7.0 MAINTENANCE, REPLACEMENT, AND STAFFING

7.1 BACKGROUND

The Grants Pass storm water system within the urban growth boundary comprises about 138 miles of storm sewer, 5300 catch basins and curb inlets, 120 cleanouts, 35 piped river outfalls, 2241 manholes, and an unspecified number of other storm water structures. The system also includes 41 miles of irrigation pipes and canals (the canals are considered in storm water analyses since they also intercept and convey storm water runoff).

Though Grants Pass does not currently have a separate storm water utility, various City departments perform or oversee numerous activities related to storm water control and related water quality issues. The City requires installation of water quality structures in commercial developments, plus erosion and sedimentation control plans for all developments, and monitors contractor work for post-construction erosion. City staff are involved in monitoring activities within riparian areas, providing pet waste stations at parks and dog parks, and installation of bio-swales on City street improvement projects. The City is also responsible for storm water system maintenance and repairs, and specific actions required by the Rogue Basin TMDL Implementation Plan.

The City of Grants Pass requested Keller Associates' technical support to develop an annual budget for their storm water system that would provide for 1) system maintenance, 2) pipeline replacement, and 3) meeting NPDES MS4 Phase II permitting requirements. This section presents a summary of recommended vs. current storm water activities, and the associated budget implications.

7.2 SYSTEM MAINTENANCE

One of the responsibilities of the Streets and Drainage Division of the Grants Pass Public Works Department is maintenance of the storm water infrastructure within the City limits. This includes storm water facilities in City streets plus county roads and state highways that run through town, 20 detention structures throughout the city, and six water quality structures at Grandview, Tussing Park, Estates Lane, 7th Street, Grace Gardens, and 8th Street. Storm water and maintenance issues with the canals and I-5 are the jurisdiction of the Grants Pass Irrigation District and the Oregon Department of Transportation, respectively.

Storm water-related maintenance activities involve cleaning of pipelines and catch basins, maintenance of detention and water quality structures, and street sweeping.

7.2.1 Pipelines

When pipeline maintenance is needed, the Streets Division borrows a sewer cleaning truck from the City's wastewater program; however, there is currently no regularly scheduled maintenance or inspection of the storm sewer pipelines.

It is important to provide regular CCTV inspection to determine pipeline conditions, and repair the pipelines as needed. Sediment build-up in the pipelines reduces their capacity and

increases the potential for flooding; it also results in higher pollutant concentrations flushed out during large storm events. Other problems that could reduce the conveyance capacity of the storm water lines are broken or cracked pipelines, offset joints, root intrusion, and other blockage. A regular cleaning and CCTV program for the storm water pipelines will enable the City to identify and prioritize the pipelines in need of maintenance.

It is recommended that all the storm water pipelines be cleaned every 3 years, or more regularly if CCTV records justify a higher cleaning frequency (e.g. annual cleaning is recommended for lines with significant root intrusion). The recommended frequency for CCTV inspection is every 5-10 years, depending on the condition of the pipelines.

7.2.2 Catch Basins

The City crew is currently cleaning 1/3 of the catch basins each year. Cleaning is done by hand, except where the basins are too deep for hand cleaning or where lines are plugged. In those situations, arrangements must be made to use the sewer cleaning truck to vacuum out the basins or jet the pipelines.

At a minimum, catch basins need to be cleaned when sediment or debris blocks more than 1/3 of the pipe. An EPA study titled *Evaluation of Catch Basin Performance for Urban Stormwater Pollution Control* (Aronson et al, 1983, EPA-600/2-83-043) recommends that all catch basins be cleaned at least annually; annual cleaning may be required by the NPDES permit. A catch basin's effectiveness increases with more frequent cleanings.

Catch basin cleaning can be coordinated with line cleaning and CCTV inspection. If lines are cleaned and inspected every three years, approximately 1/3 of the lines and catch basins will be cleaned yearly. This leaves 2/3 of the catch basins to be cleaned independent of the storm lines.

7.2.3 Detention Facilities, Open Channels and Water Quality Structures

Wetlands and detention areas in the Grants Pass storm water system are, for the most part, left to grow in a natural state. The City does attempt to remove invasives (such as blackberries), and in some locations, attempts to maintain a 5- to 10-foot buffer between the wetland and private property. The City contracts with the County to have their corrections crew complete some of the blackberry clearing along ditches, wetlands and detention areas.

Water quality structures are cleaned using the sewer cleaning (vac) truck to remove sediment. There are no filters to replace. The Grandview water quality structure, on line for 10 years, has required little effort to maintain since its location does not collect much debris. It has been cleaned a couple of times. The other water quality structures, installed later in 2012, will be placed on a 6-month cleaning schedule that will be adjusted as warranted by the accumulation of debris.

Grates on inlet and outlet pipes (where applicable) should be cleaned regularly, and the control structures should be inspected and cleaned as well. The areas around the detention facilities should be sprayed for weeds. The timing and type of spray used for this should be such that it

does not impair water quality or damage vegetation used for sediment filtering. Open detention facilities should be cleared of any trash or debris on a regular basis. The facility should be dredged before sediment accumulation exceeds the elevation of the outfall pipe, interfering with proper functioning of the detention facility. Similar maintenance should be performed on and around biofiltration swales and open channels.

7.2.4 Street Sweeping

In Grants Pass, the street sweeping is performed by an outside contractor. Street sweeping is an important part of the storm water operation and maintenance procedures in pollution prevention and control. The sweeping frequency varies by location, as shown in Table 7-1:

Table 7-1: Sweeping Frequency

Location	*Street Sweeping Frequency*
Downtown	Every week
Industrial / Commercial Areas	Every other week
Arterial Streets	Every other week
Residential Areas	Oct-Jan: once a month; Feb-Sept: every other month

7.2.5 Costs

The Streets and Drainage Division has 7 full-time employees (FTE) for maintenance of streets and drainage (storm water) facilities. City staff estimate that the time spent on storm water work accounts for an equivalent of 1 to 1.4 FTE. The City anticipates this will increase to 2 FTE when the old sewer cleaning truck is transferred to the storm water staff. The current budget for in-house storm water system maintenance and repairs is $40,500, with an additional $158,000 budgeted for the street sweeping contract. As previously discussed, this budget does not include regular pipeline cleaning and inspection, and covers annual cleaning of just 1/3 of the catch basins.

Pipeline and Catch Basin Cleaning: The cost of pipeline cleaning and inspection depends on whether the work is contracted out or performed by City staff. Based on a 3-year pipeline cleaning and a 6-year video inspection cycle, approximately 46 miles of pipeline would need to be cleaned annually and half of that would also be video inspected. Typical contracted cleaning and inspection costs, assuming the lines are regularly maintained, are about $1.90/ft ($0.80/ft for cleaning only); poorly maintained lines can cost up to $5/ft. Estimated annual costs for contract cleaning and CCTV inspection for Grants Pass would be about $327,000.

Performing the pipeline cleaning and inspection work in-house would require an estimated 260 man-days per year, based on a 2-man crew with an estimated production of 2,800 feet per day for cleaning and 1,400 feet per day for CCTV. At an estimated cost of about $336 per working day per FTE, the estimated annual pipeline cleaning and inspection cost would be about $88,000.

It is also recommended that the cleaning truck be used to clean the catch basins wherever possible. Based on an estimated cleaning rate of 40 catch basins per day, it would take 265

man-days for a 2-man crew to clean all 5300 catch basins/curb inlets. This represents a cost of about $89,000.

Based on the above time estimates and 250 annual working days, the cleaning truck required for this work would be in use over 100% of the time. Thus, borrowing the sewer cleaning truck to clean the storm sewer system would not be practical. According to a recent survey of suppliers, new fully equipped vactor/CCTV trucks cost approximately $300,000. The annualized capital cost of a vactor truck/CCTV truck, based on a 15-year equipment life and 5% interest rate, would be about $29,000 per year. Thus, the total annual cost for in-house cleaning and TV inspection of pipelines (3-year and 6-year cycle, respectively) and catch basins (annual) is estimated at $235,000. This approach is not only less costly than contracting the work out, but would give the City the ability to respond more quickly to debris blockages that may cause flooding or ponding during storm events.

Detention Facilities, Water Quality Structures and Street Sweeping: It is assumed that the City will continue current practices for maintenance of detention facilities and water quality structures. It is also assumed that the City will continue to utilize an outside contractor to provide the current level of service for street sweeping.

Staffing (based on 1500 annual productive hours per FTE): Providing the described level of pipeline cleaning and inspection in-house would require 1.39 FTE, and cleaning the catch basins annually would require 1.41 FTE. Assuming that 0.4 FTE is currently utilized for cleaning 1/3 of the catch basins each year, adding pipeline inspection/cleaning and increasing the frequency of catch basin cleaning would require an additional 2.40 FTE.

7.3 PIPELINE REPLACEMENT

In addition to regular maintenance, Keller Associates recommends establishing an annual pipeline replacement program. Storm water infrastructure replacement/rehabilitation needs will increase as the storm water system ages. A replacement program is typically based on the amount of storm water infrastructure and its estimated useful life. Assuming an average 75-year remaining useful life for the pipelines, the replacement program should target 1.3% of the system each year. For the entire Grants Pass system, this would amount to 9,700 feet of pipe, 106 catch basins, and 45 manholes. At an estimated average pipe replacement cost of $200/ft, and costs of $2,300 and $7,000, respectively, for replacement of catch basins and manholes, the annual replacement budget would total approximately $2.5 million.

The City is not necessarily responsible for 100% of this replacement cost, since parts of the Grants Pass storm water system lie within county roads, state highways, or are used by GPID for irrigation distribution. Efforts should be made to coordinate with these entities for cost-sharing. It should also be noted that any portions of the storm water infrastructure to be replaced under a capital improvement program can be excluded from the annual replacement program. It is recommended that the replacement program be phased in over a period of 5-10 years, and adjusted as needed based on future inspection efforts.

7.4 NPDES MS4 PHASE II PERMITTING REQUIREMENTS

The City received a letter from DEQ in the spring of 2015 indicating that DEQ would be done with the NPDES MS4 Phase II permit writing approximately in the next year. The implementation of the requirements is anticipated to be phased in over a five-year period. Six minimum control measures will be required to meet the NPDES MS4 Phase II permit requirements are:

1. Public education program
2. Public participation
3. Illicit discharge detection and elimination
4. Construction site stormwater runoff control
5. Post-construction stormwater management in new development and redevelopment
6. Pollution prevention in municipal operations

The City currently contracts with RVCOG to accomplish activities required by the Rogue Basin TMDL Implementation Plan, including community outreach and education, preparation of an annual report, and restoration of planting areas. These activities, particularly community education, may at least partly satisfy some of the minimum control measures required as part of an MS4 Phase II permit. Ongoing City programs and policies may be sufficient to address other requirements such as construction and post-construction storm water management. However, additional activities will be needed to satisfy all required control measures, including illicit discharge detection/elimination and pollution prevention in municipal operations, which involves the following:

- Structural and non-structural best management practices (BMPs) that the permittee or another entity will implement for each of the stormwater minimum control measures
- Measurable goals for each of the BMPs including milestones and the frequency of the action
- Rationale for how and why the permittee selected each of the BMPs and measurable goals for the permittee's Stormwater Management Program
- A timetable for completing each of these actions

It is estimated that an additional 0.25 FTE will be needed for activities related to the NPDES MS4 Phase II permit requirements. It should be noted that the NPDES MS4 Phase II permiting process will require a certain amount of operation and maintenance. The additional FTE mentioned in this paragraph is just for the administration side of the permit requirements mentioned in this section.

7.5 SUMMARY

It is recommended that the City of Grants Pass budget for an additional 2.65 FTE plus a new fully equipped inspection and cleaning truck as well as a CCTV truck, and begin to establish an annual replacement program. The recommended annual budget for the upcoming budget cycle is summarized in the table below. (The budgeted cost for each new employee is based on an estimated total of $70,200 for salary plus benefits.)

Table 7-2: O&M/Replacement Staffing Summary

Budget Item	*Currently Budgeted*	*Recommended*
Street sweeping	$ 158,000	$ 158,000
Cleaning and CCTV (2.4 add'l FTE)	-	177,000
Equipment (CCTV & vac truck)	-	58,000
Equipment fuel and maintenance	-	4,000
Storm system repairs	$25,500	50,000
Permitting (RVCOG, 0.25 add'l FTE)	$15,000	33,000
Replacement program	-	$2,500,000*
TOTAL	$ 198,500	$ 2,980,000

* Amount to be determined following inspection of existing facilities, and adjusted on an annual basis as needed