SEWER COLLECTION SYSTEM ANNUAL REPORT

2013-2014

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 2013-2014.

Sewer Collection System Annual Report

LANCASTER, CALIFORNIA 2013-2014

System Overview:

A Sanitary Sewer Collection System is a series of pipes, manholes, and lift stations that convey waste water from homes and businesses to a treatment plant. The City of Lancaster's 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 in to the City's Geographic Information System. The oldest sewer pipes in the City were installed in 1947; our pipe's average age is 31 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 of Lancaster formed Utility Services, a Division of Public Works. Our goal was to reduce the number of sewer overflows and to develop a program for the sustainability of the system. 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 its orderly growth. We are able to accomplish this while keeping costs low to ensure property owners are paying only their minimal fair share for the services provided.

DID YOU KNOW? *OVER 99% OF PUBLIC SEWER PIPES IN THE CITY ARE VITRIFIED CLAY PIPE (VCP), HAVING A LIFE EXPECTANCY IN EXCESS OF 100 YEARS, IF WELL MAINTAINED!*

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 water flows out of a manhole. SSO's are typically caused by roots growing into the pipes or a buildup of grease. Before the City maintained the system, Lancaster suffered 20 or more SSO's every year. Through following our proactive plan, we experienced only 5 SSO's last year, which is less than 40% of State average of 13.5 SSO's during 2013-14 for a city our size.

Maintenance Program:

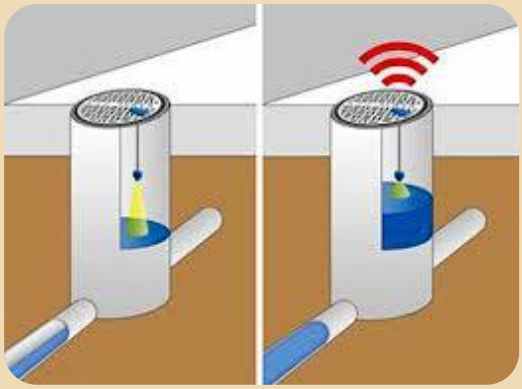
Cleaning

Cleaning consists of pipe flushing and root removal. We clean our pipes regularly using Hydro-Jetting, or high pressure jetting, with water and vacuum. This removes grease buildup as well as minor roots and debris to enable the waste water to flow freely through the pipes. Blocked waste water causes odors, SSO's, 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 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 SSO's 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 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? *SEWER WATER CONTAINS LESS THAN 1% "SOLIDS"*



SEWER MANHOLE SURCHARGE MONITOR SCHEMATIC

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 manholes which have sensors on the underside of the manhole covers 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 previously experienced sewer overflows.

Vermin Abatement

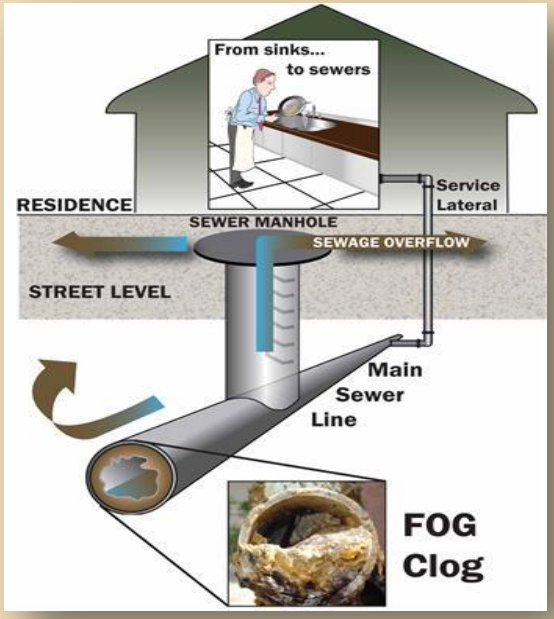
The City has started a vermin abatement program within sewer manholes. The product used to treat manholes for roaches is called Zone Defense (Boric Acid). Boric acid, or Boron, is used in many household products and boric acid is safe for humans unless ingested in large quantities. The product is applied by trained professionals using compressed air with a high pressure hose to spread the product inside the manhole. The product is pulled from the container and blown through the vent hole on

the manhole lid producing 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 feeds 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 SSO's.



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.

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. Lancaster is beginning a program to help businesses identify their hazards and ensure they are mitigated.

***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

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 waste water 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 solution to digging up streets and installing new pipe. Lancaster 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 Division currently consists of a staff of 22, including the Utility Services Manager, Assistant Manager, Associate Engineer, Assistant Engineer, Technician II, two Inspectors, Secretary II, Public Works Supervisor, two Lead Maintenance Workers, seven Maintenance Worker II's, and four Maintenance Worker I.

Training:

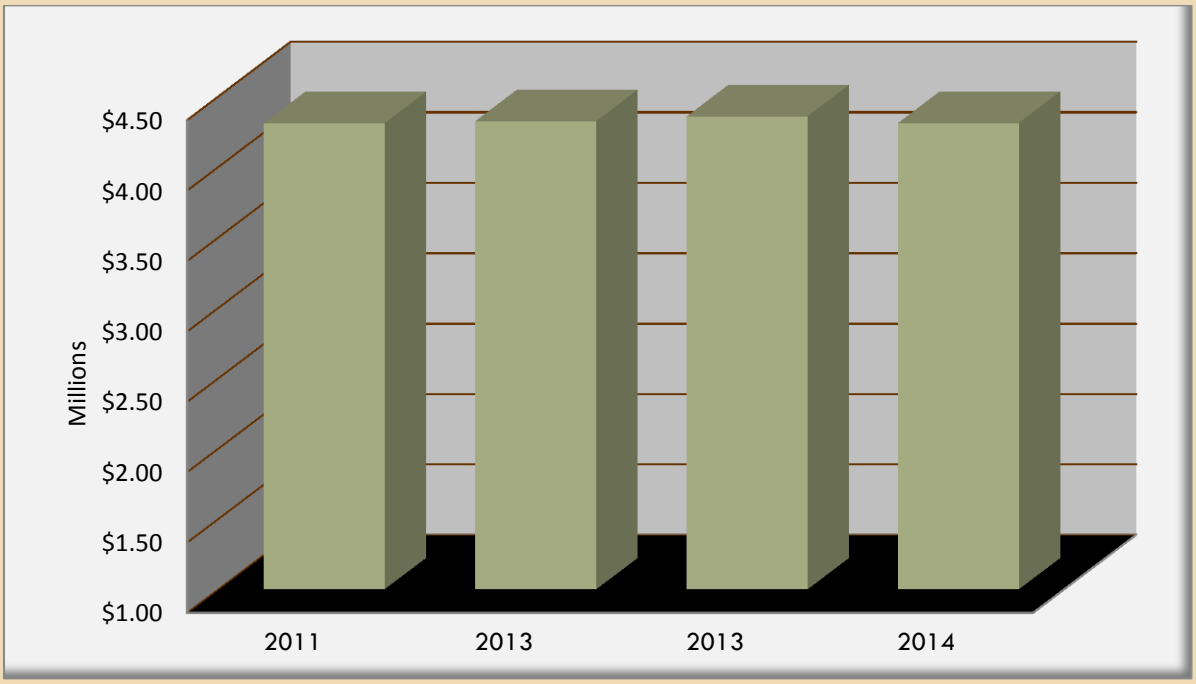
Our staff holds memberships in organizations such as the National Association of Sewer Service Companies, Inc. (NASSCO), Water Environment Federation (WEF), American Water Works Association (AWWA), and California Water & Environment Association (CWEA), American Public Works Association (APWA), California Land Surveyor's Association (CLSA), Association for GIS Professionals (URISA). These organizations provide training and certification to ensure our workers are able to safely and proficiently maintain our system. Staff members received 4 new certifications, 11 re-certifications.

Conclusion:

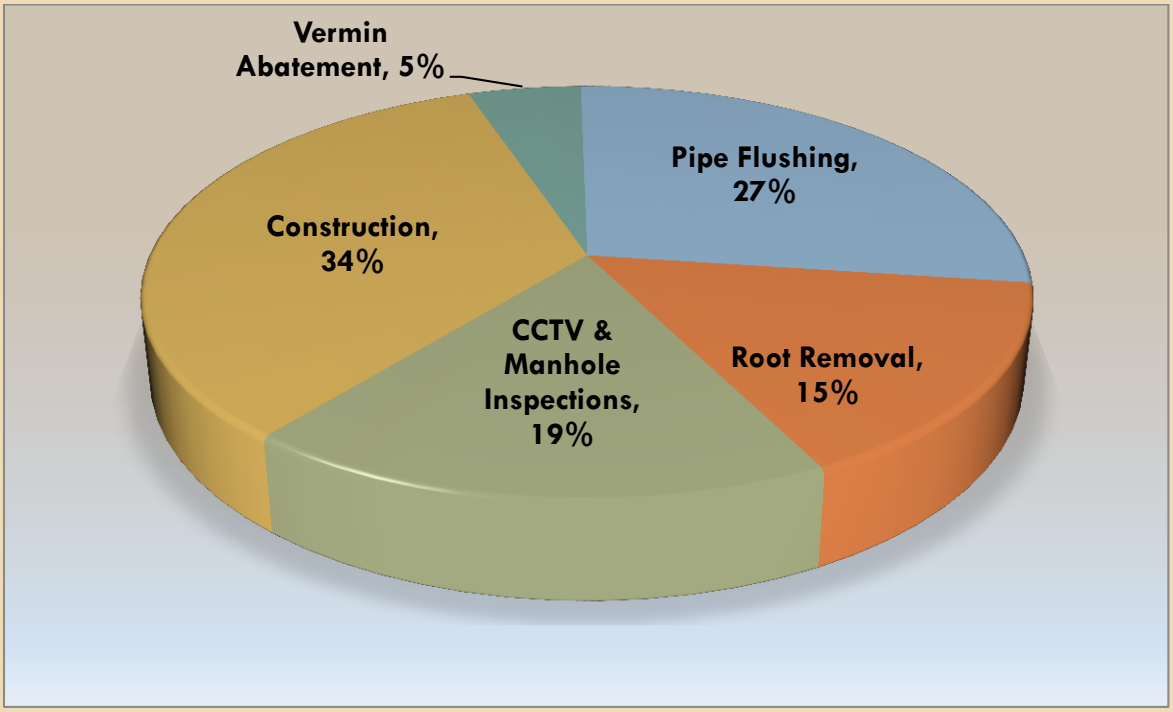
This year has been an exciting year for the City of Lancaster Utility Services Division. The confidence of the crews has grown as we enter our eighth year. Our maintenance, investigation, and prevention programs are proving to be successful and our capital program provides assurance that our system will be successful for generations to come. We enjoy our work and are proud to serve the residents of Lancaster.

Sewer District Revenue:

The City collects fees from owners of properties 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 year. These funds are used for sewer and equipment maintenance.



Annual Sewer Maintenance Activity at a Glance:



Sewer System Performance Review:

Sewer System Performance	7/1/10 to 6/30/11	7/1/11 to 6/30/12	7/1/12 to 6/30/13	7/1/13 to 6/30/14
Pipe Cleaning:				
Pipe Flushing	411,037 LF, or 77.8 Miles	179,977 LF, or 34.1 Miles	209,616 LF, or 39.7 Miles	176,880 LF, or 33.5 Miles
Root Removal	26,081 LF, or 4.9 Miles	172,194 LF, or 32.6 Miles	155,967 LF, or 29.5 Miles	111,408 LF, or 21.1 Miles
Closed-Circuit TV Inspection:	59,244 LF, or 11.2 Miles	146,203 LF, or 27.7 Miles	167,851 LF, or 31.8 Miles	68,640 LF, or 13 Miles
Manholes:				
Inspected	369	2,268	1,507	96
Repaired	18	5	9	3
Vermin Abatement				848 Manholes
Sewer Overflow (SSOs):	10	4	3	5
Annual SSO Rate (SSO/100 miles of pipe)	2.3	0.93	0.69	1.16
Portion of SSO Runoff Contained	98%	97%	95%	100%
Main SSO Causes				
Grease	90%	95%	100%	80%
Roots	10%	5%	0%	20%