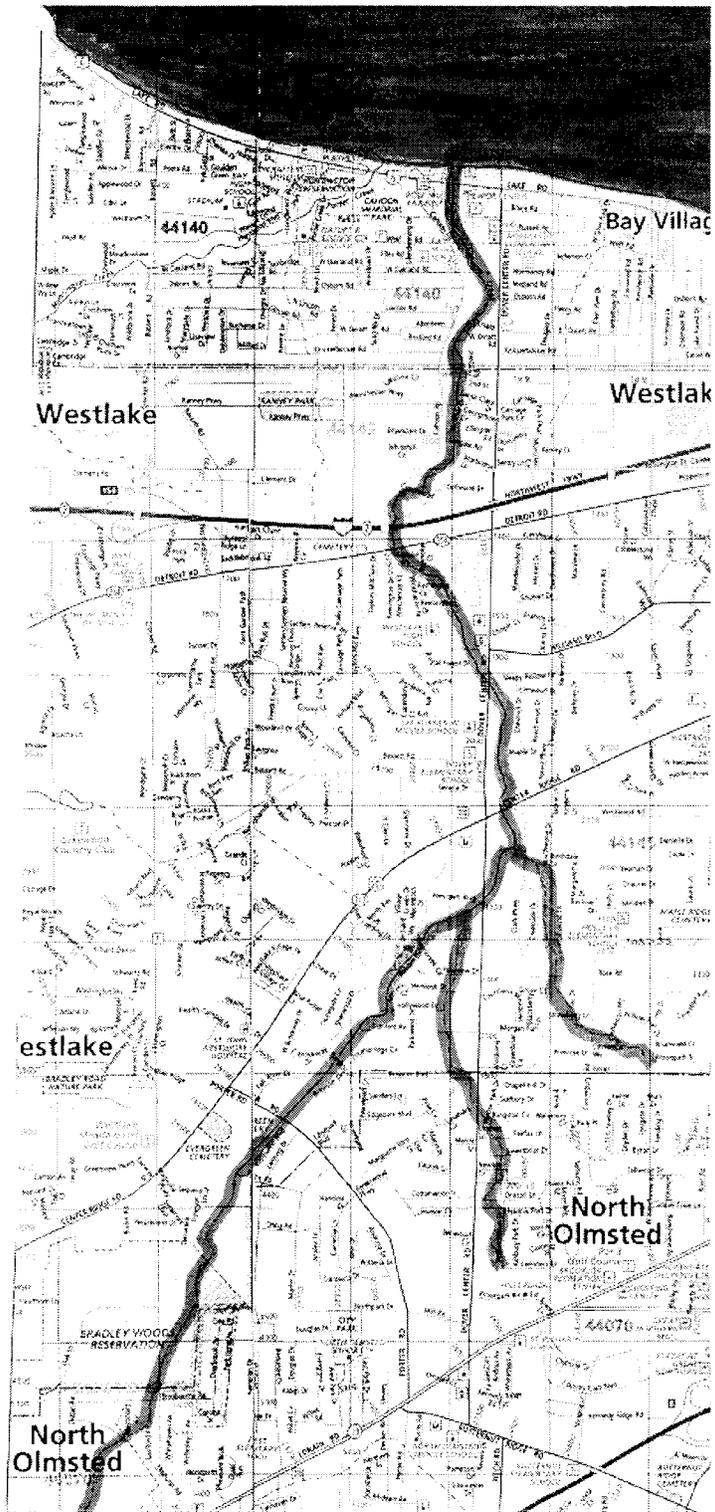


Fig. 1: The tributaries to Cahoon Creek begin in North Olmsted. The creek flows through Westlake and Bay Village, where it empties into Lake Erie.

The Qualitative Habitat Evaluation Index (QHEI)

Introduction

The Qualitative Habitat Evaluation Index (QHEI) was created by Edward T. Rankin from the Ohio Environmental Protection Agency (OEPA) to assess the physical characteristics of a stream that provide useful coverage and shelter for aquatic communities. The QHEI examines six metrics which are scored separately and then added together to provide the overall QHEI score. These metrics include substrate quality, instream cover, channel morphology, riparian zone, pool and riffle quality, and the gradient. Final QHEI scores range from zero to one hundred, with higher scores indicating superior habitats. Scores from zero to forty five indicate the stream has a poor potential to support an aquatic community, while streams scoring between forty five and sixty may or may not be capable of supporting a healthy aquatic community. Scores higher than seventy-five indicate the physical ability to support fish species that favor exceptional warm water habitats (Edward Rankin, OEPA). See score sheet Fig. 2 and Fig. 3.



Qualitative Habitat Evaluation Index Field Sheet QHEI Score:

River Code: _____ RM: _____ Stream: _____

Date: _____ Location: _____

Scorer's Full Name: _____ Affiliation: _____

1) SUBSTRATE (Check ONLY Two Substrate TYPE BOXES; Estimate % present)

| TYPE | POOL RIFFLE | POOL RIFFLE | SUBSTRATE ORIGIN | SUBSTRATE QUALITY | |
|--|--|--|--|---|---|
| <input type="checkbox"/> - SLDR (SLS) [10] | <input type="checkbox"/> - GRAVEL [7] | Check ONE (OR 2 & AVERAGE): | | Check ONE (OR 2 & AVERAGE): | |
| <input type="checkbox"/> - BOULDER [9] | <input type="checkbox"/> - SAND [6] | <input type="checkbox"/> - LIMESTONE [1] | SILT | <input type="checkbox"/> - SILT HEAVY [-2] | Substrate |
| <input type="checkbox"/> - COBBLE [8] | <input type="checkbox"/> - BEDROCK [5] | <input type="checkbox"/> - TILLS [1] | | <input type="checkbox"/> - SILT MODERATE [-1] | |
| <input type="checkbox"/> - HARDPAN [4] | <input type="checkbox"/> - DETRITUS [3] | <input type="checkbox"/> - WETLANDS [0] | | <input type="checkbox"/> - SILT NORMAL [0] | Max 20 |
| <input type="checkbox"/> - MUCK [2] | <input type="checkbox"/> - ARTIFICIAL [0] | <input type="checkbox"/> - HARDPAN [0] | | <input type="checkbox"/> - SILT FREE [1] | |
| <input type="checkbox"/> - SILT [2] | NOTE: Ignore Grudge Originating From Point Sources | | <input type="checkbox"/> - SANDSTONE [0] | EMBEDDED | <input type="checkbox"/> - EXTENSIVE [-2] |
| | | | <input type="checkbox"/> - RIP/RAP [0] | NESS: | <input type="checkbox"/> - MODERATE [-1] |
| | | | <input type="checkbox"/> - LACUSTRINE [0] | | <input type="checkbox"/> - NORMAL [0] |
| | | | <input type="checkbox"/> - SHALE [-1] | | <input type="checkbox"/> - NONE [1] |
| | | | <input type="checkbox"/> - COAL FINES [-2] | | |

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or +) 4 or More [2] 3 or Less [0]

COMMENTS: _____

2) INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

| (Structure) | TYPE: Score All That Occur | AMOUNT: (Check ONLY One or check 2 and AVERAGE) | |
|---|--|---|--------|
| <input type="checkbox"/> - UNDERCUT BANKS [1] | <input type="checkbox"/> - POOLS > 70 cm [2] | <input type="checkbox"/> - EXTENSIVE > 75% [11] | Cover |
| <input type="checkbox"/> - OVERHANGING VEGETATION [1] | <input type="checkbox"/> - ROOTWADS [1] | <input type="checkbox"/> - MODERATE 25-75% [7] | |
| <input type="checkbox"/> - SHALLOWS (IN SLOW WATER) [1] | <input type="checkbox"/> - BOULDERS [1] | <input type="checkbox"/> - SPARSE 5-25% [3] | Max 20 |
| <input type="checkbox"/> - ROOTWADS [1] | COMMENTS: _____ | <input type="checkbox"/> - NEARLY ABSENT < 5% [1] | |

3) CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

| SINOUSITY | DEVELOPMENT | CHANNELIZATION | STABILITY | MODIFICATIONS/OTHER | |
|---|--|--|---|---|---------|
| <input type="checkbox"/> - HIGH [4] | <input type="checkbox"/> - EXCELLENT [7] | <input type="checkbox"/> - NONE [6] | <input type="checkbox"/> - HIGH [3] | <input type="checkbox"/> - SNAGGING | Channel |
| <input type="checkbox"/> - MODERATE [3] | <input type="checkbox"/> - GOOD [5] | <input type="checkbox"/> - RECOVERED [4] | <input type="checkbox"/> - MODERATE [2] | <input type="checkbox"/> - RELOCATION | |
| <input type="checkbox"/> - LOW [2] | <input type="checkbox"/> - FAIR [3] | <input type="checkbox"/> - RECOVERING [3] | <input type="checkbox"/> - LOW [1] | <input type="checkbox"/> - CANOPY REMOVAL | Max 20 |
| <input type="checkbox"/> - NONE [1] | <input type="checkbox"/> - POOR [1] | <input type="checkbox"/> - RECENT OR HD RECOVERY [1] | | <input type="checkbox"/> - CREDGING | |
| | | | | <input type="checkbox"/> - IMPOUNDING | |
| | | | | <input type="checkbox"/> - ISLANDS | |
| | | | | <input type="checkbox"/> - LEAVED | |
| | | | | <input type="checkbox"/> - BANK SHARPENING | |
| | | | | <input type="checkbox"/> - ONE SIDE CHANNEL MODIFICATIONS | |

COMMENTS: _____

4) RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) ¹ River Right Looking Downstream

| RIPARIAN WIDTH | FLOOD PLAIN QUALITY (LAST 100 METERS RIPARIAN) | BANK EROSION | |
|--|---|--|----------|
| L R (Per Bank) | L R (Most Predominant; Per Bank) | L R (Per Bank) | Riparian |
| <input type="checkbox"/> - WIDE > 50m [4] | <input type="checkbox"/> - FOREST, SWAMP [3] | <input type="checkbox"/> - CONSERVATION TILLAGE [1] | |
| <input type="checkbox"/> - MODERATE 10-50m [3] | <input type="checkbox"/> - SHRUB OR OLD FIELD [2] | <input type="checkbox"/> - URBAN OR INDUSTRIAL [0] | Max 10 |
| <input type="checkbox"/> - NARROW 5-10 m [2] | <input type="checkbox"/> - RESIDENTIAL, PARK, NEW FIELD [1] | <input type="checkbox"/> - OPEN PASTURE, ROWCROP [0] | |
| <input type="checkbox"/> - VERY NARROW < 5 m [1] | <input type="checkbox"/> - FENCED PASTURE [1] | <input type="checkbox"/> - MINING/CONSTRUCTION [0] | |
| <input type="checkbox"/> - NONE [0] | | | |

COMMENTS: _____

5) POOL/GLIDE AND RIFFLE/RUN QUALITY

| MAX. DEPTH | MORPHOLOGY | CURRENT VELOCITY (POOLS & RIFFLES!) | |
|--|--|--|--------------|
| (Check 1 ONLY) | (Check 1 or 2 & AVERAGE) | (Check All That Apply) | Pool/Current |
| <input type="checkbox"/> - > 1m [5] | <input type="checkbox"/> - POOL WIDTH > RIFFLE WIDTH [2] | <input type="checkbox"/> - EDDIES [1] | |
| <input type="checkbox"/> - 0.7-1m [4] | <input type="checkbox"/> - POOL WIDTH = RIFFLE WIDTH [1] | <input type="checkbox"/> - FAST [1] | Max 12 |
| <input type="checkbox"/> - 0.4-0.7m [2] | <input type="checkbox"/> - POOL WIDTH < RIFFLE W. [0] | <input type="checkbox"/> - MODERATE [1] | |
| <input type="checkbox"/> - 0.2-0.4m [1] | COMMENTS: _____ | <input type="checkbox"/> - SLOW [1] | |
| <input type="checkbox"/> - < 0.2m (POOL=0) | | <input type="checkbox"/> - TORRENTIAL [-1] | |
| | | <input type="checkbox"/> - INTERSTITIAL [-1] | |
| | | <input type="checkbox"/> - INTERMITTENT [-2] | |
| | | <input type="checkbox"/> - VERY FAST [1] | |

| CHECK ONE OR CHECK 2 AND AVERAGE | | | | |
|---|---|---|---|-----------|
| RIFFLE DEPTH | RUN DEPTH | RIFFLE/RUN SUBSTRATE | RIFFLE/RUN EMBEDDEDNESS | Rifle/Run |
| <input type="checkbox"/> - Best Areas > 10 cm [2] | <input type="checkbox"/> - MAX > 50 [2] | <input type="checkbox"/> - STABLE (e.g., Cobble, Boulder) [2] | <input type="checkbox"/> - NONE [2] | |
| <input type="checkbox"/> - Best Areas 5-10 cm [1] | <input type="checkbox"/> - MAX < 50 [1] | <input type="checkbox"/> - MOD. STABLE (e.g., Large Gravel) [1] | <input type="checkbox"/> - LOW [1] | Max 8 |
| <input type="checkbox"/> - Best Areas < 5 cm (RIFFLE=0) | | <input type="checkbox"/> - UNSTABLE (Fine Gravel, Sand) [0] | <input type="checkbox"/> - MODERATE [0] | |
| COMMENTS: _____ | | | | Gradient |
| <input type="checkbox"/> - NO RIFFLE (Metric=0) | | | | |

Max 10

6) GRADIENT (ft/m): _____ DRAINAGE AREA (sq. mi.): _____

% POOL: % GLIDE:

% RIFFLE: % RUN:

** Best areas must be large enough to represent a population of 1000+ big eye species

Fig. 2: QHEI Score Sheet (Front)
Cahoon Creek Water Quality Project 2004

Is Sampling Reach Representative of the Stream (Y/N) _____ If Not, Explain: _____

| | | | | | |
|---------------------|------|----------|---------------|-------------|---------------|
| | Gear | Distance | Water Clarity | Water Stage | Canopy % Open |
| First Sampling Pass | | | | | |

| Stream Measurements: | | | | | | | |
|----------------------|---------------|---------------|------------------------|---------------------|--------------------|-----------------|--------------------|
| Average Width | Average Depth | Maximum Depth | Average Bankfull Width | Bankfull Mean Depth | Bankfull Max Depth | Floodprone Area | Entrenchment Ratio |
| | | | | | | | |

Major Suspected Sources of Impacts (Check All That Apply):

- None
- Industrial
- WWTP
- Ag
- Livestock
- Silviculture
- Construction
- Urban Runoff
- CSOs
- Suburban Impacts
- Mining
- Channelization
- Riparian Removal
- Landfills
- Natural
- Dams
- Other Flow Alteration
- Other: _____

Subjective Rating (1-10) - Low, - Moderate, - High

Aesthetic Rating (1-10) - Low, - Moderate, - High

Stream Drawing:

Instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3. Where: 0 - Cover type absent; 1 - Cover type present in very small amounts or if more common of marginal quality; 2 - Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 - Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well developed rootwads in deep/fast water, or deep, well-defined, functional pools.

- Yes/No
- Is Stream Ephemeral (no pools totally dry or only damp spots)?
 - Is there water upstream? How Far: _____
 - Is There Water Close Downstream? How Far: _____
 - Is Dry Channel Mostly Natural?

Fig. 3: QHEI Score Sheet (Back)

Metrics and Scoring

Substrate is measured in many ways; by recognizing the predominant substrate types and total number of types present, its origin, quality, and embeddedness. The two most predominant substrate types (i.e. boulder, cobble, sand, gravel, etc.) are selected for each section, with more stable substrates scoring more points. In a case where one substrate dominates 75-80% of the bottom, only one substrate is chosen and scored twice. Points are also given for a high variety of substrates (four or more). Substrate origin refers to the material from which the substrate developed. Quality is measured by the silt heaviness, with less siltation scoring more points. Heavy silt can negatively affect aquatic plants and animals and block stream flow. Embeddedness is the degree to which cobble, gravel and boulder substrates are surrounded, impacted or covered by fine materials. The maximum score for the substrate metric is 20.

Common substrates for the headwaters of Cahoon Creek included detritus (dead, unconsolidated organic material covering the bottom; includes sticks, wood and other partially decayed plant material), muck (black, fine, completely decomposed organic matter), gravel (mixture of rounded coarse material from 2-64mm in diameter) and sand (materials 0.06-2.0mm in diameter; gritty texture). Downstream, substrates improved to include cobble (stones from 64-256mm in diameter), bedrock (solid rock forming a continuous surface), and some silt (0.004-0.06mm in diameter; fine material generally feels “greasy” when rubbed between fingers).

Instream Cover measures the variety and amount of available shelter for fish and macroinvertebrates. Examples of instream cover include undercut banks, overhanging vegetation, rootmats (thin masses of roots that hang from the bank in the water), rootwads (large tree roots that hang in the water), large boulders, aquatic plants, deep pools, slow shallows, and woody debris (tree trunks, branches, etc.). The amount estimates the percentage of cover for the entire stream stretch. Instream cover should be functional. The maximum score for the instream cover metric is 20.

Common instream cover for Cahoon Creek included rootwads, rootmats, overhanging vegetation, undercut banks, woody debris and boulders. The amount ranged from sparse to extensive in different areas of the stream.

Channel Morphology refers to the stream's shape as indicated by sinuosity, development, channelization, and stability. Sinuosity describes the degree to which the stream meanders. A straight channel has no sinuosity, while a very sinuous stream has many bends. Development refers to the quality of riffle and pool complexes. Channelization shows how well a stream has recovered from human-made channel modifications, and stability defines the resistance of the stream banks and channel to change. The maximum score for this metric is 20.

The *Riparian Zone* metric measures the quality of the buffer zone between the stream and the surrounding landscape. The riparian width is the amount of natural land use on each stream bank, while the flood plain quality refers to the land use type that extends beyond the riparian zone. Bank erosion is also assessed. This metric scores the right and left banks separately, and then takes the average for the final score. The maximum score for this metric is 10.

Pool/glide and Riffle Quality measures the quality of the riffle and pool complexes. This metric is split into two parts, with a maximum score of 12 for pool/current development, and a maximum score of 8 for riffle/run quality.

The *Gradient* is measured by using a USGS 7.5 minute topographic map. To calculate the gradient, measure the stream length and the elevation drop. Gradient is the amount of feet dropped divided by the total length of the stream segment. The maximum score for the gradient metric is 10.

QHEI of Cahoon Creek

This project assessed the QHEI of Cahoon Creek. One QHEI field sheet was filled out approximately every 500 to 600 feet of stream length. Overall, fifty sheets were completed for two headwater tributaries and main branch of Cahoon Creek, which together total 6.2 miles. See Table 1, Table 2, and Table 3 for results.

| West Trib | | | | | | | | |
|-------------|-----------|-------|---------|----------|--------------|------------|----------|------------|
| Site Number | Substrate | Cover | Channel | Riparian | Pool/Current | Riffle/Run | Gradient | QHEI Score |
| 1 | 4 | 6 | 5 | 5 | 3 | 0 | 2 | 25 |
| 2 | 4 | 6 | 5 | 5 | 3 | 0 | 2 | 25 |
| 3 | 7 | 9 | 5 | 5 | 3 | 0 | 2 | 31 |
| 4 | 12 | 9 | 5 | 5.5 | 3 | 0 | 2 | 36.5 |
| 5 | 3 | 10 | 5 | 5 | 3 | 0 | 2 | 28 |
| 6 | 9 | 5 | 5 | 6 | 3 | 0 | 2 | 30 |
| 7 | 13 | 11 | 5 | 5 | 3 | 0 | 2 | 39 |
| 8 | 13 | 11 | 5 | 6 | 4 | 0 | 2 | 41 |
| Averages | 8.125 | 8.375 | 5 | 5.3125 | 3.125 | 0 | 2 | 31.9375 |

Table 1: QHEI results for Cahoon Creek West Tributary.

| East Trib | | | | | | | | |
|-------------|-----------|-------|----------|----------|--------------|------------|----------|------------|
| Site Number | Substrate | Cover | Channel | Riparian | Pool/Current | Riffle/Run | Gradient | QHEI Score |
| 1 | 2 | 9 | 9.5 | 5 | 5 | 0 | 10 | 40.5 |
| 2 | 2 | 10 | 8.5 | 5 | 4 | 0 | 10 | 39.5 |
| 3 | 7 | 9 | 10.5 | 6 | 6 | 0 | 10 | 48.5 |
| 4 | 14 | 11 | 11 | 6.5 | 5 | 2 | 10 | 59.5 |
| 5 | 12 | 10 | 13.5 | 5.5 | 3 | 2 | 10 | 56 |
| 6 | 12 | 8 | 11 | 7.5 | 4 | 1 | 10 | 53.5 |
| 7 | 12 | 7 | 10.5 | 6 | 4 | 1 | 10 | 50.5 |
| 8 | 14 | 11 | 8.5 | 5.5 | 2.5 | 1 | 10 | 52.5 |
| 9 | 12 | 8 | 9.5 | 5.5 | 3 | 0 | 10 | 48 |
| 10 | 12 | 7 | 9 | 5 | 3 | 0 | 10 | 46 |
| 11 | 12 | 11 | 10 | 5 | 3 | 0 | 10 | 51 |
| 12 | 12 | 14 | 8 | 5 | 5 | 3 | 10 | 57 |
| 13 | 12 | 16 | 9 | 6 | 6 | 3 | 10 | 62 |
| 14 | 12 | 9 | 13 | 9 | 8 | 2 | 10 | 63 |
| Averages | 10.5 | 10 | 10.10714 | 5.892857 | 4.392857 | 1.071429 | 10 | 51.96429 |

Table 2: QHEI results for Cahoon Creek East Tributary.

| Main Branch | | | | | | | | |
|-------------|-----------|----------|----------|----------|--------------|------------|----------|------------|
| Site Number | Substrate | Cover | Channel | Riparian | Pool/Current | Riffle/Run | Gradient | QHEI Score |
| 1 | 11 | 7 | 7 | 5.5 | 5 | 4 | 8 | 47.5 |
| 2 | 12 | 12 | 11 | 5.5 | 5 | 1 | 8 | 54.5 |
| 3 | 13 | 12 | 12.5 | 5.5 | 5 | 2 | 8 | 58 |
| 4 | 14 | 11 | 13.5 | 3.5 | 3 | 4 | 8 | 57 |
| 5 | 12 | 10 | 13 | 5.5 | 4 | 3 | 8 | 55.5 |
| 6 | 12 | 11 | 13 | 4 | 4 | 2 | 8 | 54 |
| 7 | 11 | 11 | 13 | 6 | 4 | 4 | 8 | 57 |
| 8 | 13.5 | 5 | 15.5 | 3.5 | 3 | 4 | 8 | 52.5 |
| 9 | 14 | 5 | 14.5 | 4.5 | 4 | 5 | 8 | 55 |
| 10 | 13 | 10 | 11 | 4.5 | 4 | 3 | 6 | 51.5 |
| 11 | 12 | 10 | 13 | 5 | 4 | 3 | 6 | 53 |
| 12 | 12.5 | 9 | 14.5 | 5.5 | 4 | 3 | 6 | 54.5 |
| 13 | 15 | 9 | 14.5 | 4.5 | 4 | 2 | 6 | 55 |
| 14 | 16 | 8 | 11 | 4 | 3 | 0.5 | 6 | 48.5 |
| 15 | 14 | 6 | 10 | 3.5 | 4 | 0 | 6 | 43.5 |
| 16 | 12.5 | 10 | 13.5 | 5 | 9 | 0.5 | 8 | 58.5 |
| 17 | 9 | 9 | 10.5 | 5 | 4 | 3 | 8 | 48.5 |
| 18 | 9 | 5 | 16 | 5 | 4 | 2 | 8 | 49 |
| 19 | 14.5 | 5 | 13.5 | 6 | 4 | 3 | 8 | 54 |
| 20 | 11 | 4 | 9 | 5.5 | 5 | 2 | 8 | 44.5 |
| 21 | 6 | 4 | 9 | 5.5 | 5 | 0 | 6 | 35.5 |
| 22 | 12 | 12 | 11 | 4.75 | 5 | 3 | 6 | 53.75 |
| 23 | 12 | 12 | 10.5 | 4 | 4 | 3 | 6 | 51.5 |
| 24 | 12 | 7 | 12.5 | 4.5 | 5 | 2 | 6 | 49 |
| 25 | 12 | 7 | 12.5 | 5.5 | 5 | 3 | 6 | 51 |
| 26 | 14 | 7 | 11.5 | 5.5 | 4 | 4 | 6 | 52 |
| 27 | 12 | 9 | 14 | 7 | 4 | 4 | 6 | 56 |
| 28 | 11 | 2 | 10.5 | 6 | 8 | 0 | 6 | 43.5 |
| Averages | 12.21429 | 8.178571 | 12.17857 | 4.991071 | 4.5 | 2.5 | 7 | 51.5625 |

Table 3: QHEI results for Cahoon Creek Main Branch.

Interpretation of Results

The overall average QHEI score for Cahoon Creek was 48, suggesting that it may or may not have the potential to support an aquatic community. QHEI was developed for large streams to indicate their ability to support fish populations. Although Cahoon Creek had some deep pools, it was not large enough to score in the high range. Other factors contributing to its fair score include the substrate, channel morphology and lack of natural riparian areas. The west tributary of Cahoon Creek was primarily made up of detritus and muck which score low on the substrate metric. In other sections of the creek, bedrock was the predominant substrate. Bedrock does not support good riffle development, and is not a functional fish habitat. Most of Cahoon Creek runs through residential areas, which leads to increased sediment loads from storm sewer run-off. Channel modifications were also common. Many stream stretches had retaining walls and/or riprap to prevent erosion. In these areas especially, sinuosity was low because the stream was recovering from channelization. The channel morphology throughout

the headwaters of Cahoon Creek is poor, but gradually improves downstream toward Lake Erie. While Cahoon Creek's average QHEI score suggests that it may or may not have the potential to support an aquatic community, small fish populations are present in deep pools suggesting that areas of Cahoon Creek are indeed suitable fish habitats. See Fig. 4 for a graph of QHEI scores.

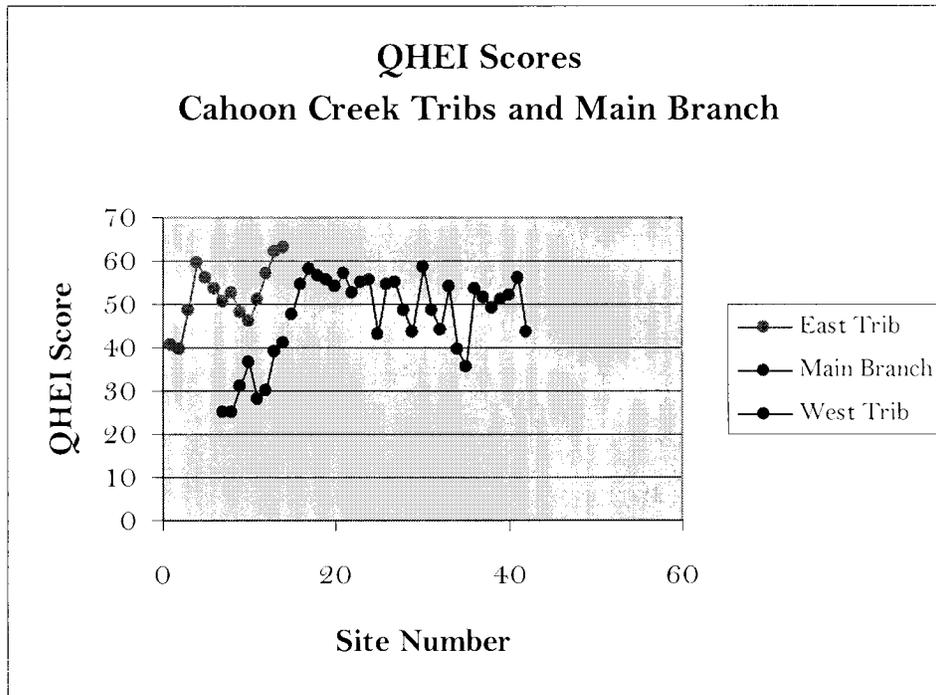


Fig. 4

Macroinvertebrate Sampling

Introduction

The macroinvertebrate population of a stream is influenced by its water quality. Benthic macroinvertebrates are organisms without a backbone such as arthropods, mollusks, and worms that live in the substrate on the stream bottom. These organisms are collected in the riffle areas of the stream where the water contains enough oxygen for them to survive. The organisms are divided into three groups based on their sensitivity to oxygen depletion. Group One taxa, which are the most sensitive, receive three points. Organisms in this group include water penny larvae, mayfly nymphs, stonefly nymphs, dobsonfly larvae, caddisfly larvae, riffle beetle adults, and gilled snails. Group Two Taxa are worth two points. These organisms include damselfly nymphs, dragonfly nymphs, crane fly larvae, beetle larvae, crayfish, scuds, clams, and sowbugs. The pollution tolerant Group Three taxa receive only one point, and include blackfly larvae, aquatic worms, midge larvae, pouch snails, and leeches.

Macroinvertebrate Sampling on Cahoon Creek

Five sampling locations were chosen in riffle areas along Cahoon Creek. For this project, the Ohio Department of Natural Resources (ODNR) score sheet and sampling

protocol was used. One person held a net downstream of a riffle area while another rubbed all rocks roughly three feet upstream so that everything living on them flowed into the net. Then, they kicked up the stream bottom to collect the organisms living in the smaller substrates. The net was picked up and placed on a white shower curtain where both participants collected the macroinvertebrates with tweezers and placed them in a container of water. When all of the organisms had been collected, they were tallied on the ODNR score sheet according to taxonomical group. Final scores indicate the quality of the macroinvertebrate population as follows: 23 or higher = Excellent; 22 – 17 = Good; 11 – 16 = Fair; 10 or less = Poor. See Table 4 for results.

| Cahoon Macroinvertebrate Sampling Points | Date | Score | Stream Quality Assessment |
|--|-----------|-------|---------------------------|
| Clark Parkway | 6/30/2004 | 8 | Poor |
| Center Ridge Rd. | 6/30/2004 | 11 | Fair |
| Westlake Police Station (Hilliard Rd.) | 6/30/2004 | 15 | Fair |
| Bryson Lane | 7/1/2004 | 20 | Good |
| Cahoon Park | 7/1/2004 | 13 | Fair |
| Average | | 13.4 | Fair |

Table 4: Macroinvertebrate Results

Interpretation of Results

A total of five locations were sampled for macroinvertebrates along Cahoon Creek, with an average score of “Fair”. While this score can be attributed to mediocre water quality, it can also be due to habitat problems. The same factors that lowered Cahoon Creek’s QHEI scores would also negatively impact the macroinvertebrate population. For example, bedrock substrate is a poor habitat for macroinvertebrates, but has no bearing on the actual quality of the water.

Chemical Sampling

Introduction

Chemical and bacteriological sampling was conducted at ten locations along Cahoon Creek. These points were chosen based on location, appearance, accessibility, and proximity to possible pollution sources. See map in Fig. 5, and Fig. 6 for sampling locations.

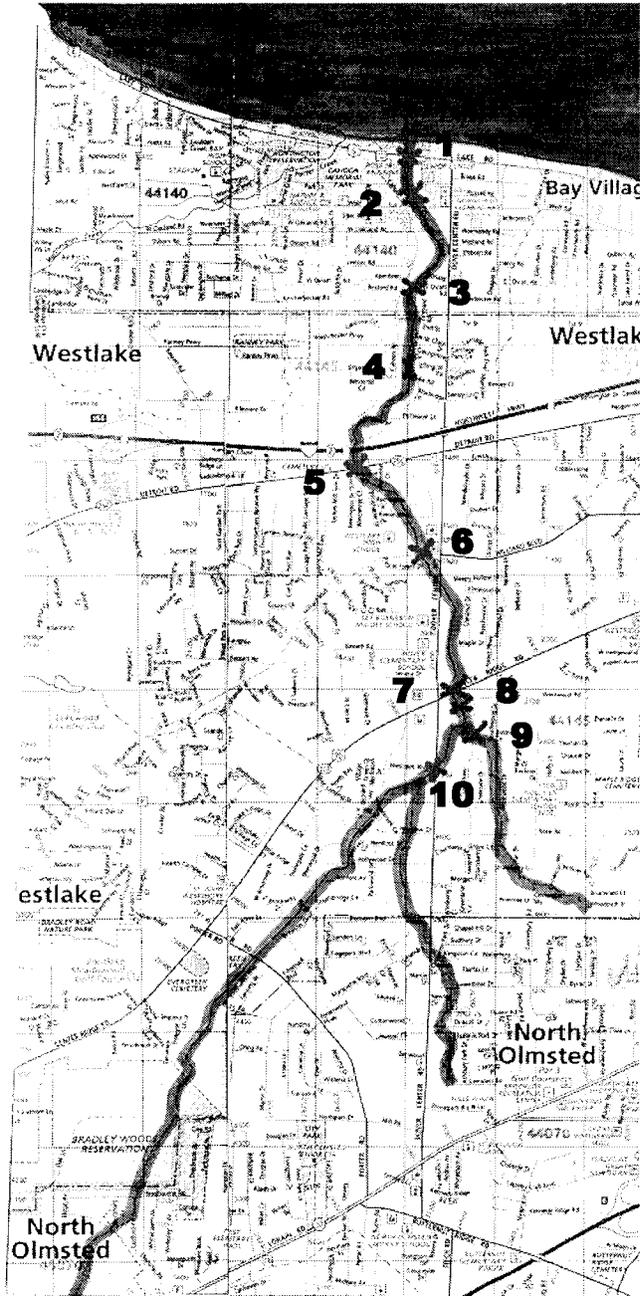


Fig. 5: Sampling Locations of Cahoon Creek

1. Cahoon Memorial Park
Lake and Cahoon Rd. (Bay Village)
2. Bryson Lane
Bryson Lane and Wolf Rd. (Bay Village)
3. Oviatt Rd.
Oviatt Rd. and Cahoon Rd. (Bay Village)
4. 1116 Richmar Rd. Outfall
(River left) (Bay Village)
5. Detroit Rd.
Detroit Rd. and Cahoon Rd. (Bay Village)
6. City Hall (Hilliard)
Westlake City Hall Hilliard Rd. (Westlake)
7. Center Ridge (2 Tributaries)
Center Ridge Rd. and Dover Center
8. Center Ridge Outfall
Upstream of Center Ridge and Dover Center (River right) (Westlake)
9. Clark Tributary
Clark Parkway and Cahoon Creek (Westlake)
10. Dover Center Tributary
Dover Center Rd. and Westwood Apartments (Westlake)

Fig. 6 Sampling Points and Locations

Fecal Coliform Standards

Fecal coliform are a type of bacteria found in the intestines of warm blooded animals, and are therefore used as an indicator organism for sewage pollution. High levels of this organism are linked to health risks caused by other more harmful bacteria or viruses.

The Ohio EPA (OEPA) has designated Cahoon Creek as a primary contact stream, meaning its waters are suitable for full body submersion. Primary contact waterways must meet OEPA's fecal coliform standard which states that the geometric mean of five samples taken within a thirty day period shall not exceed 1,000 fecal coliform colonies per 100 milliliters (ml) of sample. It further states that no more than ten percent of the samples taken during the same period shall exceed 2,000 colonies/100 ml (Ohio Administrative Code 3745-1-07).

Fecal Coliform Sampling Procedures

The sites selected for this project were sampled a total of five times within a thirty day period. All samples were collected directly from Cahoon Creek except for the ones labeled "Center Ridge Outfall" and "1116 Richmar Dr.", which were collected from storm sewer outfalls entering the creek. Samples were collected in 100 ml autoclaved Nalgene bacterial analysis bottles preserved with sodium thiosulfate. Bottles were lowered into the water facing upstream with a gloved hand. The lids were replaced tightly and the bottles were kept in a cooler at 4° Celsius and transported to the Cuyahoga County Sanitary Engineers Laboratory in Valley View. The membrane filter technique, or "plate count" method, was used to obtain the fecal coliform counts. See Table 5 for results.

Fecal Coliform Results by site for Cahoon Creek.

| Sampling Points | 6/9/2004 | 6/24/2004 | 7/1/2004 | 7/7/2004 | 7/8/2004 | Geometric Mean |
|-----------------------------------|----------|-----------|----------|----------|----------|----------------|
| 1. Cahoon Memorial Park | 240 | 580 | 410 | 310 | 310 | 353.0444 |
| 2. Bryson Lane | 360 | 756 | 3163 | 440 | 380 | 678.6283 |
| 3. Oviatt Road | 350 | 663 | 390 | 370 | 300 | 398.4684 |
| 4. 1116 Richmar Drive | 7 | 2 | 2 | 2 | 2 | 2.56947 |
| 5. Detroit Road | 540 | 829 | 678 | 820 | 600 | 683.6418 |
| 6. Westlake City Hall | 612 | 878 | 553 | 407 | 960 | 650.0808 |
| 7. Center Ridge | 1091 | 1052 | 588 | 480 | 1125 | 817.1886 |
| 8. Center Ridge Outfall | 133 | 70 | 78 | 78 | 133 | 94.49267 |
| 9. Clark Parkway (East Tributary) | 2100 | 4500 | 1923 | 3100 | 4400 | 3011.932 |
| 10. Dover Center (West Tributary) | 5145 | 2800 | 1978 | 6600 | 20267 | 5202.602 |

Table 5: Sampling points nine and ten exceeded the OEPA's standards for primary contact waters.

Interpretation of Results

Two of the ten sampling sites exceeded the OEPA's primary contact standards for fecal coliform colonies. Both of these sites were in the headwaters where the low water volume may contribute to a poor ability to absorb pollution. Further downstream, the effects of pollution were less noticeable because of the higher volume of water. The two storm sewer outfalls were chosen because they were flowing continuously during dry weather, indicating they may be possible pollution sources. 1116 Richmar had extremely low fecal coliform levels, which suggests that a water main break may be responsible for the continuous high water flow. The Center Ridge outfall also had low levels compared to the samples collected from the stream in the same vicinity. This site may be the outfall of a culverted stream.

Ammonia and Phosphorous

In addition to fecal coliform, ammonia nitrogen and total phosphorous samples were analyzed at the same ten sampling sites. High levels of these nutrients could indicate fertilizer, sewage, or industrial pollution. Surface water standards for ammonia nitrogen vary depending upon on the temperature, time of year, and pH (Ohio Administrative Code Chapter 3745-1-07). There are no current surface water standards for total phosphorous, but OEPA wastewater discharge permits usually require that effluent levels remain under 1 milligram per liter. See Table 6 for results.

Ammonia and Phosphorous Results

| 6/9/2004 | | |
|-----------------------------------|---------|-------------------|
| Sampling Points | Ammonia | Total Phosphorous |
| 1. Cahoon Memorial Park | 0.41 | 0.05 |
| 2. Bryson Lane | 0.038 | 0.05 |
| 3. Oviatt Road | 0.059 | 0.07 |
| 4. 1116 Richmar Drive | 0.027 | 0.24 |
| 5. Detroit Road | 0.025 | 0.09 |
| 6. Westlake City Hall | 0.049 | 0.1 |
| 7. Center Ridge | 0.12 | 0.14 |
| 8. Center Ridge Outfall | 0.27 | 0.26 |
| 9. Clark Parkway (East Tributary) | 0.09 | 0.19 |
| 10. Dover Center (West Tributary) | 0.42 | 0.11 |

Table 6

Interpretation of Results

Ammonia nitrogen levels should fall below 1.9 mg/l in the months of March to November when the temperature is 21° C and the pH is 7.2 to 7.7. All of the samples fell within the standards. Likewise, the total phosphorous levels at all sampling locations were low.

Dissolved Oxygen

Oxygen depletion is caused by excessive organics and nutrient loading in a waterway. Higher water temperatures also decrease oxygen levels in a stream. Therefore, low levels of dissolved oxygen can indicate both pollution and habitat degradation. Aquatic organisms need dissolved oxygen to survive. Dissolved oxygen levels below 5.0 mg/l put a significant stress on the aquatic life living in the stream. When the oxygen level falls below 2 mg/l, it is almost impossible for aerobic organisms to survive, and can result in large fish kills. See Table 7 for results.

Dissolved Oxygen (mg/l)

| Sampling Points | 6/9/2004 | 7/1/2004 |
|-----------------------------------|----------|----------|
| 1. Cahoon Memorial Park | 7.68 | 8.19 |
| 2. Bryson Lane | 7.79 | 9.12 |
| 3. Oviatt Road | 9.08 | 8.9 |
| 4. 1116 Richmar Drive | 7.94 | 8.34 |
| 5. Detroit Road | 8.56 | 9.02 |
| 6. Westlake City Hall | 8.41 | 8.95 |
| 7. Center Ridge | 6.02 | 6.59 |
| 8. Center Ridge Outfall | 5.81 | 5.68 |
| 9. Clark Parkway (East Tributary) | 6.31 | 6.61 |
| 10. Dover Center (West Tributary) | 3.73 | 4.3 |

Table 7

Interpretation of Results

All of the sampling points were above the deadly range for dissolved oxygen except for the west tributary (site # 10). The lack of riffle areas, low flow volume, and silt-heavy stream bottom at this site all contributed to the low levels of dissolved oxygen. Also, some homeowners in the area dump yard waste (grass clippings, leaves, tree branches) along the stream bank, which depletes dissolved oxygen as it decomposes.

Specific Conductance

Conductivity measures electrical conductance in the water. High levels indicate more use of the water, which generally occurs in more highly populated regions. High conductivity readings sometimes correlate with high bacteria readings dissolved solid readings, or other chemical readings. The range for conductivity of surface waters is from 100 to 10,000 μ S/cm (micro Siemens per centimeter). See Table 8.

Specific Conductance

| Sampling Points | 6/9/2004 | 7/1/2004 |
|-----------------------------------|----------|----------|
| 1. Cahoon Memorial Park | 1056 | 821 |
| 2. Bryson Lane | 1021 | 830 |
| 3. Oviatt Road | 1020 | 814 |
| 4. 1116 Richmar Drive | 700 | 452.6 |
| 5. Detroit Road | 1048 | 715 |
| 6. Westlake City Hall | 1040 | 821 |
| 7. Center Ridge | 1032 | 808 |
| 8. Center Ridge Outfall | 1044 | 820 |
| 9. Clark Parkway (East Tributary) | 1028 | 815 |
| 10. Dover Center (West Tributary) | 1166 | 912 |

Table 8

Interpretation of Results

No significant correlation between fecal coliform levels and conductivity was detected in this project. Generally, when fecal coliform levels are high, conductivity levels are high, but high conductivity levels can also be obtained when fecal levels are low.

Conclusion

This study was carried out to assess the physical (QHEI), biological (macroinvertebrate population), and bacteriological/chemical health of Cahoon Creek. Both the QHEI and the macroinvertebrate scores were in the fair range, suggesting that the creek has been negatively impacted by urbanization. For the most part, the bacteriological and chemical readings were in the acceptable range, so inadequate habitat appears to be the limiting factor for the mediocre aquatic communities.

The surrounding suburban land use negatively affects stream habitat in many ways. Storm sewer systems designed to prevent roadways from flooding are responsible for

increased sporadic stream flows, which can wash away macroinvertebrate populations and also increase erosion and sediment loadings. The destruction of the natural riparian buffer leaves the creek further unprotected from lawn, roof-top, and pavement run-off. The manicured lawns bordering much of the creek do not provide the necessary root system to prevent erosion and absorb the sediment and chemicals that are present in urban rainwater run-off. Shade trees are sparse, which increases summer water temperatures and limits the sources of instream cover for fish and macroinvertebrates. Channel modifications (retaining walls, rip-rap) decrease sinuosity and inhibit natural riffle/pool development. All these factors decrease the creek's ability to support healthy aquatic communities.

Cahoon Creek also has some naturally limiting habitat factors. Its relatively small size (6.2 miles) affects its channel morphology, and large sections of bedrock substrate make macroinvertebrate collection difficult. However, the surrounding urbanization of the Cahoon Creek watershed is definitely impacting the health of the creek.

Resources

Ohio Administrative Code 3745-1-07. "Water Quality Standards"

Ohio Administrative Code 3745-1-07. "Ammonia and Nitrogen Criteria"

Ohio Department of Natural Resources Macroinvertebrate Guide.

Ohio Environmental Protection Agency (OEPA). 1994. Volume One: Regulations-Water Standards, Air Standards, Solid Waste, Permits, Procedural, and Miscellaneous 1994-2 Edition. Anderson Publishing Co. Cincinnati, OH.

Rankin, Edward T. 1989. The Qualitative Habitat Evaluation Index (QHIEI): Rationale, Methods, and Application. OEPA Division of Water Quality Planning and Assessment Ecological Analysis Section. Columbus, OH.

Cahoon Creek Water Quality Monitoring Project Summer 2004

Cuyahoga County Board of Health



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Preface

During the months of May, June, and July of 2004, a water quality assessment of Cahoon Creek was carried out by summer intern, Sarah Beganyi under the supervision of Harry Stark and Donna Childs. This project evaluated the chemical, biological and physical properties of Cahoon Creek.

This project began in May by assessing the Qualitative Habitat Evaluation Index (QHEI) of Cahoon Creek. After QHEI was completed, Donna Childs and Sarah Beganyi selected chemical/biological sampling points of interest. Sampling parameters included temperature, dissolved oxygen, specific conductance, pH, fecal coliform, total phosphorus and ammonia nitrogen, which were collected at ten locations. Macroinvertebrate testing was also performed at five sites along the creek.

This assessment studied the effect of suburbanization on water quality. Cahoon Creek is completely surrounded by suburban residential areas except for the western tributary which begins in the Bradley Woods Reservation of Cleveland Metroparks.

Description and Location of Cahoon Creek

Cahoon Creek is located in the northwestern section of Cuyahoga County in Northeast Ohio. Two tributaries begin in the North Olmsted just north of Lorain Rd. and converge southeast of the intersection of Center Ridge Rd. and Dover Center Rd. in Westlake. The main branch then flows northward through Westlake and Bay Village, where it empties into Lake Erie at Cahoon Memorial Park. See map in Fig. 1.

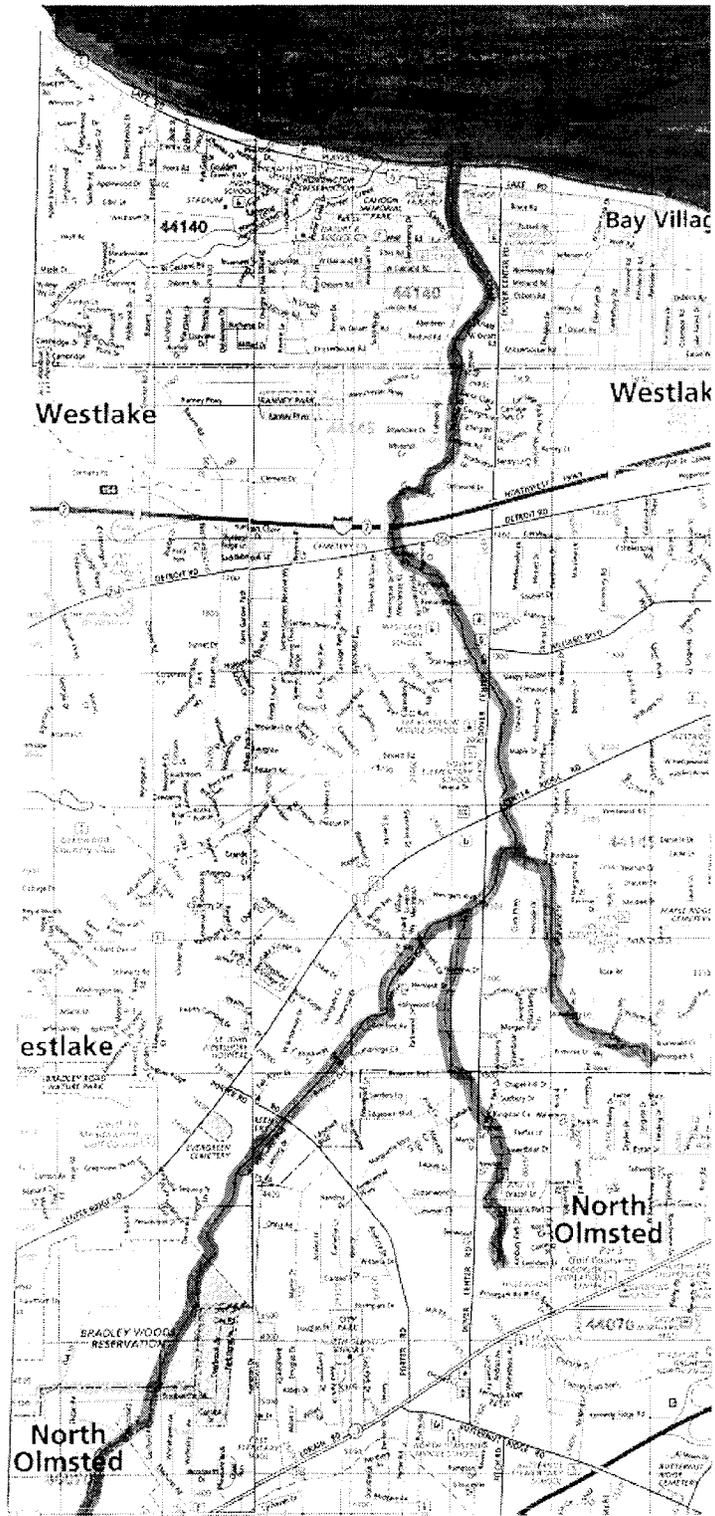


Fig. 1: The tributaries to Cahoon Creek begin in North Olmsted. The creek flows through Westlake and Bay Village, where it empties into Lake Erie.

The Qualitative Habitat Evaluation Index (QHEI)

Introduction

The Qualitative Habitat Evaluation Index (QHEI) was created by Edward T. Rankin from the Ohio Environmental Protection Agency (OEPA) to assess the physical characteristics of a stream that provide useful coverage and shelter for aquatic communities. The QHEI examines six metrics which are scored separately and then added together to provide the overall QHEI score. These metrics include substrate quality, instream cover, channel morphology, riparian zone, pool and riffle quality, and the gradient. Final QHEI scores range from zero to one hundred, with higher scores indicating superior habitats. Scores from zero to forty five indicate the stream has a poor potential to support an aquatic community, while streams scoring between forty five and sixty may or may not be capable of supporting a healthy aquatic community. Scores higher than seventy-five indicate the physical ability to support fish species that favor exceptional warm water habitats (Edward Rankin, OEPA). See score sheet Fig. 2 and Fig. 3.



Qualitative Habitat Evaluation Index Field Sheet QHEI Score:

River Code: RM: Stream:

Date: Location:

Scorer's Full Name: Affiliation:

1) SUBSTRATE (Check ONLY Two Substrate TYPE BOXES; Estimate % present)

| TYPE | POOL RIFFLE | POOL RIFFLE | SUBSTRATE ORIGIN | SUBSTRATE QUALITY | |
|--|--|--|---------------------------------------|---|---|
| <input type="checkbox"/> BLDR (SBS) [10] | <input type="checkbox"/> GRAVEL [7] | Check ONE (OR 2 & AVERAGE) | | Check ONE (OR 2 & AVERAGE) | <input type="text"/> Substrate <input type="text"/> Max 20 |
| <input type="checkbox"/> BOULDER [9] | <input type="checkbox"/> SAND [6] | <input type="checkbox"/> LIMESTONE [1] | SILT: | <input type="checkbox"/> SILT HEAVY [-2] | |
| <input type="checkbox"/> COBBLE [8] | <input type="checkbox"/> BEDROCK [5] | <input type="checkbox"/> TILLS [1] | <input type="checkbox"/> WETLANDS [0] | <input type="checkbox"/> SILT MODERATE [-1] | |
| <input type="checkbox"/> HARDPAN [4] | <input type="checkbox"/> DETRITUS [3] | <input type="checkbox"/> WETLANDS [0] | <input type="checkbox"/> HARDPAN [0] | <input type="checkbox"/> SILT NORMAL [0] | |
| <input type="checkbox"/> MUCK [2] | <input type="checkbox"/> ARTIFICIAL [0] | <input type="checkbox"/> SANDSTONE [0] | EMBEDDED | <input type="checkbox"/> SILT FREE [1] | |
| <input type="checkbox"/> SILT [2] | NOTE: Ignore Sludge Originating From Point Sources | | NESS: | <input type="checkbox"/> EXTENSIVE [-2] | |
| | | <input type="checkbox"/> RIP/RAP [0] | | <input type="checkbox"/> MODERATE [-1] | |
| | | <input type="checkbox"/> LACUSTRINE [0] | | <input type="checkbox"/> NORMAL [0] | |
| | | <input type="checkbox"/> SHALE [-1] | | <input type="checkbox"/> NONE [1] | |
| | | <input type="checkbox"/> COAL FINES [-2] | | | |

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or +) 4 or More [2] 3 or Less [0]

COMMENTS:

2) INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

| (Structure) | TYPE: Score All That Occur | AMOUNT (Check ONLY One or check 2 and AVERAGE) | |
|--|---------------------------------------|---|---|
| <u> </u> UNDERCUT BANKS [1] | <u> </u> POOLS > 70 cm [2] | <u> </u> OXBOWS, BACKWATERS [1] | <input type="text"/> Cover <input type="text"/> Max 20 |
| <u> </u> OVERHANGING VEGETATION [1] | <u> </u> ROOTWADS [1] | <u> </u> AQUATIC MACROPHYTES [1] | |
| <u> </u> SHALLOWS (IN SLOW WATER) [1] | <u> </u> BOULDERS [1] | <u> </u> LOGS OR WOODY DEBRIS [1] | |
| <u> </u> ROOTMATS [1] | COMMENTS: <u> </u> | | |
| | | <input type="checkbox"/> EXTENSIVE > 75% [11] | |
| | | <input type="checkbox"/> MODERATE 25-75% [7] | |
| | | <input type="checkbox"/> SPARSE 5-25% [3] | |
| | | <input type="checkbox"/> NEARLY ABSENT < 5% [1] | |

3) CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

| SINUOSITY | DEVELOPMENT | CHANNELIZATION | STABILITY | MODIFICATIONS/OTHER | |
|---------------------------------------|--|--|---------------------------------------|---|---|
| <input type="checkbox"/> HIGH [4] | <input type="checkbox"/> EXCELLENT [7] | <input type="checkbox"/> NONE [6] | <input type="checkbox"/> HIGH [3] | <input type="checkbox"/> SNAGGING | <input type="text"/> Channel <input type="text"/> Max 20 |
| <input type="checkbox"/> MODERATE [3] | <input type="checkbox"/> GOOD [5] | <input type="checkbox"/> RECOVERED [4] | <input type="checkbox"/> MODERATE [2] | <input type="checkbox"/> RELOCATION | |
| <input type="checkbox"/> LOW [2] | <input type="checkbox"/> FAIR [3] | <input type="checkbox"/> RECOVERING [3] | <input type="checkbox"/> LOW [1] | <input type="checkbox"/> CANOPY REMOVAL | |
| <input type="checkbox"/> NONE [1] | <input type="checkbox"/> POOR [1] | <input type="checkbox"/> RECENT OR NO RECOVERY [1] | | <input type="checkbox"/> LEVEED | |
| | | | | <input type="checkbox"/> CREGGING | |
| | | | | <input type="checkbox"/> BANK SHAPING | |
| | | | | <input type="checkbox"/> ONE SIDE CHANNEL MODIFICATIONS | |

4) RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) ¹ River Right Looking Downstream

| RIPARIAN WIDTH | FLOOD PLAIN QUALITY (LAST 100 METERS RIPARIAN) | BANK EROSION | |
|--|---|--|--|
| L R (Per Bank) | L R (Most Predominant Per Bank) | L R (Per Bank) | <input type="text"/> Riparian <input type="text"/> Max 10 |
| <input type="checkbox"/> WIDE > 50m [4] | <input type="checkbox"/> FOREST, SWAMP [3] | <input type="checkbox"/> CONSERVATION TILLAGE [1] | |
| <input type="checkbox"/> MODERATE 10-50m [3] | <input type="checkbox"/> SHRUB OR OLD FIELD [2] | <input type="checkbox"/> URBAN OR INDUSTRIAL [0] | |
| <input type="checkbox"/> NARROW 5-10 m [2] | <input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1] | <input type="checkbox"/> OPEN PASTURE, ROWCROP [0] | |
| <input type="checkbox"/> VERY NARROW < 5 m [1] | <input type="checkbox"/> FENCED PASTURE [1] | <input type="checkbox"/> MINING/CONSTRUCTION [0] | |
| <input type="checkbox"/> NONE [0] | | | |

COMMENTS:

5) POOL/GLIDE AND RIFFLE/RUN QUALITY

| MAX. DEPTH | MORPHOLOGY | CURRENT VELOCITY (POOLS & RIFFLES!) | |
|--|--|--|--|
| (Check 1 ONLY) | (Check 1 or 2 & AVERAGE) | (Check All That Apply) | <input type="text"/> Pool/Current <input type="text"/> Max 12 |
| <input type="checkbox"/> > 1m [5] | <input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2] | <input type="checkbox"/> EDDIES [1] | |
| <input type="checkbox"/> 0.7-1m [4] | <input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1] | <input type="checkbox"/> FAST [1] | |
| <input type="checkbox"/> 0.4-0.7m [2] | <input type="checkbox"/> POOL WIDTH < RIFFLE W. [0] | <input type="checkbox"/> MODERATE [1] | |
| <input type="checkbox"/> 0.2-0.4m [1] | | <input type="checkbox"/> SLOW [1] | |
| <input type="checkbox"/> < 0.2m (POOL=0) | COMMENTS: <u> </u> | <input type="checkbox"/> TORRENTIAL [-1] | |
| | | <input type="checkbox"/> INTERSTITIAL [-1] | |
| | | <input type="checkbox"/> INTERMITTENT [-2] | |
| | | <input type="checkbox"/> VERY FAST [1] | |

CHECK ONE OR CHECK 2 AND AVERAGE

| RIFFLE DEPTH | RUN DEPTH | RIFFLE/RUN SUBSTRATE | RIFFLE/RUN EMBEDDEDNESS | |
|---|---------------------------------------|---|---|---|
| <input type="checkbox"/> Best Areas > 10 cm [2] | <input type="checkbox"/> MAX > 50 [2] | <input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2] | <input type="checkbox"/> NONE [2] | <input type="text"/> Riffle/Run <input type="text"/> Max 8 |
| <input type="checkbox"/> Best Areas 5-10 cm [1] | <input type="checkbox"/> MAX < 50 [1] | <input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1] | <input type="checkbox"/> LOW [1] | |
| <input type="checkbox"/> Best Areas < 5 cm (RIFFLE=0) | | <input type="checkbox"/> UNSTABLE (Fine Gravel, Sand) [0] | <input type="checkbox"/> MODERATE [0] | |
| COMMENTS: <u> </u> | | | <input type="checkbox"/> EXTENSIVE [-1] | <input type="text"/> Gradient <input type="text"/> Max 10 |
| | | <input type="checkbox"/> NO RIFFLE (Metric=0) | | |

6) GRADIENT (ft/m): DRAINAGE AREA (sq. mi.):

% POOL: % GLIDE:

% RIFFLE: % RUN:

Fig. 2: QHEI Score Sheet (Front)
Cahoon Creek Water Quality Project 2004

Is Sampling Reach Representative of the Stream (Y/N) _____ If Not, Explain: _____

Subjective Rating (1-10): _____
 Aesthetic Rating (1-10): _____
 Gradient: - Low, - Moderate, - High

| Gear | | Distance | | Water Clarity | | Water Stage | | Canopy % Open | |
|----------------------|---------------|---------------|------------------------|---------------------|-----------|--------------------|-----------------|----------------|--|
| First Sampling Pass | | | | | | | | | |
| Stream Measurements: | | | | | | | | | |
| Average Width | Average Depth | Maximum Depth | Average Bankfull Width | Bankfull Mean Depth | W/D Ratio | Bankfull Max Depth | Floodprone Area | Entrench Ratio | |
| | | | | | | | | | |

Major Suspected Sources of Impacts (Check All That Apply):

- None
- Industrial
- WWTP
- Ag
- Livestock
- Silviculture
- Construction
- Urban Runoff
- CSDs
- Suburban Impacts
- Mining
- Channelization
- Riparian Removal
- Landfills
- Natural
- Dams
- Other Flow Alteration

Other: _____

Stream Drawing:

Instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3. Where: 0 - Cover type absent; 1 - Cover type present in very small amounts or if more common of marginal quality; 2 - Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 - Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well developed rootwads in deep/fast water, or deep, well-defined, functional pools.

Yes/No

Is Stream Ephemeral (no pools locally dry or only damp spots)?

Is there water upstream? How Far: _____

Is There Water Close Downstream? How Far: _____

Is Dry Channel Mostly Natural?

Fig. 3: QHEI Score Sheet (Back)

Metrics and Scoring

Substrate is measured in many ways; by recognizing the predominant substrate types and total number of types present, its origin, quality, and embeddedness. The two most predominant substrate types (i.e. boulder, cobble, sand, gravel, etc.) are selected for each section, with more stable substrates scoring more points. In a case where one substrate dominates 75-80% of the bottom, only one substrate is chosen and scored twice. Points are also given for a high variety of substrates (four or more). Substrate origin refers to the material from which the substrate developed. Quality is measured by the silt heaviness, with less siltation scoring more points. Heavy silt can negatively affect aquatic plants and animals and block stream flow. Embeddedness is the degree to which cobble, gravel and boulder substrates are surrounded, impacted or covered by fine materials. The maximum score for the substrate metric is 20.

Common substrates for the headwaters of Cahoon Creek included detritus (dead, unconsolidated organic material covering the bottom; includes sticks, wood and other partially decayed plant material), muck (black, fine, completely decomposed organic matter), gravel (mixture of rounded coarse material from 2-64mm in diameter) and sand (materials 0.06-2.0mm in diameter; gritty texture). Downstream, substrates improved to include cobble (stones from 64-256mm in diameter), bedrock (solid rock forming a continuous surface), and some silt (0.004-0.06mm in diameter; fine material generally feels “greasy” when rubbed between fingers).

Instream Cover measures the variety and amount of available shelter for fish and macroinvertebrates. Examples of instream cover include undercut banks, overhanging vegetation, rootmats (thin masses of roots that hang from the bank in the water), rootwads (large tree roots that hang in the water), large boulders, aquatic plants, deep pools, slow shallows, and woody debris (tree trunks, branches, etc.). The amount estimates the percentage of cover for the entire stream stretch. Instream cover should be functional. The maximum score for the instream cover metric is 20.

Common instream cover for Cahoon Creek included rootwads, rootmats, overhanging vegetation, undercut banks, woody debris and boulders. The amount ranged from sparse to extensive in different areas of the stream.

Channel Morphology refers to the stream's shape as indicated by sinuosity, development, channelization, and stability. Sinuosity describes the degree to which the stream meanders. A straight channel has no sinuosity, while a very sinuous stream has many bends. Development refers to the quality of riffle and pool complexes. Channelization shows how well a stream has recovered from human-made channel modifications, and stability defines the resistance of the stream banks and channel to change. The maximum score for this metric is 20.

The *Riparian Zone* metric measures the quality of the buffer zone between the stream and the surrounding landscape. The riparian width is the amount of natural land use on each stream bank, while the flood plain quality refers to the land use type that extends beyond the riparian zone. Bank erosion is also assessed. This metric scores the right and left banks separately, and then takes the average for the final score. The maximum score for this metric is 10.

Pool/glide and Riffle Quality measures the quality of the riffle and pool complexes. This metric is split into two parts, with a maximum score of 12 for pool/current development, and a maximum score of 8 for riffle/run quality.

The *Gradient* is measured by using a USGS 7.5 minute topographic map. To calculate the gradient, measure the stream length and the elevation drop. Gradient is the amount of feet dropped divided by the total length of the stream segment. The maximum score for the gradient metric is 10.

QHEI of Cahoon Creek

This project assessed the QHEI of Cahoon Creek. One QHEI field sheet was filled out approximately every 500 to 600 feet of stream length. Overall, fifty sheets were completed for two headwater tributaries and main branch of Cahoon Creek, which together total 6.2 miles. See Table 1, Table 2, and Table 3 for results.

| West Trib Site Number | Substrate | Cover | Channel | Riparian | Pool/Current | Riffle/Run | Gradient | QHEI Score |
|-----------------------------|-----------|-------|---------|----------|--------------|------------|----------|---------------|
| 1 | 4 | 6 | 5 | 5 | 3 | 0 | 2 | 25 |
| 2 | 4 | 6 | 5 | 5 | 3 | 0 | 2 | 25 |
| 3 | 7 | 9 | 5 | 5 | 3 | 0 | 2 | 31 |
| 4 | 12 | 9 | 5 | 5.5 | 3 | 0 | 2 | 36.5 |
| 5 | 3 | 10 | 5 | 5 | 3 | 0 | 2 | 28 |
| 6 | 9 | 5 | 5 | 6 | 3 | 0 | 2 | 30 |
| 7 | 13 | 11 | 5 | 5 | 3 | 0 | 2 | 39 |
| 8 | 13 | 11 | 5 | 6 | 4 | 0 | 2 | 41 |
| Averages | 8.125 | 8.375 | 5 | 5.3125 | 3.125 | 0 | 2 | 31.9375 |

Table 1: QHEI results for Cahoon Creek West Tributary.

| East Trib Site Number | Substrate | Cover | Channel | Riparian | Pool/Current | Riffle/Run | Gradient | QHEI Score |
|-----------------------------|-----------|-------|----------|----------|--------------|------------|----------|---------------|
| 1 | 2 | 9 | 9.5 | 5 | 5 | 0 | 10 | 40.5 |
| 2 | 2 | 10 | 8.5 | 5 | 4 | 0 | 10 | 39.5 |
| 3 | 7 | 9 | 10.5 | 6 | 6 | 0 | 10 | 48.5 |
| 4 | 14 | 11 | 11 | 6.5 | 5 | 2 | 10 | 59.5 |
| 5 | 12 | 10 | 13.5 | 5.5 | 3 | 2 | 10 | 56 |
| 6 | 12 | 8 | 11 | 7.5 | 4 | 1 | 10 | 53.5 |
| 7 | 12 | 7 | 10.5 | 6 | 4 | 1 | 10 | 50.5 |
| 8 | 14 | 11 | 8.5 | 5.5 | 2.5 | 1 | 10 | 52.5 |
| 9 | 12 | 8 | 9.5 | 5.5 | 3 | 0 | 10 | 48 |
| 10 | 12 | 7 | 9 | 5 | 3 | 0 | 10 | 46 |
| 11 | 12 | 11 | 10 | 5 | 3 | 0 | 10 | 51 |
| 12 | 12 | 14 | 8 | 5 | 5 | 3 | 10 | 57 |
| 13 | 12 | 16 | 9 | 6 | 6 | 3 | 10 | 62 |
| 14 | 12 | 9 | 13 | 9 | 8 | 2 | 10 | 63 |
| Averages | 10.5 | 10 | 10.10714 | 5.892857 | 4.392857 | 1.071429 | 10 | 51.96429 |

Table 2: QHEI results for Cahoon Creek East Tributary.

| Main Branch | | | | | | | | |
|-------------|-----------|----------|----------|----------|--------------|------------|----------|------------|
| Site Number | Substrate | Cover | Channel | Riparian | Pool/Current | Riffle/Run | Gradient | QHEI Score |
| 1 | 11 | 7 | 7 | 5.5 | 5 | 4 | 8 | 47.5 |
| 2 | 12 | 12 | 11 | 5.5 | 5 | 1 | 8 | 54.5 |
| 3 | 13 | 12 | 12.5 | 5.5 | 5 | 2 | 8 | 58 |
| 4 | 14 | 11 | 13.5 | 3.5 | 3 | 4 | 8 | 57 |
| 5 | 12 | 10 | 13 | 5.5 | 4 | 3 | 8 | 55.5 |
| 6 | 12 | 11 | 13 | 4 | 4 | 2 | 8 | 54 |
| 7 | 11 | 11 | 13 | 6 | 4 | 4 | 8 | 57 |
| 8 | 13.5 | 5 | 15.5 | 3.5 | 3 | 4 | 8 | 52.5 |
| 9 | 14 | 5 | 14.5 | 4.5 | 4 | 5 | 8 | 55 |
| 10 | 13 | 10 | 11 | 4.5 | 4 | 3 | 6 | 51.5 |
| 11 | 12 | 10 | 13 | 5 | 4 | 3 | 6 | 53 |
| 12 | 12.5 | 9 | 14.5 | 5.5 | 4 | 3 | 6 | 54.5 |
| 13 | 15 | 9 | 14.5 | 4.5 | 4 | 2 | 6 | 55 |
| 14 | 16 | 8 | 11 | 4 | 3 | 0.5 | 6 | 48.5 |
| 15 | 14 | 6 | 10 | 3.5 | 4 | 0 | 6 | 43.5 |
| 16 | 12.5 | 10 | 13.5 | 5 | 9 | 0.5 | 8 | 58.5 |
| 17 | 9 | 9 | 10.5 | 5 | 4 | 3 | 8 | 48.5 |
| 18 | 9 | 5 | 16 | 5 | 4 | 2 | 8 | 49 |
| 19 | 14.5 | 5 | 13.5 | 6 | 4 | 3 | 8 | 54 |
| 20 | 11 | 4 | 9 | 5.5 | 5 | 2 | 8 | 44.5 |
| 21 | 6 | 4 | 9 | 5.5 | 5 | 0 | 6 | 35.5 |
| 22 | 12 | 12 | 11 | 4.75 | 5 | 3 | 6 | 53.75 |
| 23 | 12 | 12 | 10.5 | 4 | 4 | 3 | 6 | 51.5 |
| 24 | 12 | 7 | 12.5 | 4.5 | 5 | 2 | 6 | 49 |
| 25 | 12 | 7 | 12.5 | 5.5 | 5 | 3 | 6 | 51 |
| 26 | 14 | 7 | 11.5 | 5.5 | 4 | 4 | 6 | 52 |
| 27 | 12 | 9 | 14 | 7 | 4 | 4 | 6 | 56 |
| 28 | 11 | 2 | 10.5 | 6 | 8 | 0 | 6 | 43.5 |
| Averages | 12.21429 | 8.178571 | 12.17857 | 4.991071 | 4.5 | 2.5 | 7 | 51.5625 |

Table 3: QHEI results for Cahoon Creek Main Branch.

Interpretation of Results

The overall average QHEI score for Cahoon Creek was 48, suggesting that it may or may not have the potential to support an aquatic community. QHEI was developed for large streams to indicate their ability to support fish populations. Although Cahoon Creek had some deep pools, it was not large enough to score in the high range. Other factors contributing to its fair score include the substrate, channel morphology and lack of natural riparian areas. The west tributary of Cahoon Creek was primarily made up of detritus and muck which score low on the substrate metric. In other sections of the creek, bedrock was the predominant substrate. Bedrock does not support good riffle development, and is not a functional fish habitat. Most of Cahoon Creek runs through residential areas, which leads to increased sediment loads from storm sewer run-off. Channel modifications were also common. Many stream stretches had retaining walls and/or riprap to prevent erosion. In these areas especially, sinuosity was low because the stream was recovering from channelization. The channel morphology throughout

the headwaters of Cahoon Creek is poor, but gradually improves downstream toward Lake Erie. While Cahoon Creek's average QHEI score suggests that it may or may not have the potential to support an aquatic community, small fish populations are present in deep pools suggesting that areas of Cahoon Creek are indeed suitable fish habitats. See Fig. 4 for a graph of QHEI scores.

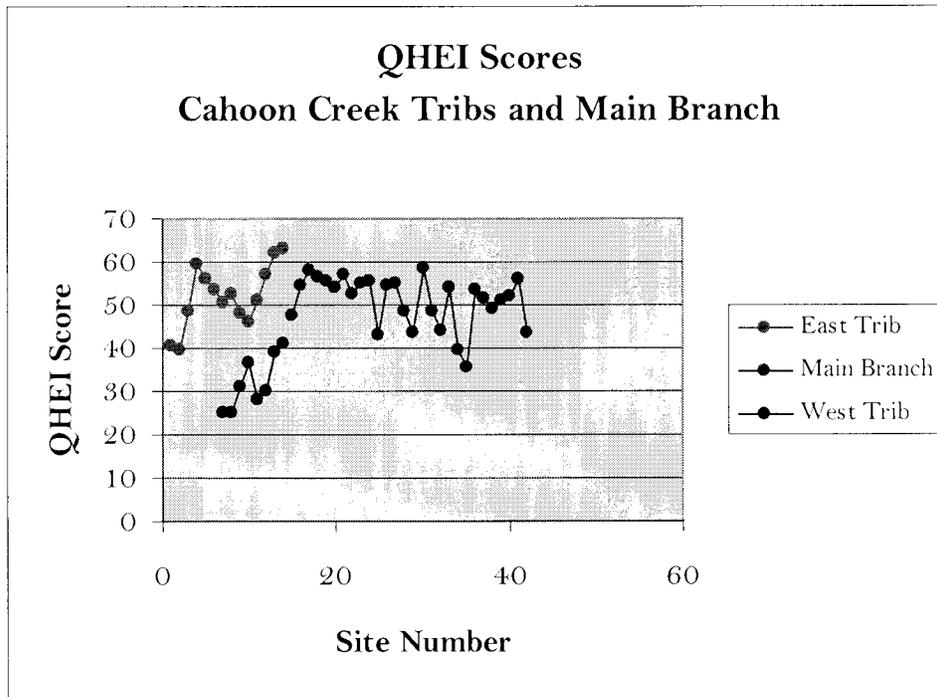


Fig. 4

Macroinvertebrate Sampling

Introduction

The macroinvertebrate population of a stream is influenced by its water quality. Benthic macroinvertebrates are organisms without a backbone such as arthropods, mollusks, and worms that live in the substrate on the stream bottom. These organisms are collected in the riffle areas of the stream where the water contains enough oxygen for them to survive. The organisms are divided into three groups based on their sensitivity to oxygen depletion. Group One taxa, which are the most sensitive, receive three points. Organisms in this group include water penny larvae, mayfly nymphs, stonefly nymphs, dobsonfly larvae, caddisfly larvae, riffle beetle adults, and gilled snails. Group Two Taxa are worth two points. These organisms include damselfly nymphs, dragonfly nymphs, crane fly larvae, beetle larvae, crayfish, scuds, clams, and sowbugs. The pollution tolerant Group Three taxa receive only one point, and include blackfly larvae, aquatic worms, midge larvae, pouch snails, and leeches.

Macroinvertebrate Sampling on Cahoon Creek

Five sampling locations were chosen in riffle areas along Cahoon Creek. For this project, the Ohio Department of Natural Resources (ODNR) score sheet and sampling

protocol was used. One person held a net downstream of a riffle area while another rubbed all rocks roughly three feet upstream so that everything living on them flowed into the net. Then, they kicked up the stream bottom to collect the organisms living in the smaller substrates. The net was picked up and placed on a white shower curtain where both participants collected the macroinvertebrates with tweezers and placed them in a container of water. When all of the organisms had been collected, they were tallied on the ODNR score sheet according to taxonomical group. Final scores indicate the quality of the macroinvertebrate population as follows: 23 or higher = Excellent; 22 – 17 = Good; 11 – 16 = Fair; 10 or less = Poor. See Table 4 for results.

| Cahoon Macroinvertebrate Sampling Points | Date | Score | Stream Quality Assessment |
|--|-----------|-------|---------------------------|
| Clark Parkway | 6/30/2004 | 8 | Poor |
| Center Ridge Rd. | 6/30/2004 | 11 | Fair |
| Westlake Police Station (Hilliard Rd.) | 6/30/2004 | 15 | Fair |
| Bryson Lane | 7/1/2004 | 20 | Good |
| Cahoon Park | 7/1/2004 | 13 | Fair |
| Average | | 13.4 | Fair |

Table 4: Macroinvertebrate Results

Interpretation of Results

A total of five locations were sampled for macroinvertebrates along Cahoon Creek, with an average score of “Fair”. While this score can be attributed to mediocre water quality, it can also be due to habitat problems. The same factors that lowered Cahoon Creek’s QHEI scores would also negatively impact the macroinvertebrate population. For example, bedrock substrate is a poor habitat for macroinvertebrates, but has no bearing on the actual quality of the water.

Chemical Sampling

Introduction

Chemical and bacteriological sampling was conducted at ten locations along Cahoon Creek. These points were chosen based on location, appearance, accessibility, and proximity to possible pollution sources. See map in Fig. 5, and Fig. 6 for sampling locations.

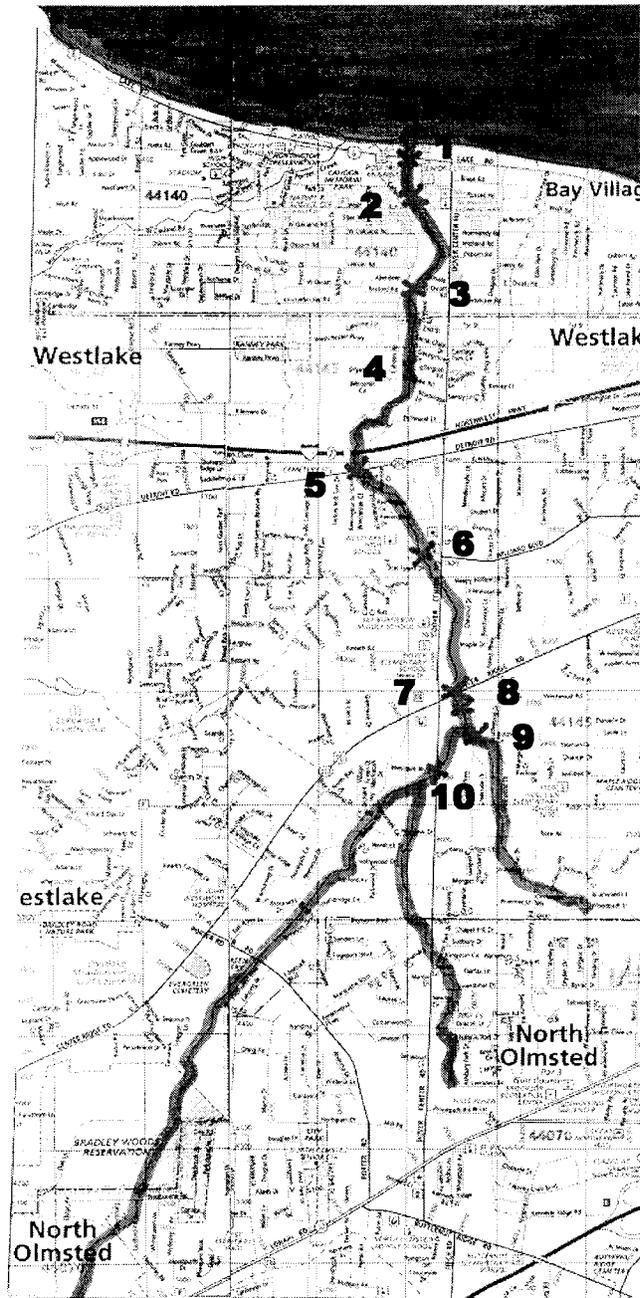


Fig. 5: Sampling Locations of Cahoon Creek

1. Cahoon Memorial Park
Lake and Cahoon Rd. (Bay Village)
2. Bryson Lane
Bryson Lane and Wolf Rd. (Bay Village)
3. Oviatt Rd.
Oviatt Rd. and Cahoon Rd. (Bay Village)
4. 1116 Richmar Rd. Outfall
(River left) (Bay Village)
5. Detroit Rd.
Detroit Rd. and Cahoon Rd. (Bay Village)
6. City Hall (Hilliard)
Westlake City Hall Hilliard Rd. (Westlake)
7. Center Ridge (2 Tributaries)
Center Ridge Rd. and Dover Center
8. Center Ridge Outfall
Upstream of Center Ridge and Dover Center (River right) (Westlake)
9. Clark Tributary
Clark Parkway and Cahoon Creek (Westlake)
10. Dover Center Tributary
Dover Center Rd. and Westwood Apartments (Westlake)

Fig. 6 Sampling Points and Locations

Fecal Coliform Standards

Fecal coliform are a type of bacteria found in the intestines of warm blooded animals, and are therefore used as an indicator organism for sewage pollution. High levels of this organism are linked to health risks caused by other more harmful bacteria or viruses.

The Ohio EPA (OEPA) has designated Cahoon Creek as a primary contact stream, meaning its waters are suitable for full body submersion. Primary contact waterways must meet OEPA's fecal coliform standard which states that the geometric mean of five samples taken within a thirty day period shall not exceed 1,000 fecal coliform colonies per 100 milliliters (ml) of sample. It further states that no more than ten percent of the samples taken during the same period shall exceed 2,000 colonies/100 ml (Ohio Administrative Code 3745-1-07).

Fecal Coliform Sampling Procedures

The sites selected for this project were sampled a total of five times within a thirty day period. All samples were collected directly from Cahoon Creek except for the ones labeled "Center Ridge Outfall" and "1116 Richmar Dr.", which were collected from storm sewer outfalls entering the creek. Samples were collected in 100 ml autoclaved Nalgene bacterial analysis bottles preserved with sodium thiosulfate. Bottles were lowered into the water facing upstream with a gloved hand. The lids were replaced tightly and the bottles were kept in a cooler at 4° Celsius and transported to the Cuyahoga County Sanitary Engineers Laboratory in Valley View. The membrane filter technique, or "plate count" method, was used to obtain the fecal coliform counts. See Table 5 for results.

Fecal Coliform Results by site for Cahoon Creek.

| Sampling Points | 6/9/2004 | 6/24/2004 | 7/1/2004 | 7/7/2004 | 7/8/2004 | Geometric Mean |
|-----------------------------------|----------|-----------|----------|----------|----------|----------------|
| 1. Cahoon Memorial Park | 240 | 580 | 410 | 310 | 310 | 353.0444 |
| 2. Bryson Lane | 360 | 756 | 3163 | 440 | 380 | 678.6283 |
| 3. Oviatt Road | 350 | 663 | 390 | 370 | 300 | 398.4684 |
| 4. 1116 Richmar Drive | 7 | 2 | 2 | 2 | 2 | 2.56947 |
| 5. Detroit Road | 540 | 829 | 678 | 820 | 600 | 683.6418 |
| 6. Westlake City Hall | 612 | 878 | 553 | 407 | 960 | 650.0808 |
| 7. Center Ridge | 1091 | 1052 | 588 | 480 | 1125 | 817.1886 |
| 8. Center Ridge Outfall | 133 | 70 | 78 | 78 | 133 | 94.49267 |
| 9. Clark Parkway (East Tributary) | 2100 | 4500 | 1923 | 3100 | 4400 | 3011.932 |
| 10. Dover Center (West Tributary) | 5145 | 2800 | 1978 | 6600 | 20267 | 5202.602 |

Table 5: Sampling points nine and ten exceeded the OEPA's standards for primary contact waters.

Interpretation of Results

Two of the ten sampling sites exceeded the OEPA's primary contact standards for fecal coliform colonies. Both of these sites were in the headwaters where the low water volume may contribute to a poor ability to absorb pollution. Further downstream, the effects of pollution were less noticeable because of the higher volume of water. The two storm sewer outfalls were chosen because they were flowing continuously during dry weather, indicating they may be possible pollution sources. 1116 Richmar had extremely low fecal coliform levels, which suggests that a water main break may be responsible for the continuous high water flow. The Center Ridge outfall also had low levels compared to the samples collected from the stream in the same vicinity. This site may be the outfall of a culverted stream.

Ammonia and Phosphorous

In addition to fecal coliform, ammonia nitrogen and total phosphorous samples were analyzed at the same ten sampling sites. High levels of these nutrients could indicate fertilizer, sewage, or industrial pollution. Surface water standards for ammonia nitrogen vary depending upon on the temperature, time of year, and pH (Ohio Administrative Code Chapter 3745-1-07). There are no current surface water standards for total phosphorous, but OEPA wastewater discharge permits usually require that effluent levels remain under 1 milligram per liter. See Table 6 for results.

Ammonia and Phosphorous Results

| 6/9/2004 | | |
|-----------------------------------|---------|-------------------|
| Sampling Points | Ammonia | Total Phosphorous |
| 1. Cahoon Memorial Park | 0.41 | 0.05 |
| 2. Bryson Lane | 0.038 | 0.05 |
| 3. Oviatt Road | 0.059 | 0.07 |
| 4. 1116 Richmar Drive | 0.027 | 0.24 |
| 5. Detroit Road | 0.025 | 0.09 |
| 6. Westlake City Hall | 0.049 | 0.1 |
| 7. Center Ridge | 0.12 | 0.14 |
| 8. Center Ridge Outfall | 0.27 | 0.26 |
| 9. Clark Parkway (East Tributary) | 0.09 | 0.19 |
| 10. Dover Center (West Tributary) | 0.42 | 0.11 |

Table 6

Interpretation of Results

Ammonia nitrogen levels should fall below 1.9 mg/l in the months of March to November when the temperature is 21° C and the pH is 7.2 to 7.7. All of the samples fell within the standards. Likewise, the total phosphorous levels at all sampling locations were low.

Dissolved Oxygen

Oxygen depletion is caused by excessive organics and nutrient loading in a waterway. Higher water temperatures also decrease oxygen levels in a stream. Therefore, low levels of dissolved oxygen can indicate both pollution and habitat degradation. Aquatic organisms need dissolved oxygen to survive. Dissolved oxygen levels below 5.0 mg/l put a significant stress on the aquatic life living in the stream. When the oxygen level falls below 2 mg/l, it is almost impossible for aerobic organisms to survive, and can result in large fish kills. See Table 7 for results.

Dissolved Oxygen (mg/l)

| Sampling Points | 6/9/2004 | 7/1/2004 |
|-----------------------------------|----------|----------|
| 1. Cahoon Memorial Park | 7.68 | 8.19 |
| 2. Bryson Lane | 7.79 | 9.12 |
| 3. Oviatt Road | 9.08 | 8.9 |
| 4. 1116 Richmar Drive | 7.94 | 8.34 |
| 5. Detroit Road | 8.56 | 9.02 |
| 6. Westlake City Hall | 8.41 | 8.95 |
| 7. Center Ridge | 6.02 | 6.59 |
| 8. Center Ridge Outfall | 5.81 | 5.68 |
| 9. Clark Parkway (East Tributary) | 6.31 | 6.61 |
| 10. Dover Center (West Tributary) | 3.73 | 4.3 |

Table 7

Interpretation of Results

All of the sampling points were above the deadly range for dissolved oxygen except for the west tributary (site # 10). The lack of riffle areas, low flow volume, and silt-heavy stream bottom at this site all contributed to the low levels of dissolved oxygen. Also, some homeowners in the area dump yard waste (grass clippings, leaves, tree branches) along the stream bank, which depletes dissolved oxygen as it decomposes.

Specific Conductance

Conductivity measures electrical conductance in the water. High levels indicate more use of the water, which generally occurs in more highly populated regions. High conductivity readings sometimes correlate with high bacteria readings dissolved solid readings, or other chemical readings. The range for conductivity of surface waters is from 100 to 10,000 μ S/cm (micro Siemens per centimeter). See Table 8.

Specific Conductance

| Sampling Points | 6/9/2004 | 7/1/2004 |
|-----------------------------------|----------|----------|
| 1. Cahoon Memorial Park | 1056 | 821 |
| 2. Bryson Lane | 1021 | 830 |
| 3. Oviatt Road | 1020 | 814 |
| 4. 1116 Richmar Drive | 700 | 452.6 |
| 5. Detroit Road | 1048 | 715 |
| 6. Westlake City Hall | 1040 | 821 |
| 7. Center Ridge | 1032 | 808 |
| 8. Center Ridge Outfall | 1044 | 820 |
| 9. Clark Parkway (East Tributary) | 1028 | 815 |
| 10. Dover Center (West Tributary) | 1166 | 912 |

Table 8

Interpretation of Results

No significant correlation between fecal coliform levels and conductivity was detected in this project. Generally, when fecal coliform levels are high, conductivity levels are high, but high conductivity levels can also be obtained when fecal levels are low.

Conclusion

This study was carried out to assess the physical (QHEI), biological (macroinvertebrate population), and bacteriological/chemical health of Cahoon Creek. Both the QHEI and the macroinvertebrate scores were in the fair range, suggesting that the creek has been negatively impacted by urbanization. For the most part, the bacteriological and chemical readings were in the acceptable range, so inadequate habitat appears to be the limiting factor for the mediocre aquatic communities.

The surrounding suburban land use negatively affects stream habitat in many ways. Storm sewer systems designed to prevent roadways from flooding are responsible for

increased sporadic stream flows, which can wash away macroinvertebrate populations and also increase erosion and sediment loadings. The destruction of the natural riparian buffer leaves the creek further unprotected from lawn, roof-top, and pavement run-off. The manicured lawns bordering much of the creek do not provide the necessary root system to prevent erosion and absorb the sediment and chemicals that are present in urban rainwater run-off. Shade trees are sparse, which increases summer water temperatures and limits the sources of instream cover for fish and macroinvertebrates. Channel modifications (retaining walls, rip-rap) decrease sinuosity and inhibit natural riffle/pool development. All these factors decrease the creek's ability to support healthy aquatic communities.

Cahoon Creek also has some naturally limiting habitat factors. Its relatively small size (6.2 miles) affects its channel morphology, and large sections of bedrock substrate make macroinvertebrate collection difficult. However, the surrounding urbanization of the Cahoon Creek watershed is definitely impacting the health of the creek.

Resources

Ohio Administrative Code 3745-1-07. "Water Quality Standards"

Ohio Administrative Code 3745-1-07. "Ammonia and Nitrogen Criteria"

Ohio Department of Natural Resources Macroinvertebrate Guide.

Ohio Environmental Protection Agency (OEPA). 1994. Volume One: Regulations-Water Standards, Air Standards, Solid Waste, Permits, Procedural, and Miscellaneous 1994-2 Edition. Anderson Publishing Co. Cincinnati, OH.

Rankin, Edward T. 1989. The Qualitative Habitat Evaluation Index (QHEI): Rationale, Methods, and Application. OEPA Division of Water Quality Planning and Assessment Ecological Analysis Section. Columbus, OH.

Appendix F

Primary Headwater Habitat Evaluation Summer 2005

Cuyahoga County Board of Health



Introduction

In the summer of 2005, the Cuyahoga County Board of Health (CCBH) partnered with the Cuyahoga Valley National Park (CVNP) to evaluate primary headwater streams which enter the Cuyahoga River around River Mile 19. Because these streams were located both inside and outside of the Park in two counties (Summit and Cuyahoga), this project allowed both agencies to expand their jurisdictional boundaries as well as pool their resources.

Headwater Streams

Primary headwater habitat (PHWH) streams are defined to have a bed and bank, continuous or periodical flowing water, a drainage area of less than 1.0 square mile, and a maximum pool depth of less than or equal to 40 centimeters. Primary headwater streams are the smallest tributaries in a network of larger streams and lakes. The chemical, physical, and biological components of these small streams are very important to the health of the larger streams and lakes with which they eventually merge. Headwater streams are placed into three different classes depending on their quality. A Class I-PHWH stream is dry with little or no aquatic life; a Class II-PHWH stream has a diverse community of warm-water adapted species; and a Class III-PHWH stream has a very diverse community of cool-cold water adapted species. In order to determine the habitat quality of the primary headwater streams, a PHWH evaluation form must be completed. This form consists of a HHEI (Headwater Habitat Evaluation Index), a HMFEI (Headwater Macroinvertebrate Field Evaluation Index), and a physical and chemical analysis of the stream.

Headwater Habitat Evaluation Index (HHEI)

The HHEI (Headwater Habitat Evaluation Index) was developed by the Ohio Environmental Protection Agency to evaluate the quality of headwater streams. The HHEI score is based on the sum of three metrics or categories (see PHWH Evaluation Form page 1). One field sheet is completed for each 200 foot segment of stream.

The first category scored is the substrate. The stream bed is observed to determine the two predominant substrate types which are weighted (given points) according to their quality and recorded in box A. Then, the total number of substrates present are recorded in box B. The final substrate score is the sum of boxes A and B, which is recorded in the substrate box (in the HHEI Metric Points column).

The second metric scored is the maximum pool depth. The deepest pool depth is measured and assigned the appropriate point value in the pool depth box.

Bank full width is the final metric. Three or four widths of stream measurements are taken; avoiding widths taken at bends, undercut banks, and divisions in the stream. Use of a long piece of string with the bubble level will increase measurement accuracy. The

average of these stream widths is calculated, and the appropriate point value is recorded in the bank full width box.

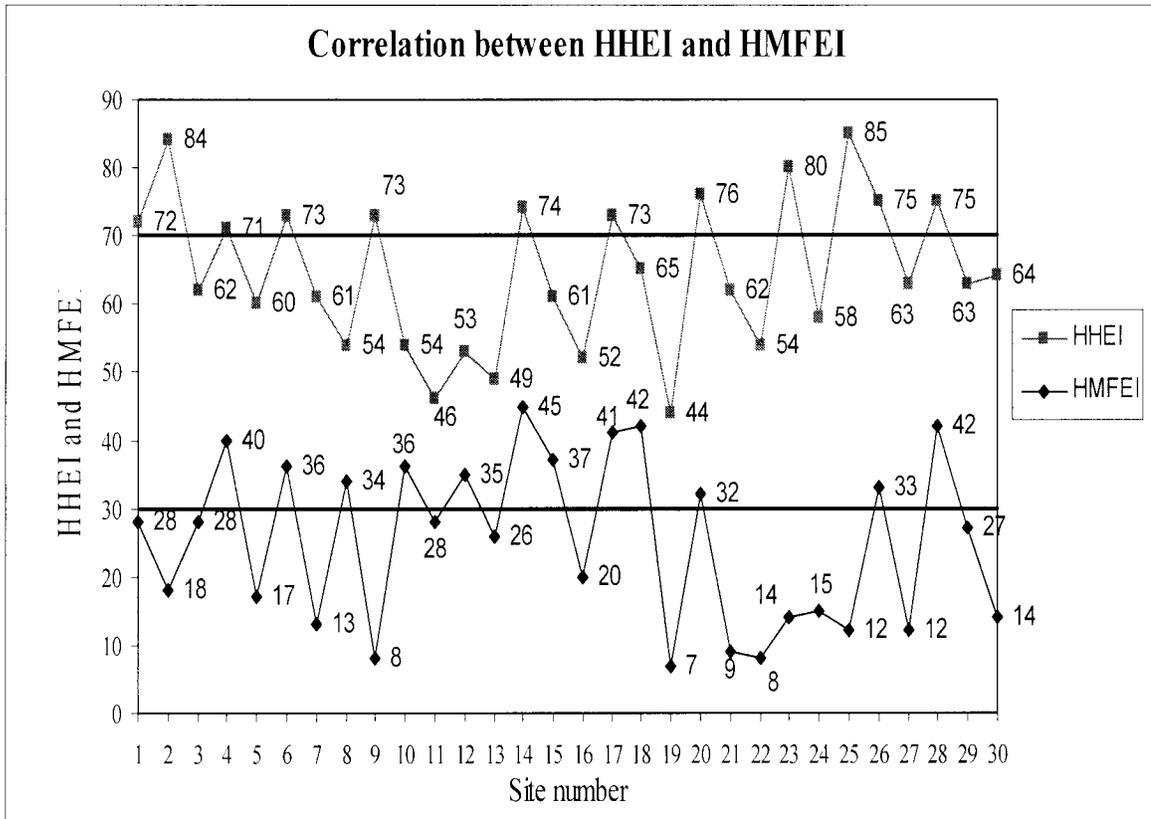
The total of the three above metrics constitutes the final HHEI score. Scores falling between 0-30 points are considered Class I streams, 70-100 points are considered Class III streams, and scores from 30-70 points are considered to be in the “gray area”. A stream in the “gray area” could fall into any of the three classes. In this situation, a headwater macroinvertebrate field evaluation index (HMFEI) must be completed to determine the actual quality of the stream.

Additional observations besides the above described metrics are included in the HHEI evaluation form, although they are not used to calculate the HHEI score. These include the physical characteristics of riparian zone, floodplain quality, flow regime, sinuosity, and stream gradient (PHWH Form page 1). The riparian width is the amount of natural land use on each bank, while floodplain quality refers to the land use type that extends beyond the riparian zone. Flow regime describes how the stream flows (i.e. continuous, interstitial, intermittent, or ephemeral), and sinuosity measures stream bends. Stream gradient estimates the change in elevation. Recent precipitation and its effect on flow conditions and turbidity is also recorded (PHWH Form page2) along with field measurements for chemical parameters such as temperature, dissolved oxygen, pH, and conductivity. Finally, a rough field drawing of the stream and its features is completed.

Headwater Macroinvertebrate Field Evaluation Index (HMFEI)

The HMFEI (Headwater Macroinvertebrate Field Evaluation Index) scores the quality of the benthic macroinvertebrate population found at the site. Benthic macroinvertebrates are small animals without backbones (mostly worms, arthropods, or mollusks) that live in the stream substrate. At each site, a thorough search for macroinvertebrates is conducted in all different habitat types throughout the stream stretch; including pools, riffles, under rocks, and in any other possible habitat (see PHWH Form page 4). The organisms found fall into one of three groups based upon their sensitivity to oxygen depletion. Group I taxa are most sensitive and receive three points for each taxa found; Group II taxa are worth two points each; and the very pollution tolerant Group III taxa are given one point. Therefore, the HMFEI score may be directly related to the quality of the water. However, habitat quality also affects macroinvertebrate populations, so it is important to take the HHEI score into account. A final HMFEI score below 7 is considered to be a Class I stream, a score from 7 to 19 is a Class II stream, and a score greater than 19 is a Class III stream. The final score of the HMFEI will give a more accurate classification of a stream’s habitat than the HHEI score alone.

Determining Stream Classification



The above graph shows the final HHEI and HMFEI scores for all streams assessed during the CCBH/CVNP project between June 13, 2005 and July 14, 2005. Streams falling into the “gray area” between 30 and 70 points depend on both the habitat and the macroinvertebrate scores to determine the final stream classification. All of the HHEI scores were above 30 points, which means none were Class I streams. Twelve of the HHEI scores were above 70 points, indicating these streams are Class III. The remaining streams fall into the “gray area”, so one must look at the HMFEI scores to determine classification. For example, Site 10 is a Class III stream due to its high HMFEI score (36 points). On the other hand, Site 22, which had the same HHEI score as Site 10 (54 points), is a Class II stream due to its lower HMFEI score of 8 points.

For the locations shown in the above graph, Sites #5, 7, 19, 21, 22, 24, 27, and 30 are categorized as Class II streams while the remaining streams are Class III.

Biological Characteristics

It is important to observe other life in the stream besides the macroinvertebrates. The biological characteristics field sheet (see PHWH Form page 3) identifies vertebrate populations (fish and salamanders) that indicate high quality headwater habitats. Fish are often found in the deepest pools, while salamanders hide under loose rocks both in and out of the water. Salamanders are a sign of a healthy stream. Whenever two-lined

salamander eggs and/or larvae are found, the Ohio EPA automatically categorizes the stream as a Class III.

Brecksville Study

Additional chemical testing was conducted by CCBH on nine HHEI sites located in the southeast section of Brecksville in Cuyahoga County. These samples were analyzed in a laboratory (Cuyahoga County Sanitary Engineers Water Quality Laboratory) for fecal coliform bacteria, total phosphorous, and ammonia nitrogen. The following tables show the results of this sampling.

Brecksville Sampling Results

| Number* | Site* | Latitude | Longitude | 12-Jul-05 | | | 26-Jul-05 | | |
|---------|-------|----------|-----------|-----------|-------|---------|-----------|-------|---------|
| | | | | Fecal | Phos. | Ammonia | Fecal | Phos. | Ammonia |
| 20 | 14 I | 41.2835 | -81.5963 | 1167 | 0.05 | 0.1 | 410 | 0.03 | 0.02 |
| 22 | 27 I | 41.2913 | -81.6029 | 3 | 0.04 | 0.29 | 97 | 0.06 | 0.09 |
| 24 | 23 I | 41.2881 | -81.5988 | 150 | 0.04 | 0.12 | 190 | 0.02 | 0.01 |
| 27 | 41 I | 41.2949 | -81.6045 | 623 | 0.2 | 15 | 685 | 0.52 | 5.7 |
| 25 | 5 II | 41.2916 | -81.5994 | 195 | 0.06 | 0.02 | 320 | 0.06 | 0.01 |
| 23 | 24 I | 41.293 | -81.5959 | 183 | 0.03 | 0.02 | 87 | 0.03 | 0.01 |
| 26 | 9 II | 41.295 | -81.6021 | 22 | 0.05 | 0.022 | 120 | 0.05 | 0.03 |
| 21 | 15 I | 41.2837 | -81.5982 | 90 | 0.1 | 0.027 | 4152 | 0.03 | 0.03 |
| 28 | 10 II | 41.2953 | -81.602 | 30 | 0.03 | 0.04 | 120 | 0.03 | 0.01 |

Laboratory Results (Table 1)

*Number corresponds to the site number listed on the HHEI/HMFEI Correlation Graph, while Site corresponds to the PHWH Form.

Field Results (Table 2)

(5-Jul-05; 6-Jul-05; 7-Jul-05; 11-Jul-05)

| Number | Site | HHEI | HMFEI | Temp. (°C) | Dissolved Oxygen (mg/L) | pH | Conductivity(μ S/cm) |
|--------|-------|------|-------|------------|-------------------------|------|---------------------------|
| 20 | 14 I | 76 | 32 | 19.38 | 9.21 | 8.15 | 782 |
| 22 | 27 I | 54 | 8 | 19.36 | 3.24 | 6.12 | 1211 |
| 24 | 23 I | 58 | 15 | 20.11 | 5.61 | 7.22 | 1226 |
| 27 | 41 I | 63 | 12 | 19.78 | 1.86 | 7.56 | 639 |
| 25 | 5 II | 85 | 12 | 17.01 | 6.77 | 7.94 | 979 |
| 23 | 24 I | 80 | 14 | 18.32 | 5.88 | 7.87 | 1382 |
| 26 | 9 II | 75 | 33 | 18.32 | 4.19 | 7.58 | 802 |
| 21 | 15 I | 62 | 9 | 21.23 | 4.76 | 7.26 | 1311 |
| 28 | 10 II | 75 | 42 | 19.8 | 6.48 | 7.68 | 579 |

Fecal coliform is a type of bacteria that is found in the intestines of warm blooded animals, and is therefore used as an indicator organism for sewage pollution. Ohio Administrative Code Chapter 3745-1-04 states that a public health nuisance exists whenever surface water exceeds 5,000 fecal colonies/100 milliliters of sample in two or more samples collected within thirty days. None of the Brecksville sites exceeded this standard.

Although there is no nuisance standard for total phosphorous in surface waters, Ohio EPA wastewater discharge permits usually require concentrations of less than 1 milligram/liter. The Brecksville sites were all below this figure.

Ammonia nitrogen standards are dependent on temperature, pH, and water use designation, and also vary seasonally (Ohio Administrative Code Chapter 3745-1-07). Generally speaking, the ammonia nitrogen at the Brecksville sites should average between 0.8 and 2.2 milligrams/liter during the summer months. One site, 41I, exceeded this level dramatically, with levels of 15 mg/l and 5.7 mg/l. This particular creek forms the border between two residential yards. Further investigation revealed that one of the residents was dumping used cat litter along the stream bank. The resident was advised to dispose of this litter properly (i.e. bagging it, and putting it in the garbage).

Conclusion

This study was conducted to evaluate the quality of the headwater streams that flow into the Cuyahoga River near River Mile 19. The evaluation of headwater quality can help environmental and municipal officials with land use decisions in areas where small streams may be culverted for new development. The results of this study show that most headwaters in the tested area are currently healthy. The physical, chemical, and biological components of the stream all work together to create a hospitable environment for plants and organisms. Decent headwater habitat and water quality contribute to a diverse population of macroinvertebrates, fish, and salamanders, which consequently increases the health of the Cuyahoga River downstream..

Resources

- Anderson, P., R. D. Davic, S. Tuckerman. 1999. Primary headwater habitat assessment program field evaluation manual, training version. Ohio EPA, Division of Surface Water, Columbus, Ohio.
- Davic, R.D. 1996. Standardized field sampling methods for assessing headwater habitat streams in Ohio. Final Draft. Ohio EPA, Division of Surface Water, Northeast District Office, Twinsburg, Ohio.

Appendix G

Sagamore Creek Water Quality Project Summer 2005

Introduction

During May and June of 2005, the Cuyahoga County Board of Health conducted a water quality assessment on Sagamore Creek, which evaluated the habitat quality (QHEI) and macroinvertebrate population on the portion of this creek running through Cuyahoga County.

This creek originates in Summit County (in Macedonia and the Village of Northfield) and flows northwestward to Valley View in Cuyahoga County where it merges with the Cuyahoga River. For this project, the qualitative habitat evaluation index (QHEI) was completed on the two and a half mile stream section beginning at the Sagamore Hills/Walton Hills border on Sagamore Rd. and ending where the creek meets the Ohio Canal in Valley View. Four macroinvertebrate sampling sites were also selected along this same stream stretch.

Qualitative Habitat Evaluation Index

The qualitative habitat evaluation index (QHEI) was developed by Edward T. Rankin from the Ohio Environmental Protection Agency to assess the physical characteristics of a stream that shelter and protect aquatic communities. The QHEI examines six metrics which are scored separately and then added together to provide an overall score. These metrics include substrate quality, instream cover, channel morphology, riparian zone, pool/glide/riffle/run quality, and the gradient. Final QHEI scores range from zero to one hundred, with higher scores indicating superior habitats. Scores below forty five indicate streams that have a poor potential to support aquatic communities, while streams scoring between forty five and sixty may or may not be able to support healthy aquatic communities. Scores above seventy five indicate the physical capability to support fish species that favor exceptional warm water habitats. (Edward Rankin, OEPA)

Thirty eight stream segments (roughly 500 feet long each) were assessed for this project. A blank QHEI field sheet is included. See Table 1 for the QHEI results on Sagamore Creek.

TABLE 1

| Site Number | Latitude | Longitude | QHEI Score |
|----------------------------------|-----------|-----------|------------|
| 1 (Sagamore Rd., NW of Acre Dr.) | N/A* | N/A | 60 |
| 2 | 41.35176 | 081.55461 | 66.5 |
| 3 | 41.35223 | 081.55527 | 63 |
| 4 | 41.35229 | 081.55675 | 56.5 |
| 5 | 41.35256 | 081.55782 | 70.5 |
| 6 | 41.35373 | 081.55830 | 61.5 |
| 7 | 41.35468 | 081.55957 | 55 |
| 8 | 41.35506 | 081.56175 | 61.5 |
| 9 | N/A | N/A | 66 |
| 10 | 41.35505 | 081.56177 | 60.5 |
| 11 | 41.35792 | 081.56452 | 61 |
| 12 | 41.35694 | 081.56687 | 62 |
| 13 | 41.35636 | 081.56746 | 63 |
| 14 | N/A | N/A | 64.5 |
| 15 | 41.35601 | N/A | 57 |
| 16 | N/A | N/A | 58 |
| 17 | 41.356401 | 081.57320 | 52 |
| 18 | 41.35529 | 081.57461 | 73 |
| 19 | 41.35479 | 081.57540 | 67.5 |
| 20 | 41.35422 | 081.57670 | 67.5 |
| 21 | 41.35328 | 081.57827 | 65.5 |
| 22 | 41.352801 | 081.57975 | 68 |
| 23 | 41.35260 | 081.58130 | 66 |
| 24 | 41.35303 | 081.58334 | 59.5 |
| 25 | 41.352931 | 081.58507 | 62 |
| 26 | 41.35601 | 081.56999 | 67.5 |
| 27 | 41.35299 | 081.58685 | 71 |
| 28 | 41.35251 | 081.58850 | 71.5 |
| 29 | 41.35191 | 081.58948 | 67 |
| 30 (Ohio Canal) | 41.35171 | 081.59112 | 60 |

*N/A = Not available

Average QHEI score = 63.5

The average QHEI score for the Cuyahoga County section of Sagamore Creek was 63.5, suggesting that it has the potential to support a healthy aquatic community. Although there is suburban development bordering some eastern sections of this stream, it is relatively sparse; and the creek is protected by the Brecksville Reservation of Cleveland Metroparks west of Dunham Rd. The abundance of natural land use surrounding this creek increases its scoring on the riparian zone and instream cover metrics. Channel morphology was also very good, because most of the stream remains in its natural meandering state. The predominant substrates of cobble, gravel, and sand also enhance QHEI scores.

Macroinvertebrate Sampling

The macroinvertebrate population of a stream is influenced by both its water quality and its habitat. Benthic macroinvertebrates are organisms without a backbone such as arthropods, mollusks, and worms that live in the substrate on the stream bottom. These organisms are collected in the riffle areas of the stream where the water contains enough oxygen for them to survive. The organisms are divided into three groups based on their sensitivity to oxygen depletion. Group One taxa, which are the most sensitive, receive three points. Organisms in this group include water penny larvae, mayfly nymphs, stonefly nymphs, dobsonfly larvae, caddisfly larvae, riffle beetle adults, and gilled snails. Group Two Taxa are worth two points. These organisms include damselfly nymphs, dragonfly nymphs, crane fly larvae, beetle larvae, crayfish, scuds, clams, and sowbugs. The pollution tolerant Group Three taxa receive only one point, and include blackfly larvae, aquatic worms, midge larvae, pouch snails, and leeches.

Four sampling locations were chosen in easily accessible locations along the Cuyahoga County stretch of Sagamore Creek. For this project, the Ohio Department of Natural Resources (ODNR) assessment form and sampling protocol was used. One person held a net downstream of a riffle area while another rubbed all rocks roughly three feet upstream so that everything living on them flowed into the net. Then, they kicked up the stream bottom to collect the organisms living in the smaller substrates. The net was picked up and placed on a white shower curtain where both participants collected the macroinvertebrates with tweezers and placed them in a container of water. When all of the organisms had been collected, they were tallied on the ODNR assessment form according to taxonomical group. Final scores indicate the quality of the macroinvertebrate population as follows: 23 or higher = Excellent; 22 – 17 = Good; 11 – 16 = Fair; 10 or less = Poor. See Table 2 for results.

TABLE 2

| Sampling Location | Date | Macroinvertebrate Score | Stream Quality Assessment |
|----------------------------|-------------|--------------------------------|----------------------------------|
| Sagamore Rd. & Canal Rd. | 6/21/05 | 21 | Good |
| Sagamore Grove Picnic Area | 6/21/05 | 26 | Excellent |
| 7775 Dunham Rd. | 6/21/05 | 22 | Good |
| Sonny Rd. bridge | 6/21/05 | 16 | Fair |

The macroinvertebrate population of Sagamore Creek was excellent at Sagamore Grove Picnic Area, which is located within the Cleveland Metroparks. This area also has very good habitat (higher QHEI scores). Good populations were found at the Dunham Rd. site and at the intersection of Sagamore and Canal Roads. These areas are outside the Metroparks, but still exhibit good habitat. The Sonny Road site is surrounded by relatively new suburban development, and the habitat is inferior to other areas of the creek (very narrow riparian zone, channel modifications, etc.) Therefore, it is not surprising that the quality of the macroinvertebrate population there was only fair.

Conclusion

This project was carried out to assess the physical (QHEI) and biological (macroinvertebrate population) health of Sagamore Creek. Both these factors were good for the most part, suggesting that this creek is capable of supporting healthy aquatic communities. Many small fish were observed living in its pools during this study. The health of Sagamore Creek ultimately affects the Cuyahoga River, into which it flows.

Resources

Ohio Department of Natural Resources Macroinvertebrate Guide

Rankin, Edward T. 1989. The Qualitative Habitat Evaluation Index (QHEI): Rationale, Methods, and Application. OEPA Division of Water Quality Planning and Assessment Ecological Analysis Section. Columbus, OH.

Appendix H

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|-------------------------|--------------------------|----------|-----------------------------|-----------|----------------|---------|------|----|-------------|----|
| Bay Village | Bay Village | ZWBL0001 | 503 BASSETT ROAD | 17-Aug-04 | 2100 | 6.6 | | | 0.330000013 | 0 |
| | | ZWBL0001 | 503 BASSETT ROAD | 10-Aug-04 | 746 | 4 | | | 4.300000191 | 0 |
| | | ZWBL0002 | BASSETT AND OSBORN | 17-Aug-04 | | 7.5 | | | 0.340000004 | 0 |
| | | ZWBL0003 | SE OF BASSETT RR TRACKS | 17-Aug-04 | | 8.1 | | | 0.349999994 | 0 |
| | | ZWBL0004 | SOUTH OF BASSETT | 17-Aug-04 | | 0.031 | | | 0.119999997 | 0 |
| Beachwood | Doan Brook - Main Branch | DBMB4010 | Behind 3405 Belvoir | 01-Aug-05 | 67 | | | | | |
| | | ECW41040 | Next to George Zeiger Sl. | 01-Aug-05 | 33 | | | | | |
| | | ECW41050 | West side of catch basin | 01-Aug-05 | 570 | | | | | |
| | | ECW41060 | South side of basin | 01-Aug-05 | 380 | | | | | |
| | | ECW41080 | S. of Cedar. by Meyers Pkwy | 01-Aug-05 | 17000 | | | | | |
| | | ECW41100 | W. of Meyers Pkwy | 01-Aug-05 | 662 | | | | | |
| | | ECW41150 | W. of Meyers Pkwy | 01-Aug-05 | 519 | | | | | |
| | | ECW41170 | E. of Meyers Pkwy | 01-Aug-05 | 51 | | | | | |
| | | ECW41250 | W. of L-271 | 02-Aug-05 | 699 | | | | | |
| | | ECW41370 | W. of Village Lane | 02-Aug-05 | 23 | | | | | |
| | | ECW41380 | South end of Pond | 02-Aug-05 | 1167 | | | | | |
| | | ECW41400 | Outfall from Ramsey Rd | 02-Aug-05 | 103 | | | | | |
| | | EW5A0010 | N. side of Cedar | 01-Aug-05 | 193333 | | | | | |
| | | FW5A0020 | N. side of Cedar | 01-Aug-05 | 11333 | | | | | |
| | | FW5B0010 | | 01-Aug-05 | 2000 | | | | | |
| Mill Creek Tributary 23 | | | | | | | | | | |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|-----------|-----------------------------|----------|------------------------------|-----------|----------------|---------|------|----|------------|----|
| | Tinkers Creek - Tributary 1 | MC230020 | W. of Green | 01-Aug-05 | 1167 | | | | | |
| | | TC110100 | Intersection Hotel & Auburn | 02-Aug-05 | 14667 | | | | | |
| | | TC110110 | Intersection Hotel & Auburn | 02-Aug-05 | 9 | | | | | |
| Berea | Cuyahoga County Berca | | | | | | | | | |
| | | ZWBE0001 | 489 Laurel | 09-Aug-04 | 1692 | | | | 0 | 0 |
| | | ZWBE0002 | Laurel and Redwood | 09-Aug-04 | 1000 | | | | 0 | 0 |
| | | ZWBE0003 | 509 Holly | 09-Aug-04 | 1092 | | | | 0 | 0 |
| | | ZWBE0004 | 456 Redwood | 09-Aug-04 | 330 | | | | 0 | 0 |
| | | ZWBE0006 | 440 Barrett | 12-Aug-04 | 260 | | | | 0 | 0 |
| | | ZWBE0007 | Cobblestone | 12-Aug-04 | 21 | | | | 0 | 0 |
| | | ZWBE0008 | North end of Kaskey | 12-Aug-04 | 29 | | | | 0 | 0 |
| | | ZWBE0010 | 1000 Bagley Road | 16-Aug-04 | 79 | | | | 0 | 0 |
| | | ZWBE0011 | 1010 Bagley Road | 16-Aug-04 | 320 | | | | 0 | 0 |
| | | ZWBE0012 | Pelret Industrial Parkway N2 | 16-Aug-04 | 973 | | | | 0 | 0 |
| | | ZWBE0013 | Pelret Industrial Parkway S1 | 09-Nov-04 | 500 | | | | 0 | 0 |
| | | ZWBE0013 | Pelret Industrial Parkway S1 | 16-Aug-04 | 13800 | | | | 0 | 0 |
| | | ZWBE0014 | Pelret Industrial Parkway S2 | 16-Aug-04 | 142 | | | | 0 | 0 |
| | | ZWBE0015 | Pelret Industrial Parkway N1 | 16-Aug-04 | 180 | | | | 0 | 0 |
| | | ZWBE0016 | 1122 Bagley Road | 16-Aug-04 | 17 | | | | 0 | 0 |
| | | ZWBE0017 | 1230 Bagley Road | 16-Aug-04 | 520 | | | | 0 | 0 |
| | | ZWBE0018 | 135 Blaze Industrial Parkway | 16-Aug-04 | 21 | | | | 0 | 0 |
| | | ZWBE0019 | 125 Berca Industrial Parkway | 16-Aug-04 | 21 | | | | 0 | 0 |
| | | ZWBE0020 | 775 Berca Industrial Parkway | 23-Aug-04 | 1890 | | | | 0 | 0 |
| | | ZWBE0021 | 777 Berca Industrial Parkway | 23-Aug-04 | 860 | | | | 0 | 0 |
| | | ZWBE0022 | 777 Bagley Road Outlet | 09-Nov-04 | 12 | | | | 0 | 0 |
| | | ZWBE0022 | 777 Bagley Road Outlet | 23-Aug-04 | 5836 | | | | 0 | 0 |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|--------------------|------------------------------|----------|-------------------------------|-----------|----------------|---------|------|----|-------------|----|
| | | ZWBE0023 | Karl Street (North Stables) | 23-Aug-04 | 187 | | | | 0 | 0 |
| | | ZWBE0024 | 107 Karl Street | 16-Nov-04 | 288 | 28 | | | 10.69999981 | 0 |
| | | ZWBE0024 | 107 Karl Street | 25-Aug-04 | 2301 | | | | 0 | 0 |
| | | ZWBE0025 | Flam. River, Poertner | 25-Aug-04 | 18 | | | | 0 | 0 |
| | | ZWBE0026 | Geiger St. / Barrett Rd. | 25-Aug-04 | 45 | | | | 0 | 0 |
| | | ZWBE0027 | 154 Marian | 25-Aug-04 | 36 | | | | 0 | 0 |
| | | ZWBE0028 | Upstream of 777 Bagley East | 09-Nov-04 | 9 | | | | 0 | 0 |
| | | ZWBE0029 | 777 Bagley Middle Parking Lot | 09-Nov-04 | 9 | | | | 0 | 0 |
| | | ZWBE0030 | Valley Parkway | 09-Nov-04 | 967 | | | | 0 | 0 |
| | | ZWBE0031 | | 09-Nov-04 | 24333 | | | | 0 | 0 |
| | | ZWBE0032 | Barrett And Nobottom Road | 07-Oct-04 | 1167 | | | | 0 | 0 |
| | | ZWBE0033 | 425 North Rocky River Drive | 07-Oct-04 | 180 | | | | 0 | 0 |
| | | ZWBE0036 | 777 Bagley South | 09-Nov-04 | 709 | | | | 0 | 0 |
| | | ZWBE0037 | 777 Bagley East | 09-Nov-04 | 12 | | | | 0 | 0 |
| | | ZWBE0038 | Upstream Peltret NZ | 09-Nov-04 | 9 | | | | 0 | 0 |
| | | ZWBE0040 | End of Savage and White Road | 09-Nov-04 | 14 | | | | 0 | 0 |
| | | ZWBE0041 | END OF TROTTER LANE | 19-Jul-05 | 7667 | | | | 0 | 0 |
| | | ZWBE0042 | 231 PROSPECT | 19-Jul-05 | 390 | | | | 0 | 0 |
| Brecksville | | | | | | | | | | |
| | Chippewa Creek - Main Branch | | | | | | | | | |
| | | CCMB0074 | SW corner of Rt. 82 bridge | 13-Jul-05 | 3 | | | | | |
| | | CCMB0160 | Route 21 (Brecksville Rd.) | 13-Jul-05 | 1367 | | | | | |
| | | CCMB0180 | Behind 7032 Mill Rd. | 13-Jul-05 | 187 | | | | | |
| | | CCMB0290 | 6745 Old Royalton Rd. | 13-Jul-05 | 16667 | | | | | |
| | | CCMB0360 | 6500 Old Royalton Rd. | 13-Jul-05 | 933 | | | | | |
| | | CCMB0370 | Old Royalton Rd. | 13-Jul-05 | 5 | | | | | |
| | | CCMB0380 | Old Royalton Rd. | 13-Jul-05 | 113 | | | | | |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|------------|-----------------------------|----------|---------------------------------|-----------|----------------|---------|------|----|------------|----|
| | Chippewa Creek - Trib 3 | | | | | | | | | |
| | | CCT30020 | across from Brecksville library | 07-Jul-05 | 210 | | | | | |
| | | CCT30120 | off of Woodcrest Dr. | 07-Jul-05 | 1233 | | | | | |
| | Chippewa Creek - Trib 7 | | | | | | | | | |
| | | CCT70020 | 9217 Windswept Rd. | 12-Jul-05 | 2143 | | | | | |
| | Cuyahoga River Tributary 12 | | | | | | | | | |
| | | CB120010 | next to 12224 Chestnut Circle | 12-Jul-05 | 248667 | | | | | |
| | Cuyahoga River Tributary 6 | | | | | | | | | |
| | | CB160010 | Settlers Passage | 12-Jul-05 | 1533 | | | | | |
| | | CB160020 | Unknown | 01-Aug-05 | 193 | | | | | |
| | | CB160030 | Unknown | 01-Aug-05 | 12667 | | | | | |
| Brook Park | | | | | | | | | | |
| | Abrams Creek - Main Branch | | | | | | | | | |
| | | ACMB1550 | Eastland Rd. | 20-Jul-04 | 2700 | | | | | |
| | | ACMB1550 | Eastland Rd. | 08-Nov-05 | 133 | | | | 0 | 0 |
| | | ACMB1580 | Rt 237 / IX Center Rd. | 20-Jul-04 | 2800 | | | | | |
| | | ACMB1580 | Rt 237 / IX Center Rd. | 22-Nov-05 | 3 | | | | 0 | 0 |
| | | ACMB1590 | Rt 237 / IX Center Rd. | 20-Jul-04 | 86 | | | | | |
| | | ACMB1590 | Rt 237 / IX Center Rd. | 22-Nov-05 | 3 | | | | 0 | 0 |
| | | ACMB1610 | Kolthoff Rd. | 22-Nov-05 | 600 | | | | 0 | 0 |
| | | ACMB1610 | Kolthoff Rd. | 20-Jul-04 | 310 | | | | | |
| | | ACMB1660 | 6494Christene Rd. | 20-Jul-04 | 4417 | | | | | |
| | | ACMB1880 | Cedar Point Rd. | 21-Nov-05 | 161 | | | | 0 | 0 |
| | | ACMB1880 | Cedar Point Rd. | 15-Sep-04 | 1071 | | | | 0 | 0 |
| | | ACMB1890 | Cedar Point Rd. | 15-Sep-04 | 370 | | | | 0 | 0 |
| | | ACMB1890 | Cedar Point Rd. | 21-Nov-05 | 2900 | | | | 0 | 0 |
| | | ACMB1925 | Unknown | 15-Sep-04 | 27 | | | | 0 | 0 |
| | | ACMB1925 | Unknown | 21-Nov-05 | 26 | | | | 0 | 0 |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform/Ammonia | Temp | PH | Phosphorus | DO |
|---------------------|----------------------------|----------|-------------------------------|-----------|------------------------|------|----|------------|----|
| | | ACMB1960 | Aerospace Pkwy | 21-Nov-05 | 42 | | | 0 | 0 |
| | | ACMB1980 | Aerospace Pkwy | 15-Sep-04 | 450 | | | 0 | 0 |
| | | ACMB1980 | Aerospace Pkwy | 21-Nov-05 | 67 | | | 0 | 0 |
| | | ACMB1990 | Aerospace Pkwy | 21-Nov-05 | 3 | | | 0 | 0 |
| | | ACMB1990 | Aerospace Pkwy | 15-Sep-04 | 27 | | | 0 | 0 |
| | Cuyahoga County Brook Park | ZWBP0001 | 5882 Ruple | 21-Jul-04 | 77333 | | | 0 | 0 |
| | | ZWBP0001 | 5882 Ruple | 13-Jul-04 | 86000 | | | 0 | 0 |
| | | ZWBP0001 | 5882 Ruple | 07-Jul-04 | 32000 | | | 0 | 0 |
| | | ZWBP0002 | Ruple/Cedar | 21-Jul-04 | 142667 | | | 0 | 0 |
| | | ZWBP0002 | Ruple/Cedar | 13-Jul-04 | 102000 | | | 0 | 0 |
| | | ZWBP0002 | Ruple/Cedar | 07-Jul-04 | 12333 | | | 0 | 0 |
| | | ZWBP0003 | 5706 Edgepark | 07-Jul-04 | 142143 | | | 0 | 0 |
| | | ZWBP0003 | 5706 Edgepark | 13-Jul-04 | 330000 | | | 0 | 0 |
| | | ZWBP0003 | 5706 Edgepark | 21-Jul-04 | 84000 | | | 0 | 0 |
| Independence | | | | | | | | | |
| | Cuyahoga River - Trib 9 | | | | | | | | |
| | | CRT90060 | | 03-Oct-05 | 17233 | | | | |
| | | CRT90090 | 6405 Sprague Rd. | 03-Oct-05 | 430 | | | | |
| | West Creek Tributary 4 | | | | | | | | |
| | | WCT40030 | across from Oak Tree Blvd. | 03-Oct-05 | 240 | | | | |
| | | WCT40035 | Unknown | 03-Oct-05 | 10 | | | | |
| Mayfield | | | | | | | | | |
| | Beechers Brook Main Branch | | | | | | | | |
| | | BBMB0050 | Beechers Brook and Som Center | 28-Jun-05 | 3515 | | | | |
| | | BBMB0080 | | 28-Jun-05 | 51 | | | | |
| | | BBMB0100 | ODOT yard | 28-Jun-05 | 7 | | | | |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|---------------------------|----------------------------|----------|--------------------------------|-----------|----------------|---------|-------|----|------------|------|
| | | BBMB0150 | In culvert under Beta Park Dr. | 28-Jun-05 | 5 | | | | | |
| | | BBMB0170 | Upstream of Beta Park Dr | 28-Jun-05 | 40667 | | | | | |
| | | BBMB0180 | Upstream of Beta Park Dr | 28-Jun-05 | 30 | | | | | |
| | | BBMB0190 | Upstream of Beta Park | 28-Jun-05 | 17000 | | | | | |
| | | BBMB0220 | Upstream Beta Park | 28-Jun-05 | | | | | | |
| | | BBMB0240 | Ry Holiday In sign | 28-Jun-05 | 158 | | | | | |
| | | BBMB0270 | Upstream of Wilson Mill | 28-Jun-05 | 137333 | | | | | |
| | | BBMB1010 | 6257 Ridgebury | 11-May-04 | | | | | | |
| | | BBMB1010 | 6257 Ridgebury | 28-Jun-05 | 230 | | | | | |
| | | BBMB1010 | | 28-Jun-05 | | | | | | |
| | Beechers Brook Tributary 1 | | | | | | | | | |
| | | BBT10010 | 687 Echo | 22-Jun-05 | 1733 | | | | | |
| | | BBT10040 | | 22-Jun-05 | 2485 | | | | | |
| | Chagrin River Tributary 10 | | | | | | | | | |
| | | CT100130 | Deepwood & Timberline | 28-Jun-05 | 109750 | | | | | |
| | Chagrin River Tributary 6 | | | | | | | | | |
| | | CMT60020 | off Cleveland Metro Park Rd | 05-Jul-05 | 7000 | | | | | |
| | Euclid Creek - East Branch | | | | | | | | | |
| | | ECEB3010 | I-271 at White Road | 05-Jul-05 | 200 | | | | | |
| | | ECEB3050 | North of Progressive | 05-Jul-05 | 1333 | | | | | |
| | | ECEB3060 | | 05-Jul-05 | | | | | | |
| | | ECEB3090 | Progressive Property | 05-Jul-05 | 2273 | | | | | |
| Middleburg Heights | | | | | | | | | | |
| | 319 Grant | | | | | | | | | |
| | | 3190002 | 19199 Fowles Rd | 22-Jul-04 | 2100 | | 0.12 | | | 0.22 |
| | | 3190002 | 19199 Fowles Rd | 27-Jul-04 | 2900 | | 0.34 | | | 0.18 |
| | | 3190002 | 19199 Fowles Rd | 15-Jun-05 | 3182 | 1933 | 0.032 | | | 0.28 |
| | | 3190002 | 19199 Fowles Rd | 18-Jul-05 | 1872 | 1800 | 0.013 | | | 0.23 |
| | | 3190002 | 19199 Fowles Rd | 25-Jul-05 | 733 | 900 | 0.01 | | | 0.25 |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|-----------|-----------------------------|----------|-------------------------------|-----------|----------------|---------|------|------|------------|-----|
| | | 3190002 | 19199 Fowles Rd | 13-Jul-04 | 4000 | | 0.2 | 22.3 | 7.46 | 1.9 |
| | Abrams Creek - Main Branch | | | | | | | | | |
| | | ACMB0060 | 6691 Big Creek Parkway | 02-Jun-05 | 230 | | | | | 0 |
| | | ACMB0810 | 7238 Big Creek Pkwy | 02-Jun-05 | 65000 | | | | | 0 |
| | | ACMB0890 | 7300 Big Creek Pkwy | 02-Jun-05 | 1200 | | | | | 0 |
| | | ACMB0935 | Webster Road | 02-Jun-05 | 190000 | | | | | 0 |
| | | ACMB0937 | Unknown | 02-Jun-05 | 10 | | | | | 0 |
| | | ACMB0940 | Brookside / Nethersole | 08-Jun-04 | 83333 | | | | | |
| | | ACMB0970 | Under Fngle Rd. at RR. Tracks | 08-Jun-04 | 97 | | | | | |
| | | ACMB1130 | 19448 Bagley Rd. | 09-Jun-04 | 360 | | | | | |
| | Baldwin Creek - Main Branch | | | | | | | | | |
| | | BCMB0410 | | 21-Jun-05 | 9667 | | | | | 0 |
| | | BCMB0420 | 13399 Old Pleasant Valley Rd | 09-Jun-04 | 26700 | | | | | |
| | | BCMB0420 | 13399 Old Pleasant Valley Rd | 21-Jun-05 | 125667 | | | | | 0 |
| | | BCMB0430 | 13475 Old Pleasant Valley Rd. | 21-Jun-05 | 3061 | | | | | 0 |
| | | BCMB0430 | 13475 Old Pleasant Valley Rd. | 09-Jun-04 | 338 | | | | | |
| | | BCMB0490 | Bagley Rd. and Baldwin | 21-Jun-05 | 30 | | | | | 0 |
| | | BCMB0500 | Bagley Rd. | 21-Jun-05 | 79 | | | | | 0 |
| | | BCMB0500 | Bagley Rd. | 09-Jun-04 | 460 | | | | | |
| | | BCMB0510 | under Bagley Rd. bridge | 21-Jun-05 | 1 | | | | | 0 |
| | | BCMB0510 | under Bagley Rd. bridge | 09-Jun-04 | 7 | | | | | |
| | | BCMB0550 | 14820 and 14801 Eden Ln. | 21-Jun-05 | 11667 | | | | | 0 |
| | | BCMB0600 | Pine Hill Tr. | 09-Jun-04 | 340 | | | | | |
| | | BCMB0600 | Pine Hill Tr. | 21-Jun-05 | 153 | | | | | 0 |
| | | BCMB0610 | Cherokee Tr | 21-Jun-05 | 53 | | | | | 0 |
| | | BCMB0610 | Cherokee Tr | 09-Jun-04 | 73 | | | | | |
| | | BCMB0630 | Saratoga / Indian Creek | 27-Jun-05 | 662 | | | | | 0 |
| | | BCMB0680 | 7548 Webster Rd | 09-Jun-04 | 869 | | | | | |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|-----------|--------------------|----------|--------------------------------|-----------|----------------|---------|------|----|------------|----|
| | | BCMB0710 | 7566 7560 Ragall Pkwy | 27-Jun-05 | 30 | | | | | 0 |
| | | BCMB0720 | 7584 and 7578 Ragall Pkwy | 27-Jun-05 | 13333 | | | | | 0 |
| | | BCMB0730 | 7549 Briar Cliff Pkwy | 27-Jun-05 | 10 | | | | | 0 |
| | | BCMB0740 | Ragall Pkwy | 27-Jun-05 | 73333 | | | | | 0 |
| | | BCMB0770 | Normandie Blvd | 09-Jun-04 | 210 | | | | | 0 |
| | | BCMB0770 | Normandie Blvd | 27-Jun-05 | 92 | | | | | 0 |
| | Middleburg Heights | | | | | | | | | |
| | | ZWMI0001 | Pleasant Valley and University | 24-Jun-04 | 661667 | | | | | 0 |
| | | ZWMI0001 | Pleasant Valley and University | 01-Jul-04 | 200000 | | | | | 0 |
| | | ZWMI0002 | 7209 Pleasant | 24-Jun-04 | 4600 | | | | | 0 |
| | | ZWMI0002 | 7209 Pleasant | 01-Jul-04 | 8000 | | | | | 0 |
| | | ZWMI0002 | 7209 Pleasant | 01-Sep-04 | 23423 | | | | | 0 |
| | | ZWMI0003 | N. 7201 Pleasant | 24-Jun-04 | 3700 | | | | | 0 |
| | | ZWMI0003 | N. 7201 Pleasant | 01-Jul-04 | 5333 | | | | | 0 |
| | | ZWMI0004 | 19448 Bagley West | 24-Jun-04 | 1527 | | | | | 0 |
| | | ZWMI0004 | 19448 Bagley West | 01-Jul-04 | 1733 | | | | | 0 |
| | | ZWMI0005 | 19448 Bagley Center | 24-Jun-04 | 4900 | | | | | 0 |
| | | ZWMI0005 | 19448 Bagley Center | 01-Jul-04 | 3800 | | | | | 0 |
| | | ZWMI0006 | 19448 Bagley East | 24-Jun-04 | 380 | | | | | 0 |
| | | ZWMI0006 | 19448 Bagley East | 01-Jul-04 | 340 | | | | | 0 |
| | | ZWMI0007 | 7255 Pleasant Street | 14-Sep-04 | 410000 | | | | | 0 |
| | | ZWMI0007 | 7255 Pleasant Street | 01-Sep-04 | 1233333 | | | | | 0 |
| | | ZWMI0008 | 7265 PLEASANT STREET | 01-Sep-04 | 1275750 | | | | | 0 |
| | | ZWMI0008 | 7265 PLEASANT STREET | 14-Sep-04 | 1650480 | | | | | 0 |
| | | ZWMI0009 | 7225 PLEASANT STREET | 01-Sep-04 | 96667 | | | | | 0 |
| | | ZWMI0009 | 7225 PLEASANT STREET | 14-Sep-04 | 16333 | | | | | 0 |
| | | ZWMI0010 | 7555-57 WEBSTER | 13-Sep-04 | 641250 | | | | | 0 |
| | | ZWMI0010 | 7555-57 WEBSTER | 14-Sep-04 | 1166666 | | | | | 0 |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|------------------|------------------|----------|-----------------------|-----------|----------------|---------|------|----|------------|----|
| | | ZWMI0011 | 7548 REGALL | 13-Sep-04 | 191667 | | | | | 0 |
| | | ZWMI0011 | 7548 REGALL | 14-Sep-04 | 766667 | | | | | 0 |
| | | ZWMI0012 | 7578 WEBSTER | 14-Sep-04 | 15385 | | | | | 0 |
| | | ZWMI0012 | 7578 WEBSTER | 13-Sep-04 | 4800 | | | | | 0 |
| Moreland Hills | | | | | | | | | | |
| | Moreland Hills | | | | | | | | | |
| | | ZWMO0016 | 80 STERNCREST | 09-Dec-04 | 3669 | | | | | |
| | | ZWMO0017 | 130 STERNCREST | 09-Dec-04 | 441667 | | | | | |
| | | ZWMO0018 | 140 STERNCREST | 09-Dec-04 | 636500 | | | | | |
| | | ZWMO0019 | OLD FARM | 09-Dec-04 | 1867 | | | | | |
| | | ZWMO0020 | Unknown | 09-Dec-04 | 566 | | | | | |
| | | ZWMO0021 | 32500 JACKSON | 09-Dec-04 | 2000 | | | | | |
| | | ZWMO0022 | JACKSON AND SOM | 09-Dec-04 | 25 | | | | | |
| | | ZWMO0023 | 3969 ELLENDALE | 19-Oct-04 | 2504 | | | | | |
| Olmsted Township | | | | | | | | | | |
| | Olmsted Township | | | | | | | | | |
| | | ZWOT0004 | 7500 STEARNS | 23-Jun-05 | 61290 | | | | 0 | 0 |
| | | ZWOT0004 | 7500 STEARNS | 27-Jun-05 | 60000 | | | | 0 | 0 |
| | | ZWOT0005 | 8526 STEARNS | 23-Jun-05 | 8667 | | | | 0 | 0 |
| | | ZWOT0005 | 8526 STEARNS | 27-Jun-05 | 14000 | | | | 0 | 0 |
| | | ZWOT0006 | 7997 FITCH - RAILROAD | 23-Jun-05 | 2632 | | | | 0 | 0 |
| | | ZWOT0006 | 7997 FITCH - RAILROAD | 27-Jun-05 | 1600 | | | | 0 | 0 |
| | | ZWOT0007 | 7548 FITCH | 27-Jun-05 | 9667 | | | | 0 | 0 |
| | | ZWOT0007 | 7548 FITCH | 23-Jun-05 | 3750 | | | | 0 | 0 |
| | | ZWOT0008 | 7105 FITCH SCHOOL | 23-Jun-05 | 1842 | | | | 0 | 0 |
| | | ZWOT0008 | 7105 FITCH SCHOOL | 27-Jun-05 | 37500 | | | | 0 | 0 |
| | | ZWOT0009 | 6283 FITCH | 23-Jun-05 | 31250 | | | | 0 | 0 |
| | | ZWOT0009 | 6283 FITCH | 27-Jun-05 | 37500 | | | | 0 | 0 |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|-----------|----------------------------------|----------|----------------------|-----------|----------------|---------|------|----|------------|----|
| | French Creek-Lower Trib | ZWOT0010 | 27025 Oakwood | 13-Jul-05 | 8333 | | | | 0 | 0 |
| | French Creek-Lower Trib | FCTT1020 | WEST OF STEARNS | 21-Jul-04 | 2455 | | | | | |
| | French Creek-Lower Trib | FCLT1030 | WEST OF STEARNS | 21-Jul-04 | 6900 | | | | | |
| | French Creek-Lower Trib 1 | FCLL1010 | SOUTH OF COOK | 21-Jul-04 | 1955 | | | | | |
| | | FCLL1030 | SOUTH OF COOK | 13-Jul-05 | 20000 | | | | 0 | 0 |
| | | FCLL1050 | SOUTH OF COOK | 13-Jul-05 | 152333 | | | | 0 | 0 |
| | | FCLL1090 | SOUTH OF COOK | 21-Jul-04 | 61700 | | | | | |
| | | FCLL1100 | EAST OF WILLOW | 21-Jul-04 | 4500 | | | | | |
| | French Creek-Tributary 1 | | | | | | | | | |
| | | FCTT1027 | South of Bagley Road | 13-Jul-05 | 210667 | | | | 0 | 0 |
| | French Creek-Tributary 3 | | | | | | | | | |
| | | FCT30010 | 8368 Jennings | 10-Aug-05 | 8667 | | | | 0 | 0 |
| | | FCT30030 | 8353 Jennings | 10-Aug-04 | 590 | | | | 0 | 0 |
| | Plum Creek -Olmsted Township | | | | | | | | | |
| | | PCOT0060 | | 10-Aug-05 | 110 | | | | 0 | 0 |
| | | PCOT0060 | | 17-Aug-04 | 12667 | | | | 0 | 0 |
| | | PCO10110 | 9300 Usher Rd | 17-Aug-04 | 600000 | | | | 0 | 0 |
| | Rocky River Trib 1 | | | | | | | | | |
| | | RWT10010 | | 08-Jun-05 | 231 | | | | 0 | 0 |
| | | RWT10030 | EAST OF COLUMBIA | 09-Aug-04 | 133 | | | | 0 | 0 |
| | | RWT10040 | EAST OF COLUMBIA | 09-Aug-04 | 58462 | | | | 0 | 0 |
| | | RWT10040 | EAST OF COLUMBIA | 08-Jun-05 | 29000 | | | | 0 | 0 |
| | | RWT10050 | WEST OF COLUMBIA | 08-Jun-05 | 91667 | | | | 0 | 0 |
| | | RWT10050 | WEST OF COLUMBIA | 09-Aug-04 | 73333 | | | | 0 | 0 |
| | | RWT10100 | TRAILER PARK | 09-Aug-04 | 483333 | | | | 0 | 0 |
| | ROCKY RIVER - WEST BRANCH TRIB 2 | | | | | | | | | |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|-----------|--------------------------|----------|-----------------------|-----------|----------------|---------|------|----|------------|----|
| | | RWT21010 | TRAILER PARK | 09-Aug-04 | 63333 | | | | 0 | 0 |
| | | RWT21020 | TRAILER PARK | 08-Jun-05 | 102000 | | | | 0 | 0 |
| | | RWT21030 | | 09-Aug-04 | 460 | | | | 0 | 0 |
| | Root Ditch-Tributary 1 | | | | | | | | | |
| | | RDT11140 | Behind 6868 Mackenzie | 22-Jun-05 | 5485 | | | | 0 | 0 |
| | | RDT11200 | SOUTH OF COOK ROAD | 20-Jul-04 | 136 | | | | | |
| | | RDT11220 | SOUTH END OF POND | 13-Jul-05 | 7667 | | | | 0 | 0 |
| | | RDT11260 | EAST OF STEARNS | 13-Jul-05 | 77000 | | | | 0 | 0 |
| | | RDT11260 | EAST OF STEARNS | 20-Jul-04 | 4400 | | | | | |
| | | RDT11260 | EAST OF STEARNS | 20-Jul-04 | 5200 | | | | | |
| | Root Ditch-Tributary 2 | | | | | | | | | |
| | | RDT20010 | EAST OF MACKENZIE | 21-Jul-04 | 43300 | | | | | |
| | | RDT20020 | 26972 Tall Oaks | 13-Jul-05 | 3667 | | | | 0 | 0 |
| | | RDT20030 | | 21-Jul-04 | 4691 | | | | | |
| | | RDT20030 | | 13-Jul-05 | 21000 | | | | 0 | 0 |
| Orange | | | | | | | | | | |
| | CHAGRIN RIVER WOOD CREST | | | | | | | | | |
| | | CRWC0120 | 31499 MILES | 17-Oct-05 | 2121 | | | | | |
| | | CRWC0280 | 31099 WOODCREST | 17-Oct-05 | 3 | | | | | |
| | | CRWC0320 | BEHIND 4819 LANDER | 17-Oct-05 | 1600 | | | | | |
| | | CRWC0390 | 30750 STERNSCREST | 17-Oct-05 | 25000 | | | | | |
| | Hawthorne Creek Trib 1 | | | | | | | | | |
| | | HCT10020 | | 17-Oct-05 | 59333 | | | | | |
| | Pinecrest Drive East | | | | | | | | | |
| | | OVPE0020 | 3969 PINCREST | 08-Aug-05 | 10667 | | | | | |
| | | OVPE0020 | 3969 PINCREST | 02-Sep-04 | 25231 | | | | | |
| | Cambridge Court West | | | | | | | | | |
| | | OVCW0080 | | 08-Aug-05 | 73 | | | | | |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|-----------|--------------------------|----------|-----------------------|-----------|----------------|---------|------|----|------------|----|
| | Jackson Road South | OVCW0080 | | 02-Sep-04 | 3400 | | | | | |
| | | OVS0040 | 28800 JACKSON | 08-Aug-05 | 23667 | | | | | |
| | Walnut Hills Road East | | | | | | | | | |
| | | OWH0030 | 3671 Walnut Hills | 02-Sep-04 | 66000 | | | | | |
| | Wiley Creek -Main Branch | | | | | | | | | |
| | | WIMB1280 | Trib from Woodmere | 02-Sep-04 | 541 | | | | | |
| | | WIMB1290 | Unknown | 02-Sep-04 | 826 | | | | | |
| | | WIMB1290 | Unknown | 08-Aug-05 | 17000 | | | | | |
| | | WIMB1300 | Unknown | 02-Sep-04 | 50 | | | | | |
| | | WIMB1310 | North of Orangewood | 02-Sep-04 | 12333 | | | | | |
| | | WIMB1310 | North of Orangewood | 08-Aug-05 | 57667 | | | | | |
| | | WIMB1320 | North of Orangewood | 02-Sep-04 | 13000 | | | | | |
| | | WIMB1320 | North of Orangewood | 08-Aug-05 | 4667 | | | | | |
| | | WIMB1360 | | 02-Sep-04 | 6077 | | | | | |
| | | WIMB1370 | Unknown | 02-Sep-04 | 1292 | | | | | |
| | | WIMB1380 | South Orangewood | 02-Sep-04 | 72000 | | | | | |
| | | WIMB1430 | 28525 Harvard | 08-Aug-05 | 28667 | | | | | |
| | | WIMB1430 | 28525 Harvard | 02-Sep-04 | 7000 | | | | | |
| | Wiley Creek -Tributary 1 | | | | | | | | | |
| | | WTT10060 | South side of Chagrin | 02-Sep-04 | 5 | | | | | |
| | | WTT10069 | South side of Chagrin | 08-Aug-05 | 18 | | | | | |
| | | WTT10070 | Under Chagrin Blvd | 08-Aug-05 | 5818 | | | | | |
| | | WTT10070 | Under Chagrin Blvd | 02-Sep-04 | 100 | | | | | |
| | | WTT10080 | Chagrin Blvd | 02-Sep-04 | 410 | | | | | |
| | | WTT10080 | Chagrin Blvd | 08-Aug-05 | 152667 | | | | | |
| Parma | | | | | | | | | | |
| | Big Creek - Main Branch | | | | | | | | | |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|-----------|-----------------------|----------|------------------------------|-----------|----------------|---------|------|----|------------|----|
| | | BGMB0132 | Unknown | 18-May-05 | 80 | | | | 0 | 0 |
| | | BGMB0134 | Unknown | 18-May-05 | 56 | | | | 0 | 0 |
| | | BGMB0135 | Unknown | 18-May-05 | 26 | | | | 0 | 0 |
| | | BGMB0137 | Behind Temple on Ridge Rd. | 18-May-05 | 37 | | | | 0 | 0 |
| | | BGMB0138 | Unknown | 18-May-05 | 290 | | | | 0 | 0 |
| | | BGMB0139 | Unknown | 18-May-05 | 1608 | | | | 0 | 0 |
| | | BGMB0150 | Ridge Rd | 18-May-05 | 137 | | | | 0 | 0 |
| | | BGMB0155 | Ridge Rd | 18-May-05 | 27550 | | | | 0 | 0 |
| | | BGMB0160 | 7608 + 7612 Hidden Valley | 18-May-05 | 56 | | | | 0 | 0 |
| | | BGMB0165 | Unknown | 18-May-05 | 1833 | | | | 0 | 0 |
| | | BGMB0180 | 7905 + 7913 Pleasant Valley | 18-May-05 | 1931 | | | | 0 | 0 |
| | | BGMB0205 | under Pleasant Valley bridge | 18-May-05 | 6167 | | | | 0 | 0 |
| | | BGMB0240 | 8340 + 8320 Pinhurst Dr | 18-May-05 | 2338 | | | | 0 | 0 |
| | | BGMB0254 | under Royalview Dr. | 18-May-05 | 3 | | | | 0 | 0 |
| | | BGMB0280 | 8740 Royalview Dr | 18-May-05 | 2523 | | | | 0 | 0 |
| | | BGMB0290 | 9000 + 9010 Tracey Tr | 19-May-05 | 35 | | | | 0 | 0 |
| | | BGMB0300 | 9060 Tracey Dr | 19-May-05 | 21 | | | | | |
| | | BGMB0310 | 9220 + 9170 Boundary Ln | 19-May-05 | 240 | | | | | |
| | Big Creek Tributary 4 | BGT40010 | | 19-May-05 | 14 | | | | 0 | 0 |
| | | BGT40020 | | 19-May-05 | 35 | | | | 0 | 0 |
| | | BGT40030 | Unknown | 19-May-05 | 147 | | | | 0 | 0 |
| | | BGT40040 | 4618 Bruening | 19-May-05 | 10 | | | | 0 | 0 |
| | Big Creek Tributary 5 | BGT50070 | north of Parmatown Apts. | 18-May-05 | 967 | | | | 0 | 0 |
| | | BGT50090 | behind 6500 Ely Vista | 18-May-05 | 410 | | | | 0 | 0 |
| | | BGT50100 | west of Langerford Dr. | 18-May-05 | 833 | | | | 0 | 0 |
| | | BGT50110 | west of Langerford Dr. | 18-May-05 | 290 | | | | 0 | 0 |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|-----------|--------------------------|----------|---------------------------|-----------|----------------|---------|------|----|------------|----|
| | Big Creek Tributary 6 | BGT50120 | west of Sassafras | 18-May-05 | 30333 | | | | 0 | 0 |
| | | BGT60020 | under Lakeview Rd | 18-May-05 | 5545 | | | | 0 | 0 |
| | | BGT60030 | under Lakeview Rd | 18-May-05 | 561 | | | | 0 | 0 |
| | | BGT60040 | 100' east of Lakeview | 18-May-05 | 1200 | | | | 0 | 0 |
| | Parma | | | | | | | | | |
| | | ZWPA0004 | 1101 Maple | 12-Jul-05 | 70000 | | | | 0 | 0 |
| | | ZWPA0005 | 1151 SAGAMORE | 28-Jun-05 | 49333 | | | | 0 | 0 |
| | | ZWPA0005 | 1151 SAGAMORE | 12-Jul-05 | 48 | | | | 0 | 0 |
| | | ZWPA0006 | 1301 SAGAMORE | 12-Jul-05 | 173 | | | | 0 | 0 |
| | | ZWPA0007 | 1331 MAPLE | 12-Jul-05 | 30909 | | | | 0 | 0 |
| | | ZWPA0008 | 7327 SAGAMORE | 12-Jul-05 | 176061 | | | | 0 | 0 |
| | | ZWPA0009 | 1070 MAPLE | 12-Jul-05 | 86667 | | | | 0 | 0 |
| | | ZWPA0010 | 7301 SAGAMORE | 12-Jul-05 | 24545 | | | | 0 | 0 |
| | | ZWPA0011 | 1100 SAGAMORE | 12-Jul-05 | 61 | | | | 0 | 0 |
| | | ZWPA0012 | 1151 SAGAMORE-2 | 28-Jun-05 | 48000 | | | | 0 | 0 |
| | | ZWPA0014 | CRILE SW 1 | 17-Aug-05 | 60 | | | | 0 | 0 |
| | | ZWPA0015 | CRILE SW 2 | 17-Aug-05 | 25 | | | | 0 | 0 |
| | | ZWPA0016 | CRILE SW 3 | 17-Aug-05 | 137 | | | | 0 | 0 |
| | | ZWPA0017 | CRILE SW 4 | 17-Aug-05 | 56 | | | | 0 | 0 |
| | | ZWPA0018 | CRILE SW 5 | 17-Aug-05 | 77 | | | | 0 | 0 |
| | West Creek - Main Branch | | | | | | | | | |
| | | WCMB0020 | 7630 Pleasant Valley | 07-Jul-04 | 58 | | | | | |
| | | WCMB0090 | Hopetaven / 7535 Biscayne | 23-Aug-04 | 15667 | | | | 0 | 0 |
| | | WCMB0130 | 1520 Pleasant Valley | 23-Aug-04 | 526 | | | | 0 | 0 |
| | | WCMB0140 | 1720 Pleasant Valley | 23-Aug-04 | 301 | | | | 0 | 0 |
| | | WCMB0270 | 1800 Gettysburg | 17-Aug-04 | 131333 | | | | | |
| | | WCMB0280 | 7104 / 7121 Thorncliffe | 17-Aug-04 | 2600 | | | | 0 | 0 |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|--------------------|------------------------------|----------|-----------------------|-----------|----------------|---------|------|----|------------|----|
| | | WCMB0300 | 1560 Lourdes | 17-Aug-04 | 1035 | | | | 0 | 0 |
| | | WCMB0310 | 1584 Fatima Dr | 17-Aug-04 | 2800 | | | | 0 | 0 |
| | | WCMB0350 | 1520 Parkhaven | 17-Aug-04 | 26769 | | | | 0 | 0 |
| | | WCMB0360 | 1712 /1717 Rustic Tr | 17-Aug-04 | 106000 | | | | 0 | 0 |
| | | WCMB0370 | 6750 Broadview Rd | 17-Aug-04 | 6666667 | | | | 0 | 0 |
| | | WCMB0370 | 6750 Broadview Rd | 10-Aug-05 | | | | | | |
| | | WCMB0450 | Grantwood Dr | 17-Aug-04 | 2000 | | | | 0 | 0 |
| | | WCMB0470 | 2435 Grantwood Dr | 17-Aug-04 | 96333 | | | | 0 | 0 |
| | | WCMB0480 | Grantwood | 04-Aug-05 | 2000 | | | | | |
| | | WCMB0500 | 6082 S. Park Blvd | 17-Aug-04 | 2185000 | | | | 0 | 0 |
| | | WCMB0510 | 6030 S. Park Blvd | 03-Aug-04 | 18154 | | | | | |
| | | WCMB0540 | 5974 S. Park Blvd | 03-Aug-04 | 50615 | | | | | |
| | | WCMB0550 | 5929 S. Park Blvd | 03-Aug-04 | 10667 | | | | | |
| | | WCMB0560 | 5929 S. Park Blvd | 03-Aug-04 | 19846 | | | | | |
| | | WCMB0740 | 5553 Broadview Rd | 03-Aug-04 | 2800 | | | | | |
| | | WCMB0750 | 5553 Broadview Rd | 03-Aug-04 | 2239 | | | | | |
| | | WCMB0760 | Brookdale Ave | 03-Aug-04 | 38923 | | | | | |
| Pepper Pike | | | | | | | | | | |
| | Cuyahoga County Pepper Pike | | | | | | | | | |
| | | ZWPP0003 | 3405 KERSDALE | 02-Aug-05 | 80000 | | | | | |
| | | ZWPP0007 | 2412 Lander Road | 20-Apr-04 | 21640000 | | | | | |
| | | ZWPP0008 | BELCOURT AND KERSDALE | 02-Aug-05 | 756667 | | | | | |
| | | ZWPP0009 | 3425 KERSDALE | 02-Aug-05 | 43750 | | | | | |
| | | ZWPP0010 | 2855 LANDER | 02-Aug-05 | 2000000 | | | | | |
| Seven Hills | | | | | | | | | | |
| | Chippewa Creek - Main Branch | | | | | | | | | |
| | | CCMB2000 | NORTH OF EAST SPRAGUE | 04-Aug-05 | 1167 | | | | | |
| | | CCMB2000 | NORTH OF EAST SPRAGUE | 23-Jun-04 | 5100 | | | | | |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|-----------|-----------------------------|----------|----------------------|-----------|----------------|---------|------|----|------------|----|
| | Henlock Creek - Main Branch | CCMB2020 | NORTH OF SPRAGUE | 23-Jun-04 | 5300 | | | | | |
| | | HEMB1010 | EAST OF CHERRY ANN | 04-Aug-05 | 16 | | | | | |
| | | HEMB1020 | EAST OF CHERYL ANN | 24-Jun-04 | 56 | | | | | |
| | | HEMB1020 | EAST OF CHERYL ANN | 04-Aug-05 | 26 | | | | | |
| | | HEMB1030 | EAST OF CHERYL ANN | 04-Aug-05 | 1400 | | | | | |
| | | HEMB1050 | EAST OF DONNA RAE | 24-Jun-04 | 600 | | | | | |
| | | HEMB1050 | EAST OF DONNA RAE | 04-Aug-05 | 1100 | | | | | |
| | | HEMB1070 | FORT ST OVERLOOK | 04-Aug-05 | 53 | | | | | |
| | | HEMB1160 | NORTH OF HILLSIDE | 23-Jun-04 | 11700 | | | | | |
| | | HEMB1160 | NORTH OF HILLSIDE | 04-Aug-05 | 137 | | | | | |
| | | HEMB1180 | SOUTH OF HILLSIDE | 04-Aug-05 | 73 | | | | | |
| | | HEMB1190 | SOUTH OF HILLSIDE | 23-Jun-04 | 6090 | | | | | |
| | | HEMB1210 | WEST OF HICKORY LANE | 23-Jun-04 | 1036 | | | | | |
| | | HEMB1220 | WEST OF HICKORY LANE | 23-Jun-04 | 5500 | | | | | |
| | Henlock Creek Tributary 1 | | | | | | | | | |
| | | HE111010 | EAST OF EDGEWOOD | 23-Jun-04 | 798 | | | | | |
| | | HE111020 | EAST OF EDGEWOOD | 23-Jun-04 | 21900 | | | | | |
| | Henlock Creek Tributary 2 | | | | | | | | | |
| | | HE211000 | NORTH OF MAGNOLIA | 23-Jun-04 | 50606 | | | | | |
| | West Creek Tributary 2 | | | | | | | | | |
| | | WC211000 | EAST OF DONNA RAE | 04-Aug-05 | 3273 | | | | | |
| | | WC211070 | EAST OF PARKHAVEN | 28-Jun-04 | 10575 | | | | | |
| | | WC211070 | EAST OF PARKHAVEN | 03-Aug-05 | 1033 | | | | | |
| | West Creek Tributary 8 | | | | | | | | | |
| | | WC81060 | North of Scenic Lane | 28-Jun-04 | 105 | | | | | |
| | | WC81060 | North of Scenic Lane | 03-Aug-05 | 26333 | | | | | |
| Solon | | | | | | | | | | |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|--------------|------------------------------|----------|-----------------------|-----------|----------------|---------|------|----|------------|----|
| | Cuyahoga County Solon | ZWSL0008 | 7430 LIBERTY | 23-Jun-05 | 133333 | | | | | |
| | | ZWSL0009 | 7300 LIBERTY | 23-Jun-05 | 156667 | | | | | |
| | | ZWSL0010 | 37065 PETTIBONE | 23-Jun-05 | 2182 | | | | | |
| | | ZWSL0011 | 37885 PETTIBONE | 23-Jun-05 | 200 | | | | | |
| | | ZWSL0012 | AUOROA AND PORTAGE | 23-Jun-05 | 43750 | | | | | |
| | | ZWSL0013 | 39760 EDITH | 23-Jun-05 | 66250 | | | | | |
| | | ZWSL0014 | 40000 AUOROA | 23-Jun-05 | 13667 | | | | | |
| | | ZWSL0015 | END OF ARLINGTON | 23-Jun-05 | 1533 | | | | | |
| | | ZWSL0016 | END OF ELMWOOD | 23-Jun-05 | 27000 | | | | | |
| | | ZWSL0017 | 41777 BURTON TRAIL | 09-Aug-05 | 107 | | | | | |
| | | ZWSL0018 | 41777 BURTON TRAIL | 09-Aug-05 | 8 | | | | | |
| | | ZWSL0019 | SHERWOOD LAKE | 17-Aug-05 | | | | | | |
| | | ZWSL0019 | SHERWOOD LAKE | 21-Sep-05 | | | | | | |
| | | ZWSL0020 | 34875 MCAFFEE | 17-Aug-05 | | | | | | |
| | | ZWSL0021 | 34145 MCAFFEE | 17-Aug-05 | | | | | | |
| | | ZWSL0022 | 34420 McAffee | 21-Sep-05 | | | | | | |
| Strongsville | | | | | | | | | | |
| | Bakers Creek Main Branch | BKMB0001 | 18619 ADMIRALTY DR | 21-Jul-04 | 801 | | | | | |
| | | BKMB0008 | NORTHSIDE OF DRAKE RD | 21-Jul-04 | 4472 | | | | | |
| | | BKMB0030 | 19454 Bowman Dr | 21-Jul-04 | 37500 | | | | | |
| | | BKMB0160 | Echo Dr | 21-Jul-04 | 2200 | | | | | |
| | | BKMB0160 | Echo Dr | 13-Jun-05 | 1391 | | | 0 | 0 | |
| | Bakers Creek Tributary 3 | BKT30070 | Unknown | 27-Jun-05 | 16000 | | | | 0 | 0 |
| | | BCT81010 | off Dow Circle | 13-Jun-05 | | | | | | |
| | Blodgett Creek - Main Branch | | | | | | | | | |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|-----------|-----------------|----------|-------------------------|-----------|----------------|---------|------|----|------------|----|
| | | BLMB0002 | PEARL ROAD/POST OFFICE | 20-Jul-04 | 86 | | | | | |
| | | BLMB0002 | PEARL ROAD/ POST OFFICE | 08-Jun-05 | 140 | | | | 0 | 0 |
| | | BLMB0004 | PEARL RD /POST OFFICE | 08-Jun-05 | 410 | | | | 0 | 0 |
| | | BLMB0020 | Pearl Rd School Rd | 20-Jul-04 | 340 | | | | | |
| | | BLMB0530 | Hazelwood Ave / | 21-Jul-04 | 3500 | | | | | |
| | | BLMB0530 | Hazelwood Ave / | 08-Jun-05 | 88000 | | | | 0 | 0 |
| | | BLMB0560 | Prospect Rd / Fair Rd | 08-Jun-05 | 1200 | | | | 0 | 0 |
| | | BLMB0580 | Prospect Rd | 21-Jul-04 | 668 | | | | | |
| | | BLMB0580 | Prospect Rd | 08-Jun-05 | 20 | | | | 0 | 0 |
| | | BLMB0590 | Prospect Rd | 21-Jul-04 | 83 | | | | | |
| | | BLMB0590 | Prospect Rd | 08-Jun-05 | 57 | | | | 0 | 0 |
| | | BLMB0610 | Prospect Rd | 21-Jul-04 | 270 | | | | | |
| | | BLMB0610 | Prospect Rd | 08-Jun-05 | 10 | | | | 0 | 0 |
| | | BLMB0640 | 21380 Montclare | 08-Jun-05 | 4500 | | | | 0 | 0 |
| | | BLMB0640 | 21380 Montclare | 21-Jul-04 | 48900 | | | | | |
| | | BLMB0650 | 21428 Montclare Blvd | 08-Jun-05 | 1675 | | | | 0 | 0 |
| | | BLMB0650 | 21428 Montclare Blvd | 21-Jul-04 | 32500 | | | | | |
| | | BLMB0680 | 8044 Fair Rd / Preim Rd | 21-Jul-04 | 19500 | | | | | |
| | | BLMB0680 | 8044 Fair Rd / Preim Rd | 09-Jun-05 | 420 | | | | 0 | 0 |
| | | BLMB0681 | Fair Rd and Preim Rd. | 09-Jun-05 | 248667 | | | | 0 | 0 |
| | | BLMB0682 | PREIM RD | 09-Jun-05 | 136333 | | | | 0 | 0 |
| | | BLMB0690 | Preim Rd | 09-Jun-05 | 2025 | | | | 0 | 0 |
| | | BLMB0710 | Preim Rd | 09-Jun-05 | 3600 | | | | 0 | 0 |
| | | BLMB0720 | 22240 Lorraine Dr | 09-Jun-05 | 128 | | | | 0 | 0 |
| | | BLMB0730 | Lorraine Dr | 09-Jun-05 | 164 | | | | 0 | 0 |
| | Strongsville | | | | | | | | | |
| | | ZWST0015 | JANETTE DRIVE | 17-Aug-05 | 236250 | | | | 0 | 0 |
| | | ZWST0015 | JANETTE DRIVE | 09-Aug-05 | 83333 | | | | 0 | 0 |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|-----------|-----------------|----------|---------------------|-----------|----------------|---------|------|----|------------|----|
| | | ZWST0016 | RUTH AND JANETTE | 17-Aug-05 | 66458 | | | | 0 | 0 |
| | | ZWST0016 | RUTH AND JANETTE | 09-Aug-05 | 39091 | | | | 0 | 0 |
| | | ZWST0017 | 12337 BLAZEY TRAIL | 17-Aug-05 | 560000 | | | | 0 | 0 |
| | | ZWST0017 | 12337 BLAZEY TRAIL | 09-Aug-05 | 163333 | | | | 0 | 0 |
| | | ZWST0018 | 13252 BALZEY TRAIL | 17-Aug-05 | 210000 | | | | 0 | 0 |
| | | ZWST0018 | 13252 BALZEY TRAIL | 09-Aug-05 | 36250 | | | | 0 | 0 |
| | | ZWST0019 | 13887 BLAZEY TRAIL | 17-Aug-05 | 51250 | | | | 0 | 0 |
| | | ZWST0019 | 13887 BLAZEY TRAIL | 09-Aug-05 | 62333 | | | | 0 | 0 |
| | | ZWST0020 | 11778 WEBSTER ROAD | 09-Aug-05 | 2900 | | | | 0 | 0 |
| | | ZWST0020 | 11778 WEBSTER ROAD | 17-Aug-05 | 41333 | | | | 0 | 0 |
| | | ZWST0021 | 12242 WEBSTER ROAD | 09-Aug-05 | 3848 | | | | 0 | 0 |
| | | ZWST0021 | 12242 WEBSTER ROAD | 17-Aug-05 | 18333 | | | | 0 | 0 |
| | | ZWST0022 | 12664 WEBSTER ROAD | 09-Aug-05 | 1903333 | | | | 0 | 0 |
| | | ZWST0022 | 12664 WEBSTER ROAD | 17-Aug-05 | 1533333 | | | | 0 | 0 |
| | | ZWST0023 | 12669 WEBSTER ROAD | 09-Aug-05 | 221000 | | | | 0 | 0 |
| | | ZWST0023 | 12669 WEBSTER ROAD | 17-Aug-05 | 437500 | | | | 0 | 0 |
| | | ZWST0024 | 12773 WEBSTER ROAD | 09-Aug-05 | 570 | | | | 0 | 0 |
| | | ZWST0024 | 12773 WEBSTER ROAD | 17-Aug-05 | 1818 | | | | 0 | 0 |
| | | ZWST0025 | 13229 WEBSTER ROAD | 09-Aug-05 | 12333 | | | | 0 | 0 |
| | | ZWST0025 | 13229 WEBSTER ROAD | 17-Aug-05 | 17000 | | | | 0 | 0 |
| | | ZWST0026 | 13861 WEBSTER ROAD | 17-Aug-05 | 356667 | | | | 0 | 0 |
| | | ZWST0026 | 13861 WEBSTER ROAD | 09-Aug-05 | 86667 | | | | 0 | 0 |
| | | ZWST0027 | 13505 ROYALTON ROAD | 09-Aug-05 | 113333 | | | | 0 | 0 |
| | | ZWST0027 | 13505 ROYALTON ROAD | 17-Aug-05 | 356364 | | | | 0 | 0 |
| | | ZWST0028 | 13465 ROYALTON ROAD | 09-Aug-05 | 2182 | | | | 0 | 0 |
| | | ZWST0028 | 13465 ROYALTON ROAD | 17-Aug-05 | 207667 | | | | 0 | 0 |
| | | ZWST0029 | 16427 ALBION | 31-Oct-05 | 613158 | 22 | | | 0 | 0 |
| | | ZWST0030 | 18796 BIG CREEK | 13-Oct-05 | 4400 | 0.15 | | | 0 | 0 |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|-------------------------------------|-----------------|-----------|-------------------------------|-----------|----------------|---------|-------|------|-------------|-----------|
| Woodmere | Woodmere | | | | | | | | | |
| | | ZWWID0001 | 27600 Chagrin Blvd | 11-Oct-05 | 40 | | | | | |
| | | ZWWID0001 | 27600 Chagrin Blvd | 09-Jun-05 | 5900 | | | | | |
| | | ZWWID0006 | 3750 Maplecrest Avenue | 09-Jun-05 | 900 | | | | | |
| | | ZWWID0007 | 3731 Brainard Road | 09-Jun-05 | 800 | | | | | |
| | | ZWWID0008 | 3777 Brainard Road | 09-Jun-05 | 520 | | | | | |
| | | ZWWID0009 | West Side of Water treatment | 09-Jun-05 | 867 | | | | | |
| | | ZWWID0010 | Behind Water treatment plant | 09-Jun-05 | 1475 | | | | | |
| | | ZWWID0011 | Chagrin Blvd at Orange Border | 09-Jun-05 | 671 | | | | | |
| Permanent Sampling Locations | | | | | | | | | | |
| Bay Village | | | | | | | | | | |
| | | ZCPSOCA1 | Lake Rd and Calhoun Rd | 03-Aug-05 | 490 | 0.14 | 22.8 | 8.19 | 0.050000001 | 8.5699997 |
| | | ZCPSOCA1 | Lake Rd and Calhoun Rd | 13-Jul-05 | 667 | 0.04 | 21.9 | 8 | 0.050000001 | 7.3600001 |
| | | ZCPSOCA1 | Lake Rd and Calhoun Rd | 08-Jul-04 | 290 | 0.04 | 20.2 | 7.36 | 0.02 | 10.02 |
| | | ZCPSOCA1 | Lake Rd and Calhoun Rd | 14-Sep-04 | 940 | 0.31 | 18.1 | n/a | 0.090000004 | 8.96 |
| | | ZCPSOPO1 | Wolf Rd. and Lake Rd | 03-Aug-05 | 1947 | 0.13 | 22.1 | 8.14 | 0.059999999 | 8.1599998 |
| | | ZCPSOPO1 | Wolf Rd. and Lake Rd | 13-Jul-05 | 1267 | 0.03 | 21.6 | 7.88 | 0.129999995 | 6.1700001 |
| | | ZCPSOPO1 | Wolf Rd. and Lake Rd | 08-Jul-04 | 538 | 0.042 | 19.9 | 7.13 | 0.07 | 9.7700005 |
| | | ZCPSOPO1 | Wolf Rd. and Lake Rd | 14-Sep-04 | 1060 | 0.31 | 18.2 | n/a | 0.090000004 | 9.4499998 |
| Bentleyville | | | | | | | | | | |
| | | ZCPSUCR5 | Solon Rd and Liberty Rd | 23-Aug-04 | 177 | 0.046 | 16.22 | 8.23 | 0.050000001 | 9.0900002 |
| | | ZCPSUCR5 | Solon Rd and Liberty Rd | 29-Sep-04 | 995 | 0.015 | 15.85 | 8.12 | 0.050000001 | 0 |
| | | ZCPSUCR5 | Solon Rd and Liberty Rd | 28-Jun-05 | 73000 | 0.16 | | | 0.200000003 | 0 |
| | | ZCPSUCR5 | Solon Rd and Liberty Rd | 28-Jun-05 | 73000 | 0.16 | 21.56 | 7.49 | 0.200000003 | 7.54 |
| | | ZCPSUCR5 | Solon Rd and Liberty Rd | 24-Aug-05 | 220 | 0.063 | 16.35 | 8.48 | 0.050000001 | 5.9899998 |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|-------------------|-----------------|----------|----------------------------|-----------|----------------|---------|-------|------|-------------|-----------|
| Bentleyville | | | | | | | | | | |
| | | | | | | | | | | |
| | | ZCPS0SSI | Sulphur Springs | 23-Aug-04 | 77 | 0.028 | 15.22 | 6.92 | 0.029999999 | 8.8599997 |
| | | ZCPS0SSI | Sulphur Springs | 24-Aug-05 | 12 | 0.062 | 16.09 | 8.31 | 0.039999999 | 7.3299999 |
| | | ZCPS0SSI | Sulphur Springs | 28-Jun-05 | 56 | 0.01 | 20.31 | 6.69 | 0.079999998 | 8.3800001 |
| | | ZCPS0SSI | Sulphur Springs | 28-Jun-05 | 56 | 0.01 | | | 0.079999998 | 0 |
| Broadview Heights | | ZCPS0SSI | Sulphur Springs | 29-Sep-04 | 147 | 0.012 | 13.97 | 8.05 | 0.029999999 | 0 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | ZCPS0TC2 | Broadway Rd. and Metropark | 23-Jun-05 | 300 | 0.14 | 23.1 | 8.56 | 0.289999992 | 10.92 |
| | | ZCPS0TC2 | Broadway Rd. and Metropark | 01-Aug-05 | 205 | 0.02 | 24.5 | 8.5 | 0.219999999 | 11.59 |
| | | ZCPS0TC2 | Broadway Rd. and Metropark | 13-Sep-04 | 320 | 0.75 | 19 | 8.24 | 0.219999999 | 8.8500004 |
| Brook Park | | ZCPS0TC2 | Broadway Rd. and Metropark | 11-Aug-04 | 675 | 0.1 | 20.7 | 8.31 | 0.259999999 | 11.45 |
| | | ZCPS0TC2 | | 23-Jun-05 | 300 | 0.14 | | | 0.289999992 | 0 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | ZCPS0BC1 | Hummel Rd and Smith Rd | 02-Jun-05 | 3000 | | | | 0 | 0 |
| | | ZCPS0BC1 | Hummel Rd and Smith Rd | 02-Jun-05 | 2900 | | | | 0 | 0 |
| | | ZCPS0BC1 | Hummel Rd and Smith Rd | 12-Jul-05 | 2165 | 0.02 | | | 0.25 | 0 |
| | | ZCPS0BC1 | Hummel Rd and Smith Rd | 07-Sep-04 | 63667 | 1.15 | 19.9 | 7.52 | 0.219999999 | 4.3400002 |
| | | ZCPS0BC1 | Hummel Rd and Smith Rd | 16-Aug-04 | 703 | 0.067 | 17.4 | 8.19 | 0.170000002 | 8.5200005 |
| | | ZCPS0BC1 | Hummel Rd and Smith Rd | 12-Jul-05 | 2165 | 0.02 | 18.6 | 8.14 | 0.25 | 7.1700001 |
| | | ZCPS0BC1 | Hummel Rd and Smith Rd | 02-Jun-05 | 3000 | 0.07 | 12.9 | 7.95 | 0.200000003 | 9.9200001 |
| | | ZCPS0RR1 | 6315 Grayton Rd. | 29-Jun-05 | 7000 | 0.055 | 23.8 | 7.68 | 0.259999999 | 7.9299998 |
| | | ZCPS0RR1 | 6315 Grayton Rd. | 29-Jun-05 | 7000 | 0.055 | | | 0.259999999 | 0 |
| | | ZCPS0RR1 | 6315 Grayton Rd. | 05-Oct-04 | 222 | 0.21 | | | 0.090000004 | 0 |
| | | ZCPS0RR1 | 6315 Grayton Rd. | 03-Aug-05 | 44 | 0.16 | 23.4 | 8.01 | 0.090000004 | 6.8600001 |
| | | ZCPS0RR1 | 6315 Grayton Rd. | 02-Sep-04 | 1000 | 1.5 | 18 | 7.96 | 0.039999999 | 7.3299999 |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO | |
|------------------|-----------------|----------------|------------------|----------------|----------------|---------|------|-------------|-------------|-------------|-----------|
| Brooklyn | | | | | | | | | | | |
| | | ZCPS0BC7 | 9811 Memphis Rd | 02-Jun-05 | 140 | 0.08 | 14.7 | 8.04 | 0.340000004 | 8.2799997 | |
| | | ZCPS0BC7 | 9811 Memphis Rd | 16-Aug-04 | 42400 | 0.155 | 16.7 | 8.15 | 0.340000004 | 7.9000001 | |
| | | ZCPS0BC7 | 9811 Memphis Rd | 12-Jul-05 | 1400 | 0.01 | | | 0.389999986 | 0 | |
| | | ZCPS0BC7 | 9811 Memphis Rd | 02-Jun-05 | 140 | | | | 0 | 0 | |
| | | ZCPS0BC7 | 9811 Memphis Rd | 12-Jul-05 | 1400 | 0.01 | 20 | 8.32 | 0.389999986 | 8.6800003 | |
| | | ZCPS0BC7 | 9811 Memphis Rd | 07-Sep-04 | 1950 | 0.048 | 20.7 | 8.14 | 0.289999992 | 7.2800002 | |
| | | ZCPS0CC2 | South Hills Blvd | 02-Jun-05 | 27 | | | | 0 | 0 | |
| | | ZCPS0CC2 | South Hills Blvd | 12-Jul-05 | 259 | 0.03 | 20.8 | 7.7 | 0.02 | 5.0700002 | |
| | | ZCPS0CC2 | South Hills Blvd | 02-Jun-05 | 27 | 0.03 | 15.6 | 7.66 | 0.02 | 6.27 | |
| | | ZCPS0CC2 | South Hills Blvd | 16-Aug-04 | 33 | 0.039 | 17.1 | 7.73 | 0.02 | 6.1399999 | |
| | | ZCPS0CC2 | South Hills Blvd | 07-Sep-04 | 400 | 0.042 | 20.4 | 7.8 | 0.02 | 7.1100001 | |
| Brooklyn Heights | | ZCPS0CC2 | South Hills Blvd | 12-Jul-05 | 259 | 0.03 | | | 0.02 | 0 | |
| | | | | | | | | | | | |
| | | ZCPS0WT3 | 5399 Lancaster | 02-Jun-05 | 198 | 0.06 | 15.4 | 8.07 | 0.109999999 | 8.21 | |
| | | ZCPS0WT3 | 5399 Lancaster | 12-Jul-05 | 1167 | 0.02 | | | 0.180000007 | 0 | |
| | | ZCPS0WT3 | 5399 Lancaster | 12-Jul-05 | 1167 | 0.02 | 19.2 | 8.52 | 0.180000007 | 8.96 | |
| | | ZCPS0WT3 | 5399 Lancaster | 16-Aug-04 | 218 | 0.15 | 16.3 | 8.29 | 0.159999996 | 7.9000001 | |
| | | ZCPS0WT3 | 5399 Lancaster | 02-Jun-05 | 198 | | | | 0 | 0 | |
| | | ZCPS0WT3 | 5399 Lancaster | 07-Sep-04 | 254 | 0.033 | 20.5 | 8.25 | 0.059999999 | 5.09000002 | |
| | Charter Falls | | | | | | | | | | |
| | | | ZCPSRCO1 | End of High St | 28-Jul-05 | 926 | 0.01 | 20.69 | 7.97 | 0.159999996 | 9.2200003 |
| | | | ZCPSRCO1 | End of High St | 24-Aug-05 | 110 | 0.06 | 17.38 | 8.45 | 0.039999999 | 5.4000001 |
| | | | ZCPSRCO1 | End of High St | 23-Aug-04 | 183 | | | | 0 | 0 |
| | ZCPSRCO1 | End of High St | 23-Aug-04 | 177 | 0.037 | 17.69 | 9.97 | 0.045000002 | 9.1800003 | | |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|------------------|-----------------|-----------|-----------------------------|-----------|----------------|---------|-------|------|-------------|------------|
| | | ZCPSRCR01 | End of High St | 29-Sep-04 | 93 | 0.014 | 15.21 | 8.35 | 0.039999999 | 0 |
| | | ZCPSRCR01 | End of High St | 28-Jul-05 | 962 | 0.01 | 20.69 | 7.97 | 0.600000024 | 9.22000003 |
| Euclid | | | | | | | | | | |
| | | ZCPSOEC1 | East 185th St., off of I-90 | 30-Sep-04 | 94 | 0.024 | 15.8 | 8.5 | 0.029999999 | 13.26 |
| | | ZCPSOEC1 | East 185th St., off of I-90 | 28-Jul-05 | 1733 | 0.01 | 22.28 | 8.05 | 0.079999998 | 8.81000004 |
| | | ZCPSOEC1 | East 185th St., off of I-90 | 02-Sep-04 | 1118 | 0.41 | 19.83 | 12.3 | 0.01 | 9.5 |
| | | ZCPSOEC1 | East 185th St., off of I-90 | 24-Aug-05 | 4500 | 0.088 | 18.5 | 8.16 | 0.140000001 | 6.8499999 |
| Garfield Heights | | | | | | | | | | |
| | | ZCPS0MC2 | Broadway Rd and McKraeken | 11-Aug-04 | 1094 | 0.06 | 18.4 | 8.1 | 0.150000006 | 10.22 |
| | | ZCPS0MC2 | Broadway Rd and McKraeken | 13-Sep-04 | 2900 | 0.185 | 18.5 | 8.16 | 0.189999998 | 7.7800002 |
| | | ZCPS0MC2 | Broadway Rd and McKraeken | 23-Jun-05 | 1967 | 0.15 | | | 0.219999999 | 0 |
| | | ZCPS0MC2 | Broadway Rd and McKraeken | 01-Aug-05 | 1500 | 0.01 | 22.6 | 8.09 | 0.140000001 | 8.8400002 |
| | | ZCPS0MC2 | Broadway Rd and McKraeken | 23-Jun-05 | 1967 | 0.15 | 18 | 7.79 | 0.219999999 | 6.9099998 |
| | | ZCPS0MC3 | Garfield Park Nature | 01-Aug-05 | 2333 | 0.11 | 23.2 | 8.13 | 0.140000001 | 9.1599998 |
| | | ZCPS0MC3 | Garfield Park Nature Center | 13-Sep-04 | 1633 | 0.19 | 18.4 | 8.15 | 0.119999997 | 9.0299997 |
| | | ZCPS0MC3 | Garfield Park Nature Center | 23-Jun-05 | 2433 | 0.1 | 18.3 | 7.71 | 0.119999997 | 7.23 |
| | | ZCPS0MC3 | Garfield Park Nature Center | 11-Aug-04 | 2700 | 0.12 | 19.4 | 8.21 | 0.050000001 | 8.9799995 |
| | | ZCPS0MC3 | Garfield Park Nature Center | 23-Jun-05 | 2333 | 0.11 | | | 0.140000001 | 0 |
| | | ZCPS0MC3 | Garfield Park Nature Center | 23-Jun-05 | 2433 | 0.1 | | | 0.119999997 | 0 |
| Gates Mills | | | | | | | | | | |
| | | ZCPSUCR1 | County Line Rd | 30-Sep-04 | 400 | 0.021 | 12.3 | 8.1 | 0.029999999 | 9.3599997 |
| | | ZCPSUCR1 | County Line Rd. | 30-Aug-04 | 1227 | 0.06 | 18.86 | 11.2 | 0.079999998 | 7.4000001 |
| | | ZCPSUCR1 | County Line Rd. | 28-Jul-05 | | | | | 0 | 0 |
| | | ZCPSUCR1 | County Line Rd. | 23-Aug-05 | 210 | 0.09 | 17.56 | 7.69 | 0.150000006 | 7.1999998 |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|------------------|-----------------|----------|----------------------------|-----------|----------------|---------|-------|------|-------------|-----------|
| Glenwillow | | | | | | | | | | |
| | | ZCPS0TC1 | Cochran Rd. and Petbone Rd | 11-Aug-04 | 470 | 0.19 | 20.1 | 7.96 | 0.219999999 | 8.9499998 |
| | | ZCPS0TC1 | Cochran Rd. and Petbone Rd | 13-Sep-04 | 360 | 0.295 | 18.3 | 7.91 | 0.189999998 | 9.1000004 |
| | | ZCPS0TC1 | Cochran Rd. and Petbone Rd | 23-Jun-05 | 380 | 0.33 | | | 0.349999994 | 0 |
| | | ZCPS0TC1 | Cochran Rd. and Petbone Rd | 23-Jun-05 | 380 | 0.33 | 21.7 | 7.98 | 0.349999994 | 8.9700003 |
| | | ZCPS0TC1 | Cochran Rd. and Petbone Rd | 01-Aug-05 | 210 | 0.03 | 23.9 | 8.07 | 0.189999998 | 9.6800003 |
| Hunting Valley | | | | | | | | | | |
| | | ZCPS0GC1 | Falls River Rd | 23-Aug-04 | 67 | 0.044 | 18.51 | 10.6 | 0.25 | 9.54 |
| | | ZCPS0GC1 | Falls River Rd | 30-Sep-04 | 3220 | 0.027 | 11.2 | 8.09 | 0.01 | 12.09 |
| | | ZCPS0GC1 | Falls River Rd | 28-Jun-05 | 1500 | | | | 0 | 0 |
| | | ZCPS0GC1 | Falls River Rd | 28-Jun-05 | 1867 | 0.02 | | | 0.07 | 0 |
| | | ZCPS0GC1 | Falls River Rd | 24-Aug-05 | 48 | 0.06 | 18.4 | 8.43 | 0.029999999 | 9.0200005 |
| | | ZCPS0GC1 | Falls River Rd | 28-Jun-05 | 1867 | 0.02 | 23.06 | 8.34 | 0.07 | 10.55 |
| | | ZCPS0GC2 | County Line Rd | 24-Aug-05 | 93 | 0.057 | 16.48 | 8.42 | 0.01 | 9.8999996 |
| | | ZCPS0GC2 | County Line Rd | 30-Sep-04 | 740 | 0.63 | 11.6 | 8.16 | 0.029999999 | 11.51 |
| | | ZCPS0GC2 | County Line Rd | 28-Jun-05 | 133 | 0.02 | | | 0.07 | 0 |
| | | ZCPS0GC2 | County Line Rd | 28-Jun-05 | 133 | 0.02 | 21.2 | 8.29 | 0.07 | 9.9499998 |
| | | ZCPS0GC2 | County Line Rd | 24-Aug-05 | 93 | 0.057 | | | 0.100000001 | 0 |
| | | ZCPS0GC2 | County Line Rd | 23-Aug-04 | 130 | 0.031 | 16.97 | 10.5 | 0.029999999 | 9.4799995 |
| | | ZCPS0PC3 | County Line Rd | 28-Jul-05 | 2133 | 0.01 | 19.5 | 8.17 | 0.25 | 8.8500004 |
| | | ZCPS0PC3 | County Line Rd | 30-Aug-04 | 1145 | 0.05 | 19.85 | 11.3 | 0.209999993 | 7.9299998 |
| | | ZCPS0PC3 | County Line Rd | 30-Sep-04 | 131 | 0.17 | 11.5 | 8.23 | 0.209999993 | 11.38 |
| | | ZCPS0PC3 | County Line Rd | 23-Aug-05 | 93 | 0.073 | 17.7 | 8.09 | 0.180000007 | 6.5700002 |
| Mayfield Heights | | | | | | | | | | |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|--------------------|-----------------|----------|------------------------------|-----------|----------------|---------|--------|------|-------------|-----------|
| | | ZCPSUCR3 | 6805 Mayfield Rd | 23-Aug-05 | 2500 | 0.26 | 18.21 | 7.51 | 0.129999995 | 6.6999998 |
| | | ZCPSUCR3 | 6805 Mayfield Rd | 30-Sep-04 | 1120 | 0.14 | 15.3 | 7.64 | 0.189999998 | 8.3599997 |
| | | ZCPSUCR3 | 6805 Mayfield Rd | 30-Aug-04 | 5618 | 0.26 | 19.6 | 12.1 | 0.129999995 | 7.1199999 |
| Mayfield Village | | | | | | | | | | |
| | | | | | | | | | | |
| | | ZCPS0BB1 | Wilson Mills & Chagrin River | 30-Sep-04 | 80 | 0.019 | 12.8 | 8.05 | 0.07 | 11.35 |
| | | ZCPS0BB1 | Wilson Mills & Chagrin River | 28-Jun-05 | 51 | 0.02 | 22.9 | 8.36 | 0.129999995 | 9.6300001 |
| | | ZCPS0BB1 | Wilson Mills & Chagrin River | 23-Aug-05 | 133 | 0.12 | 18.3 | 7.89 | 0.140000001 | 7.8200002 |
| | | ZCPS0BB1 | Wilson Mills & Chagrin River | 30-Aug-04 | 340 | 0.03 | 19.43 | 11.5 | 0.090000004 | 8.3699999 |
| | | ZCPS0BB1 | Wilson Mills & Chagrin River | 28-Jun-05 | 51 | 0.02 | | | 0.129999995 | 0 |
| | | ZCPS0BB2 | 731 Beta Drive | 23-Aug-05 | 200 | 0.12 | 17.83C | 6.33 | 0.150000006 | 4.8000002 |
| | | ZCPS0BB2 | 731 Beta Drive | 28-Jun-05 | 430 | 0.01 | 22.69 | 8.29 | 0.180000007 | 7.8899999 |
| | | ZCPS0BB2 | 731 Beta Drive | 30-Sep-04 | 63 | 0.032 | 14 | 8.25 | 0.100000001 | 12.07 |
| | | ZCPS0BB2 | 731 Beta Drive | 02-Sep-04 | 277 | 0.084 | 17.47 | 10.5 | 0.079999998 | 9.5 |
| | | ZCPS0BB2 | 731 Beta Drive | 28-Jun-05 | 430 | 0.01 | | | 0.180000007 | 0 |
| Middleburg Heights | | | | | | | | | | |
| | | | | | | | | | | |
| | | ZCPS0RE1 | 7660 Eastland Rd | 12-Aug-04 | 1033 | 0.12 | | | 0.239999995 | 0 |
| | | ZCPS0RE1 | 7660 Eastland Rd | 12-Aug-04 | 1033 | 0.12 | 17.9 | | 0.239999995 | 6.9400001 |
| | | ZCPS0RE1 | 7660 Eastland Rd | 29-Jun-05 | 45000 | 0.18 | | | 0.289999992 | 0 |
| | | ZCPS0RE1 | 7660 Eastland Rd | 03-Aug-05 | 759 | 0.13 | 23.4 | 7.95 | 0.259999999 | 6.5700002 |
| | | ZCPS0RE1 | 7660 Eastland Rd | 29-Jun-05 | 45000 | 0.18 | 22.2 | 7.7 | 0.289999992 | 5.7800002 |
| | | ZCPS0RE1 | 7660 Eastland Rd | 05-Oct-04 | 340 | 0.099 | | | 0.200000003 | 0 |
| | | ZCPS0RR2 | Big Creek Parkway and I-71 | 29-Jun-05 | 23000 | 0.087 | 20.7 | 7.75 | 0.219999999 | 7.3499999 |
| | | ZCPS0RR2 | Big Creek Parkway and I-71 | 14-Sep-04 | 800 | 0.25 | 18.7 | n/a | 0.230000004 | 6.6300001 |
| | | ZCPS0RR2 | Big Creek Parkway and I-71 | 03-Aug-05 | 900 | 0.14 | 22.7 | 7.97 | 0.209999993 | 7.0599999 |
| | | ZCPS0RR2 | Big Creek Parkway and I-71 | 29-Jun-05 | 23000 | 0.087 | | | 0.219999999 | 0 |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|----------------|-----------------|-----------|----------------------------|-----------|----------------|---------|---------------------------|------|-------------|-----------|
| | | ZCPSORR2 | Big Creek Parkway and I-71 | 05-Oct-04 | 1989 | 0.12 | | | 0.200000003 | 0 |
| Moreland Hills | | | | | | | | | | |
| | | ZCPSOWC2 | Chagrin River Rd | 28-Jun-05 | 420 | 0.027 | | | 0.189999998 | 0 |
| | | ZCPSOWC2 | Chagrin River Rd | 29-Sep-04 | 42 | 0.014 | 14.39 | 8.41 | 0.079999998 | 0 |
| | | ZCPSOWC2 | Chagrin River Rd | 30-Aug-04 | 453 | 0.04 | 19.54 | 9.41 | 0.109999999 | 7.7199998 |
| | | ZCPSOWC2 | Chagrin River Rd | 28-Jun-05 | 420 | 0.027 | 21.8 | 8.1 | 0.189999998 | 9.6700001 |
| | | ZCPSOWC2 | Chagrin River Rd | 23-Aug-05 | 220 | 0.094 | 18.16 | 8.63 | 0.230000004 | 8.6300001 |
| | | ZCPSOWC3 | SOM Center Rd | 28-Jun-05 | 70 | 0.22 | | | 0.379999995 | 0 |
| | | ZCPSOWC3 | SOM Center Rd | 23-Aug-04 | 56 | 0.24 | 19.22 | 10.5 | 0.180000007 | 7.04 |
| | | ZCPSOWC3 | SOM Center Rd | 29-Sep-04 | 18 | 0.011 | 16.7 | 8.05 | 0.079999998 | 0 |
| | | ZCPSOWC3 | SOM Center Rd | 23-Aug-05 | 80 | 0.45 | 18.16 | 8.63 | 0.230000004 | 8.8500004 |
| | | ZCPSOWC3 | SOM Center Rd | 28-Jun-05 | 70 | 0.22 | 24.68 | 7.99 | 0.379999995 | 6.2399998 |
| North Royalton | | | | | | | | | | |
| | | ZCPSORE5 | 8700 Boston Rd | 02-Sep-04 | 155 | 0.16 | 19.2 | 8.54 | 0.01 | 8.8599997 |
| | | ZCPSORE5 | 8700 Boston Rd | 13-Jul-05 | 113 | 0.02 | NS (broken meter) | 8.3 | 0.319999993 | 0 |
| | | ZCPSORE5 | 8700 Boston Rd | 18-Aug-05 | 51 | 0.16 | NS (broken meter) | 8.48 | 0 | 0 |
| | | ZCPSORE5 | 8700 Boston Rd | 05-Oct-04 | 80 | 0.068 | | | 0.02 | 0 |
| | | ZCPSORE6 | Boston Rd. and Ridge Rd | 05-Oct-04 | 370 | 0.059 | | | 0.140000001 | 0 |
| | | ZCPSORI:6 | Boston Rd. and Ridge Rd | 13-Jul-05 | 290 | 0.03 | NS (Broken meter) | 7.82 | 0.050000001 | |
| | | ZCPSORE:6 | Boston Rd. and Ridge Rd | 18-Aug-05 | 130 | 0.09 | NS (Broken meter) | 8 | 0.270000011 | |
| | | ZCPSORI:6 | Boston Rd. and Ridge Rd | 02-Sep-04 | 340 | 0.14 | 19.6 | 8.02 | 0.219999999 | 7.2800002 |
| Olmsted Falls | | | | | | | | | | |
| | | ZCPSORW2 | Lewis Rd. and Fortier Park | 15-Sep-04 | 367 | 0.21 | 18.5 NS (Broken meter) | 7.9 | 0.129999995 | 4.54 |
| | | ZCPSORW2 | Lewis Rd. and Fortier Park | 13-Sep-05 | 201 | 0.07 | NS (Broken meter) | 8.29 | 0.100000001 | 0 |
| | | ZCPSORW2 | Lewis Rd. and Fortier Park | 28-Jun-05 | 1833 | 0.041 | 21.7 | 8.09 | 0.289999992 | 6.7800002 |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|------------------|-----------------|----------|----------------------------|-----------|----------------|---------|---------------------|------|-------------|-----------|
| | | ZCPS0RW2 | Lewis Rd. and Fortier Park | 08-Jul-04 | 590 | 0.046 | 20 | 7.5 | 0.01 | 7.4000001 |
| | | ZCPS0RW2 | Lewis Rd. and Fortier Park | 28-Jun-05 | 1833 | 0.041 | | | 0.289999992 | 0 |
| | | ZCPS0RW2 | Lewis Rd. and Fortier Park | 23-Nov-04 | | | | | 0 | 0 |
| | | ZCPS0RW4 | 25132 Sprague Rd | 08-Jul-04 | 22500 | 0.26 | 20.9 | 7.55 | 0.02 | 9.1700001 |
| | | ZCPS0RW4 | 25132 Sprague Rd | 13-Sep-05 | 1567 | 0.045 | N/A BROKEN METER | 8.09 | 0.02 | 0 |
| | | ZCPS0RW4 | 25132 Sprague Rd | 28-Jun-05 | 1992 | 0.05 | 22.9 | 7.77 | 0.059999999 | 5.9699998 |
| | | ZCPS0RW4 | 25132 Sprague Rd | 15-Sep-04 | 3100 | 0.034 | 18.4 | n/a | 0.039999999 | 6.4699998 |
| | | ZCPS0RW4 | 25132 Sprague Rd | 28-Jun-05 | 1992 | 0.05 | | | 0.059999999 | 0 |
| | | ZCPS0RW5 | Sprague Rd. | 08-Jul-04 | 30730 | 0.036 | 20.1 | 7.43 | 0.029999999 | 6.6799998 |
| | | ZCPS0RW5 | Sprague Rd. | 13-Sep-05 | 1633 | 1.1 | N/A BROKEN METER | 8.21 | 0.029999999 | 0 |
| | | ZCPS0RW5 | Sprague Rd. | 28-Jun-05 | 1969 | 0.03 | 22.6 | 8.02 | 0.100000001 | 7.5900002 |
| | | ZCPS0RW5 | Sprague Rd. | 15-Sep-04 | 1263 | 0.024 | 18.9 | n/a | 0.039999999 | 6.6399999 |
| | | ZCPS0RW5 | Sprague Rd. | 28-Jun-05 | 1969 | 0.03 | | | 0.100000001 | 0 |
| | | ZCPS0RW6 | Sprague Rd. and Rt. 252 | 13-Sep-05 | 143 | 0.062 | N/A BROKEN METER | 8.05 | 0.059999999 | 0 |
| | | ZCPS0RW6 | Sprague Rd. and Rt. 252 | 28-Jun-05 | 380 | 0.03 | 25.6 | 8.35 | 0.230000004 | 10.85 |
| | | ZCPS0RW6 | Sprague Rd. and Rt. 252 | 28-Jun-05 | 380 | 0.03 | | | 0.230000004 | 0 |
| | | ZCPS0RW6 | Sprague Rd. and Rt. 252 | 15-Sep-04 | 410 | 0.046 | 20.2 | n/a | 0.159999996 | 6.2399998 |
| | | ZCPS0RW6 | Sprague Rd. and Rt. 252 | 02-Sep-04 | 350 | 0.48 | 19.5 | 8.02 | 0.100000001 | 7.3600001 |
| Olmsted Township | | | | | | | | | | |
| | | ZCPS0RW1 | Lewis Rd and Rainbow Dr. | 28-Jun-05 | 200 | 0.29 | | | 0.159999996 | 0 |
| | | ZCPS0RW1 | Lewis Rd and Rainbow Dr. | 28-Jun-05 | 200 | 0.29 | 26.7 | 9.18 | 0.159999996 | 14.95 |
| | | ZCPS0RW1 | Lewis Rd and Rainbow Dr. | 08-Jul-04 | 850 | 0.044 | 22.4 | 7.33 | 0.039999999 | 8.8299999 |
| | | ZCPS0RW1 | Lewis Rd and Rainbow Dr. | 13-Sep-05 | 120 | 0.05 | N/A BROKEN METER | 8.8 | 0.02 | 0 |
| | | ZCPS0RW1 | Lewis Rd and Rainbow Dr. | 15-Sep-04 | 205 | 0.056 | 19.7 | 8.63 | 0.150000006 | 4.96 |
| | | ZCPS0RW3 | 27060 Sprague Rd | 15-Sep-04 | 900 | 0.145 | 18.9 | n/a | 0.289999992 | 3.54 |
| | | ZCPS0RW3 | 27060 Sprague Rd | 28-Jun-05 | 200 | 0.24 | | | 0.379999995 | 0 |
| | | ZCPS0RW3 | 27060 Sprague Rd | 13-Sep-05 | 2212 | 0.14 | N/A BROKEN METER | 7.7 | 0.200000003 | 0 |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|---------------|-----------------|----------|-----------------------|-----------|----------------|---------|------|------|-------------|-----------|
| | | ZCPSORW3 | 27060 Sprague Rd | 28-Jun-05 | 200 | 0.24 | 25.2 | 7.7 | 0.379999995 | 5.8000002 |
| | | ZCPSORW3 | 27060 Sprague Rd | 08-Jul-04 | 643 | 0.26 | 21.4 | 7.52 | 0.200000003 | 4.9400001 |
| Parma | | | | | | | | | | |
| | | ZCPSOBC3 | Peral Rd and Snow Rd | 07-Sep-04 | 444 | 0.095 | 21.5 | 7.85 | 0.140000001 | 6.3899999 |
| | | ZCPSOBC3 | Peral Rd and Snow Rd | 16-Aug-04 | 444 | 0.11 | 19.2 | 7.91 | 0.140000001 | 6 |
| | | ZCPSOBC3 | Peral Rd and Snow Rd | 02-Jun-05 | 982 | 0.22 | 17 | 7.69 | 0.159999996 | 5.6399999 |
| | | ZCPSOBC3 | Peral Rd and Snow Rd | 12-Jul-05 | 800 | 0.03 | 21.2 | 7.93 | 0.230000004 | 5.98 |
| | | ZCPSOBC3 | Peral Rd and Snow Rd | 02-Jun-05 | 982 | | | | 0 | 0 |
| | | ZCPSOBC3 | Peral Rd and Snow Rd | 12-Jul-05 | 800 | 0.03 | | | 0.230000004 | 0 |
| | | ZCPSORE2 | 12550 Sprague Rd | 29-Jun-05 | 15000 | 0.1 | 21.8 | 7.57 | 0.270000011 | 6.6500001 |
| | | ZCPSORE2 | 12550 Sprague Rd | 18-Aug-05 | 560 | 0.26 | 80.2 | 7.7 | 0.200000003 | 6.8800001 |
| | | ZCPSORE2 | 12550 Sprague Rd | 05-Oct-04 | 15067 | 0.195 | | | 0.379999995 | 0 |
| | | ZCPSORE2 | 12550 Sprague Rd | 29-Jun-05 | 15000 | 0.1 | | | 0.270000011 | 0 |
| | | ZCPSORE2 | 12550 Sprague Rd | 02-Sep-04 | 221 | 0.26 | 20.7 | 7.91 | 0.159999996 | 7.5700002 |
| | | ZCPSOWT1 | 7700 Broadview Rd | 02-Jun-05 | 3300 | 0.64 | 12.8 | 8.06 | 0.529999971 | 9.1099997 |
| | | ZCPSOWT1 | 7700 Broadview Rd | 16-Aug-04 | 34800 | 1.2 | 17.9 | 8.18 | 0.5 | 6.1300001 |
| | | ZCPSOWT1 | 7700 Broadview Rd | 07-Sep-04 | 4500 | 0.285 | 19.7 | 8.09 | 0.319999993 | 7.1700001 |
| | | ZCPSOWT1 | 7700 Broadview Rd | 12-Jul-05 | 54333 | 1.3 | | | 0.670000017 | 0 |
| | | ZCPSOWT1 | 7700 Broadview Rd | 02-Jun-05 | 3300 | | | | 0 | 0 |
| | | ZCPSOWT1 | 7700 Broadview Rd | 12-Jul-05 | 54333 | 1.3 | 17.4 | 8.12 | 0.670000017 | 7.8499999 |
| | | ZCPSOWT2 | 2451 W. Ridgewood Dr. | 02-Jun-05 | 480 | 0.16 | 16.8 | 8.21 | 0.050000001 | 9.9399996 |
| | | ZCPSOWT2 | 2451 W. Ridgewood Dr. | 12-Jul-05 | 900 | 0.01 | 21.8 | 8.54 | 0.02 | 10.16 |
| | | ZCPSOWT2 | 2451 W. Ridgewood Dr. | 02-Jun-05 | 480 | | | | 0 | 0 |
| | | ZCPSOWT2 | 2451 W. Ridgewood Dr. | 12-Jul-05 | 900 | 0.01 | | | 0.02 | 0 |
| | | ZCPSOWT2 | 2451 W. Ridgewood Dr. | 16-Aug-04 | 1300 | 0.084 | 21.5 | 8.55 | 0.039999999 | 8.0100002 |
| | | ZCPSOWT2 | 2451 W. Ridgewood Dr. | 07-Sep-04 | 736 | 0.07 | 20.3 | 8.08 | 0.072999999 | 9.1700001 |
| Parma Heights | | | | | | | | | | |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|------------------|-----------------|----------|----------------------------|-----------|----------------|---------|-------|------|-------------|-----------|
| | | ZCPS0BC2 | Stumph Rd and Big Creek | 07-Sep-04 | 3100 | 0.13 | 20.6 | 7.76 | 0.100000001 | 6.5 |
| | | ZCPS0BC2 | Stumph Rd and Big Creek | 12-Jul-05 | 933 | 0.01 | | | 0.270000011 | 0 |
| | | ZCPS0BC2 | Stumph Rd and Big Creek | 12-Jul-05 | 933 | 0.01 | 20.6 | 8.13 | 0.270000011 | 5.77 |
| | | ZCPS0BC2 | Stumph Rd and Big Creek | 02-Jun-05 | 629 | | | | 0 | 0 |
| | | ZCPS0BC2 | Stumph Rd and Big Creek | 12-Jul-05 | 833 | 0.01 | | | 0.259999999 | 0 |
| | | ZCPS0BC2 | Stumph Rd and Big Creek | 16-Aug-04 | 533 | 0.042 | 16.5 | 7.96 | 0.079999998 | 6.3099999 |
| Pepper Pike | | | | | | | | | | |
| | | | | | | | | | | |
| | | ZCPS0PC1 | Lander Rd and Shaker Blvd. | 29-Sep-04 | 5700 | 0.023 | 15.02 | 8.21 | 0.469999999 | 0 |
| | | ZCPS0PC1 | Lander Rd and Shaker Blvd | 28-Jul-05 | 1767 | 0.01 | 19.23 | 8.09 | 0.159999996 | 8.6000004 |
| | | ZCPS0PC1 | Lander Rd and Shaker Blvd. | 23-Aug-05 | 2700 | 0.095 | 18.02 | 8.23 | 0.519999981 | 8.2299995 |
| | | ZCPS0PC1 | Lander Rd and Shaker Blvd. | 30-Aug-04 | 2600 | 0.05 | 18.96 | 10.7 | 0.159999996 | 7.79 |
| | | ZCPS0PC2 | SOM Center Rd. | 23-Aug-05 | 390 | 0.083 | 19.03 | 8.1 | 0.800000012 | 7.3600001 |
| | | ZCPS0PC2 | SOM Center Rd. | 30-Aug-04 | 1585 | 0.09 | 20.34 | 11.8 | 0.540000021 | 6.3299999 |
| | | ZCPS0PC2 | SOM Center Rd. | 29-Sep-04 | 46 | 0.019 | 15.94 | 8.39 | 0.529999971 | 0 |
| | | ZCPS0PC2 | SOM Center Rd. | 28-Jul-05 | 1933 | 0.01 | 20.19 | 7.92 | 0.300000012 | 7.6500001 |
| | | ZCPS0WC1 | Lander Rd. and Pinetree Rd | 28-Jun-05 | 3333 | 0.036 | 22.06 | 7.95 | 1.259999999 | 8.4499998 |
| | | ZCPS0WC1 | Lander Rd. and Pinetree Rd | 23-Aug-05 | 1773 | 0.092 | 19.76 | 8.18 | 0.449999988 | 7.48 |
| | | ZCPS0WC1 | Lander Rd. and Pinetree Rd | 28-Jun-05 | 3333 | 0.036 | | | 1.259999999 | 0 |
| | | ZCPS0WC1 | Lander Rd. and Pinetree Rd | 30-Aug-04 | 1500 | 0.05 | 19.33 | 10.3 | 0.25 | 7.6500001 |
| | | ZCPS0WC1 | Lander Rd. and Pinetree Rd | 29-Sep-04 | 667 | 0.57 | 16.77 | 8.18 | 0.209999993 | 0 |
| Richmond Heights | | | | | | | | | | |
| | | | | | | | | | | |
| | | ZCPS0EC5 | White Rd and Richmond Rd | 02-Sep-04 | 3100 | 0.32 | 17.88 | 12.3 | 0.310000002 | 7.0599999 |
| | | ZCPS0EC5 | White Rd and Richmond Rd | 30-Sep-04 | 1950 | 0.11 | 14.3 | 8.37 | 0.159999996 | 10.79 |
| | | ZCPS0EC5 | White Rd and Richmond Rd | 28-Jul-05 | 590 | 0.01 | 20.94 | 8.26 | 0.140000001 | 9.2799997 |
| | | ZCPS0EC5 | White Rd and Richmond Rd | 24-Aug-05 | 693 | 0.104 | 17 | 8.31 | 0.150000006 | 5.3800001 |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|--------------|-----------------|----------|------------------------------|-----------|----------------|---------|-------|------|-------------|-----------|
| Solon | | | | | | | | | | |
| | | ZCPS0CR1 | Solon Rd and Liberty Rd | 28-Jul-05 | 1400 | 0.06 | 20.57 | 7.15 | 0.02 | 9.6599998 |
| | | ZCPS0CR1 | Solon Rd and Liberty Rd | 29-Sep-04 | 86 | 0.016 | 15.73 | 8.23 | 0.079999998 | 0 |
| | | ZCPS0CR1 | Solon Rd and Liberty Rd | 23-Aug-04 | 1294 | 0.04 | 17.03 | 9.4 | 0.125 | 8.8800001 |
| | | ZCPS0CR1 | Solon Rd and Liberty Rd | 24-Aug-05 | 502 | 0.066 | 17.83 | 8.39 | 0.140000001 | 7.0799999 |
| | | ZCPS0CR2 | | 28-Jul-05 | 1867 | 0.08 | 20 | 7.75 | 0.180000007 | 8.8599997 |
| | | ZCPS0CR2 | | 24-Aug-05 | 310 | 0.057 | 16.85 | 8.36 | 0.07 | 8.9899998 |
| | | ZCPS0CR2 | | 29-Sep-04 | 183 | 0.017 | 14.51 | 8.22 | 0.050000001 | 0 |
| | | ZCPS0CR2 | | 23-Aug-04 | 248 | 0.038 | 16.51 | 9.5 | 0.0105 | 8.7700005 |
| | | ZCPS0HC1 | Richmond Rd. and Cannon | 23-Jun-05 | 550 | 0.092 | | | 0.059999999 | 0 |
| | | ZCPS0HC1 | Richmond Rd. and Cannon | 23-Jun-05 | 550 | 0.092 | 18.7 | 7.82 | 0.059999999 | 6.4000001 |
| | | ZCPS0HC1 | Richmond Rd. and Cannon | 13-Sep-04 | 460 | 0.27 | 17.6 | 8.03 | 0.090000004 | 8.21 |
| | | ZCPS0HC1 | Richmond Rd. and Cannon | 11-Aug-04 | 313 | 0.08 | 19 | 7.87 | 0.029999999 | 7.4200001 |
| | | ZCPS0HC1 | Richmond Rd. and Cannon | 01-Aug-05 | 4424 | 0.01 | 22.9 | 8.09 | 0.039999999 | 8.3500004 |
| | | ZCPS0HC2 | Richmond Rd and Solon Rd | 01-Aug-05 | 195 | 0.01 | 23.7 | 8.25 | 0.029999999 | 8.3699999 |
| | | ZCPS0HC2 | Richmond Rd and Solon Rd | 11-Aug-04 | 280 | 0.04 | 18.7 | 8.15 | 0.029999999 | 9.1099997 |
| | | ZCPS0HC2 | Richmond Rd and Solon Rd | 13-Sep-04 | 270 | 0.17 | 16.9 | 8.12 | 0.050000001 | 9.7600002 |
| | | ZCPS0HC2 | Richmond Rd and Solon Rd | 23-Jun-05 | 480 | 0.37 | | | 0.039999999 | 0 |
| | | ZCPS0HC2 | Richmond Rd and Solon Rd | 23-Jun-05 | 480 | 0.37 | 19.7 | 8.07 | 0.039999999 | 9.1099997 |
| South Euclid | | | | | | | | | | |
| | | ZCPS0EC3 | Anderson Rd. and Caroline Ct | 28-Jul-05 | 1500 | 0.01 | 20.74 | 8.23 | 0.059999999 | 8.8400002 |
| | | ZCPS0EC3 | Anderson Rd. and Caroline Ct | 30-Sep-04 | 208 | 0.034 | 14.5 | 8.2 | 0.029999999 | 9.9099998 |
| | | ZCPS0EC3 | Anderson Rd. and Caroline Ct | 02-Sep-04 | 300 | 0.069 | 18.4 | 12.4 | 0.029999999 | 8.79 |
| | | ZCPS0EC3 | Anderson Rd. and Caroline Ct | 24-Aug-05 | 739 | 0.072 | 16.2 | 8.21 | 0.079999998 | 6.8299999 |
| Strongsville | | | | | | | | | | |

| Community | Receiving Water | ID | Location | Date | Fecal Coliform | Ammonia | Temp | PH | Phosphorus | DO |
|--------------|-----------------|----------|-----------------------------|-----------|----------------|---------|---------------------|------|-------------|-----------|
| | | ZCPS0RE4 | 15230 Drake Rd | 29-Jun-05 | 18000 | 0.05 | NS | 7.91 | 0.389999986 | |
| | | ZCPS0RE4 | 15230 Drake Rd | 15-Sep-04 | 395 | 0.12 | 18.7 | n/a | 0.109999999 | 7.3800001 |
| | | ZCPS0RE4 | 15230 Drake Rd | 02-Sep-04 | 54667 | 0.95 | 17.7 | 7.9 | 0.090000004 | 9.1899996 |
| | | ZCPS0RE4 | 15230 Drake Rd | 29-Jun-05 | 18000 | 0.05 | N/A BROKEN | | 0.389999986 | 0 |
| | | ZCPS0RE4 | 15230 Drake Rd | 18-Aug-05 | 2697 | 0.77 | METER | 7.92 | 0.529999971 | 0 |
| | | ZCPS0RW7 | 19414 Drake Rd | 28-Jun-05 | 2733 | 2.5 | 22.7 | 7.67 | 0.639999986 | 1.28 |
| | | ZCPS0RW7 | 19414 Drake Rd | 18-Aug-05 | 7333 | 2.9 | N/A BROKEN METER | 7.78 | 0.600000024 | 0 |
| | | ZCPS0RW7 | 19414 Drake Rd | 28-Jun-05 | 2733 | 2.5 | | | 0.639999986 | 0 |
| | | ZCPS0RW7 | 19414 Drake Rd | 15-Sep-04 | 2700 | 0.36 | 19.5 | n/a | 0.289999992 | 5.1700001 |
| | | ZCPS0RW7 | 19414 Drake Rd | 02-Sep-04 | 1733 | 2.4 | 18.5 | 7.7 | 0.479999989 | 2.8599999 |
| Walton Hills | | | | | | | | | | |
| | | | | | | | | | | |
| | | ZCPS0SC1 | 17115 Sagamore Rd | 23-Jun-05 | 1567 | 0.26 | | | 0.180000007 | 0 |
| | | ZCPS0SC1 | 17115 Sagamore Rd | 11-Aug-04 | 700 | 0.07 | 18.5 | 8.11 | 0.029999999 | 6.1100001 |
| | | ZCPS0SC1 | 17115 Sagamore Rd | 23-Jun-05 | 1567 | 0.26 | 21.5 | 8.35 | 0.180000007 | 7.3400002 |
| | | ZCPS0SC1 | 17115 Sagamore Rd | 13-Sep-04 | 250 | 0.49 | 17.4 | 8.12 | 0.059999999 | 9.6199999 |
| | | ZCPS0SC1 | 17115 Sagamore Rd | 01-Aug-05 | 280 | 0.01 | 22.8 | 8.23 | 0.07 | 10.12 |
| | | ZCPS0TC3 | Canal Rd. and Tinkers Creek | 11-Aug-04 | 840 | 0.12 | 19.6 | 8.01 | 0.180000007 | 6.0799999 |
| | | ZCPS0TC3 | Canal Rd. and Tinkers Creek | 13-Sep-04 | 340 | 1.5 | 18 | 8.16 | 0.200000003 | 9.2399998 |
| | | ZCPS0TC3 | Canal Rd. and Tinkers Creek | 23-Jun-05 | 240 | 0.16 | | | 0.189999998 | 0 |
| | | ZCPS0TC3 | Canal Rd. and Tinkers Creek | 23-Jun-05 | 240 | 0.16 | 22.9 | 8.68 | 0.189999998 | 14.11 |
| | | ZCPS0TC3 | Canal Rd. and Tinkers Creek | 01-Aug-05 | 80 | 0.01 | 22.4 | 8.11 | 0.129999995 | 10.73 |