Lake County Public Works Department

Capital Improvements Plan 2016-2020

Presented by

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Section 1

Executive Summary

Section 1
Executive Summary

The purpose of this report is to present the Public Works Department's long-range plan for capital projects to the Public Works and Transportation Committee of the Lake County Board. It is intended to present Department planning information on proposed capital projects in an informative and comprehensive format. Committee members are asked to comment on this report and adopt the Capital Improvement Plan (CIP). By adopting the CIP, the Public Works and Transportation Committee authorizes staff to proceed with these projects.

The Public Works Department funds an extensive Capital Improvement Program designed to preserve, maintain, and enhance the Department's assets, meet regulatory requirements, accommodate user needs, and protect public health and the environment. Capital improvements include design, construction, and renovation activities which add value to the Department's fixed assets (building, pipelines, facilities, equipment) or significantly increase their useful life.

The Department provides essential water and wastewater services to over 40 percent of the County's residents. The assets employed for these services are not typically visible. For example, water mains and sewers, while necessary to maintain sanitary conditions and a thriving community, are below ground. Pump stations and treatment facilities are more visible, though not seen on a daily basis. The most visible components are water towers.

Most Department assets are built to provide long-term service. The heavy-duty mechanical systems will last for 20 to 30 years, while buried pipelines will last 50 to 100 years. All assets require Department attention to provide efficient, reliable and safe service. This report addresses the capital improvements proposed for these assets for the period of 2016 to 2020.

This report outlines the Department's priorities with respect to capital projects in the following manner:

1. System Preservation - the replacement value of the Department's assets is estimated to exceed $1 billion. All assets (excluding land) deteriorate over time. Therefore, continuous improvements are necessary to counter the long-term decline of asset value and preserve system functionality.

2. System Modernization and Regulatory Compliance - modernization typically involves replacing existing systems or components with new technology that performs more efficiently, while regulatory compliance addresses improvements necessary to stay current with ever-changing environmental regulatory requirements.

3. System Expansion - expansion extends service to new customers, though maintaining and enhancing service to existing customers has priority over service to new customers.

Public Works operates as the County's only enterprise fund, supported entirely by funds generated via the user fees and connection fees. The Department uses no County General Fund tax support. Total funding for implementation of the Capital Improvement Plan for years 2016 through 2020 is projected as $61,575,000.

Our Mission

To provide drinking water and wastewater services in a reliable, efficient and safe manner, ensuring quality service, public health and stewardship of the environment.

Section 2

Department Overview

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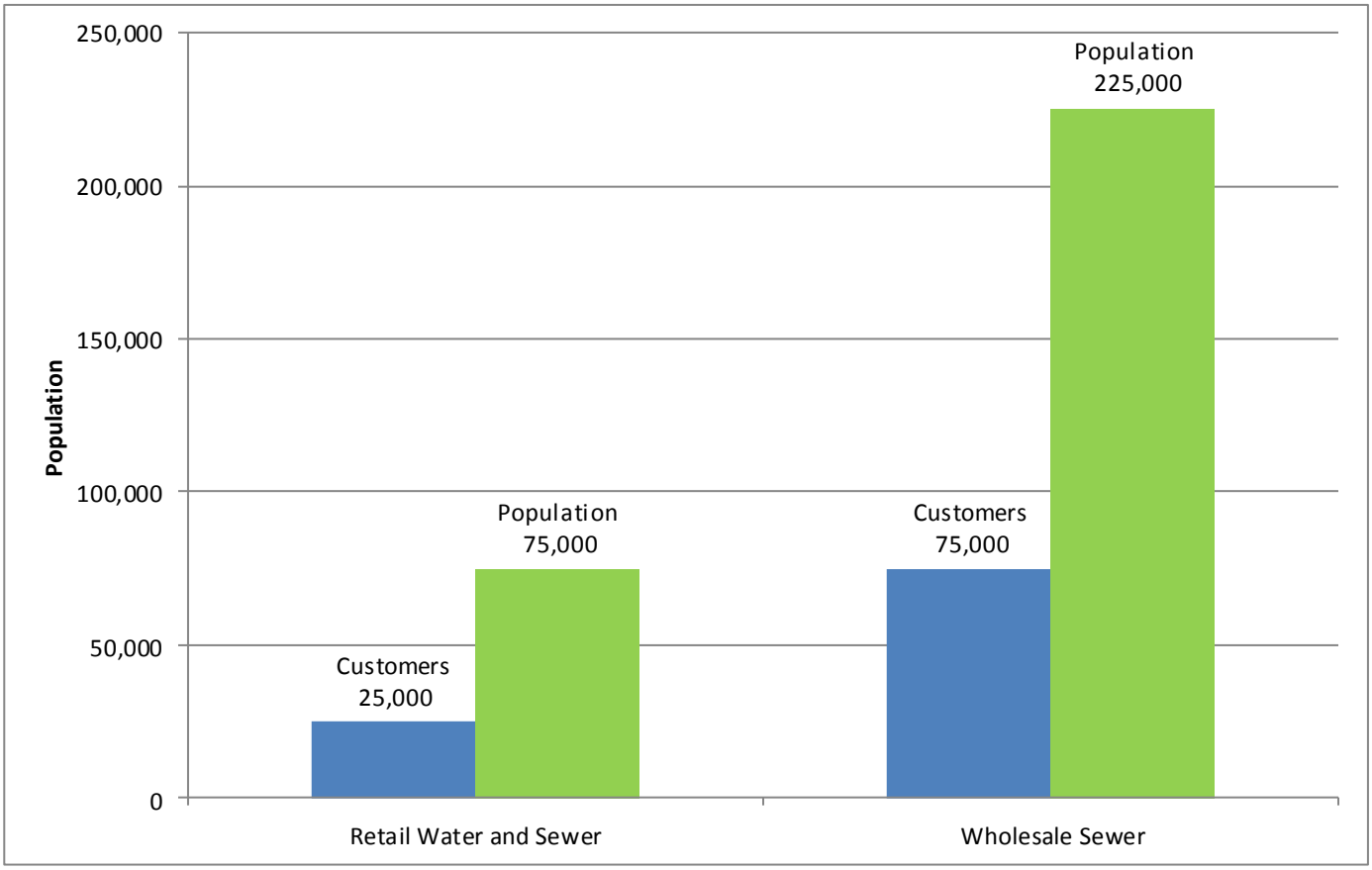
Department Overview

SERVICES

Lake County, through the Public Works Department, owns, operates and maintains twelve water systems, seven local sanitary sewer systems, three water reclamation facilities, and five regional interceptor sewer systems. The Department has 96 full-time employees dedicated to providing daily water and wastewater services to 300,000 residents of Lake County, which is over 40 percent of the County's total population. The system provides wholesale and retail services as follows:

Figure 2-1
Population Served



GOVERNANCE

The Department of Public Works was created by a resolution of the Lake County Board on October 9, 1962 under the provisions of the State of Illinois County Public Works Act of July 22, 1959. The Department reports to the Lake County Board through the Public Works and Transportation Committee.

The Public Works Department is Lake County's only Enterprise Fund and is funded solely by revenue generated from connection fees and user fees.

DEPARTMENT ASSETS

Current physical assets of the Department include the following:

Table 2-1
Potable Water

Quantity	Item
8	Elevated water towers
35	Ground water wells
10	Ground level water reservoirs
293	Water main (miles)
3,762	Fire hydrants
3,799	Valves
20,600	Water meters

Table 2-2
Wastewater

Quantity	Item
3	Water reclamation facilities
5	Regional interceptor sewer systems
7	Major pump stations
10	Local sanitary sewer systems
46	Force main (miles)
74	Lift stations
341	Gravity sewer main (miles)
8,369	Manholes

Other Assets

Additional assets owned by the County include an administration building, environmental laboratory, maintenance garage, and the North Libertyville Estates Levee.

Management of this large asset base requires a capital investment program to maintain the function and value of these assets.

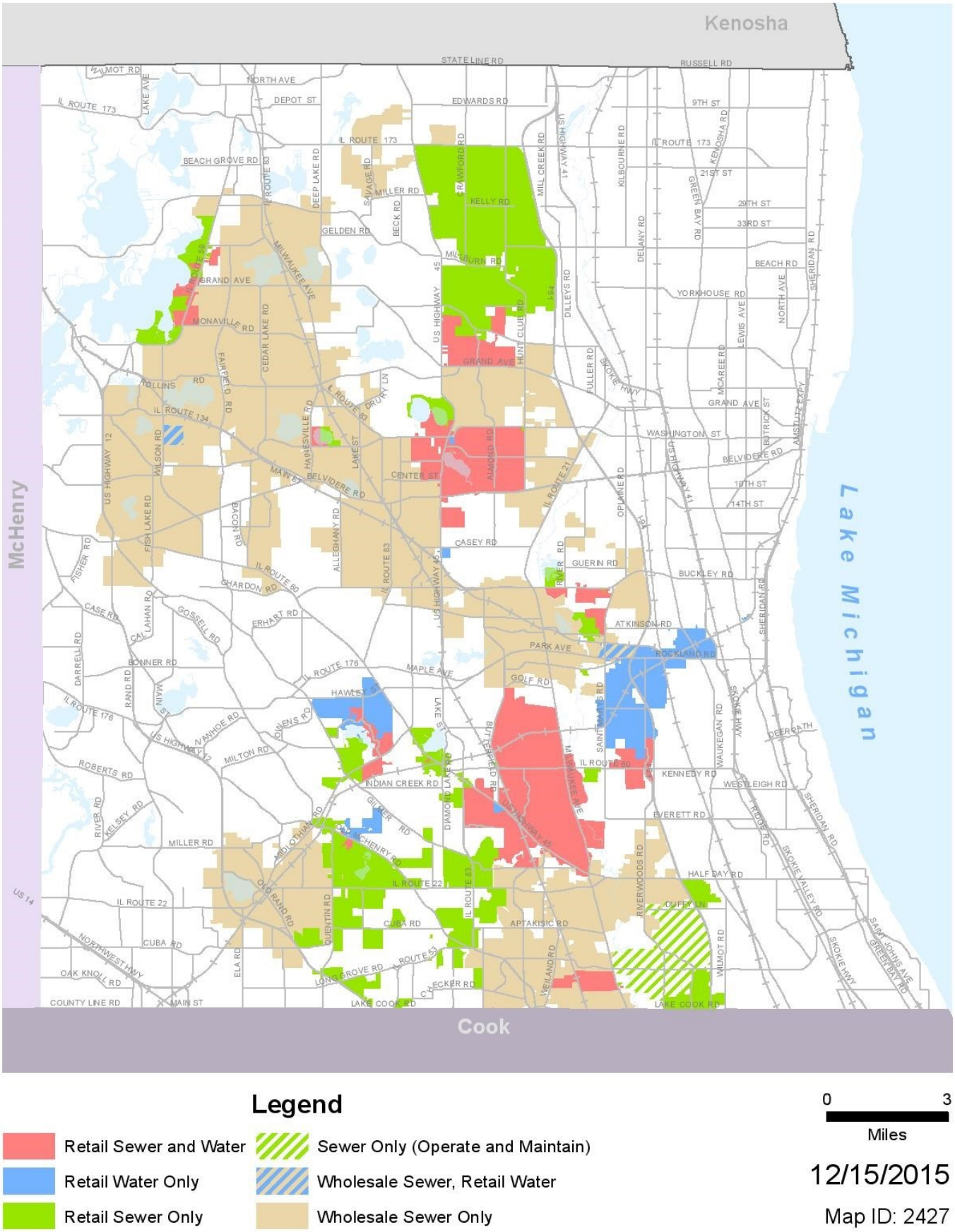
Public Works Administration Building

North Libertyville Estates Levee

Maintenance Facility and Fleet

Environmental Laboratory

Figure 2-2
Lake County Public Works Service Areas



Section 3

Long-Range Capital Program

Section 3
Long-Range Capital Program

Capital projects require large amounts of financial capital and labor to maintain or improve a County asset to ensure many years of service. These assets include pipelines, pumping facilities, treatment plants and storage tanks. Lake County Public Works Department's capital projects address the following three Department priorities:

System Priorities

- System preservation
- System modernization and regulatory compliance
- System expansion

SYSTEM PRESERVATION

All Department assets lose value as they age and deteriorate. Some assets, such as pipelines and concrete tanks, have an estimated service life of 70 years, after which time they will need refurbishment or replacement. Some of the Department's heavy duty mechanical assets, such as pumps, aeration blowers and filtration equipment, have an estimated service life of 25 years. Other assets, such as trucks, laboratory equipment and computers, have service lives of 5 to 10 years.

The long-range capital plan includes the investment needed to renew or replace assets as they approach the end of their service life. The replacement value of the Departments assets is over $1 billion. Anticipated capital expenditures needed to preserve the Department's assets is estimated at approximately $8 million per year. This value will increase over time as the asset base of the Department grows to serve more people.

System Preservation Project Examples

- Lining a deteriorated gravity sewer
- Painting a water tower
- Refurbishing a lift station

SYSTEM MODERNIZATION AND REGULATORY COMPLIANCE

Modernization of Department assets typically involves the replacement of existing components with new devices that increase efficiency. More efficient performance leads to lower operating costs. Therefore, investing capital in modernization results in operational cost savings.

New regulations governing potable (drinking) water arise from time to time typically requiring additional water treatment to meet the new standards. New regulations in wastewater usually address a new environmental protection issue, and result in improvements in sewer systems, wastewater treatment or wastewater sludge processing. Complying with new regulations can lead to capital investments, additional operating costs, or a combination of capital investments and additional operating costs.

Both modernization and evolving regulatory compliance require necessary improvements. Annual long-term costs for modernization and regulatory compliance are anticipated to be approximately $4 million per year.

System Modernization and Regulatory Compliance Project Examples

- Installation of Supervisory Control and Data Acquisition (SCADA) system to monitor facilities remotely
- Replacing electrical components with high-efficiency modern equipment
- Adding phosphorus removal systems to comply with new environmental regulations.

SYSTEM EXPANSION

The current population of Lake County is approximately 700,000 people. The Public Works Department provides potable water to about 60,000 people and provides wastewater service to approximately 300,000 people. In general, the demand for water and wastewater service from the Department increases as population increases in unincorporated parts of the County or in those municipalities that receive service from the Department.

A number of studies have been published estimating water demands for Lake County as well as the entire region. One study titled the "Regional Water Demand Scenarios for Northeastern Illinois: 2005-2050", prepared for the Chicago Metropolitan Agency for Planning (CMAP) by the Department of Geography and Environmental Resources of Southern Illinois University Carbondale, projected increases in the county population from 2005 through 2050. The demand for water and wastewater services is expected to increase over the 2016 through 2050 planning period. The increase in demand for service may lead to expansion of County water and wastewater infrastructure and services.

System Expansion Project Examples

- Water Reclamation Facility expansion to accommodate higher flows
- Water main or sewer extension to a new subdivision
- Pipeline replacement with larger diameter pipe to increase capacity

Section 4

Capital Improvement Program

2016-2020

Section 4
Capital Improvement Program (2016-2020)

The Lake County Public Works Department owns and operates a large set of assets. At any point in time, there are a number of capital projects underway to preserve, expand or modernize these assets. Some projects focus on planning, while others focus on design or construction. This capital improvement program identifies, schedules and budgets these projects so that they can be effectively managed and implemented.

PROJECT PHASES

Every capital project is different; however, there are common elements to all projects. The three phases of capital projects are planning, design and construction.

Planning

Project planning activities include recognizing the need for a project, comparing various alternatives to address the needs, and estimating the project costs. Project planning is the least expensive phase of a project, but decisions made during planning will drive construction and operating costs over the life of the project.

Design

Design describes a project through drawings and specifications. This effort typically involves detailed engineering work to transform the project concepts into documents that are used to obtain bids from contractors and then to construct the project.

Construction

The construction phase includes bidding, awarding, scheduling, constructing and inspecting the project progress. This phase of a project requires the largest expenditure of capital funds.

The duration of each project phase varies depending on the type and size of the project. Capital projects can take several years from the start of planning through the end of construction. The timing of the project phases are scheduled so that capital fund expenditures are planned in advance.

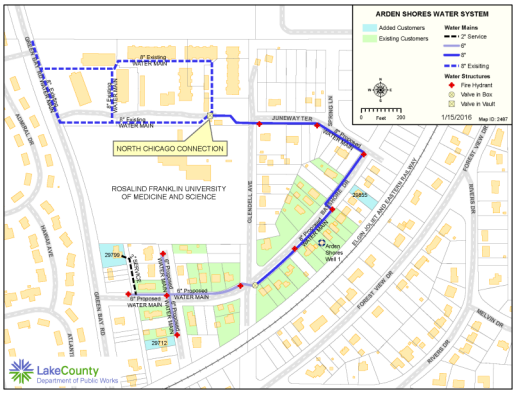
This section describes the individual capital projects planned for the period of 2016 through 2020. The tables following these descriptions provide timing and cost estimates for each initiative.

PROJECT DESCRIPTIONS

Arden Shores Water Main Replacement

Project Description: Replacement of deteriorating water system to comply with IEPA requirements.

Goals: To improve water system reliability and allow for expansion of water service to additional customers. The existing well system is being replaced with Lake Michigan Water through an interconnection with the City of North Chicago.



Fiscal Year	Cost
2016	$575,000

Consultant Services

Project Description: Annual costs for professional engineering consultants to evaluate potential improvements and projects throughout the LCPW systems.

Goals: Provide planning, design and construction-related services to produce the most cost-effective projects.

Fiscal Year	Cost
2016	$400,000

Corporate Woods Reservoir Improvements

Project Description: Expansion of the existing Corporate Woods Reservoir in Vernon Hills by 500,000 gallons.

Goals: Increase system capacity to provide uninterrupted service to customers during system repairs and miscellaneous shutdowns for maintenance.

Fiscal Year	Cost
2016	$70,000
2017	$1,550,000
Total	$1,620,000

Countryside Lake Water Tower Refurbishment

Project Description: The Countryside Lake water tower will be painted and refurbished to meet current American Water Works Association standards.

Goals: Improve the appearance, extend service life and meet current safety standards.

Fiscal Year	Cost
2016	$200,000
Total	$200,000

Countryside Manor Water Tower Replacement

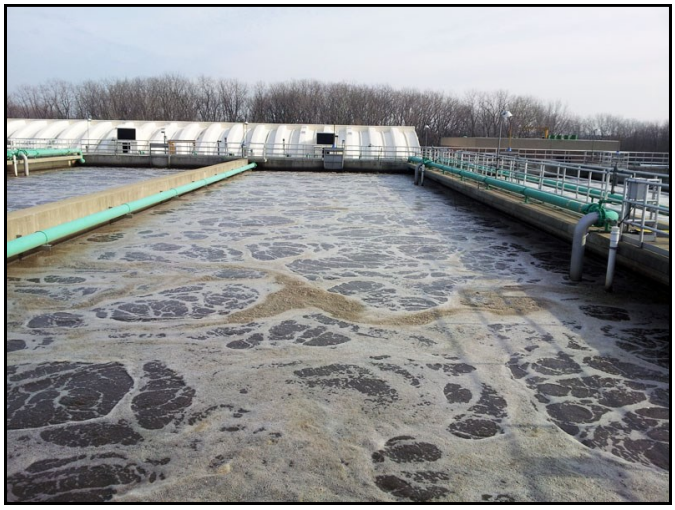
Project Description: The water tower for Countryside Manor will be removed and replaced since it has reached the end of its service life. The capacity will be increased from 40,000 gallons to 150,000 gallons to provide additional system storage and fire flow.

Goals: Increase emergency storage and provide adequate fire protection.

Fiscal Year	Cost
2016	$1,000,000
Total	$1,000,000

Des Plaines River WRF Improvements

Project Description: Improvements to the wastewater treatment processes, HVAC system upgrades, increased filtration capacity and addition of a biosolids drying facility. The standby power system will be improved with a new generator. Facility buildings will be updated for energy efficiency and structural integrity to increase service lives.



Goals: Increase treatment plant reliability during power outages, promote energy efficiency, maintain assets and incorporate additional treatment processes to meet more stringent IEPA standards.

Fiscal Year	Cost
2015	$33,200,000
2016	$100,000
Total	$33,300,000

East Main Pump Station Refurbishment

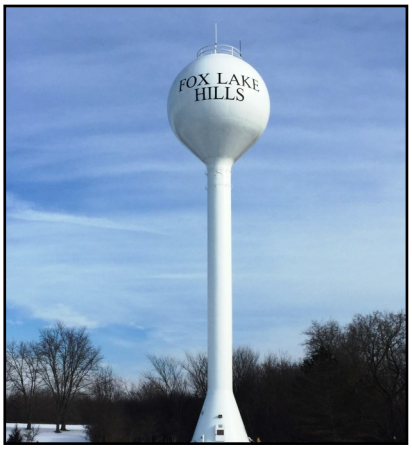
Project Description: Upgrades to control valves, electrical power systems, and replacement of the existing automatic screens with grinders.

Goals: Improve station reliability and eliminate a solid waste handling operation at this facility.

Fiscal Year	Cost
2016	$2,450,000
Total	$2,450,000

Fox Lake Hills Reservoir and Booster Station

Project Description: Construction of a reservoir and booster pump system to deliver Lake Michigan water to area residents.



Goals: Improved water quality and long-term sustainability as well as increased pressure and ability to meet fire flow demands.

Fiscal Year	Cost
2016	$1,300,000
Total	$1,300,000

Grandwood Park/Bridlewood Reservoir and Booster Station

Project Description: Improvements to the Bridlewood Reservoir in Grandwood Park to deliver Lake Michigan water to area residents.

Goals: Improved water quality and long-term sustainability as well as increased pressure and ability to meet fire flow demands.

Fiscal Year	Cost
2016	$750,000
Total	$750,000

Gregg's Landing Reservoir Improvements

Project Description: Expansion of the Gregg's Landing reservoir in Vernon Hills by 500,000 gallons.

Goals: Increase system capacity to provide uninterrupted service to customers during system repairs and miscellaneous shutdowns for maintenance.

Fiscal Year	Cost
2016	$120,000
2017	$1,550,000
Total	$1,670,000

Lake County Public Works Administration and Maintenance Building

Project Description: Refurbishment of the Maintenance building to include a new roofing system, replacement of overhead doors, addition of two garage bays, ADA compliant restrooms and addition of a training room.

Goals: To extend the structure's useful life and create additional vehicle and equipment storage.

Fiscal Year	Cost
2016	$1,500,000
Total	$1,500,000

Midland Lift Station Force Main Improvements

Project Description: Phased replacement of approximately 5,350 feet of existing 10-inch asbestos cement pipe (ACP) force main constructed over 50 years ago.

Goals: Improve the structural integrity of the pipe, increase the life of the asset and increase capacity of the force main.

Fiscal Year	Cost
2017	$455,000
2019	$455,000
Total	$910,000

Mill Creek WRF Filter Upgrades

Project Description: Replacement of the existing sand filters at Mill Creek plant with a disk filter system.

Goals: Improve treatment process efficiency to meet more stringent IEPA standards.

Fiscal Year	Cost
2018	$65,000
2019	$1,040,000
Total	$1,105,000

Mill Creek WRF Process Improvements

Project Description: Installation of additional piping and design of process improvements to increase treatment capacity and efficiency.

Goals: Enhance biological nutrient removal (BNR) efficiency and process efficiency to meet more stringent IEPA requirements.

Fiscal Year	Cost
2016	$1,040,000
2018	$70,000
2019	$1,040,000
Total	$2,150,000

Northeast Central (NEC) Gravity Interceptor Sewer Refurbishment

Project Description: As a result of development expansion within Grayslake, additional capacity will be required within the Northeast Central sewer system. Sewer pipes will be constructed to provide additional sewer system capacity.

Goals: Increase capacity of the interceptor sewer system to accommodate additional customers and higher demand.

Fiscal Year	Cost
2017	$150,000
2018	$1,800,000
Total	$1,950,000

Oak Terrace Water System & West Oak Water System

Project Description: Investigate improvements to the West Oak well and the Oak Terrace water system.

Goals: Replace aging system components to extend service life and improve reliability of service to customers.

Fiscal Year	Cost
2016	$30,000
2017	$315,000
Total	$345,000

Pekara Water System

Project Description: Investigate the replacement of the groundwater well supply with Lake Michigan water through the Village of Buffalo Grove.

Goals: Improved water quality and long-term sustainability.

Fiscal Year	Cost
2016	$530,000
Total	$530,000

Petite Lake Pump Station Refurbishment

Project Description: The 35-year-old electrical controls are outdated and obsolete and require replacement. In addition, new roofs, paint, tuck pointing and general refurbishment is required.

Fiscal Year	Cost
2017	$20,000
2018	$80,000
2019	$600,000
Total	$700,000

Goals: To increase the service life and reliability for this major pump station.

Rollins Road Pump Station Refurbishment

Project Description: Electrical controls are outdated and obsolete and require replacement. In addition new roofs, paint, tuck pointing and general refurbishment is required.

Goals: To increase the service life and reliability for this major pump station.

Fiscal Year	Cost
2018	$20,000
2019	$80,000
2020	$1,500,000
Total	$1,600,000

Route 120 Reservoir Improvements

Project Description: Increase system capacity in the Route 120 water reservoir.

Goals: To ensure uninterrupted service to customers during system repairs and miscellaneous shutdowns for maintenance.

Fiscal Year	Cost
2017	$1,650,000
Total	$1,650,000

Route 22 Sanitary Sewer Relocation

Project Description: The Illinois DOT is in the early phase of designing an improvement to approximately 3,300 feet of IL Route 22.

Goals: To move existing pipelines outside of the limits of pavement and right of way.

Fiscal Year	Cost
2018	$100,000
2019	$1,080,000
Total	$1,180,000

Route 22 to Ela Lift Station Relief Sewer

Project Description: Installation of a 12-inch to 18-inch diameter sanitary relief sewer parallel to the existing sewer.

Goals: To allow for additional sewage conveyance in the relief sewer to minimize and/ or eliminate the number of Sanitary Sewer Overflows (SSOs) tributary to this sewer system.

Fiscal Year	Cost
2017	$70,000
2018	$775,000
Total	$845,000

Sewer and Force Main Rehabilitation

Project Description: Annual program to rehabilitate older sewers.

Goals: Improve flow characteristics, restore pipe strength and extend the service life of existing sewers based on the Sanitary Sewer Assessment Program.

Fiscal Year	Cost
2016	$330,000
Total	$330,000

Sewer System Infiltration and Inflow Assessment

Project Description: Several regional and local sewers show evidence of significant infiltration and inflow. This study will assess the extent of the problem by installing flow meters and monitoring flow characteristics under normal conditions and under wet, rainy conditions.

Goals: To quantify the extent of the inflow and infiltration entering the Lake County Public Works sewer system from neighboring community sewers.

Fiscal Year	Cost
2016	$200,000
Total	$200,000

Investigation Photo **Installation Photo**

South Central Motor Control Cabinet (MCC) Electrical Rehabilitation

Project Description: Updates to certain outdated electrical motor control centers to comply with current electrical arcflash code.

Goals: Improve safety by updating Motor Control Center facilities that are outdated and are no longer serviceable with replacement parts.

Fiscal Year	Cost
2016	$100,000
Total	$100,000

Southeast Central Interceptor Sewer

Project Description: Rehabilitation and heavy cleaning of deteriorated sections of the Southeast Central Interceptor sewer.

Goals: Restore the integrity of this pipe to extend service life and maintain capacity.

Fiscal Year	Cost
2018	$2,665,000
2019	$2,665,000
Total	$5,330,000

Southeast Interceptor Sewer

Project Description: Rehabilitation and heavy cleaning of deteriorated sections of the Southeast Interceptor sewer.

Goals: Restore the integrity of this pipe to extend service life and maintain capacity.

Fiscal Year	Cost
2018	$4,695,000
2019	$4,695,000
Total	$9,390,000

Supervisory Control and Data Acquisition (SCADA) System

Project Description: Improvements to this electronic linkage among the LCPWD facilities will employ state-of-the-art equipment to convert from telephone line data transmission to wireless (radio) data transmission for over 150 water and wastewater facilities.

Goals: Enhance and centralize facility operations and improve data collection and transmission.

Fiscal Year	Cost
2016	$700,000
Total	$700,000

Teal Lane Force Main Connection

Project Description: Redirect sewage flows from the Teal Lane force main to the Buffalo Grove force main.

Goals: Improve capacity of Route 22 lift station by diverting flows to Buffalo Grove.

Fiscal Year	Cost
2016	$210,000
Total	$210,000

Vernon Hills WRF Plant Improvements

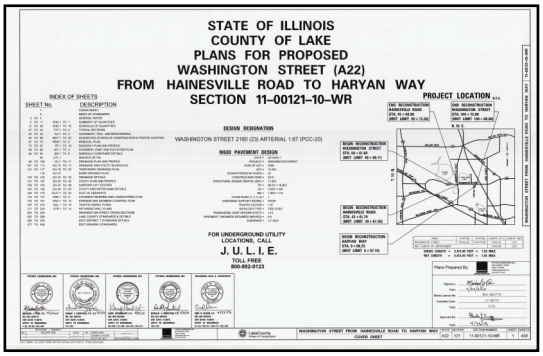
Project Description: This project targets overall plant repairs including service door replacements, alarm gas sensors, belt press parts, new piping and electrical improvements to operate the blowers by generator when necessary.

Goals: Replace aging system components to extend service life and improve reliability.

Fiscal Year	Cost
2016	$600,000
Total	$600,000

Washington Street Utility Replacement Phase II

Project Description: Due to the Lake County DOT widening of Washington Street from Hainesville Rd to Haryan Way, LCPW had to relocate a sanitary sewer lift station, force main and water mains.



Goals: Increase the useful life of the sewer and water system while avoiding conflicts with the widening of Washington Street.

Fiscal Year	Cost
2016	$400,000
Total	$400,000

Water Main Replacements

Project Description: Annual program to replace aging water mains which are subject to breaks and failures that can interrupt service to customers.

Goals: Improve reliability of the water system and extend service life of infrastructure based on Water Main Assessment Program.

Fiscal Year	Cost
2016	$1,620,000
Total	$1,620,000

Water Tower Refurbishment

Project Description: The Vernon Hills (Hawthorn), Wildwood and Brooks Farm water towers will be painted and refurbished to meet current American Water Works Association standards.

Goals: Improve the appearance, extend the service lives and meet current safety standards of these water towers.

Fiscal Year	Cost
2016	$230,000
2017	$230,000
2018	$230,000
Total	$690,000

Wilson Rd and Rollins Rd Sewer and Structure Rehabilitation

Project Description: Repair existing 30-foot-deep junction chamber located under the intersection of Wilson and Rollins Road. This structure connects large interceptor sewers transmitting flows to the Fox River Regional Water Reclamation Facility. Further rehabilitation is planned for the large diameter interceptor sewers as well.

Goals: To improve the structural integrity of the chamber and extend the service life of the structure and interceptor sewers.

Fiscal Year	Cost
2016	$2,575,000
2019	$100,000
2020	$5,400,000
Total	$8,075,000

2016 CAPITAL IMPROVEMENT PLAN

Project Title	Project Description	Phase	Preservation	Modernization and Compliance	Expansion
Arden Shores Water Main Replacement	Replace old water system	C		$575,000	
Consultant Services	Evaluation of potential projects	P		$400,000	
Corporate Woods Reservoir Improvements	Reservoir expansion	D		$70,000	
Countryside Lake Water Tower Refurbishment	Water tower refurbishment	D,C	$200,000		
Countryside Manor Water Tower Replacement	Replace tower to increase emergency storage	C	$500,000		$500,000
Des Plaines Water Reclamation Facility Improvements	Construction Testing Services	C	$20,000	$80,000	
East Main Pump Station Refurbishment	Electrical and valve upgrades	C	$490,000	$1,960,000	
Fox Lake Hills Reservoir and Booster Station	System upgrades to deliver Lake Michigan water to area residents	C		$1,300,000	
Grandwood Park/Bridlewood Reservoir and Booster Station	System upgrades to deliver Lake Michigan water to area residents	C		$750,000	
Gregg's Landing Reservoir Improvements	500,000 gallon reservoir	D		$120,000	
LCPW Administration and Maintenance Building	Rehabilitation to building and adds a bay to maintenance garage	C	$750,000		$750,000
Mill Creek WRF Process Improvements	Additional piping, electrical upgrades, etc.	C		$1,040,000	
Oak Terrace Water System and West Oak Water System	Investigation of improvements to the system	D		$30,000	
Pekara Water System	Investigate replacing well water supply with Lake Michigan water	C		$530,000	
Sewer and Forcemain Rehabilitation	Sewer rehabilitation	P,D,C	$330,000		
Sewer System Infiltration and Inflow Assessment	Yearly assessment of inflow and infiltration level improvement	C		$200,000	
South Central MCC Electrical Rehabilitation	Updates to comply with current electrical archflash code	D		$100,000	
Supervisory Control and Data Acquisition System	Wireless electronic data transfer upgrades	C		$700,000	
Teal Ln Forcemain	Improve capacity of lift station	D,C		$210,000	
Vernon Hills WRF Plant Improvements	Treatment plant site improvements	D,C	$300,000	$300,000	
Washington Street Utility Replacement Phase II	Sewer and water main realignment	C		$400,000	
Water Main Replacements	Replacement of aging water mains	P,D,C	$1,620,000		
Water Tower Refurbishment	Water tower refurbishment at various locations	D,C	$230,000		
Wilson Rd and Rollins Rd Sewer and Structure Rehabilitation	Rehabilitation to sewer located within a major County DOT intersection	C	$2,575,000		
Subtotal			**$7,015,000**	**$8,765,000**	**$1,250,000**
Total					***$17,030,000***

Phases:

P = Planning D = Design C = Construction

2017 CAPITAL IMPROVEMENT PLAN

Project Title	Project Description	Phase	Preservation	Modernization and Compliance	Expansion
Consultant Services	Evaluation of potential projects	P		$400,000	
Corporate Woods Reservoir Improvements	Reservoir expansion	C		$1,550,000	
Gregg's Landing Reservoir Improvements	Reservoir expansion	C		$1,550,000	
Midland Lift Station Forcemain Improvements	Replacement and upsizing of existing forcemain	D,C		$455,000	
Northeast Central (NEC) Interceptor Sewer Refurbishment	Increase interceptor sewer capacity	D	$150,000		
Oak Terrace Water System and West Oak Water System	Investigation of improvements to the system	C		$315,000	
Petite Lake Pump Station Refurbishment	Electrical updates and building rehabilitation.	P	$20,000		
Route 120 Reservoir Improvements	Increase system reliability	C		$1,650,000	
Route 22 to Ela Lift Station Relief Sewer	Improve sewage conveyance to minimize SSOs.	D		$35,000	$35,000
Sewer and Forcemain Rehabilitation	Sewer rehabilitation	P,D,C	$330,000		
Water Main Replacements	Replacement of aging water mains	P,D,C	$1,620,000		
Water Tower Refurbishment	Water tower refurbishment at various locations	D,C	$230,000		
Subtotal			**$2,350,000**	**$5,955,000**	**$35,000**
Total					***$8,340,000***

Phases:
P = Planning D = Design C = Construction

2018 CAPITAL IMPROVEMENT PLAN

Project Title	Project Description	Phase	Preservation	Modernization and Compliance	Expansion
Consultant Services	Evaluation of potential projects	P		$400,000	
Mill Creek WRF Filter Upgrades	Replacement of sand filters with more efficient disc filters	D		$65,000	
Mill Creek WRF Process Improvements	Process improvements	D		$70,000	
Northeast Central (NEC) Interceptor Sewer Refurbishment	Increase interceptor sewer capacity	C	$1,800,000		
Petite Lake Pump Station Refurbishment	Electrical updates and building rehabilitation.	D	$80,000		
Rollins Road Pump Station Refurbishment	Electrical updates and building rehabilitation.	P	$20,000		
Route 22 Sanitary Sewer Relocation	Relocate sewer outside of roadway improvements	D		$100,000	
Route 22 to Ela Lift Station Relief Sewer	Improve sewage conveyance to minimize SSOs.	C		$387,500	$387,500
Sewer and Forcemain Rehabilitation	Sewer rehabilitation	P,D,C	$330,000		
Southeast Central Interceptor Sewer	Rehabilitation and heavy cleaning of deteriorated sewers	D,C	$2,665,000		
Southeast Interceptor Sewer	Rehabilitation and heavy cleaning of deteriorated sewers	D,C	$4,695,000		
Water Main Replacements	Replacement of aging water mains	P,D,C	$1,620,000		
Water Tower Refurbishment	Water tower refurbishment at various locations	D,C	$230,000		
Subtotal			**$11,440,000**	**$1,022,500**	**$387,500**
Total					***$12,850,000***

Phases:
P = Planning D = Design C = Construction

2019 CAPITAL IMPROVEMENT PLAN

Project Title	Project Description	Phase	Preservation	Modernization and Compliance	Expansion
Consultant Services	Evaluation of potential projects	P		$400,000	
Midland Lift Station Forcemain Improvements	Replacement and upsizing of existing forcemain	D,C	$455,000		
Mill Creek WRF Filter Upgrades	Replacement of sand filters with more efficient disc filters	C		$1,040,000	
Mill Creek WRF Process Improvements	Process improvements	C		$1,040,000	
Petite Lake Pump Station Refurbishment	Electrical updates and building rehabilitation.	C	$600,000		
Rollins Road Pump Station Refurbishment	Electrical updates and building rehabilitation.	D	$80,000		
Route 22 Sanitary Sewer Relocation	Relocate sewer outside of roadway improvements	C		$1,080,000	
Sewer and Forcemain Rehabilitation	Sewer rehabilitation	P,D,C	$330,000		
Southeast Central Interceptor Sewer	Rehabilitation and heavy cleaning of deteriorated sewers	D,C	$2,665,000		
Southeast Interceptor Sewer	Rehabilitation and heavy cleaning of deteriorated sewers	D,C	$4,695,000		
Water Main Replacements	Replacement of aging water mains	P,D,C	$1,620,000		
Wilson Rd and Rollins Rd Sewer and Structure Rehabilitation	Refurbishment to interceptor sewers	D	$100,000		
Subtotal			**$10,545,000**	**$3,560,000**	**$0**
Total					***$14,105,000***

Phases:

P = Planning D = Design C = Construction

2020 CAPITAL IMPROVEMENT PLAN

Project Title	Project Description	Phase	Preservation	Modernization and Compliance	Expansion
Consultant Services	Evaluation of potential projects	P		$400,000	
Rollins Road Pump Station Refurbishment	Electrical updates and building rehabilitation.	C	$1,500,000		
Sewer and Forcemain Rehabilitation	Sewer rehabilitation	P,D,C	$330,000		
Water Main Replacements	Replacement of aging water mains	P,D,C	$1,620,000		
Wilson Rd and Rollins Rd Sewer and Structure Rehabilitation	Refurbishment to interceptor sewers	D,C	$5,400,000		
Subtotal			**$8,850,000**	**$400,000**	**$0**
Total					***$9,250,000***

Phases:
P = Planning D = Design C = Construction

Section 5
Funding

Section 5
Funding

The Lake County Public Works Department's budget is an enterprise fund. As such, it is entirely supported by funds generated within the department, with no County General Fund Tax support. The enterprise fund is primarily composed of water and sewer connection fees, and user fees. The Department's capital projects are funded by departmental income and reserves.

FUNDING REQUIREMENTS

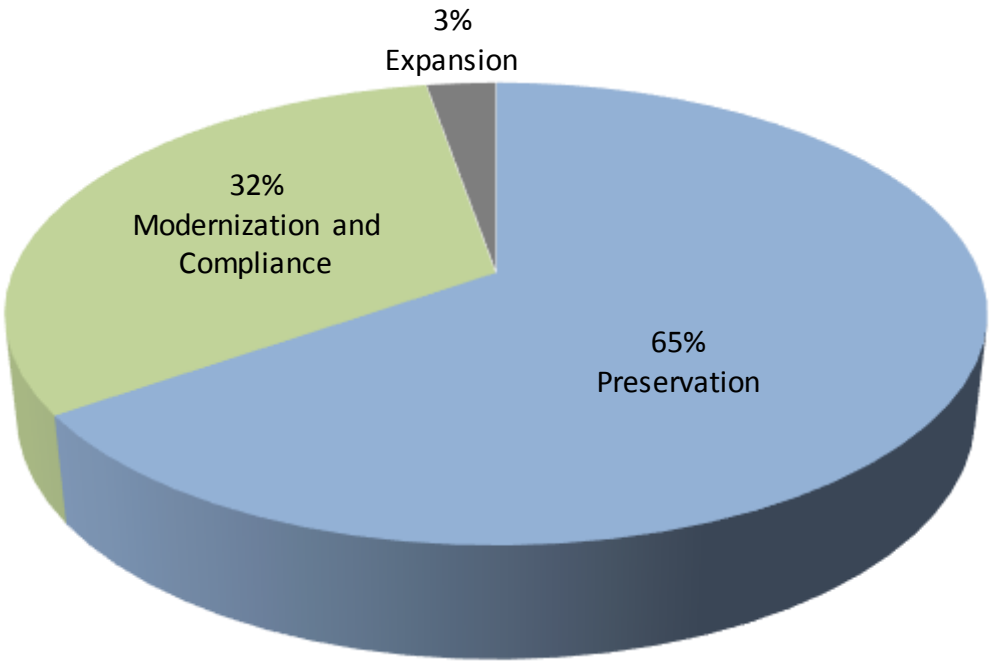
The Capital Improvements Plan for the years 2016 through 2020 is presented in the previous section. The annual funding requirements for these improvements are summarized in Table 5-1 below. These requirements include a breakdown among the three major priorities: system preservation, system modernization and compliance and system expansion. The funding breakdown by priorities is illustrated in Figure 5-1. The total funding requirement for the period is $61,575,000.

Table 5-1
Funding Requirements

Year	Preservation	Modernization and Compliance	Expansion	Total
2016	$7,015,000	$8,765,000	$1,250,000	$17,030,000
2017	$2,350,000	$5,955,000	$35,000	$8,340,000
2018	$11,440,000	$1,022,500	$387,500	$12,850,000
2019	$10,545,000	$3,560,000	$0	$14,105,000
2020	$8,850,000	$400,000	$0	$9,250,000
Total	**$40,200,000**	**$19,702,500**	**$1,672,500**	**$61,575,000**

As shown in the following figure, a majority of the funding requirements are allocated to system preservation, followed by system modernization and compliance, and finally the smallest portion is used for system expansion.

Figure 5-1
Funding Requirements



FUNDING SOURCES

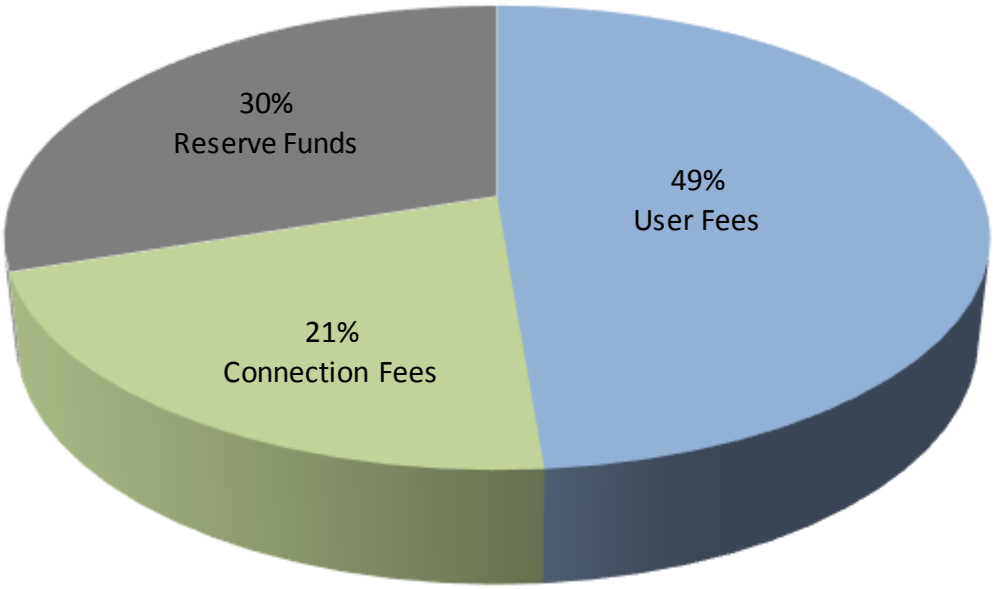
The Department uses various major funding sources for capital improvements: user fees, connection fees, and reserve funds. The anticipated use of these funding sources for the Capital Improvements Plan from 2016 through 2020 is shown in Table 5-2 and illustrated in Figure 5-2.

Table 5-2
Funding Requirements

Source	Preservation	Modernization and Compliance	Expansion	Total
User Fees	$21,625,000	$8,375,000	$0	$30,000,000
Connection Fees	$0	$11,327,500	$1,672,500	$13,000,000
Reserve Funds	$18,575,000	$0	$0	$18,575,000
Total	**$40,200,000**	**$19,702,500**	**$1,672,500**	**$61,575,000**

Figure 5-2 below illustrates that 49% of the funds are derived from user fees, 21% from connection fees and 30% from reserve funds.

Figure 5-2
Funding Sources



Appendix

Appendix
Project Selection Process

This appendix summarizes the criteria used to determine which projects should be added to the Capital Improvement Plan. Lake County Public Works has developed assessment criteria to determine when capital assets need to be repaired, upgraded or replaced.

SANITARY SEWER ASSESSMENT

Every year the Maintenance Division of the Public Works Department captures video footage of 10 percent of the County's sanitary sewer pipes. The LCPW TV truck sets up in a given area of the County and inserts a camera into a manhole, the camera is on wheels and "crawls" down the pipe recording video as it goes. The camera technicians report the condition of the pipe utilizing the National Association of Sewer Service Companies (NASSCO) rating system for inspecting sewer pipes.

This rating system consists of a number range from 1-5 with the following meaning:

- 1 = acceptable structural condition;
- 2 = minimal collapse risk;
- 3 = collapse unlikely in near future,
- 4 = collapse likely in foreseeable future;
- 5 = collapsed or collapse imminent.

Every year the pipes with the worst NASSCO rating are added to the annual sanitary sewer rehabilitation capital project.

WATER MAIN ASSESSMENT

Water mains are pipes that deliver pressurized water to homeowners and businesses therefore these pipes cannot be televised and assessed like sewer pipes. Instead Lake County Public Works relies on industry standards for assessment of conditions that take into account pipe material, age and previous water main break history to determine which sections of water main should be replaced as part of the annual water main replacement capital project.

WATER TOWER ASSESSMENT

Water towers are one of the County's most visible assets. An engineering consultant routinely inspects all water towers on a five-year cycle. If the tower's exterior or interior coating is deteriorating, then that tower is added to the list for painting in the next cycle.

BUILDING/STRUCTURE ASSESSMENT

Lake County Public Works maintains many buildings throughout the County. In order to rank the condition of the facility infrastructure Lake County is creating an inventory of all buildings and their assessment rating. Facilities are ranked according to their need for repairs and the facilities with the least desirable rating are prioritized in the capital improvement plan for repairs and upgrades.