

MEMORANDUM

Date: August 20, 2014

To: Board of Directors
Cherry Hills North Metropolitan District

From: Clarice O'Hanlon, P.E.
Chris Purrington, P.E.

Re: 2014 Sanitary Sewer Maintenance Program
Job. No. 14-004

2014 SANITARY SEWER MAINTENANCE

The District's Sanitary Sewer Maintenance Program consists of a two (2) year jet cleaning and video cycle. The District has been divided into two (2) basins, the East Basin (6,658 linear feet) and the West Basin (5,198 linear feet). During even numbered years, the East Basin is jet cleaned and the West Basin is inspected by video. During odd numbered years, the West Basin is jet cleaned and the East Basin is inspected by video.

The 2014 Sanitary Sewer Maintenance Program was compiled by our office and completed by Dale's Environmental Services (DES). The following is a summary of the 2014 Program.

1. Jet Cleaning Program

The 2014 Jet Cleaning Program consisted of jet cleaning the East Basin. DES completed the jet cleaning on June 9, 2014.

2. Video Program

The 2014 Video Program consisted of video inspection of the West Basin. DES completed the video inspection on July 31, 2014. Structural defects with corresponding severity are identified on the attached Pipe Condition exhibit.

Recommendations

The following actions are recommended per the 2014 Video Program:

- Jet Cleaning
We do not recommend any additional cleaning at this time.

- **Root Removal**
Flow in the mains is not shown to be restricted per the video inspections. However, further root growth or obstructions caught in the roots could result in a backup of flow in the pipe. Therefore, root removal is recommended in the four (4) pipe runs listed in the table below. Additional pipe runs were shown to contain fine roots, which will most likely be removed during jet cleaning next year. We will monitor the lines with fine roots to verify they are being addressed properly.

Upstream MH	Downstream MH	Pipe Length (LF)
MH 14	MH 13	400
MH 11	MH 10	342
MH 4.2	MH 4.1	122
MH 4.1	MH 4	235
	Total LF	1,099

DES charges \$0.80 /LF, therefore the estimated cost for rootsaw is \$879.20.

- **Roots in Service Lines**
Nine (9) service connections were identified with roots. It is our recommendation that any correspondence with the homeowners come from the District Manager. We are available to draft a letter concerning roots in the service lines, including a picture from the video, to be sent to the appropriate homeowners on District letterhead.
- **Pipe Repairs**
A service line was found to be intruding into the sanitary main from MH 2.2 to MH 2.1. The main was lined with cured-in-place pipe (CIPP) under the 2010 Capital Improvement Project. It appears that the service line has intruded into the main since the 2010 CIP as there is no indication of damage to the CIPP. It is our opinion that the service line was most likely repaired or replaced since 2010 and was not correctly connected to the main. We recommend that the District contact the homeowner to repair the service connection. The homeowner would need to notify the District and/or our office prior to the repair so the connection can be observed by our field staff. Should the Board decide to address the repair without contacting the homeowner, the service connection could be ground down from inside the main at an estimated cost of \$2,000.
- **Capital Improvements**
None of the structural defects identified are severe enough to recommend repair at this time. We will continue to monitor the lines identified on the Pipe Condition exhibit for future recommendations.

PURRINGTON CIVIL, LLC

Clarice O'Hanlon, P.E.

www.purringtoncivil.com