

SEWAGE COLLECTION SYSTEM INSPECTION FORM
City of Piedmont

GENERAL INFORMATION**Inspection Date:** 4/30/09

Utility Name: City of Piedmont		
Address: 120 Vista Ave., Piedmont, CA 94611		
Contact Person: Larry Rosenberg		
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Inspectors Names	Agency/Contractor
Michelle Moustakas	EPA Region 9
Bill Hahn	SAIC
Dianne Stewart	SAIC

Utility personnel who accompanied inspectors

Name	Title
Larry Rosenberg	Director of Public Works
Dave Frankel	Supervisor of Public Works
Kourosh Iranpour	Deputy City Engineer

SYSTEM OVERVIEWPopulation: 11,000Service Area (Sqr. Miles): 1.75Service Area Description: Primarily residential, with minor commercial activity

	Residential	Commercial	Industrial	Total
Number of service connections	3,864	11		3,875

Combined Sewers (% of system): 0Name and NPDES permit number for WWTP(s) owned or operated by the collection system utility: NAName and NPDES permit number for WWTP(s) that receive flow from the collection system utility: EBMUD, District No. 1 – NPDES Permit CA 0037702Names of upstream collection systems sending flow to the collection system utility:
Oakland

Names of downstream collection systems receiving flow from the collection system utility:
Oakland and EBMUD

Do any interagency agreements exist with upstream collection systems? No

Does the utility maintain the legal authority to limit flow from upstream satellite collection systems? No

Comments

The City stated that only residential areas are located upstream from Piedmont (i.e., no commercial or industrial facilities).

In a late-1980s agreement with Oakland, the City pays \$22,000 per year for the maintenance of Oakland's pipes because Piedmont flows are conveyed by Oakland to the EBMUD interceptors. Oakland does not pay Piedmont for its flows that enter Piedmont pipes. Piedmont also paid several millions of dollars for part of the cost of rehabilitation of Oakland pipes in the mid-1990s.

SYSTEM INVENTORY *(list only assets owned by utility)*

Miles of gravity main	Miles of force main	Miles of laterals	Number of maintenance access structures	Number of pump stations	Number of siphons
50.9	0	49	1,055	0	0

Utility responsibility for laterals (none, whole, lower) None

Size Distribution of Collection System

Diameter in inches	Gravity Sewer (miles)	Force Mains (miles)
6 inches or less	29.9	
8 inches	16	
9 - 18 inches	5	
19 - 36 inches	0	
> 36 inches	0	

Age Distribution of Collection System

Age	Sewer Mains, miles	# of Pump Stations
0 - 25 years	27.9	
26 - 50 years	4	
51 - 75 years	4	
> 76 years	15	

Comments

The 49 miles of laterals indicated in the table above represents the entire lateral.

Piedmont has rehabilitated about half the system so far. They have inspected the remainder and have a program to complete the needed rehabilitation by 2020.

SYSTEM FLOW CHARACTERISTICS

Collection System (flow measurement location: <u>See list below</u>)		
Average Daily Dry Weather Flow (MGD)	Peak Daily Wet Weather Flow (MGD)	Peak Instantaneous Wet Weather Flow (MGD)
1.4	22	2.6

Wastewater Treatment Plant		
Average Daily Dry Weather Flow (MGD)	Peak Daily Wet Weather Flow (MGD)	Peak Instantaneous Wet Weather Flow (MGD)
NA	NA	NA

Upstream Satellite Name	Avg. Dry Weather Flow (MGD)		Peak Flow (MGD)	Flow based on meter or estimate?
	(MGD)	% of total flow		
Parts of Oakland	NA	NA	NA	

Constructed Relief Points		
Relief Point	Location	Number of Discharges/Year
	None within the City	

Flow Measurement Locations (from EBMUD's Wet Weather Infrastructure Improvements Studies):

Linda Ave. at Grand Ave.

Wildwood Ave. off of Grand Ave.

1015 Harvard Rd at Annerley Rd.
298 Indian Rd.
1684 Trestle Glen Ave. at Valant Place
61 Glen Alpine Road
5554 Moraga Ave.

Comment

Piedmont does not measure the volume of flow that enters their pipes from Oakland. Three pipes come in from Oakland. There are five to seven points at which Piedmont wastewater is conveyed outside the City.

REGULATORY BACKGROUND

Does the system operate under the provisions of an NPDES permit (either their own or under provisions of another agencies permit)? Yes

Permit holder City of Piedmont

Permit # CA0038504

List provision of the permit that apply (If permit holder is other than the agency being inspected)

Does the system operate under a state permit? Yes

Are there any spill reporting requirements? Yes

Which agency (or agencies) promulgates the spill reporting requirements? RWQCB2 and SWRCB

Outline the spill reporting requirements (summarize spill reporting requirement for each applicable statute, regulation and permit):

The SSO monitoring and reporting requirements are in accordance with the SWRCB Order No. WQ 2006-0003-DWQ (as revised by Order No. WQ 2008-0002-EXEC), included in the appendix section of the City's SSMP.

Comments:

In February 2008, SWRCB issued new SSO notification requirements in Order No. WQ 2008-0002-EXEC. On May 1, 2008, RWQCB2 sent a letter to permitted dischargers explaining the new reporting requirements. The letter contains the following summary table showing these requirements:

Communication Type (all are required)	Agency Being Contacted	Timeframe Requirements	Method for Contact
1. Notification	Office of Emergency Services	As soon as possible, but not later than 2 hours after becoming aware of the SSO.	Telephone – (800) 852-7550 (obtain a control number from OES)
	Local health department	As soon as possible, but not later than 2 hours after becoming aware of the SSO.	Depends on local health dept.
	Regional Water Board	As soon as possible, but not later than 2 hours after becoming aware of the SSO.	Electronic www.r2esmr.net/sso_login2.asp
2. Certification	Regional Water Board	As soon as possible, but not later than 24 hours after becoming aware of the SSO.	Electronic www.r2esmr.net/sso_login2.asp
3. Reporting State Water Board	State Water Board (CIWQS)	Category 1 SSO: initial report within 3 business days , final report within 15 calendar days after response activities have been completed.	Electronic (only) to CIWQS
		Category 2 SSO: within 30 calendar days after the end of the calendar month in which the SSO occurs.	Electronic (only) to CIWQS

The City's spill reporting procedures appear to conform to these requirements.

SPILLS

Sanitary Sewer Overflows From and Caused by Utility									
Note: Spill Rate = number of SSOs/100 miles of sewer pipe/year									
Year	Mains (Miles of Mains: <u>50.9</u>)			Laterals (Miles of Laterals: <u>0</u>)			Totals (Total Miles: <u>50.9</u>)		
	#SSO's	Spill Rate	Gross Spill Volume	#SSO's	Spill Rate	Gross Spill Volume	Total SSO's	Total Spill Rate	Total Gross Spill Volume
2006	13	26	17,208				13	26	17,208
2007	8	16	2,647				8	16	2,647
2008	8	16	618				8	16	618
2009	3	3	9,241				3	3	9,241
Total	32		29,714				32		29,714

Spill Cause

Spin Cause

Time Period	Blockage								Gravity Pipe Break		Force Main Break		Pump Station		Capacity	
	Grease		Roots		Debris		Multiple									
	#	%	#	%	#	%	#	%	#	%	#	%	#	%		
2006			9	69	3	23									1	8
2007			3	38	3	38			2	25						
2008	1	12	3	38	3	38			1	12						
2009			1	33	1	33			1	33						
Total	1		16		10				4						1	

BUILDING BACKUPS (list only backups caused by problems in sewer mains)		
Year	Number of backups	Cost of Settled Claims
2006	3	\$16,305.74
2007	3	\$40,316.69
2008	0	\$0
2009	0	\$0
TOTAL	6	\$56,622.43

Comments

SAIC reviewed the spill data provided in a spreadsheet format by RWQCB2 and from CIWQS, for the period December 2004 through January 2009.

The capacity-related spill reported in the table above occurred on 12/12/06. The volume was reported as 13,500 gallons. The City says this spill was actually due to a blockage by root masses, not lack of capacity.

The City had capacity-related spills on 12/22/05 at Mountain Avenue and Pacific Avenue, and at 144 Nova Drive. They rehabilitated the pipes and have had no spills since.

There were repeat spills at 61 Glen Alpine on 1/6/06 and 12/12/06. These were stated as being caused by debris and roots, respectively.

The cause of the building backups listed above was roots.

STAFFING

Indicate Number of Staff

Management and Administrative: 2 (part time)

Maintenance: 4 (part time)

Electricians and Mechanical Technicians: 0

Operators: 0

Engineering: 1 (part time)

Number of Certified Collection System Operators/Certification Program: 0

Number of Sewer Cleaning Crews: 1

Sewer Cleaning Crew Size: 2 to 4

Contractor Services	Contractor Name(s) (NA if contractors not used)	Cost (\$/year)
Sewer Cleaning	Philips Services	\$26,115.00
Chemical Root Control	Root Tamers/Dukes Root	\$16,670(07), \$51,296(08)
Spot Repairs	Pacific General/Fermin-Sierra	\$76,769.00
CCTV	Subtronic Corporation	
Spill Response		
Other:		

Comments

The part time staff spend about 50 percent of their time on sewers.

Philips Services provides a combination truck for catch basin cleaning and for sewer issues when needed.

The City plans to contract for 10 miles of annual CCTV work to supplement City staff efforts.

EQUIPMENT

List Major Equipment Owned by the Utility:

Equipment	Number	Number in Service
Combination Trucks (hydroflush and vactor)	0	0
Hydroflusher	2	2
Mechanical Rodder	1	1
CCTV (portable)	2	2
Utility Truck	3	3
Portable Pumps	5	5
Portable Generator	6	6

Comment

The City uses the portable pumps and generators to clean up spills, since they do not have a vactor.

FINANCIAL

REVENUES	
Revenue Source	Annual Revenue (\$/year)
User Fees	\$1,815,031
Connection Fees	
Grants	
Bonds	
SRF Loans	
Interest Earned	\$50,000
TOTAL	\$1,865,031

Expenditures of the City are classified as Labor, Materials and Equipment Maintenance, Administration and Overhead and Capital. Capital expenditures of \$1,116,667 per year over the next 3 years is expected to be paid from the SRF and are not included.

EXPENSES		
Expense	Annual Cost (\$/year)	Cost / Mile of Pipe (Total Pipe Mileage: 50)
Salaries & Wages	\$339,488	\$6,790
Material & Maintenance	\$78,584	\$1,570
Administration & Overhead	\$181,988	\$3,640
Sanitary Sewer/Trash Disposal	\$241,471	\$4,830
SRF Debt payments	\$447,635	\$8,950
TOTAL	\$1,289,166	\$25,780

Average Monthly Household User Fee for Sewage Collection: \$40 per household/month
 Wastewater Treatment: NA
 Total Wastewater Fees: \$40

Sewer Fee Rate Basis (i.e. water consumption, flat rate, etc.): Per square footage of property

Last Fee Increase (Date): 07/01/08

Planned Fee Increases: 3% in Fiscal Year 2009-2010

Capital Improvement Fund: \$1 Million/year for about 10 years

Comment

The capital improvement fund varies because it includes whatever is left after salaries, debt service, emergency work, etc. are subtracted from revenue.

SPILL RESPONSE, NOTIFICATION AND REPORTING

Does the Utility Have a Written Spill Response Plan? Yes

Is the Plan Carried by Maintenance/Spill Response Crews? Yes

Indicate Elements Included In the Spill Response Plan		
Element	Y/N	Comment
Identification of Responsible Staff	Y	
DISPATCH		
System for Becoming Aware of Spills	Y	
System for Receiving Public Calls	Y	
Dispatch Procedures – Normal Hours	Y	
Dispatch Procedures – After Hours	Y	
Coordination with First Responders (police, fire department)	Y	
Response Time Goal	Y	
SPILL CONTROL/MITIGATION		
Spill Response Activity Sequence	Y	
Spill Site Security	Y	
Procedures for Stopping Spills	Y	
Spill Containment	Y	
Protection of Storm Drains	Y	
Cleanup/Mitigation	Y	
DOCUMENTATION		
Spill Volume Estimation (list methods in comment field)	Y	
Determination of Spill Start Time	Y	
Spill Sampling	Y	
Receiving Water Sampling	Y	
Photographing Spill Site	Y	
Field Notes Form	Y	
Spill Report Form	Y	
NOTIFICATION		
Notification of Affected Public (schools, recreational users, etc.)	Y	
Posting Warning Signs	Y	
Sanitation Information re: building backups	Y	
REPORTING		
Reporting Procedures	Y	
Spill Report Forms	Y	

Indicate Elements Included In the Spill Response Plan		
Element	Y/N	Comment
Persons Responsible for Filing Reports	Y	

Are all spills reported regardless of volume? Yes

Are Contractors Required to Follow Spill Response Procedures? Yes

Average Spill Response Time (normal work hours): 15-30 minutes

Average Spill Response Time (after hours/holidays): 1 hour

Does the Utility CCTV Pipes Following Spill? Yes – since April 2008

Are Cleaning Schedules Adjusted in Response to Spills? Yes

Comments

The City typically finds out about spills through customer calls. Calls usually come in through Police Dispatch or City Hall. All after-hours calls come through Police Dispatch. Dispatch calls the Public Works staff, day or night. Staff are on-call after-hours. They typically use one crew to plug the downstream catch basins, while another crew works to relieve the stoppage; however, this may not be possible at night. The San Diego photographs are used for spill volume estimation. Trucks carry a binder containing the spill response plan. The crew will collect samples if wastewater reaches a surface water.

The default spill start time was considered to be the time that the call came into dispatch, unless better information is available. The City acknowledges, however, that it is most likely that a spill would have started before the call came in. So now volume calculations may use a start time of 15 to 30 minutes prior to the call, depending on what the crew finds on site.

Spill reports are kept in binders. The City plans to begin using a CMMS to keep spill records in the future.

SEWER CLEANING AND MAINTENANCE

Does the Utility Have Detailed Sewer System Maps? Yes

Are Maps on GIS Database? Yes

Are Maps Available to Maintenance Crews? Yes

Does the Utility Have a Written Maintenance Management System? Yes

Does the Utility Have a Computerized Maintenance Management System? Yes

ANNUAL SEWER CLEANING – Include hydroflushing, mechanical and hand rodding		
Pipe Cleaning excluding repeats		Pipe Cleaning Including Repeats
(miles/year)	% of system/year	(miles/year)
12.5	25	12.5

System Cleaning Frequency (years to clean entire system): 4

Hot Spots subject to more frequent cleaning: 19 locations; 0.74 miles of pipe

Types of problems subject to hot spot cleaning? roots, flat lines

HOT SPOT CLEANING SCHEDULE			
Cleaning Frequency	Number of Locations	Pipe length excluding repeats (miles)	Pipe length including repeats (miles)
1/month			
6/year			
4/year			
2/year			
1/year	19		0.74

Chemical Root Treatments

Length of pipe subject to chemical root treatments (miles/year): 2007: 5.61 mi; 2008: 10.16 mi

Chemical treatment frequency: 2 times per year

Root treatment chemicals used: combination of Metam-Sodium and Dichlobenil

Spot Repairs

Spot repairs completed annually: _____ (#/year); _____ (miles/year)

Spot repair budget (\$/year): _____

Spot repair expenditures last year: \$80,000 ; year: 2008 (includes adding end of the line cleanouts)

Odors

Annual number of complaints: None

Odor hot spot locations: _____

Odor treatment facilities: _____

Easement Pipe Cleaning

Total length of easement pipes (miles): 19

Annual easement pipe cleaning (miles/year): Varies – average 5 miles per year

Do maintenance workers have access to all easements? Yes

Comments:

The City began its current root foaming program about a year and a half ago. Last year over 53,000 feet of pipe was foamed. This figure includes repeat foaming. Prior to this, they had a less aggressive program that involved foaming about 2,500 feet of pipe per year. The pipes are televised after treatment to evaluate the success. The target areas are pipes close to creeks, and pipes that have a history of problems with roots. Manholes are also foamed if roots are present.

FATS, OILS AND GREASE (FOG) CONTROL

Does the Utility have a FOG source control ordinance?

- EBMUD has a Wastewater Control Ordinance

Ordinance Citation: East Bay Municipal Utility District Wastewater Control Ordinance, Ordinance 311A-03

Agency responsible for implementing the FOG control program:

- Collection System Agencies and EBMUD for respective program components

Number of Food Service Establishments (FSEs) in service area:

- Approximately 3,000

Number of FSEs subject to FOG ordinance:

- Same as number of FSEs

Indicate Elements Included In the Food Service Establishment FOG Source Control Program		
Element	Y/N	Comment
FSE Permits	Y	
FSE inspections	Y	
FSE enforcement	Y	
Oil & grease discharge concentration limit		EBMUD's Ordinance has an O&G limit; however, the FOG program focuses on GRD installation and appropriate maintenance
Grease removal device (GRD) requirements:		
traps		
interceptors	Y	
Automatic cleaning traps		
FSEs subject to GRD installation:		
all FSEs (new and existing)		
new FSEs	Y	
remodeled FSEs	Y	Remodels > \$75,000
for cause at existing FSEs	Y	
GRD maintenance requirements:		
Cleaning frequency	Y	Every 3 months or more as needed
25% rule (grease and solids accumulation)	Y	EBMUD requires increased pumping frequency if >25% grease/solids
Kitchen BMP Requirements (list required BMPs below)		
		BMPs are recommended, not required (BMP information attached)
Allowance for chemical additives?		See BMPs ("Do not use emulsifiers or solvents...")
Allowance for biological additives?		Not recommended
FOG Disposal Requirements		See permit for maintenance and disposal requirements
FOG Disposal Manifest System		See permit for documentation/manifest requirements

Number of FOG Program staff:

Inspectors 10

Permit writers 1

Other 4

FSE Inspection frequency: Every 5 years for routine inspections, as needed for Hotspot Response

Annual number of FSE inspections: _____

Does Utility use CCTV to identify FOG sources? Yes

Does sewer maintenance staff coordinate with FOG source control program staff? Yes.

Collection system agencies report hotspots to EBMUD Staff

Cleaning targeted to FOG hot spots? _____

Maintenance crew referrals to FOG program? _____

Pipe repairs at FOG hot spots? _____

Describe program for public outreach and education related to residential FOG sources:

- EBMUD conducts outreach to businesses (FSEs), universities and residents, both throughout the year and during the holidays. EBMUD has expanded its multi-lingual targeted outreach in residential areas that have SSOs and blockages.
 - EBMUD includes outreach with permit issuances and inspections via BMPs, posters, and brochures, most in multiple languages (English, Chinese, Spanish, Korean, and Vietnamese).
 - EBMUD has coordinated with UC Berkeley for targeted outreach to the university's residential areas
 - EBMUD has general residential outreach including *Customer Pipeline* articles, articles in other newsletters, and information on the EBMUD website. EBMUD also targets residential outreach to hotspot areas in coordination with the collection system communities, via distribution of doorhangers with information in English, Chinese, and Spanish.
 - EBMUD has a container at the entrance to its wastewater treatment plant for residents to bring used grease. This bin collected approximately 2,400 gallons in 2008.
 - EBMUD has a hotline phone number and email address for customers to contact us for additional information regarding FOG.
- EBMUD also partners with the nongovernmental organization Baykeeper to expand its FOG control message to residential customers. Information on FOG control is on Baykeeper's website. EBMUD and Baykeeper collaborate to expand the FOG-control message by working with "big box" retailers that sell turkey fryers and with grocers during the holiday season. We provide information to go on the turkey fryers and pull-off tags for use at grocery stores to communicate not to put FOG down the drain and with contact information for EBMUD for additional information.

Comments:

There are no restaurants located within the City of Piedmont.

The 10 inspectors identified as FOG program staff are also responsible for pollution prevention and industrial user inspections in addition to FOG. One of these staff is a senior inspector whose primary job responsibility is FOG.

PIPE INSPECTION AND CONDITION ASSESSMENT

Gravity Main Inspection

Describe Pipe Inspection Methods: CCTV

Miles of Pipe Inspected in the Last 10 Years and Planned Inspection Next 10 Years				
Date Range	Inspection Method	Miles of Pipe without repeats	Useable Condition Assessment	
			Miles of Pipe (without repeats)	% of System (System miles: 50)
2007 to present	CCTV	18.75	18.75	37%
19__ to present	Other			
Present to 2012	CCTV	10 miles/year	10 miles/year	20%
Present to 20__	Other			

Describe Planned Pipe Inspection: CCTV inspections for the next few years will be focused on the sub-basins with clay pipes and areas needing frequent emergency maintenance because of backups and overflows.

Summary of Condition Assessment Findings: The findings of the recent CCTV inspection work have been detailed in a report titled "Sanitary Sewer CCTV Study (sub-basins G2, G6, G7, H1, P1, V1, W2, W3, and W6)", dated, March 2009. In general, of the 99,000 feet of sewer inspected, 68% of the pipes are clay with various defects. The non-clay pipes (PVC, HDPE, ATP, CP, and DIP) seem to be generally in fairly good condition.

Force Mains

Describe Force Main Inspection Methods: NA

Describe Program for Inspecting Air Relief Valves: NA

Private Laterals

Does the Utility Inspect Private Laterals? No

Number of Private Laterals Inspected 19__ to Present: _____

Summary of Inspection Findings:

Number of Private Laterals Planned for Inspection Present to 20__ : _____

Comments

A copy of the March 2009 condition assessment report was obtained during the inspection. Pipes were cleaned prior to televising. According to the report, the majority of the pipes in the study were constructed of vitrified clay (VCP) and were over 90 years old. Many of the joints between these pipes were missing grout, causing serious pipe defects. Of the 99,000 feet of pipe surveyed,

24 percent was identified as in “very poor” condition. Another 17 percent was in “poor” condition, with the remainder in “good” or “fair” condition. Most of the pipes in very poor condition are either beginning to collapse or have collapsed. This condition allows roots to enter, not only at the joints but even in the barrel of the pipe. The report recommended that the City begin by rehabilitating all lines with serious defects as part of an emergency program, and the City is addressing these pipes. The report also prioritized the remaining pipes.

They are trying to revise the City Code to require inspection of lateral pipes upon property transfer. This has not yet been implemented. There is precedent for this type of program within the City; for instance, if a homeowner spends more than \$5,000 on the property, they must replace the sidewalk if needed (and if the sidewalk problem is not due to a City tree).

When mains are rehabilitated or replaced, the lower lateral is included in the project. The homeowner is informed at the time that it would be a good opportunity for them to replace the upper lateral, at a lower cost to the owner than would otherwise be possible.

CAPACITY ASSURANCE

List Locations and Dates of Repeats Capacity Spills: None

List Locations of Known Capacity Bottlenecks: None

Dry Weather: None

Wet Weather: None

Describe I/I Assessments Completed by the Utility (dates, area covered, findings, etc.):
Sewer System Evaluation Survey (SSES) Report in 1986

Flow Meters (number, locations): No Permanent flow meters

Describe Flow Model Used by the Utility: The City believes that its 1986 model should still be valid, as the area was built out prior to this.

Inflow

Does the Utility Prohibit Storm Water Connections to the Sanitary Sewer (roof drains, sump pumps, etc.)? Yes

Describe Program for Enforcing Ban on Illicit Connections: Building Sewer Code

Describe Program for Locating Illicit Connections (smoke testing, etc.):
There is not an active program to search for illicit connections. If they are found by the sewer rehabilitation program or through routine maintenance they will be disconnected.

Locations Subject to Street Flooding: None

Has the Utility Sealed Manholes in Locations Subject to Street Flooding: NA

I/I Control

Describe I/I Control Projects (miles of pipe rehabilitated or replaced for I/I Control)

Recently Completed Projects:

Rehabilitated approx. 125,770 feet of sanitary sewer mains and associated lower laterals since 1995

Planned Projects:

33,400 feet of sewer mains are scheduled for rehabilitation in 2009 or 2010

Describe Capacity Control Measures (relief sewers, storage, WWTP expansion, etc.)

Recently Completed Projects:

Between 1990 and 1993, the City replaced the pipe segments where flows generated by the five-year storm would cause surcharging.

Planned Projects: None

INFRASTRUCTURE RENEWAL AND CAPITAL IMPROVEMENTS

Pipe Rehabilitation and Replacement Methods Used: Pipe bursting is primarily used for pipe rehabilitation.

Miles of Pipe Rehabilitated or Replaced: Last 20 Years and Planned Next 20 Years		
Date Range	Miles of Pipe	% of System (System miles:)
1995 to present	23.8	47%
Present to 2020	27.1	53%

Describe Capacity Improvement Program:

The population of the City of Piedmont is not expected to grow significantly, and has remained relatively stable over the last 50 years, because of the lack of additional land for development and zoning restrictions. Because growth and the opportunity for growth in the City are limited and future land use patterns are not expected to change significantly, no extra allowance for growth was considered in calculating the base sanitary sewer flow for future. City staff believe that the sanitary sewer improvements implemented in recent years should address the current and future capacity requirements for the collection system facilities for a 5-year flow.

List Major Planned Improvements:

As explained above, no short-term or long-term improvements are required to improve the capacity of the sewer system. However, replacing the old clay pipes with plastic pipes should provide for additional capacity in the system due to improved interior wall surface friction. To date, approximately 50% of the sewer system has been replaced with plastic pipes with plans to replace the remaining sewer mains by 2020.

Describe Master Plan:

As part of the Sewer System Evaluation Survey Study conducted in February 1986, a computerized collection system routing model was created to identify the bottlenecks in the system. The parameters for the computer simulation included the study area characteristics expected during the project life, a description of the collection system, and the characteristics of the design storm.

As explained above, Piedmont was already built out when the sewer system was modeled in 1986 and the population and land use patterns have not changed significantly. Therefore, City staff feel that the results of the model prepared in 1986 should still be valid and usable.

Comments

The City does not have a manhole replacement program, but manholes are coated during sewer rehabilitation/replacement projects. If needed, a manhole would be replaced.

All mains and lower laterals within the public right of way will be rehabilitated as part of the planned improvements. The City plans to use pipe bursting for this.