

SEWER COLLECTION SYSTEM ANNUAL REPORT



2014/2015

City of Lancaster



A report of the history, current assessment, budget, activities, and the achievements of the Lancaster, California Sewer Collection System in Fiscal Year 2014/2015.

Sewer Collection System Annual Report

LANCASTER, CALIFORNIA 2014/2015

System Overview:

A Sanitary Sewer Collection System is a series of pipes, manholes, and lift stations that convey wastewater from homes and businesses to a treatment plant. The City of Lancaster's (City) sanitary sewer collection system consists of a network of 429 miles of sewer lines, 8,970 sewer manholes, and one sewer lift station. This information is obtained from data input into the City's Geographic Information System. The oldest sewer pipes in the City were installed in 1947; our pipes average age is 32 years old. The estimated value of our sewer collection system is in excess of 300 million dollars. Our goal is to properly manage, operate, and plan for the system to ensure it is a valuable asset for many years to come.

City of Lancaster Sanitary Sewer System Collection History:

The City assumed responsibility for the operation and maintenance of its sanitary sewer system from the County of Los Angeles Consolidated Sewer Maintenance District on July 1, 2008. At that time the City formed Utility Services, a Section of the Public Works Division. Our goal was to reduce the number of sewer overflows and to develop a program for the sustainability of the system.

DID YOU KNOW? SANITARY SEWER MANHOLES IN THE CITY OF LANCASTER VARY IN DEPTH FROM 8 FEET TO UP TO 23 FEET. THAT'S OVER TWO STORIES DEEP!

Working with the State and the County Sanitation District, we developed a maintenance program where we would systematically clean the sewer pipes and inspect them both visually and with cameras. We also developed a program to reduce the amount of harmful materials being discharged into the pipes. With these efforts, we have greatly

reduced the number of overflows and feel we have a reliable plan to prolong the life of our pipes and manage the orderly growth of the sewer system. We are able to accomplish this while keeping costs low and ensuring that property owners are paying only their minimal fair share for the services provided.

Sanitary Sewer Overflow:

A collection system's greatest concern is a sanitary sewer overflow (SSO); this is where a pipe is plugged and raw sewage wastewater flows out of a manhole. SSOs are typically caused by roots growing into the pipes or a buildup of grease. Before the City maintained the system, the City suffered 20 or more SSOs every year. We now average about four. Through following our proactive plan, the SSO spill volume rate in the City was 43.6 gallons/1,000 capita, which was about 30% of the statewide rate of 147 gallons/1,000 capita for a similar sized system.



Maintenance Program:

Cleaning

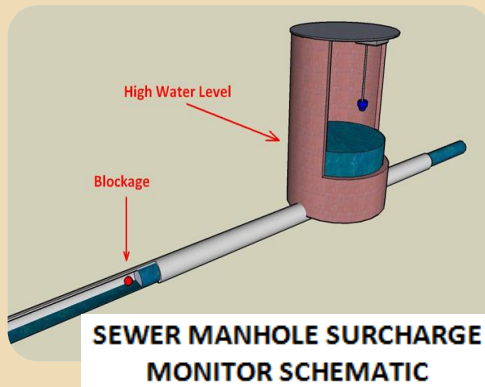
Cleaning consists of pipe flushing and root removal. We clean our pipes regularly using a hydrojet which is a high pressure jetting system that uses water and an optional vacuum to remove debris. This removes grease buildup as well as minor roots and debris to enable the wastewater to flow freely through the pipes. Blocked wastewater causes odors, SSOs, and damages pipes. The objective of sewer pipe cleaning is to prevent future blockages of the sewer system. Roots are also removed by a mechanical cutting rodder or treated with environmentally safe foam. The majority of our maintenance budget is spent on cleaning the sewer lines and removing roots.

Inspections

Waiting for damages or blockages to present themselves is an expensive maintenance strategy. Therefore, we follow a strict inspection schedule to identify problems before they result in SSOs or expensive repairs. The City owns a closed circuit television (CCTV) truck. Our operator sends a camera on a small wheeled vehicle through the sewer lines. It is controlled remotely from inside of the truck and the video is stored for further analysis. Blockages, roots, cracks, and damaged pipes are located and cleaning or repair is scheduled. CCTV greatly enhances the planning of the maintenance and repair programs.

**WOULD YOU BELIEVE? SOME CITY
SANITARY SEWER LINES ARE UP TO
30 INCHES IN DIAMETER; ENOUGH TO
ACCOMMODATE 52 MILLION TOILET
FLUSHES PER DAY!**

When waste water is blocked in a line it will slowly rise and fill a manhole. We have identified the locations where blockages are common. We visually inspect these manholes on a regular basis to look for impending overflows. We have installed surcharge monitors in selected manholes which have sensors on the underside of the manhole cover to measure water levels. These monitors enable us to receive advance notice of elevated flow levels in the manhole so that corrective action can be taken before an overflow occurs. This prevents costly and messy sewer overflows. Surcharge monitors are currently installed at eight locations within the City which had previously experienced sewer overflows.



Vermin Abatement

The City has started a vermin abatement program within sewer manholes. The product used to treat manholes for roaches is called Zone Defense (boric acid). Boric acid, or Boron, is used in many household products; boric acid is safe for humans, unless ingested in large quantities. The product is applied by trained professionals using compressed air with a high pressure hose to spread the product inside of the manhole. The product is pulled from the container and blown through the vent hole on the manhole lid to produce a dusting of powder throughout the manhole. A six-month follow-up inspection of the manhole is performed to evaluate the treatment. If necessary, the manhole is re-treated to eliminate vermin.



Prevention Program:

Fats, Oils, and Grease (FOG)

Keeping harmful substances from going into the sewer is much easier than trying to get them out. Fats, Oils, and Grease are harmful to sewers. FOG feed the bacteria that create hydrogen sulfide gas. Hydrogen sulfide causes a rotten egg smell, is a health risk, and deteriorates sewer pipes. FOG builds up in clumps in pipes and leads to blockages and SSOs.

Food service establishments (restaurants, cafeterias, etc.) produce a significant amount of FOG.



Lancaster is among many cities that work with restaurants to reduce the amount of FOG they send down the drain. Minimally, a business will maintain best management practices to prevent FOG discharge like wiping off of pans and dishes into the trash before they go in the sink. Ideally, a business will have a grease removal device like a grease interceptor or

trap. We are working to educate businesses on how to best reduce their FOG impact on the sewer system.

YOU CAN HELP:

NEVER POUR GREASE DOWN THE DRAIN. PUT IT IN A CAN OR SOAK IT UP IN A PAPER TOWEL AND PUT IT INTO THE TRASH OR SAVE YOUR GREASE & DELIVER TO CITY MAINTENANCE YARD AT 615 W. AVENUE H, FOR RECYCLING.

Industrial Waste Water Discharge

Some businesses manufacture or generate harmful chemicals that pose a health risk and damage sewer pipes, if not properly disposed of or treated. The City is beginning a program to help businesses identify their hazards and ensure they are mitigated.

Capital Improvements:

A capital improvement program helps turn expensive emergency repairs into planned affordable improvements. With an investment as large as our sewer system, financial reserves and good planning are crucial.

As sewer pipes age or are exposed to chemicals, they can wear, crack, or collapse resulting in wastewater flowing out, and ground water seeping into the pipe. Once we have identified the sites in need of repair or replacement, we develop a plan to fix them in the most cost effective manner. New methods such as cured in place lining using trenchless technology to rehabilitate pipes, are proving to be an economical alternative to digging up streets and installing new pipe. The City is utilizing these and other cutting edge techniques to stretch our capital budget. Our trucks, equipment, and pumps require regular overhauls or replacement. We have developed, and are constantly enhancing, our long-term capital improvement program to ensure that major expenses are identified early and financial reserves are established.

Staffing:

The Utility Services Section currently consists of a staff of 23, including the Utility Services Manager, Associate Engineer, Assistant Engineer, Engineering Aide, Industrial Waste Technician 1, Industrial Waste Technician II, Secretary II, Public Works Supervisor, two Lead Maintenance Workers, seven Maintenance Worker IIs and six Maintenance Worker Is.

Training:

Our staff holds memberships in the following organizations:

- National Association of Sewer Service Companies, Inc. (NASSCO),
- Water Environment Federation (WEF),
- American Water Works Association (AWWA),
- California Water & Environment Association (CWEA),
- American Public Works Association (APWA),
- California Land Surveyor’s Association (CLSA), and
- Association for GIS Professionals (URISA).



These organizations provide training and certification to ensure our workers are able to safely and proficiently maintain our system. In fiscal year 2014-2015, staff members received 7 new certifications and 11 re-certifications.

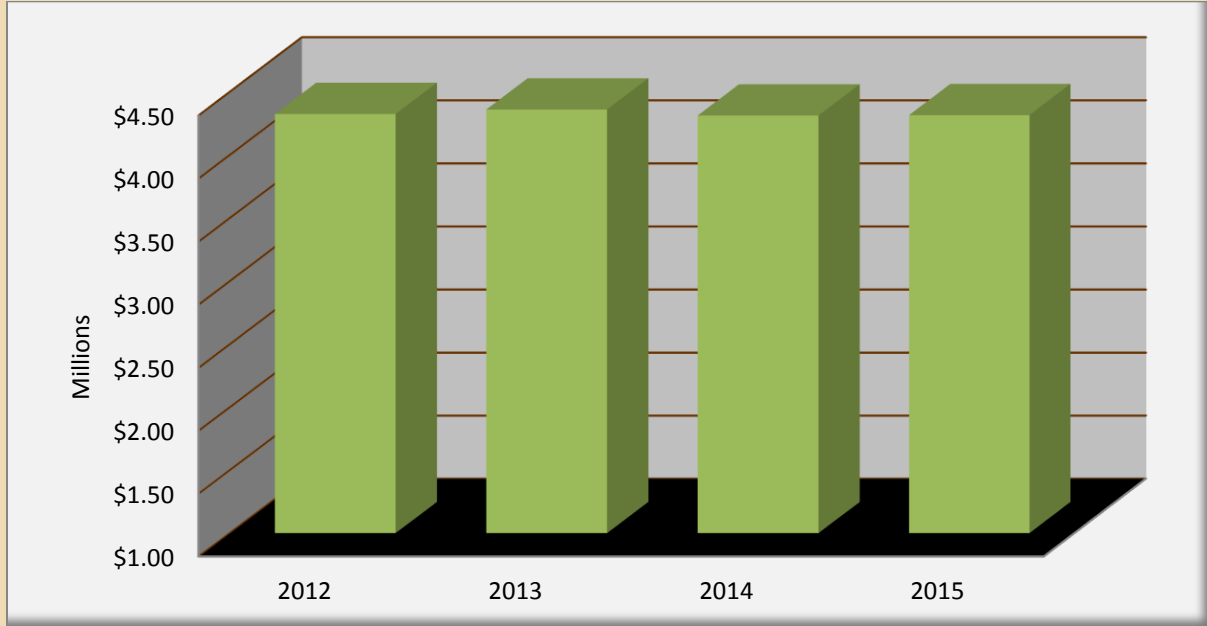
Conclusion:

This year has been an exciting year for the City’s Utility Services Section. The confidence of the crews has grown as we enter our eighth year. Our maintenance, investigation, and prevention programs are proving to be successful and our capital program provides assurance that our system

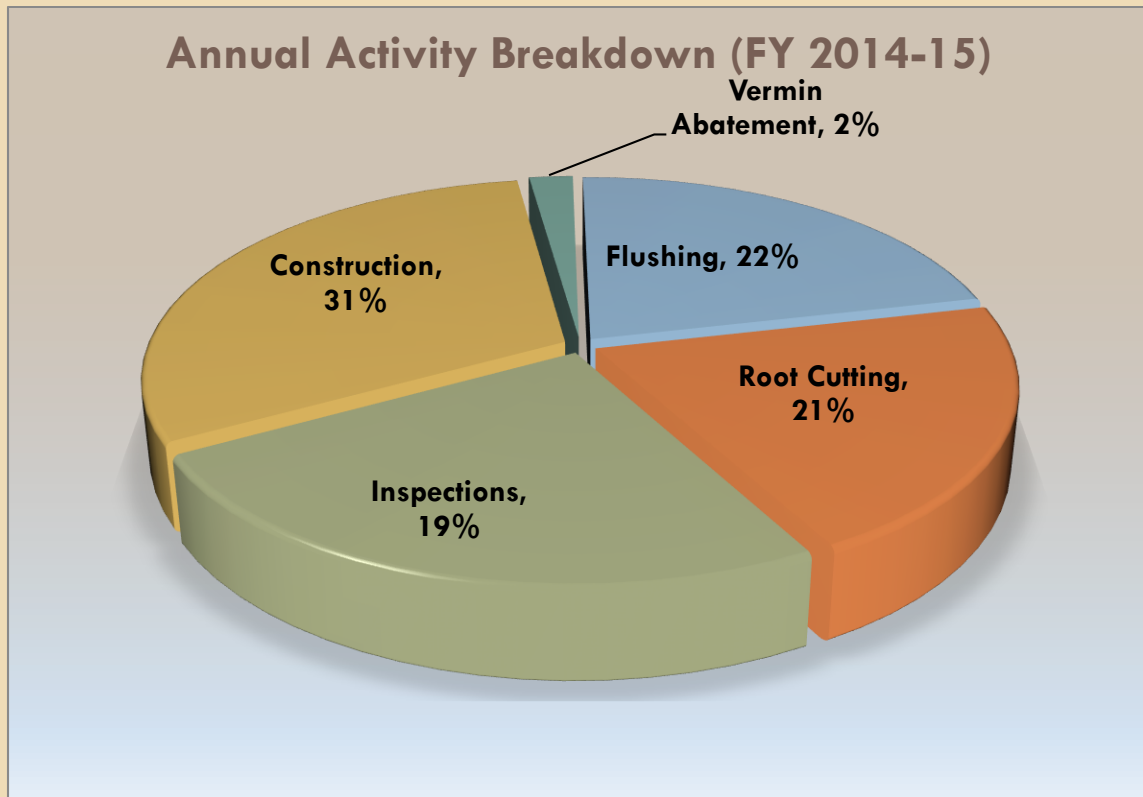
will be successful for future generations. We enjoy our work and we are proud to serve the residents of the City.

Sewer District Revenue:

The City collects fees from property owners whose properties are connected to the sewer system. As shown in the exhibit below, the City has been consistently collecting over \$4,000,000 in sewer charges over the last four years. These funds are used for sewer and equipment maintenance.



Annual Sewer Maintenance Activity at a Glance:



Sewer System Performance Review:

Sewer System Performance	7/1/11 to 6/30/12	7/1/12 to 6/30/13	7/1/13 to 6/30/14	7/1/14 to 6/30/15
<u>Pipe Cleaning:</u>				
Pipe Flushing	179,977 LF, or 34.1 Miles	209,616 LF, or 39.7 Miles	176,880 LF, or 33.5 Miles	257,242 LF, or 48.7 Miles
Root Removal	172,194 LF, or 32.6 Miles	155,967 LF, or 29.5 Miles	111,408 LF, or 21.1 Miles	117,296 LF, or 22.2 Miles
<u>Closed-Circuit TV Inspection:</u>				
	146,203 LF, or 27.7 Miles	167,851 LF, or 31.8 Miles	68,640 LF, or 13 Miles	85,834 LF, or 16.3 Miles
<u>Manholes:</u>				
Inspected	2,268	1,507	96	2,127
Repaired	5	9	3	30
Vermin Abatement			848 Manholes	233 Manholes
<u>Sewer Overflow (SSOs):</u>				
	4	3	5	4
Annual SSO Rate (SSO/100 miles of pipe)	0.93	0.69	1.16	0.93
Portion of SSO Runoff Contained	97%	95%	100%	32% ¹
<u>Main SSO Causes</u>				
Grease	95%	100%	80%	75%
Roots	5%	0%	20%	0%
Other (Vandalism, etc.)				25%

¹. The percentage of run-off contained for fiscal year 2014-2015 is lower, compared to the previous year, due to the fact that two of the four spills occurred in dirt fields where the liquid soaked into the ground and could not be recovered.