

2016 ANNUAL REPORT

Prepared For The: City of Maple Heights

By the DEPARTMENT OF PUBLIC WORKS







Department of Public Works

<u>OVERVIEW</u>

Established in 1919, the office of the Cuyahoga County Sanitary Engineer was created to provide administrative authority in matters of wastewater, storm water, and water supply management. In 2012, the Sanitary Engineering Division (formerly CCSE) became a part of the Cuyahoga County Department of Public Works, and now operates under County Executive Armond Budish.

Our focus on maintenance and repair of aging sewer lines, needs assessment, engineering feasibility studies, as well as other infrastructure-related issues, has a direct impact on commercial and residential development, job creation, and expanded tax base in the communities served by the Department of Public Works.

This Division is a major source of information and guidance that mayors, municipal engineers, and service directors rely on when making infrastructure decisions within their community. The Division has considerable experience in the maintenance, repair, and rehabilitation of sanitary and storm sewer lines. Moreover, the Division has much expertise with respect to the operation and maintenance of pump stations.

The Sanitary Engineering Division currently operates in 38 communities. It maintains more than 1,200 miles of sanitary sewers, operates 56 sewage-pumping stations, and maintains two wastewater treatment plants. The Division performs these services on county-owned facilities and through community agreements. Storm sewer maintenance is also provided in a number of communities.

Working in cooperation with the Ohio Environmental Protection Agency (Ohio EPA), the Northeast Ohio Regional Sewer District (NEORSD), various communities, and the Cuyahoga County Board of Health; the Division works to maintain water quality through the identification and investigation of illicit discharges as well as the construction of new sanitary sewers.

All operating funds for the Division are generated through fees and assessments. The Division does not receive a subsidy from the County's general fund.

The Sanitary Engineering Division of the Department of Public Works has been in the forefront of regionalism efforts. With services provided to more than half of the county's 59 communities, the Division continues to maintain reasonable rates and improve infrastructure throughout the area.



GOALS

The Sanitary Division has three (3) major goals.

- 1. Operate and maintain the sanitary sewerage systems within the communities to meet the goals and objectives of the EPA Capacity Management Operation and Maintenance (CMOM) guidelines.
- 2. Provide guidelines for the design and construction through the "Uniform Standards for Sewerage Improvements" and the "Rules and Regulations."
- 3. Issue sewer connection permits and provide construction inspection for new sanitary sewers and new connections to existing sanitary sewers.

The goals of the Division are attained through the activities of our three (3) main groups working together: Maintenance Services; Engineering and Construction Services; and, Administrative Services.

MAINTENANCE SERVICES

- Reduce the number of flooded basements by decreasing mainline blockage, minimize the inflow/ infiltration of storm water in the sanitary system, and evaluate the structural integrity of the sewerage system;
- Increase efficiency to reduce operating costs and provide more available funds for capital improvement projects;
- Operate wastewater treatment plants in compliance of National Pollution Discharge Elimination System (NPDES) permit parameters;
- Maintain and inspect the existing collection system to meet EPA CMOM maintenance goals;
- Operate and maintain pumping stations; and operational checks (EPA permit compliance).



Engineering and Construction Services

- Task Order preparation for repairs and rehabilitation;
- Plan review and approval of all new sewer improvements within the county service area;
- Engineering analysis (required for operation of facilities and the collection system);
- Capital improvement planning;
- Construction management and inspection;
- Provide guidelines for new construction through use of Uniform Standards for Sewerage Improvements;
- Provide infrastructure needs assessment for communities;
- Project design;
- Construction inspection of new wastewater collection systems within the county service area; and,
- Record keeping, as-built plans and test tee location.

ADMINISTRATIVE SERVICES

- Issuance of connection permits;
- Issuance of sewer builders' licenses:
- Mapping and spatial analysis for design and service management;
- Geographical Information Systems (GIS) for development and implementation;
- Fiscal oversight of annual operating budget and capital improvement budget;
- Grant and loan administration; and,
- Licensing and permitting of more than 200 contractors

SUMMARY OF MAINTENANCE SERVICES

Sewers

- High-pressure jetting of sewers in the right-of-way, approximately 320 miles of sewers;
- Point repairs of sewers, force mains, and structures;
- Cleaning of service laterals, more than 8,000 houses annually;
- Inflow and Infiltration testing;
- Televising of lines to identify possible failures or deficiencies, approximately 280 miles of sewers;
- Licensed operators to monitor the condition of the treatment plants and pumping stations, as well as implement upgrades and preventative maintenance; and,
- Emergency maintenance and 24-hour on-call team for resident issues.



The Sewer Maintenance section provides a full-service program to clean, evaluate, maintain structural integrity, and perform construction on sanitary and storm sewers. The objective of the program is the cleaning of all sanitary sewers every three years and performing video inspection every six years which is well within the NEORSD's "Best Management Practices" guidelines.

The Division cleans more than 8,000 house connections annually. The goal is to alleviate sewer backups by clearing blocked mains and cleaning service connections to restore sewer capacity.

The Department of Public Works has an Inflow and Infiltration (I&I) section within the Lateral Service Department. This section uses flow meters to monitor sanitary mainlines during both dry and wet weather conditions to quantify wastewater flow in the system. Smoke and dye testing is used to identify sources of clean water into the sanitary sewer system. When used in unison, the flow quantification and source identification can identify sewers in need of rehabilitation or capacity enhancement.



Pumping Stations

The County operates 56 pumping stations throughout the 38 service communities. A Supervisory Control and Data Acquisition (SCADA) system monitors the stations. The system provides alarms and operational status through a central computer that is accessed from a remote computer providing 24-hour monitoring. New pump stations are added to the SCADA as they come on-line. Our maintenance staff consists of experienced mechanics and electricians enabling us to repair most problems in-house, therefore keeping costs down. Their preventive maintenance program and dedication to the job has reduced emergency call-outs and overflows.



Wastewater Treatment Plants

The County operates two package wastewater treatment plants. The standards are set for each facility by the Ohio EPA through the National Pollution Discharge Elimination System (NPDES) permit. The support staff consists of wastewater operators licensed by the Ohio EPA who monitor the conditions of the plants and make necessary process adjustments to meet the NPDES permit.

Capacity, Management, Operation, and Maintenance Program (CMOM)

The CMOM Program is a set of "best management practices" that have been developed by the industry and are applied over the life cycle of the collection system. It is these general practices that are taken into consideration when a system is being reviewed by a federal or state agency. Improvement and recommendations are provided by such agencies based on deficiencies identified in the sanitary sewer system.

We continue to work with the NEORSD through their community discharge program and the Ohio EPA to ensure that our department's best practices meet the CMOM goals.

Summary of Engineering and Construction Services

This section provides technical services to its customers including capital project planning, grant and loan administration, design engineering, construction management, and inspection of sanitary and storm sewers, pump stations, and wastewater treatment facilities.

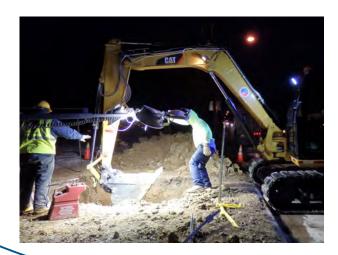
A sewer repair and rehabilitation program is managed through in-house personnel supplemented with two outside contractors. Task orders for repair and rehabilitation are issued based on video inspection information and requests from the communities.

A specific Engineer is assigned to each community to provide an individual contact for collection system related issues.

Design plans are reviewed for more than 50 construction projects per year on behalf of member communities. Engineering also coordinates and analyzes the results of field testing and flow monitoring in order to detect and eliminate storm water inflow/infiltration from the sanitary sewer system and illicit discharges to the storm sewer system. Record drawings are prepared, then scanned and filed for record keeping. Information on the new sewers and service connections are provided to our IT personnel for incorporation in the GIS.

These departments also oversee capital construction projects and develop financial packages in the form of grants and loans obtained from the state of Ohio. These funds are utilized for lining, repairing, replacing, and rehabilitating existing sanitary and storm sewerage systems.

The construction staff provides inspection for all new sanitary sewers and service laterals connecting to existing sewers. The Inspectors ensure that projects are constructed in conformance to design plans and specifications and the "Uniform Standards."







SUMMARY OF ADMINISTRATIVE SERVICES

PERMITS

This department operates in 38 member communities and its major functions include the licensing, bonding, and permitting of more than 200 contractors. They also maintain the permanent records for sewer construction projects and provide information to all county departments, engineering consulting firms, contractors, and the public.

FINANCE

Finance provides support services to various units within the Public Works Department. Automated cost accounting programs and systems ensure accurate tracking and monitoring of expenditures, revenues, rate structures and other data that provide financing for capital projects and operational budgets. All systems and programs are operated under generally accepted accounting principles.

The Department of Public Works oversees an annual storm and sanitary sewer operating budget in excess of \$15 million. Finance is responsible for accounts receivable, accounts payable, cost accounting, audit, inventory control, capital project financing, purchasing, and sewer assessment revenue management for member communities.

Information Technology

Information Technology (IT) provides computer and analytical support to internal end-users and communities within the department. It is responsible for the design, implementation and maintenance of geographical map-based and other relational database systems, as well as guiding data acquisition tasks throughout the Division. The computerized mapping program catalogues the location of sewer systems and performs analysis on spatial data. This ability supports the planning, design, and maintenance of sewer systems, and ensures user fees are appropriately assessed and collected. Furthermore, the mapping program now features attached permits and engineering drawings.

Our Geographical Information System (GIS) is continually being expanded to include information on repair and rehabilitation activities as well as system maintenance and inspection activities. Information is shared between the county, member communities, and the NEORSD to better identify areas of responsibility.

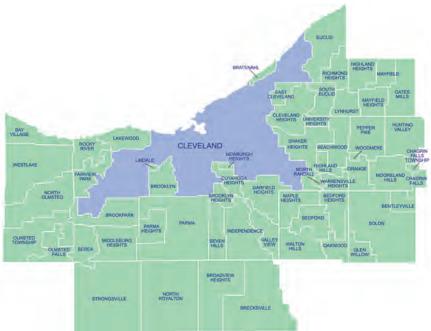


APPENDIX DESCRIPTION*

The following appendices contain a variety of reports representing the services provided to communities in 2016. The Public Works Department follows a manhole-to-manhole, sewer segment-based accounting method for jet cleaning and TV (video) inspection maintenance services. The first two reports contain listings of the collection system cleaned and inspected for the year by street. The following report discloses the more significant projects submitted and reviewed by the Permit and Engineering and Construction Departments during the year for your community. Smaller review services such as house connections or ongoing, intermittent review of large multi-phase projects spanning several years of development are not shown on this report. The final appendices provide a breakdown of operating expenses, capital project costs contracted for the community, as well as additional services including house visits, inflow/infiltration studies, and construction activity.

A map showing areas where collection system mainlines were jet cleaned and TV inspected, construction crew activity locations, house visits and if house lateral connections needed to be cleaned or inspected is available on our website at http://publicworks.cuyahogacounty.us/en-US/Sewer-Maintenance-Services.aspx. A CD containing the map with the Annual Report is available upon request.

* <u>Please note:</u> These appendix reports are provided only to communities for which the specific service is provided by the Department of Public Works. For example, if regularly scheduled mainline cleaning service is not provided for your community, a map was not produced. Similarly, if project review or capital project management services are not provided to your community, then there is no corresponding report. Certain communities are provided limited maintenance on county improvement mainlines and/or facilities only.





Community Streets Cleaned*

Collection System Jet Cleaning

MAPLE HEIGHTS

	STREET		NUMBER OF SEGMENTS	JET FT
TYPE	SANITARY		Street Count 34	
	BEECHWOOD AVENUE		1	206
	BELLVIEW AVENUE		2	631
	CLARE AVENUE		3	1,060
	EAST 146 STREET		3	540
	FRIEND AVENUE		3	540
	GARDEN STREET		2	500
	HILLGROVE AVENUE		7	2,407
	HOLLYWOOD AVENUE		3	619
	JACKSON EASEMENT		1	300
	JANICE EASEMENT		1	283
	KNOLL DRIVE		1	250
	KREMS AVENUE		5	1,912
	LIBBY ROAD		1	284
	LISA DRIVE		3	361
	LONGVIEW AVENUE		2	600
	MAPLE HEIGHTS BOULEVARD		3	540
	MAPLEWOOD AVENUE		1	300
	MILAN DRIVE		2	233
	MORGAN STREET		3	702
	MUSTANG DRIVE		2	215
	MUSTANG EASEMENT		7	993
	PHILLIP STREET		2	312
	RAYMOND STREET		4	711
	ROCHELLE DRIVE		2	280
	ROCHELLE EASEMENT		2	540
	ROCKSIDE ROAD		2	529
	SOUTH BOULEVARD		4	1,277
	STAFFORD AVENUE		1	155
	STOCKTON AVENUE		1	328
	TABOR AVENUE		1	300
	TATRA EASEMENT		3	861
	THOMAS STREET		9	2,641
	TURNEY ROAD		1	350
	WOODBROOK AVENUE		2	625
		Total:	90	22,385

Collection System Jet Cleaning

MAPLE HEIGHTS

	STREET		NUMBER OF SEGMENTS	JET FT	
TYPE	STORM		Street Count 7		
	CLARE AVENUE		1	357	
	GARDENVIEW DRIVE		3	600	
	HILLGROVE AVENUE		13	3,888	
	MAPLE HEIGHTS BOULEVARD		2	489	
	RAYMOND STREET		2	425	
	SOUTH BOULEVARD		3	810	
	THOMAS STREET		1	286	
		Total:	25	6,855	
Annual Report Jet Cleani	ng	Grand Total:	115	29,240	

Community Streets Inspected*

Collection System TV Inspection

MAPLE HEIGHTS

	STREET	N	IUMBER OF SEGMENTS	TV FT	
TYPE	SANITARY		Street Count 30)	
	ARCH STREET		1	21	
	BEECH AVENUE		2	106	
	BEECHWOOD AVENUE		1	25	
	BOWLING GREEN ROAD		1	189	
	BRUNSWICK AVENUE		2	494	
	CLARE AVENUE		6	1,317	
	DUNHAM ROAD		6	1,423	
	ELMWOOD AVENUE		1	238	
	GARDENVIEW DRIVE		3	471	
	GREENHURST ROAD		1	160	
	HANSEN ROAD		1	355	
	HAZELWOOD AVENUE		1	73	
	HILLGROVE AVENUE		8	1,724	
	JANICE EASEMENT		1	258	
	JOSEPH STREET		1	135	
	KENNERDOWN AVENUE		2	24	
	LIBBY ROAD		1	116	
	LISA DRIVE		3	644	
	MAPLE HEIGHTS BOULEVARD		2	265	
	MAPLEWOOD AVENUE		1	47	
	MILAN DRIVE		2	59	
	MUSTANG EASEMENT		2	142	
	PEASE ROAD		2	204	
	RAYMOND STREET		1	233	
	ROCHELLE DRIVE		2	280	
	ROCHELLE EASEMENT		2	566	
	ROWENA AVENUE		2	189	
	STOCKTON AVENUE		1	328	
	TABOR AVENUE		1	361	
	WOODBROOK AVENUE		2	407	
		Total:	62	10,854	
TYPE	STORM		Street Count 14	1	
	BROADWAY AVENUE		1	270	
	CLARE AVENUE		9	2,321	
	DUNHAM ROAD		5	820	

Collection System TV Inspection MAPLE HEIGHTS

STREET		NUMBER OF SEGMENTS	TV FT	
ELMWOOD AVENUE		1	241	
GARDENVIEW DRIVE		6	981	
HAZELWOOD AVENUE		1	52	
HILLGROVE AVENUE		10	2,740	
MAPLE HEIGHTS BOULEVARD		4	265	
MAPLEWOOD AVENUE		1	69	
NITRA AVENUE		1	76	
RAMAGE AVENUE		2	28	
RAYMOND STREET		1	235	
SOUTH BOULEVARD		3	445	
TURNEY ROAD		1	116	
	Total:	46	8,659	
Annual Report TV Inspection	Grand Total:	108	19,513	

Projects Status*

Maple Heights Project Review

Project ID	Project Name	Approval Date
16-033 (1)	CATO, THOMAS & DONNYBROOK SEWER IMPROVEMENTS	18-Apr-2016
16-063 (1)	NEW MAPLE HTS. SCHOOL DISTRICT BUS PARKING LOT	20-Dec-2016

Service Program*

City of Maple Heights

<u>Type</u> <u>Community Total</u>

Sanitary Sewers Manholes 392,956 Feet 1,644 (Approximately)

2016 Service Program

<u>Program</u>	2016 Activity
1) High Pressure Jet Cleaning Sanitary – 22,385 Feet (76.6 %) Storm – 6,855 (23.4%)	29,240 Feet
2) House Service	843 Calls
3) Television Inspection Sanitary – 10,854 Feet (55.6%) Storm – 8,659 Feet (44.4%)	19,513 Feet
4) Construction Activities	533 Job(s)
5) Smoke and Dye Testing	- Test(s)
6) Construction Permits Issued (Commercial) (Residential)	2 1
7) Plan Review	2 Plan(s)
8) Construction Inspection a) Main Lines Inspected b) Service Laterals Inspected	- Feet 38 Feet
9) Catch Basin Cleaning	28

Community Operating Expenses

City of Maple Heights

2016 Operating Expenses

	<u>Activity</u>	Cost
1.	Maintenance of Sanitary Sewerage Systems	\$1,067,109
2.	Pump Station Operation and Maintenance	\$18,217
3.	Waste Water Treatment Plant Maintenance	\$ 0
4.	Engineering and/or Inspection	\$40,297
5.	Capital Expenses (See Section A-6 if any)	\$188,523
	Total Operating Expenses:	\$1,314,146

Community Capital Expenses

City of Maple Heights

2016 Capital Expenses

Arch Street Repair	\$ 25,479
Joseph Street Repair	\$ 27,456
Hillgrove Avenue Repair	\$ 41,968
Maple Heights Boulevard Repair	\$ 36,334
Broadway Avenue Repair	\$ 8,239
Watercrest Avenue Repair	\$ 8,545
Woodbrook Avenue Repair	\$ 19,617
Clare Avenue Repair	\$ 14,597
Sewer Repair Loan Payment	\$ 6,288

Total Capital Expenses: \$ 188,523

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