

2009 Stormwater Management Utility Report City of Lakewood

March 2010

The Stormwater Management Utility provides services and improvements throughout the City including:

- Maintenance of existing drainage facilities
- Water quality monitoring, testing, and resolution of pollution issues
- Funding for improvements to the drainage system
- Replacement of older, deteriorated facilities

Although progress is being made, tens of millions of dollars of improvements are still needed to protect people and property from flood dangers. Over a period of decades, the Utility will make a significant difference; however, inflation is delaying progress on solving drainage problems. The utility fees have not changed since originally adopted in 1998.

Maintenance

Without maintenance, many drainage facilities lose their capacity to handle the amount of water for which they were designed. Debris is washed into the drainage system where it accumulates and decreases the capacity of inlets, channels, culverts and pipes. Reduced conveyance capacity increases flooding risk.

The Stormwater Management Utility is focused on minimizing damage to property by ensuring the stormwater system is functioning properly. Much of Lakewood's stormwater system is 40 to 70 years old. The following narratives and photographs highlight some of the maintenance efforts and improvement projects of the past year.

The maintenance program is a cyclical program that ensures all facilities are inspected every two years. All obstructions are removed the same year as they are identified during inspection. Last year, the following inspections occurred:

- ❑ 1230 inlets and associated discharge pipes
- ❑ 55 culverts
- ❑ 77 trash racks
- ❑ Eight miles of gulches



Seven cubic yards of trash and debris were removed from one location in Dry Gulch at a cost of \$300.

A street failure under Cedar Drive occurred due to gaps between pipes and manholes under the roadway surface.



Concrete Stabilization Technologies was hired to make the repairs using polyurethane foam. The foam was injected around the pipe to fill the voids and seal the gaps.



This technique was used in five locations for a total cost of \$4,500.

Another pavement failure in a parking lot was caused by a collapsed metal storm sewer.



A contractor was hired to remove the corroded pipe and install a new section of pipe. The repair was completed for \$7,100.



During heavy rain storms, runoff from the Crown Hill driveway would flow across 26th Avenue and flood adjacent properties. A corroded driveway culvert was found during the site inspection



Stormwater Utility crews replaced the culvert and created an asphalt berm to redirect the runoff to a roadside ditch. The work was completed for \$2,300.

Silt, debris, and vegetation can build up in channels, limiting the capacity of the channel. A contractor was hired to restore the channel of South Lakewood Gulch, just west of Reed Street, south of Highland Drive. The project was completed for \$600.



Sediment and vegetation shown above was removed, improving the capacity of the channel.



Fallen trees can trap debris and block the channel during a storm. A large cottonwood that had fallen over the McIntyre Gulch channel was removed by a tree removal contractor.



Construction Projects

The Stormwater Management Utility has several major drainage projects under construction. Before construction can begin the Utility activities include:

- Obtaining input from affected property owners.
- Designing the improvements and preparing plans.
- Acquiring necessary property rights.
- Identifying funding from the Utility's revenue and the Urban Drainage and Flood Control District.
- Receiving bids from contractors.

Construction is underway on the following projects:

North Sanderson Gulch – downstream of Pierce Street between Oregon Avenue and Mexico Place – Construction was completed in 2009 on the initial phase of gulch improvements, wetland enhancements and bike path connections. The second phase of gulch improvements downstream of Pierce Street will be completed in 2010. The estimated total cost is \$750,000. The Stormwater Management Utility and the Urban Drainage and Flood Control District will each contribute \$325,000. The Community Resources Department funded the bike path connections at a cost of \$100,000. Upon completion, the project will narrow the flood plain, reducing the 100-year flood damage potential on 16 properties.



Phase 1 North Sanderson Gulch before construction



Phase 1 North Sanderson Gulch after Construction

Dry Gulch – Richey Park to Zephyr Street – Final design is complete for this project that improves the detention characteristics of the facility located at Richey Park and provides a box culvert to carry 100-year flood flows from the park to an existing open channel near Zephyr Street. Construction of the box culvert is underway and Richey Park work will start spring 2010. This project is a joint project with the Stormwater Management Utility, the Urban Drainage and Flood Control District and the Regional Transportation District in conjunction with RTD's light rail project. Total cost will exceed \$2.0 million, of which the Utility's contribution is \$350,000.

Dry Gulch and North Dry Gulch near Harlan Street – The Utility and the Regional Transportation District are cooperating to provide 100-year storm facilities in the vicinity of Harlan Street and 13th Avenue. These improvements will remove the 100-year flood plain from the light rail line and two properties, and significantly narrow the floodplain on three properties. This work will cost approximately \$2.5 million. The Utility participated by acquiring a portion of the property needed for the work.

Lakewood Gulch – Carr Street to Dudley Street between 7th and 8th Avenues – Construction is underway to correct severe bank erosion along this reach of Lakewood Gulch. Construction will be completed spring 2010. Total cost is estimated to be \$450,000 and is funded entirely by the Urban Drainage and Flood Control District.



Lakewood Gulch before construction



Lakewood Gulch after construction

Drainage Master Planning

North Dry Gulch – from Harlan Street at 13th Avenue to Dover Street at Colfax Avenue - Work will begin in 2010 to review and update the master plan for drainage improvements along North Dry Gulch. The estimated total cost is \$200,000. The Stormwater Management Utility and the Urban Drainage and Flood Control District will each contribute \$100,000. The updated plan will integrate the current construction projects associated with the RTD light rail project with comprehensive drainage planning in the remainder of the watershed.

Marston Lake North Drainageway – from Wadsworth Boulevard at Quincy Avenue to Bear Creek east of Sheridan Boulevard - The Utility is partnering with Jefferson County, Denver Water, the City and County of Denver and the Urban Drainage and Flood Control District to update the drainage master plan. The total cost of the project is \$160,000 and the Utility will contribute \$8,000.

Stormwater Quality

The quality of water in Lakewood's stormwater system affects the health of aquatic life in Lakewood and downstream, including the Platte River. The City is required by the State of Colorado Department of Public Health and Environment (CDPHE) to provide a water quality program designed to:

- Educate people about water quality and actions that can harm or improve water quality.
- Monitor water quality in Lakewood's gulches.
- Test suspected pollutants and eliminate pollutant sources.

The educational effort is widely focused to educate as many groups as possible that can affect water quality. Educational programs during the year included:

- Distributed three brochures titled "Caring for Your Lawn and Garden," "Managing Your Construction Site," and "Managing Your Household Wastes."
- Distributed a booklet focused on pollution prevention designed for industrial and commercial businesses. The West Metro Fire Protection District distributed over 250 booklets during their annual fire protection inspections.
- Distributed 525 mailers encouraging contractors registered with Lakewood to participate in the Red Rocks Community College course on erosion and sediment control.
- Produced the award-winning video "Nailed - Enforcing your National Pollution Discharge Elimination System Permit Requirements."
- Continued periodic airing of "Solutions to Water Pollution" and public service announcements on KLTV-8 and other public access stations.
- Participated in pre-construction meetings, reviewed more than 50 erosion control or stormwater management plans, and provided many courtesy inspections as part of the City's land development process.

- Performed environmental inspections of all municipal facilities to meet current permit requirements, identifying deficiencies and recommending improvements to facilities managers.
- Received the 2009 CDPHE Environmental Excellence Award for efforts to remove phosphorus and nitrate from stormwater flows to Bear Creek.

Several pollution problems were identified and resolved. More than 50 illicit discharges of paint, motor oil, antifreeze, concrete washout, restaurant grease, raw sewage or sediment were remediated. The photos below are examples of activities CDPHE requires the City to find and stop from occurring.



Washing out a concrete truck into the storm sewer and the results in the pipe.



Cleaning fluid being dumped into an inlet.



Drilling fluid being dumped into a roadside ditch.

Samples are taken at suspect locations in the City to identify, track and eliminate pollutants to meet the National Pollution Discharge Elimination System permit requirements.



In February 2009, the CDPHE issued Lakewood an updated National Pollution Discharge Elimination System permit. New requirements include preparing standard operating procedures for all City activities that could create a pollutant discharge. The Utility began preparing the procedures in 2009.

Stormwater effects readily cross jurisdictional boundaries. The Utility's cooperative approach results in cost efficiencies and logical solutions to stormwater issues. Some of the joint project efforts include:

- Shared technical data and costs among Denver, Aurora, Urban Drainage and Flood Control District and Lakewood for implementation of State required permit provisions. The task force has provided data to the Colorado Water Quality Control Commission on rulemaking issues and shared costs such as development of the informational booklet for industrial and commercial businesses.
- Participated as a member of the Bear Creek Watershed Association with all jurisdictions upstream of Bear Creek Reservoir. The watershed that drains into Bear Creek Reservoir is approximately 236 square miles and includes approximately 27,000 septic systems and a variety of other conditions that impact water quality in Bear Creek. Projects include monitoring water quality, wastewater treatment plans, land development and other activities that can affect water quality. The Association's efforts have resulted in a decade of documented water quality improvement in Bear Creek Reservoir. The documented improvement is important information that affects Colorado Water Quality Control Commission hearings and rulemaking decisions.
- Monitored water quality at five sites in Bear Creek Lake Park, seven locations on Turkey and Bear Creeks upstream of the park and six locations along the South Platte River. Other entities involved are the Bear Creek Watershed Association, Denver, Aurora, Urban Drainage and Flood Control District, Denver Regional Council of Governments and United States Geological Survey. Parameters monitored include a variety of biological and chemical constituents. The testing is necessary to meet state permit requirements, establish valid baseline data, evaluate efforts to improve water quality, and determine pollutant sources.

Financial Summary

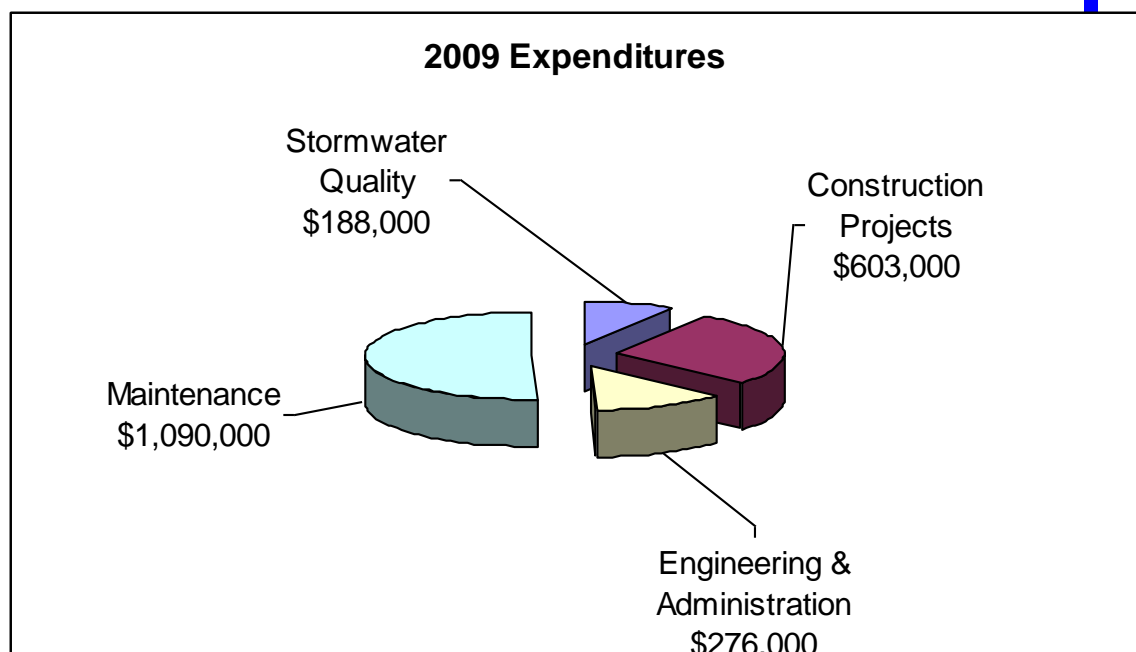
The Utility provides adequate funding for the federally mandated water quality permit requirements and a routine maintenance program. It also provides a moderate amount of funding for construction of drainage system improvements and replacement of facilities. The City's capital need for new drainage improvement was estimated in 1999 to be \$60 million and it will take time to fulfill that need. Construction cost inflation has pushed the need to approximately \$70 million. During this inflationary period, the fee structure has not been increased since it was established in 1998.

The Urban Drainage and Flood Control District has funds available to local communities to improve major drainageways and for maintenance projects. The District's funds are derived from a property tax imposed throughout the metropolitan region. Obtaining District funds for major improvement projects requires City matching funds. For years, Lakewood was not able to match the District's funds and the District spent funds available to Lakewood in other jurisdictions. The Stormwater Management Utility now provides the required matching funds. The District's maintenance projects do not require matching funds.

Urban Drainage and Flood Control District funds used in Lakewood during the year included:

- Capital construction projects: \$275,000
- Maintenance/restoration projects: \$480,000
- Routine maintenance activities: \$42,300

Stormwater Management Utility expenditures do not equal revenue every year. During some years, revenues will exceed expenses as funds are set aside for larger projects. Many projects will require more than \$1 million for completion. During years when larger projects are constructed, expenditures exceed revenue. Total Stormwater Management Utility revenue is approximately \$2.5 million per year.



Beginning in 2000, property owners throughout Lakewood have received annual bills for stormwater management. Nearly 36,000 properties are billed each year. Single-family homeowners pay a fee of \$23.76 per year. Other properties pay a proportional amount based on the impervious area on each property.

Lakewood's rate is one of the lowest in the region. A comparison of stormwater utility rates follows:

Community	Monthly Fee for a Single-Family Home in dollars
Fort Collins	9.95
Loveland	8.30
Aurora	8.16
Longmont	7.13
Boulder	7.10
Castle Rock	7.01
Berthoud	6.76
Parker	5.50
Southeast Metro Stormwater Authority	5.30
Erie	5.00
Denver	4.84
Greeley	3.96
Arvada	3.67
Golden	3.52
Pueblo	3.50
Windsor	3.31
Federal Heights	3.15
Westminster	3.00
Littleton	2.00
Woodland Park	2.00
Northglenn	2.00
Lakewood	1.98

In 1998 when the Lakewood fee was established, the average fee of Colorado utilities was \$3.11 per month. The average has since increased 55% to \$4.83. Lakewood's fee has not changed since it was first established by the City.

Summary

For decades, the City of Lakewood was unable to adequately maintain its drainage facilities. The investment in pipes, inlets, ditches and gulches was substantial and the potential for property damage and personal injury was increasing because of inadequate maintenance. The Stormwater Management Utility is providing the resources to care for the existing drainage system with a systematic maintenance program.

The Stormwater Management Utility is providing revenue to match available funds from the Urban Drainage and Flood Control District. Improvements are being made and federally mandated water quality program requirements are being met.