

Annual Wastewater Collection System Report 2012

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Santa Barbara, California
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Section 1

Introduction and Background

1.1 Introduction

On April 27, 2011, Santa Barbara Channelkeeper filed a lawsuit against the City of Santa Barbara in the United States District Court for alleged violations of the Clean Water Act. The parties engaged in extensive Court-ordered and supervised mediation that resulted in the Court's entry of a Consent Decree on May 14, 2012. A requirement of the Consent Decree is the submission of an Annual Report by March 31st of each year, providing details relevant to the City's implementation of and compliance with the Consent Decree in the preceding year.

Additionally, the Annual Report includes the following required information:

- a. A statement and explanation of the City's compliance or non-compliance with the Sanitary Sewer Overflow (SSO) Reduction Performance Standard for the preceding year;
- b. Any program modifications or delays during the preceding year;
- c. CCTV inspection schedules for the upcoming year for inspection of Gravity Sewers;
- d. A statement of :
 - i. The miles of sewer that were assessed in the preceding year;
 - ii. The miles of sewer assessed receiving each grade in the PACP Grading System;
 - iii. A summary of the mileage and identification of sewers repaired, rehabilitated and/or replaced during the preceding year; and
- e. Identification of sewer segments cleaned.

1.2 Consent Decree Implementation and Compliance

For purposes of this report, the Consent Decree Implementation and Compliance is being organized into three general sections: Work plan development; CIP Completion; and Expenditures. These sections are followed by a discussion of the more specific items identified in a. through e. above.

The Consent Decree focuses much of the City's work on limiting any opportunity for water to leak from sanitary sewer systems to storm drain systems which may occur in cases where sanitary sewer pipes are located near to and above storm drain pipes. For the purposes of the Consent Decree, these pipes are called high risk pipes (HRP). A final determination of which pipes meet the Consent Decree designation of HRP is due to be completed by the City by June 30, 2013. The City is designating pipes as High Risk Candidate Pipes (HRC) in cases where information regarding the designation as HRP is not complete, but where it is likely that the pipe will be considered HRP.

1.2.1 Work Plan and Program Development

The Consent Decree recognizes the substantial work efforts that had been initiated by the City prior to ChannelKeeper filing suit. The intent of the work efforts is to improve staff's operational and capital work practices. These work efforts involved substantial consultant contract support focused

upon operational work plan document development, staff operations training, and related information technology hardware and software purchases and their integration. Thus, these consultant support contract tasks are designed to improve the City's overall management of the municipal wastewater collection system through the implementation of industry best-management practices. In so doing, the ultimate external outcome should be an SSO event reduction and sewage spill volume reduction, consistent with the intent of the Consent Decree.

Utilizing consultant contract support throughout the years 2011 and 2012, the City produced important Work Plan documents in 2012. City staff worked diligently to implement these new Work Plan strategies and recommendations as they were developed. Many of these activities were "one-time" tasks and will not be required to be undertaken in following years. The investment made in developing new business strategies and activities that follow from these new Work Plan documents will serve the City well in future years. The work products from each of these new Work Plan strategies have been submitted to ChannelKeeper in compliance with the requirements of the Consent Decree and are therefore not included again with this report. Work plans developed are listed below:

- Fats, Oils and Grease Program Plan
- SSO Response Improvement Plan
- Lift Station SSO Response Plan
- Cleaning and Inspection Plan
- CCTV, Rehabilitation, and Replacement Plan
- Wastewater Master Plan
- Lift Station Maintenance, Inspection, and Condition Assessment Plan
- IT Governance Plan
- Flow Monitoring Plan
- Exfiltration Abatement Program Plan
- Updated Sewer System Management Plan

These important Work Plan documents have served as a principal guidance for planning and implementing industry best practices and standards related to wastewater collection business processes within the City of Santa Barbara, with the intent of reducing SSOs to comply with the SSO Reduction Performance Standards.

In 2012, the City implemented its first year of operation for all Work Plan activities. The same year was the first year of the City's efforts to clean its entire wastewater collection system in a five-year time period. Much has been learned during this first year, and major user-based modifications are being made to the Cartegraph CMMS: modifications to sewer main cleaning schedules, addition of data into Cartegraph related to CCTV activity schedules, addition of SSO event information, and addition of Sewer Lateral Inspection Program scheduling and tracking activities.

1.2.2 Capital Improvement Program Completion

In 2012, the City rehabilitated and repaired 5.12 miles of sewer mains. Of this, 1.02 miles of pipe falls within the City's Exfiltration Abatement Program (EAP) and is designated as HRP because of its proximity to storm drains.

In August of 2012, the Exfiltration Abatement Plan submitted to ChannelKeeper identified that 0.6 miles of HRP was anticipated to be rehabilitated, repaired or replaced in 2012. That number has been corrected to reflect the actual HRP rehabilitated, replaced or repaired. The number changed based on work that took place in 2012, and the identification of additional segments of pipe that were rehabilitated, repaired or replaced that met the classification of HRP.

1.3 2012 Expenditures

The City has worked diligently to comply with the many requirements due in the first year of the Consent Decree and has been successful in meeting all deadlines and implementing meaningful modification to programs and work practices. While it is the City’s intent to accomplish all of the work set forth in the Consent Decree, the City is dependent on rate payer revenues to fund all of its work, and resources are not unlimited. Unbudgeted expenditure on the Consent Decree requires that resources be diverted from other parts of the operation and must be managed to ensure that other critical work is not delayed or diverted. The Consent Decree does provide protection in the event that the scope of work or cost of work exceeds the City’s financial capability. To this end, the Consent Decree’s Paragraph 49 states in part, that “...notwithstanding any provision to the contrary set forth herein, the City shall not be required to spend more than five million one hundred thousand eight hundred ninety-one dollars (\$5,100,891.00) to comply with the terms of this Consent Decree...”. The City of Santa Barbara’s 2012 expenditure was \$5,919,937, well in excess of the Consent Decree’s economic expenditure cap.

These summary cost components are shown below in Table 1-1. The City’s ability to absorb additional costs is limited and resulted in the inability to achieve the full amount of pipe rehabilitation, replacement or repair for the EAP pipe in 2012. Although the EAP pipe mileage was not achieved in 2012, the City intends to catch up in the future as funding and workload allow even though it is not required to do so under the Consent Decree.

Expenditures in 2012 are summarized below. The City operates on a fiscal year budget from July through June each year. This, coupled with the need for time to reconcile expenditures at the close of the reporting period, has resulted in costs changing slightly from the projections given to ChannelKeeper in 2012. This adjustment reflects a better accounting of monies spent on activities necessary for the design and construction of the CIP HRP projects.

Table 1-1. 2012 Cost Summary Table				
Operations	Non Capital Consent Decree Expenditures	Consent Decree Capital Expenditures	High Risk Pipe Capital Expenditures	Total
\$2,637,948	\$603,914	\$2,035,153	\$642,922	\$5,919,937

The City spent considerable time and resources in 2012, performing important work to meet the deadlines of the Consent Decree and responding to comments and requests from ChannelKeeper:

- Completing Consent Decree deliverable documents;
- Responding to ChannelKeeper comments on deliverables and modifying plans as appropriate;
- Performing engineering surveying work critical to the design of HRP projects and necessary to meet the June 30, 2013, deadline for designation of all HRP ;
- Developing needed CIP construction plan/specification documentation for the Sewer Main Rehabilitation Project to be awarded in 2013;
- Developing needed CIP plan/specification documentation for awarding a CCTV Inspection consultant contract in early 2013;
- Procuring, installing and operating new computer software (POSM) and related hardware associated with the CCTV Inspection Program; and

- Initiating Condition Assessment activities associated with the development of an annual CIP Program sewer main rehabilitation/replacement project.

These abovementioned activities have been instrumental in preparing the City to continue its compliance with and successful implementation of Consent Decree activities in 2013 and beyond. These activities have formed the foundation upon which key Consent Decree milestone activities will be achieved and may be accurately measured in the future. Many of these activities were “one-time” tasks and will not be required to be undertaken in following years. The economic investment made in these “one-time” activities was necessary to achieve SSO Reduction Standards, for future design of capital projects, and was critical to ongoing Consent Decree compliance.

Section 2

Compliance with SSO Performance Reduction Standards for 2012

2.1 2012 SSO History

In 2012, the City exceeded the Consent Decree's 2012 SSO Reduction Performance Standard of 18 SSOs by two. The City's system experienced 20 SSOs during this time period. As a result, the City is required to prepare an SSO Reduction Action Plan. However, because two of the overflows were caused by the actions of private contractors, the SSO Reduction Action Plan is not required to include additional actions to be taken to reduce overflows in 2013. Nonetheless, the City has reevaluated its program, and the SSO Reduction Action Plan does detail modifications to the City's program that will help reduce overflows in the future, with a goal of achieving the SSO Reduction Performance Standards in future years.

A listing of these SSO events and a summary of related wastewater collection system performance matters are provided in Table 2-1 below:

Table 2-1. 2012 SSO Event Listing			
SSO Event	Location	SSO Date	Cause
1	1303 DE LA GUERRA RD.	01/15/12	OTHER
2	123 ALAMEDA PADRE SERRA	01/25/12	DEBRIS
3	300 WEST PUEBLO STREET	03/07/12	OTHER (Private Construction)
4	327 WEST PADRE STREET	03/10/12	ROOTS
5	2119 STATE (20 AMERICAN AVENUE)	04/07/12	OTHER (City Contractor)
6	1919 GARDEN STREET	05/10/12	ROOTS
7	870 PASEO FERRELO	05/17/12	ROOTS
8	1210 CACIQUE STREET	05/20/12	GREASE

SSO Event	Location	SSO Date	Cause
9	2906 LAS POSITAS ROAD	05/30/12	ROOTS
10	1210 ALAMEDA PADRE SERRA	05/30/12	ROOTS
11	1244 WEST MICHELTORENA ST.	06/04/12	ROOTS
12	11 LAS ALTURAS ROAD	06/06/12	ROOTS
13	1524 EUCALYPTUS HILL ROAD	06/25/12	ROOTS
14	600 N. MILPAS ST.	07/13/12	GREASE
15	INTERSECTION MORENO AT APS	09/28/12	OTHER (Private construction)
16	1830 CLEVELAND	10/05/12	ROOTS
17	1225 N. SALSIPUEDES ST	11/09/12	ROOTS
18	462 CONEJO ROAD	11/10/12	OTHER (City Contractor)
19	1102 LUNETTA PLAZA	12/02/12	ROOTS
20	416 N. ONTARE	12/22/12	ROOTS

An overview of these SSO locations is provided in Figure 2-1 below. Detailed SSO Event Summary datasheets are provided in Appendix C.

2.1.1 2012 Overflows by Cause

Table 2-2 summarizes these 20 SSOs by cause. In this past year, the cause category of “Roots” accounted for more than half of all total SSO events (60%). In one such event, roots entered the City’s wastewater collection system from a private sewer lateral, causing the largest volume SSO event (6,600 gallons) of the year. The next most common condition finding was “Other” (resulting in 25% of the total SSO events). The cause categories of “Grease” and “Debris” constituted the

remaining causes of SSO events in the past year, accounting for a combined three of the total SSO events (15%). Detailed SSO Event Summary datasheets are provided in Appendix C.

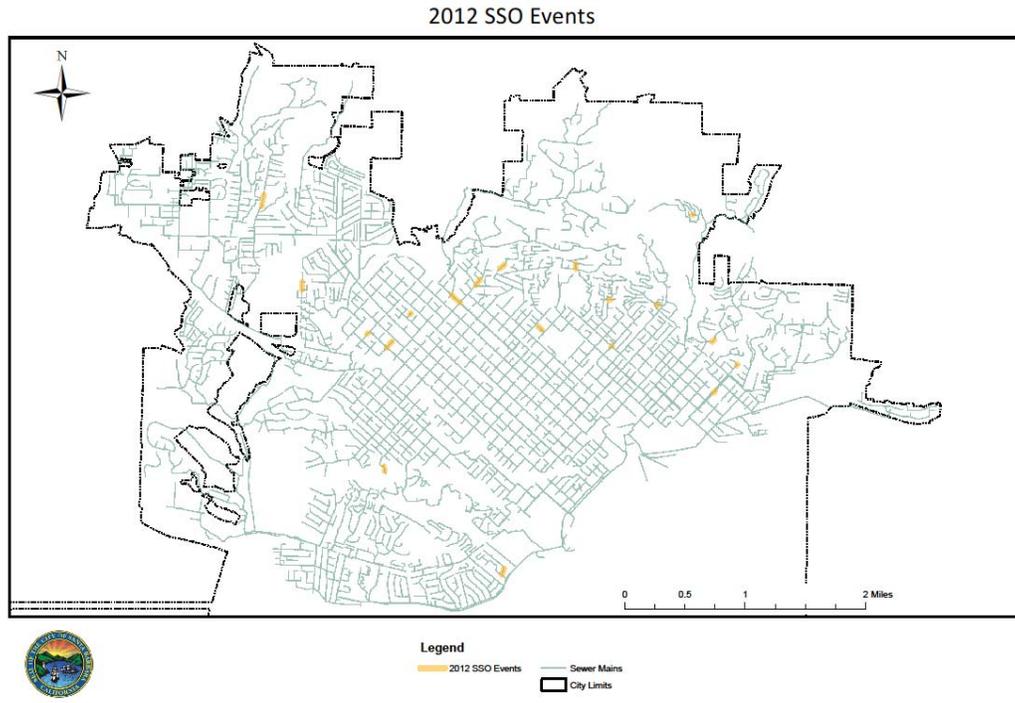


Figure 2-1. 2012 SSO Events Location Map.

Table 2-2. 2012 SSO Event Summary by Primary Cause.	
SSO Cause	Number of SSO Events
Roots	12
Other	5
Grease	2
Debris	1

Table 2-3 provides a detailed summary of each of the 2012 SSO events.

Table 2-3. 2012 SSO Event Condition Finding Details						
SSO Event	Pipe ID	Grease	Roots	Debris	Other	Overall Finding
1	H6-142	Clear	Clear	Medium	Heavy	Heavy
2	K7-51	Clear	Clear	Heavy	Clear	Heavy
3	E7-161	Clear	Clear	Clear	Heavy	Heavy
4	E7-111	Clear	Heavy	Clear	Medium	Heavy
5	E7-52	Clear	Clear	Light	Heavy	Heavy
6	F6-135	Clear	Heavy	Clear	Heavy	Heavy
7	H6-108	Clear	Heavy	Clear	Clear	Heavy
8	K8-27	Heavy	Clear	Clear	Clear	Heavy
9	D6-132	Clear	Heavy	Clear	Clear	Heavy
10	H5-33	Clear	Medium	Clear	Clear	Medium
11	E10-9	Clear	Medium	Medium	Clear	Medium
12	J6-91	Clear	Light	Light	Clear	Light
13	K8-83	Clear	Heavy	Clear	Clear	Heavy
14	H7-44	Heavy	Clear	Clear	Heavy	Heavy
15	G5-2	Clear	Clear	Clear	Heavy	Heavy
16	F6-165	Clear	Light	Clear	Clear	Light
17	G7-83	Clear	Medium	Clear	Clear	Medium
18	New	Light	Light	Light	Heavy	Heavy
19	F12-46	Light	Heavy	Light	Clear	Heavy
20	C4-93	Clear	Light	Light	Clear	Light

Additional summary activities associated with the 20 SSO events in 2012 may be referenced in Appendix C.

2.1.2 2012 Overflows By Volume

Table 2-4 summarizes the SSO events by volumes, showing total event volume, volume recovered, and net volume released.

Table 2-4. 2012 SSO Event Summary by Volume.			
SSO Event	Total Volume	Volume Recovered	Volume Not Recovered
1	100	100	0
2	90	90	0
3	50	50	0
4	2	0	2
5	3	0	3
6	250	20	230
7	2	0	2
8	400	250	150
9	15	10	5
10	75	45	30
11	25	0	25
12	10	10	0
13	10	10	0
14	25	25	0
15	50	40	10
16	25	25	0
17	25	25	0
18	50	50	0
19	6,600	100	6,500
20	325	300	25
Totals:	8,132	1,150	6,982

Table 2-4 data shows that 14% of the total SSO volume was recovered during emergency response events. Excluding SSO Event Number 19, a total volume of 1,532 gallons were related to the remaining 19 SSO events, and of that, 482 gallons were released to the environment.

2.1.3 2012 Public Water Overflow Impacts

In 2012, two City SSOs reached public waters: SSO Event Number 8 and SSO Event Number 19. The SSO volume not recovered from these two SSO events totaled 6650 gallons, representing 95% of the year's SSO volume released. SSO Event Number 8 was caused by "Grease" and occurred in a City sewer main immediately downstream from a mobile home park's sewer lateral discharge point, located on Cacique Street. As a result of Event Number 8, City Fats, Oil, and Grease (FOG) Program door hangers were distributed on all the mobile home residences located in that trailer park complex. The cleaning frequency of the blocked sewer main also was increased.

SSO Event Number 19 was caused by a private property sewer lateral's roots entering a City sewer main and causing a root-related blockage at the location of the sewer lateral's connection with the City sewer main. It was noted by City staff that the citizen calling in the SSO complaint was the owner of this private property, and that the citizen informed City staff that the SSO event had been taking place for approximately one day prior to calling in the SSO complaint. The property owner has subsequently been directed to clean and inspect their lateral and has replaced their faulty wye connection.

The citizen did not notify the City of the SSO when first noticed. Had that communication been made in a timely manner, the volume of the SSO would have been significantly smaller and may not have reached public waters. The City subsequently has increased its public outreach through City email publications and utility bill inserts to encourage residents to immediately notify the City when they suspect an SSO may be occurring in the City of Santa Barbara.

2.2 Modifications in 2012

2.2.1 Business and Technology-Driven Modifications

In 2012, the City made significant investment in information technology hardware and software, including the following milestone activities:

- Updating the City's GIS and CMMS software databases to address critical data gaps necessary for City staff to provide best practice business activities.
- Implementing an updated CMMS, linked to GIS, to record and track pertinent asset management, operations, and maintenance activities.
- Developing a database of pipe invert elevations which allow the City to evaluate the relative depths of the sewer pipes in the City Collection System and separate storm sewer pipes in the City's MS4.
- Developing and implementing an inspection database to be incorporated into the City's CMMS system that documents the condition assessment rating for all Sewer Line Segments inspected pursuant to the City's CCTV and Condition Assessment Work Plan.

Both the Cartegraph and ESRI GIS databases have changed substantially in the past year with much new data being entered into them and modifications made to their table structures. In the coming year, these databases should become more mature both in terms of structure and in terms of content.

Key strategies designed to improve overall performance of the wastewater collection system as a result of analyses contained in this report:

- A new mechanical root control program will be designed and implemented in 2013 to change cleaning schedules of sewer segments found to have heavy or medium root condition findings to a new 6-month cleaning frequency.
- A new debris control program will be designed and implemented in 2013 to change cleaning schedules of small-diameter sewer segments found to have heavy or medium debris condition findings to a new 12-month cleaning frequency.

2.2.2 2012 CCTV Activities

In early 2012, the City contracted with National Plant Services to televise many large diameter sewer mains. This work was completed in July 2012. Because the Consent Decree was not finalized until May 2012, CCTV work completed in 2012 did not focus on HRP pipe. In order to comply with Consent Decree requirements to CCTV all HRP by December 31, 2015, future work will prioritize HRP for CCTV inspection. The City also has implemented provisions to televise and assess all sewer mains according to PACP Code standards.

In mid-2012, the City initiated activities to develop a CCTV inspection contract for the 2013 time period. CCTV inspection plans and specifications were developed to prioritize HRP and requests for proposals were solicited in September 2012. The contractor Advanced Sewer Technologies (AST) was selected as a result of this process. AST was purchased by ProPipe, and a contract with the City was executed in November 2012, for work to be completed in 2013. The CCTV inspection work that was completed in 2012 produced the information which appears in Table 2-5 below. Sewer segment locations are shown in Figure 2-2.

Table 2-5. 2012 CCTV Events			
CCTV Source	HR Candidate Pipe Mileage	Regular Pipe Mileage	Total Mileage
City	4.42	11.51	15.93
Contract	2.02	4.05	6.07
Total	6.44	15.56	22.00

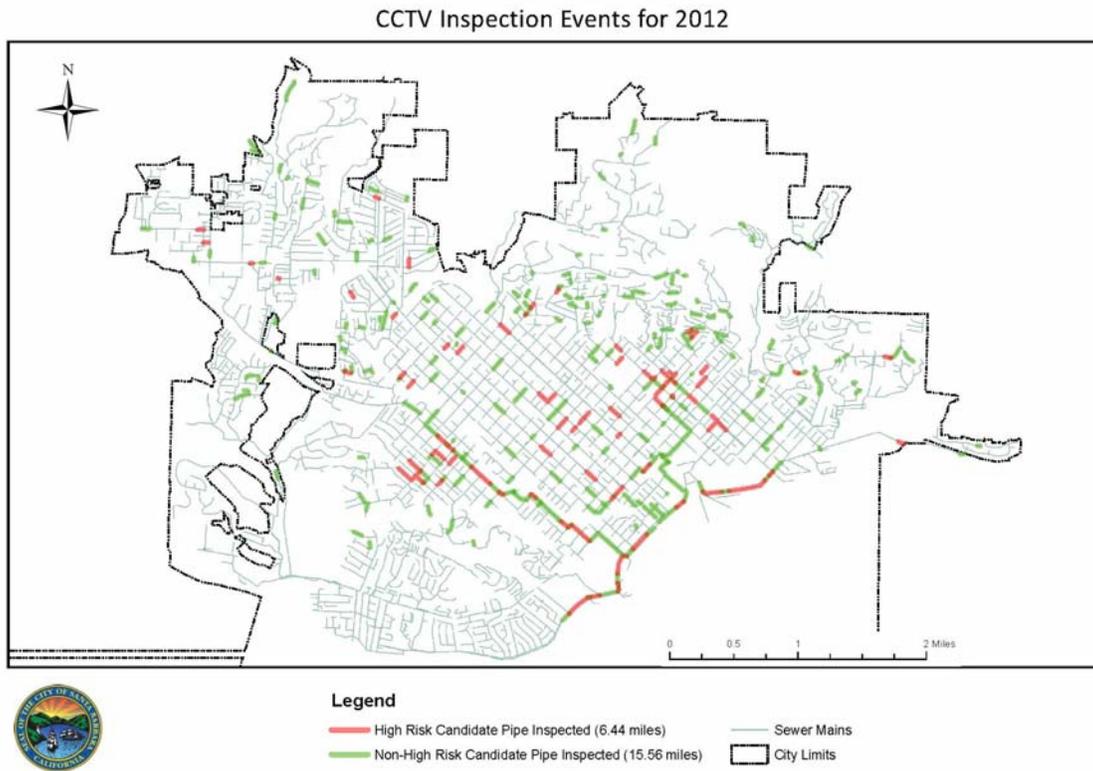


Figure 2-2. CCTV Inspection Events for 2012.

2.3 Condition Assessment and CIP Work in 2012

2.3.1 Closed Circuit Television Inspection

In 2012, the City made significant progress in the development and implementation of its Condition Assessment Work Plan activities. Notable developments were the acquisition and implementation of new Condition Assessment Program software. This software product is called POSM (which stands for Pipeline Observation System Management). The new POSM software serves as a repository and condition assessment tool by which City staff can analyze and prioritize sewer mains which have been televised, PACP code-graded, and uploaded into the software system.

The existing CCTV and assessment data that has been placed into the new POSM software is being reviewed by City staff at this time.

2.3.2 Capital Improvement Project Rehabilitation, Replacement and Repair

The City completed CIP construction project pipe mileage totaling 5.12 miles in 2012. Project-related information is shown in Table 2-6 and Figure 2-3 below.

CIP Pipe Mileage Completed in 2012

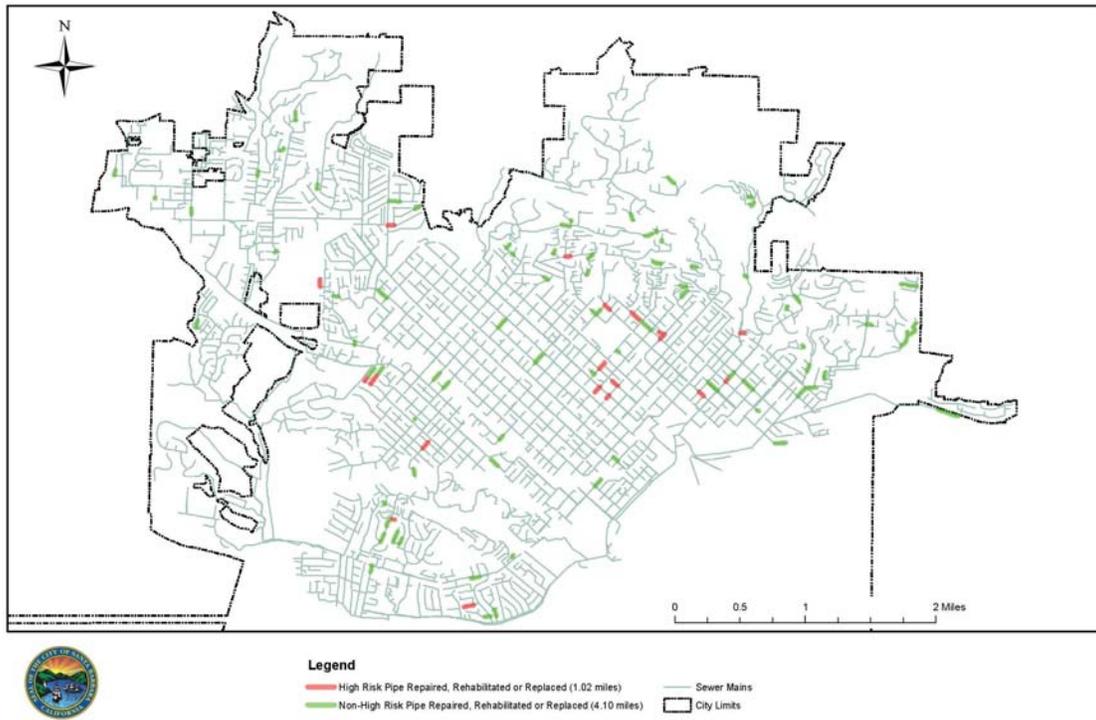


Figure 2-3. CIP Pipe Mileage Completed in 2012.

Table 2-6. CIP Project Pipe Mileage Completed in 2012

Project Type	Type of Work	HRP		Non-HRP		Total	
		Segment ¹ Count	Miles	Pipe Count	Miles	Segments	Miles
Sewer Main Rehabilitation Project	Rehab	11	0.48	42	1.98	53	2.46
Sewer Main Replacement Project	Replace	0	0.00	5	0.08	5	0.08
Sewer Main Repairs Project	Repair	11	0.54	52	2.04	63	2.58
Total		22	1.02	99	4.10	121	5.12

¹A segment of pipe is the distance from manhole to manhole or manhole to clean-out.

2.4 Sewer Segments Cleaned in 2012

2.4.1 Cleaning Activity Summaries

In 2012, the City cleaned approximately 186.5 miles of sewer segments (mains). These sewer main cleaning activities resulted in 4,482 cleaning events being performed on 3,539 individual sewer mains. The tables below describe in detail these sewer main cleaning activities.

Key analyses contained in this report have produced the following results:

- 4,482 sewer main cleaning events were completed in 2012. These cleaning events represent 186.5 miles of sewer mains.
- 3,539 individual sewer mains were cleaned, many of them several times, in 2012.
 - These cleaned sewer main segments represent 144 geographic miles of the Wastewater Collection System (which is 257.4 geographic miles). Thus, in 2012, the City cleaned 56% of its entire wastewater collection system.
- Of all sewer main segments cleaned in 2012, some experienced cleaning schedule frequency changes.
 - Six percent of all sewer mains cleaned had their cleaning frequencies reduced (from 1- through 6-month frequencies to less frequent cleaning schedules).
 - Five percent of all sewer mains cleaned had their cleaning frequencies increased from a 60-month frequency schedule to more frequent cleaning schedules.

Table 2-7 lists the monthly sewer main cleaning events and related cleaning mileages this past year. In summary, the City performed an average of 374 cleaning events monthly with a resulting average of 15.5 miles of sewer main being cleaned each month.

Table 2-7. 2012 Sewer Main Cleaning Monthly Summaries		
Month	Monthly Cleaning Events	Monthly Cleaning Mileage
January	381	17.39
February	292	12.01
March	442	17.79
April	337	14.70
May	436	19.38
June	357	14.63
July	298	12.15
August	391	16.77
September	369	14.07
October	456	19.53
November	343	13.70
December	380	14.41
Totals:	4482	186.53
Monthly Averages:	373.5	15.54

Table 2-8 lists the number of times that individual sewer mains were cleaned in 2012. Sewer mains being cleaned only one time in the past year represent 63.6% of all the cleaning events performed.

Sewer mains being cleaned more than one time represent the remaining 36.4% of these cleaning events.

Table 2-8. 2012 Sewer Main Cleaning Event History			
Cleaning Event Category	Number of Mains Cleaned	Cleaning Mileage	Geographic Mileage
One Time	2744	108.34	108.34
Two Times	659	58.85	29.43
Three Times	124	17.27	5.76
Four Times	12	2.07	0.52
Totals:	3539	186.53	144.05

2.4.2 Condition Findings

Table 2-9 provides information related to the density of materials that were found when cleaning events were performed in 2012. In summary, 94% of the sewer main cleaning events resulted in “Clear” or “Light” condition findings, which indicate that the cleaning schedules for these sewer mains are adequate and that they do not require more frequent cleaning. The condition findings for the remaining 6% of the cleaning events performed have resulted in the sewer main cleaning frequencies being adjusted so that these pipes are cleaned more frequently in the future. Sewer segments representing these Overall condition findings are shown in Figure 2-4.

Table 2-9. 2012 Sewer Main Cleaning Condition Findings Summary			
Overall Condition Finding	Number of Mains	Number of Events	Cleaning Mileage
Heavy	35	78	3.29
Medium	131	200	8.50
Light	688	1001	42.57
Clear	2488	3203	132.17
Other	197	NA	
Total	3539	4482	186.53

Overall Condition Findings

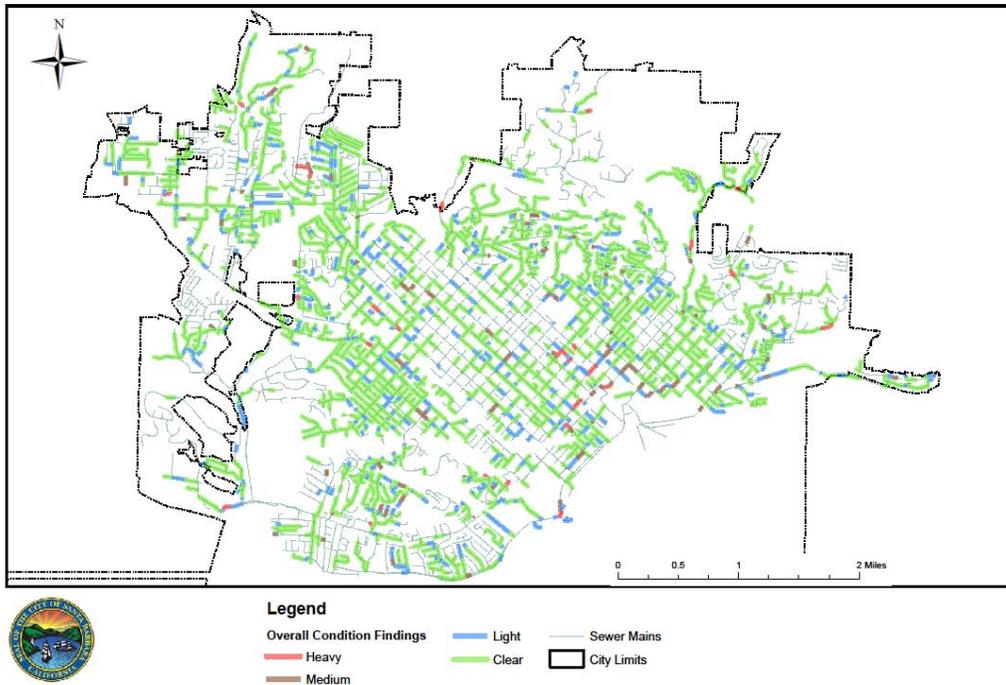


Figure 2-4. Overall Condition Findings.

A more detailed examination of these condition findings can be made through a review of Table 2-10. Detailed cleaning event results for the sewer mains which have been found to have “heavy” or “medium” condition findings are shown below.

Table 2-10. 2012 Cleaning Event Condition Finding Summary				
Category	Grease Events	Root Events	Debris Events	Other Events
Heavy	11	20	27	24
Medium	31	86	94	2
Light	125	521	482	11
Clear	4310	3851	3874	4437
Other	5	4	5	8
Totals:	4482	4482	4482	4482

Individual analyses of the major three condition finding categories are presented in the tables and figures below. Root condition finding data are presented in Table 2-11 and Figure 2-5 below.

Table 2-11. 2012 Root Condition Finding Data		
Category	Number of Sewer Mains	Number of Root Finding Events
Heavy	18	20
Medium	69	86
Light	396	521
Clear	3053	3851
Other	3	4
Totals:	3539	4482

Table 2-11 shows that there were 106 “heavy” or “medium” root finding events occurring in 87 sewer mains in 2012. These events will be more fully examined in the following Section.

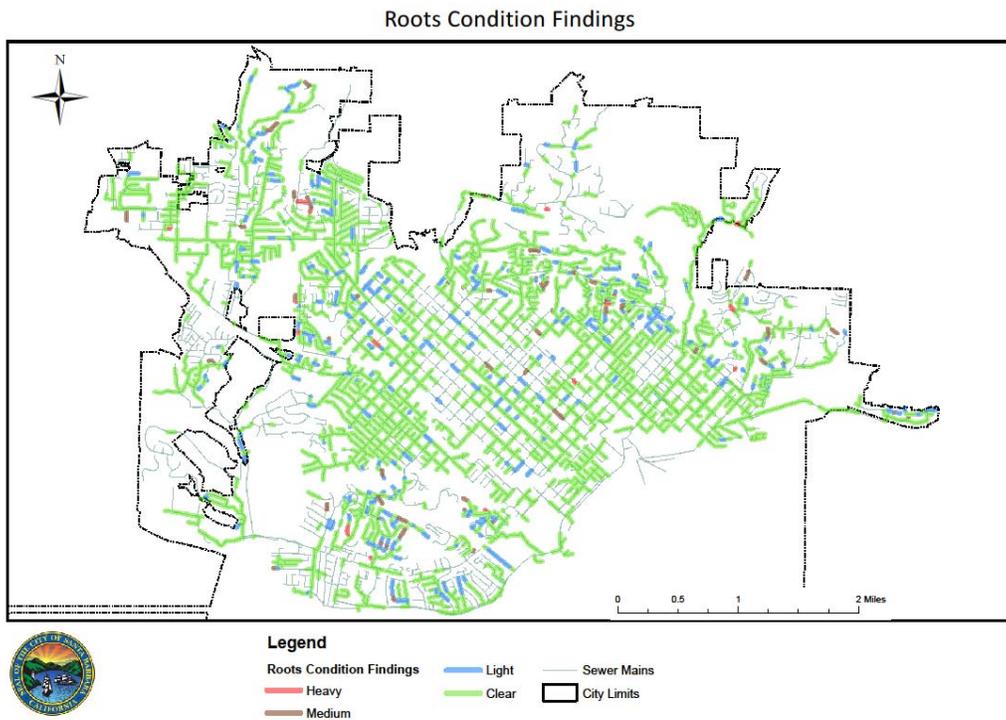


Figure 2-5. Roots Condition Findings

Grease condition finding data are presented in Table 2-12 and Figure 2-6 below.

Table 2-12. 2012 Grease Condition Finding Data		
Category	Number of Sewer Mains	Number of Grease Finding Events
Heavy	9	11
Medium	15	31
Light	72	125
Clear	3440	4310
Other	3	5
Totals:	3539	4482

Table 2-12 shows that there were 42 “heavy” or “medium” grease finding events occurring in 24 sewer mains in 2012. These events will be more fully examined in the next Section.

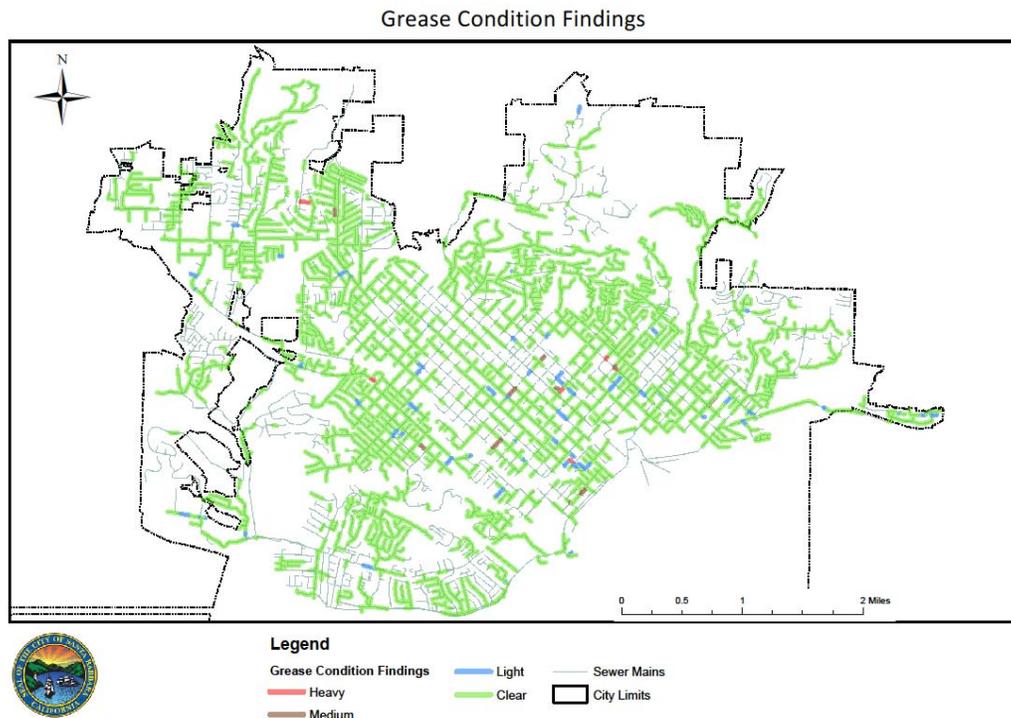


Figure 2-6. Grease Condition Findings.

Debris condition finding data are presented in Table 2-13 and Figure 2-7 below.

Table 2-13. 2012 Debris Condition Finding Data		
Category	Number of Sewer Mains	Number of Debris Finding Events
Heavy	24	27
Medium	73	94
Light	348	482
Clear	3091	3874
Other	3	5
Totals:	3539	4482

Table 2-13 shows that there were 121 “heavy” or “medium” debris finding events occurring in 97 sewer mains in 2012. These events will be more fully examined in the next Section.

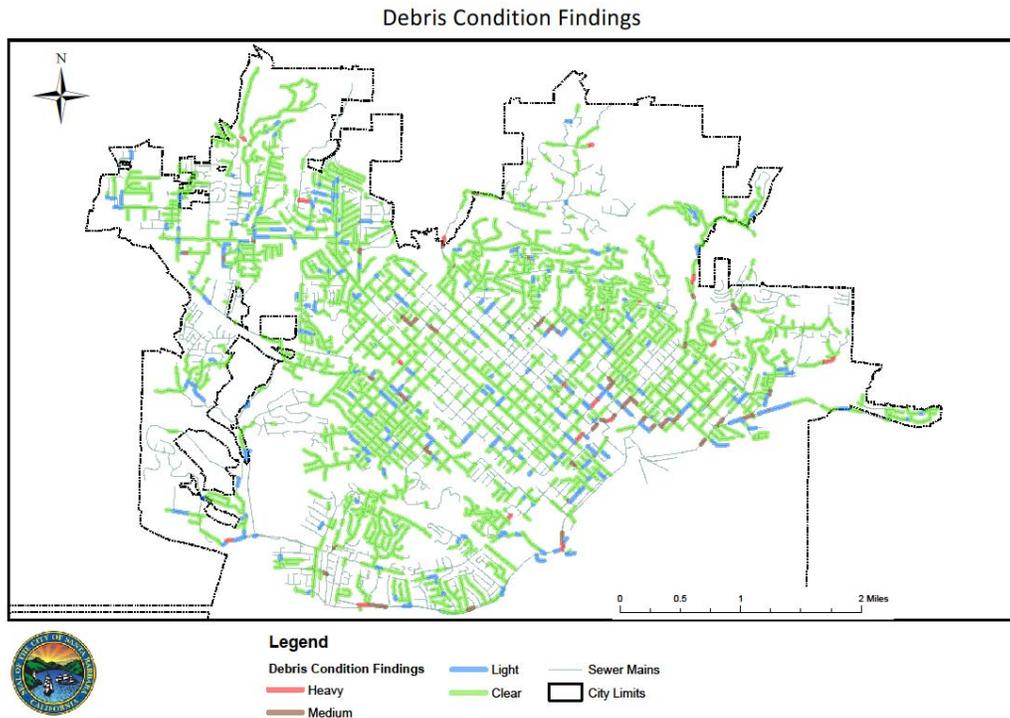


Figure 2-7. Debris Condition Findings.

2.4.3 Cleaning Frequency Adjustments

Table 2-14 summarizes the sewer main cleaning frequency adjustments that have been made in 2012. It shows that 578 sewer mains have had their cleaning frequency adjusted this past year. In general, sewer mains with cleaning frequency changes have had their frequencies either reduced (1-to-6-month frequency pipes being changed to new 12-month cleaning intervals) or have had their frequencies increased (60-month frequency pipes being changed to 24-month cleaning frequency). Now the 12-month and 24-month frequency pipe constitute the largest population of changed frequency pipe in 2013.

Table 2-14. 2012 Sewer Main Cleaning Frequency Change Summary		
Frequency Range (month)	Previous Sewer Main Frequency Count	Current Sewer Main Frequency Count
1 to 6	327	122
12	51	280
24	13	176
60	187	0
Totals:	578	578

2.4.4 2012 Cleaning Analyses Results

Section 3 describes additional measures to be undertaken in 2013 and beyond that are designed to achieve compliance with SSO Reduction Performance Standards. It will provide a more detailed look at the results of sewer main cleaning activities that took place in 2012. Specifically a review of “heavy” and “medium” condition finding cleaning events have shown there is an opportunity to fine-tune the current cleaning schedules of specific sewer mains now, so that they are cleaned at time intervals more appropriate for the materials that are apt to collect within these pipes in the coming years.

Section 3

Activities Planned for 2013

3.1 CCTV Activities in 2013

As discussed above, the City has awarded a contract for CCTV inspection to ProPipe. The scope of work for the ProPipe contract involves the cleaning and subsequent CCTV inspection of 24.5 miles of 6” and 8” diameter City sewer mains, and inspection of the sewer manholes associated with these sewer mains. Ancillary contract work involves traffic control, Caltrans and other agency permitting, resident and merchant notifications, and production of a final inspection report.

The contractor will clean City sewer mains in conformance with applicable Work Plan policies and related Wastewater Section Standard Operating Procedures. The contractor will report its sewer main cleaning condition findings in a format that allows for the City to enter the results into its CMMS software for determination of next cleaning frequency schedules and required future cleaning events for all sewer mains cleaned under this contract in 2013.

All City sewer mains televised will be assessed by the Contractor according to PACP Code standards. The resulting CCTV data and related reporting information will be transmitted to the City and uploaded into the City’s CCTV software, POSM. City certified inspectors will spot-check the Contractor’s PACP coded-video to ensure that the video is of appropriate quality and that the PACP code results are accurate and representative of the City sewer mains being assessed.

The City plans to award a second CCTV contract in 2013. This contract will be for approximately 12 miles of candidate HRP. The contract will include pipe cleaning and inspection of the sewer manholes associated with the sewer mains being televised.

The City owns one CCTV truck with televising hardware that functions with POSM software. In 2013, City staff will continue its televising work of City sewer mains needed for response to: SSO events, system blockages, customer complaints, quality control review of contracted sewer main cleaning, and ad-hoc organizational needs.

City staff will also participate in planned annual system-wide CCTV scheduled work as needed to assist in successful completion of the City’s annual CCTV goal. It is estimated that this City televising work will result in approximately 15 miles of City sewer main being assessed in 2013. Table 3-1 summarizes the planned CCTV work for 2013. A graphical representation of City sewer segments planned to be televised is shown in Figure 3-1 below. A listing of these individual sewer segments is provided in the Appendices’ ESRI GIS Shapefile.

Table 3-1. 2013 Planned CCTV Assessment Schedule				
CCTV Source	Manholes Inspected	HR Candidate Pipe Mileage	Regular Pipe Mileage	Total Mileage
City	TBD	0	15.0	15.0
Contractor	1200	36.4	0	36.4
Total	1200+	36.4	15.0	51.4

Planned CCTV Activities for Calendar Year 2013

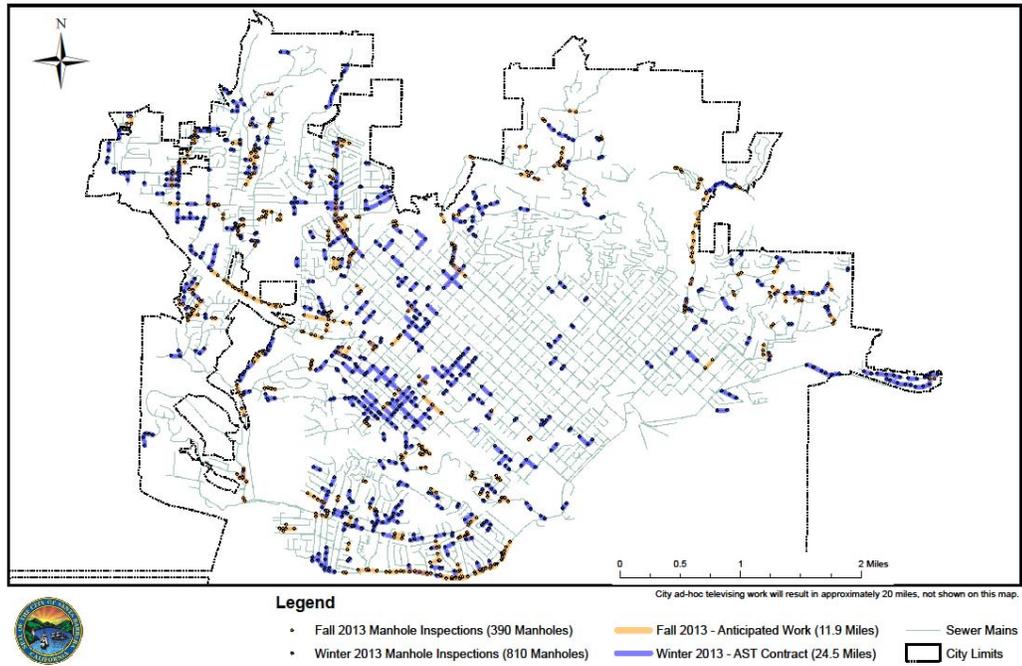


Figure 3-1. Planned CCTV Activities for 2013.

For long-term CIP-related condition assessment purposes, the City has developed a basic schedule to televise the entire Wastewater Collection System in a ten-year time period. A summary schedule of this system-wide CCTV program is listed below in Table 3-2 and in Figure 3.2.

Table 3-2. Multi-Year CCTV Inspection Schedule Summary		
Year	Count of Pipes	Mileage*
2013	862	36.4
2014	581	25.8
2015	541	25.8
2016	600	26
2017	741	26
2018	659	26
2019	699	26
2020	671	26
2021	728	26
2022	645	26

* Televising PACP Codes 4 & 5 sewer mains may increase televised mileage quantities in subsequent years beginning in 2014.

Planned CCTV Activities for Calendar Years 2013 through 2017

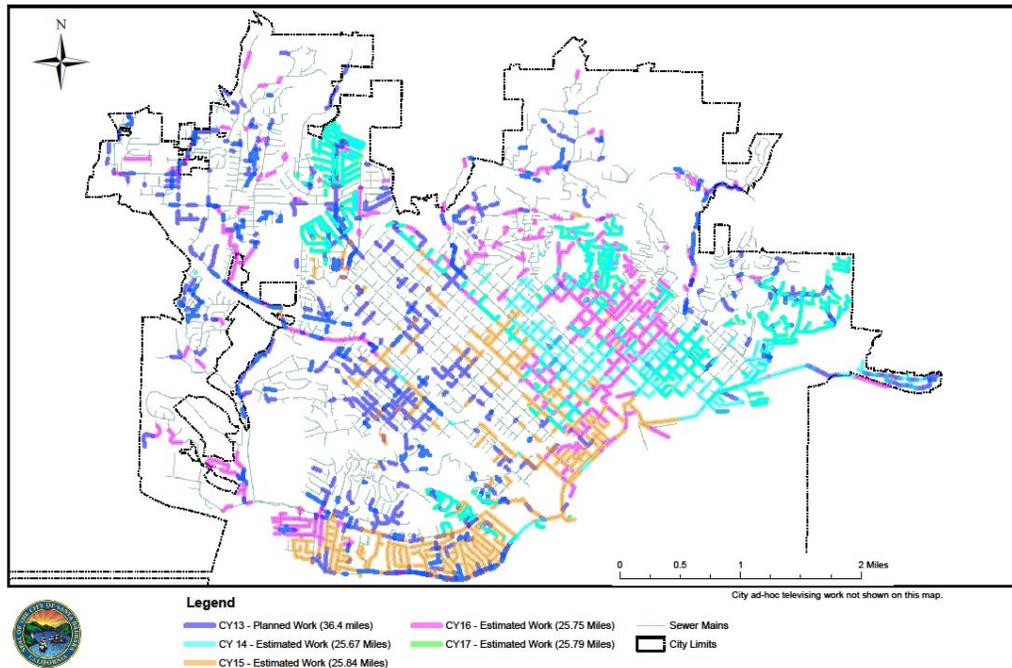


Figure 3-2. Planned CCTV Activities for 2013 through 2017

3.2 Condition Assessment and CIP Work in 2013

3.2.1 High Risk Pipe Work

During the period of time from August 2012 to the end of the calendar year, City staff focused its efforts on managing the HRP surveying contract and refining the data as part of the City wastewater collection system in the GIS. Once data was received from the surveying firm, it was checked for accuracy and submitted to the GIS team to populate the fields for HRP candidates and adjacent storm drains. City staff also updated sewer main attribute data such as previous rehabilitation dates, ownership, operation status (abandoned or live), etc., to reflect the current status of the wastewater collection system and prepare for the HRP analysis.

In January 2013, the City initiated sewer main rehabilitation contract activities with the contractor Southwest Pipeline. The contract work is ongoing at this time. The sewer main locations are within the Laguna Watershed area. This project will rehabilitate two miles of sewer mains. All sewer mains in this construction project are considered to be HRP. These sewer mains are shown in Figure 3-3 below. The sewer segments' identification may be found in the representative ESRI Shapefiles found in the Appendices.

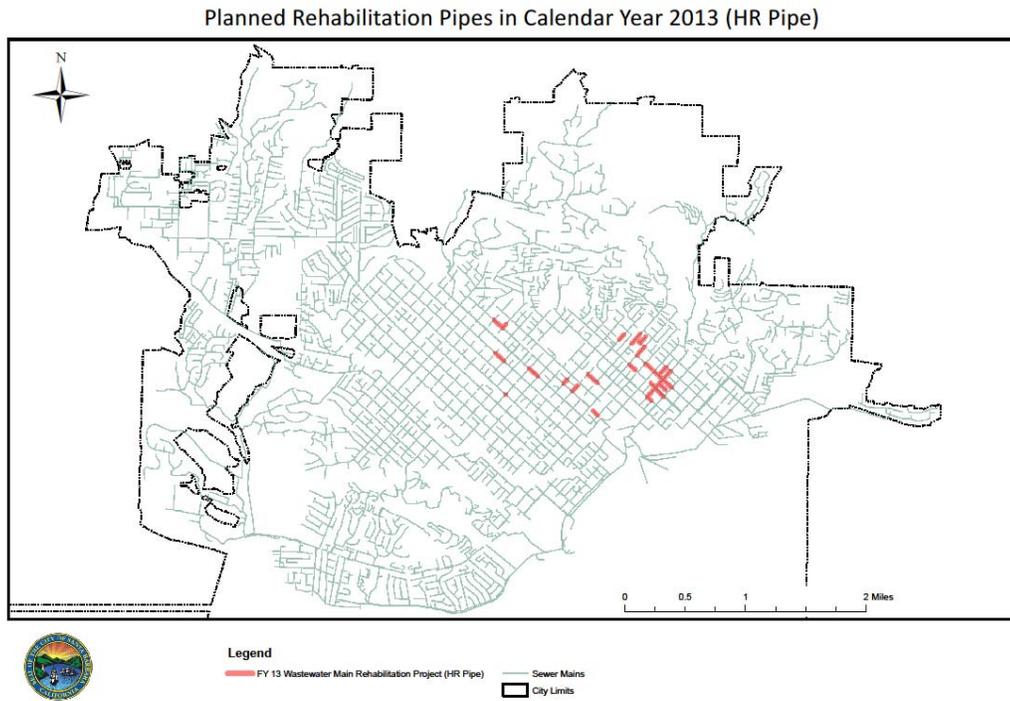


Figure 3-3. Planned Rehabilitation Pipes in 2013 (HRP).

3.2.2 Capital Improvement 2013 – Non High Risk Pipe

The Consent Decree provides pipe rehabilitation, replacement, or repair in excess of the required 2.56 miles shall be credited to the following year. As discussed above, the City completed 4.10 miles of pipe repair, rehabilitation and replacement in 2012. Therefore, 1.54 miles of the 2013 pipe rehabilitation, replacement and repair obligation of the Consent Decree has been completed.

In addition to a CIP rehabilitation contract, the City has an on-call sewer main repair construction contract in place to provide for repairs of sewer mains to be performed on an as-needed basis. This work will be directed to repairing pipes throughout the system, as prioritized by the City’s condition assessment work. Work completed will be credited to 2013 and will ensure that the City continues to meet the Consent Decree requirement of repairing, replacing or rehabilitating 2.56 miles of pipe each year.

3.3 Cleaning Plan Modifications in 2013

3.3.1 Need for Maintenance Control Programs

From analyses conducted both on SSO events and on sewer main cleaning events in 2012, it was found that a major contributor to SSOs are “heavy” and “medium” root condition findings. From review of existing cleaning frequency data, 87 sewer mains were found to have overall “heavy” or “medium” root findings. Of these, 56 sewer mains now have cleaning frequencies greater than six-month time intervals.

To provide better focus on root-related SSO reduction, a new Mechanical Root Control Program is being implemented in 2013. Sewer mains that have been identified with “heavy” or “medium” root condition findings will have their cleaning frequencies manually adjusted to a 6-month interval in 2013. These sewer mains will be cleaned initially at a 6-month frequency to ensure that root growth in sewer mains is controlled until such time that CIP project rehabilitation or repair can be made on these sewer mains.

Analyses made for grease and debris-related “heavy” or “medium” condition findings have resulted in a similar determination for pipe cleaning frequencies to be increased in 2013. Grease condition finding pipes also will result in individual tributary area studies made to determine if upstream commercial food establishments are contributing to these grease condition findings. Special outreach and inspection activities will continue to be conducted at these area food service establishments. For “heavy” or “medium” debris condition findings on smaller diameter sewer mains, cleaning frequencies will be increased if they are at less than 12-month intervals. Cleaning frequency adjustments for larger diameter pipes will be reviewed on a case-by-case basis.

The results for these overall condition finding analyses are presented in Table 3-3.

Table 3-3. 2012 Overall “Heavy” / “Medium” Condition Findings Pipe Count				
Category	Grease	Roots	Debris	Other
<= 6 Months	18	31	35	4
> 6 Months	6	56	62	14
Totals	24	87	97	18

A large number of SSO-related sewer main events have been recorded as “heavy” in the “Other” category in addition to specific category condition findings. For this reason the “Other” category has not been independently analyzed here. It also has been discovered that non-scheduled cleaning events were not getting automatic frequency adjustments made in the Cartegraph software through programming algorithms as were the scheduled cleaning events. The impacted cleaning frequency adjustments for these sewer segments and this Cartegraph programming algorithm error all will be corrected in 2013.

3.3.2 Root Control Program

Table 3-4 presents information related to sewer main mileage changes for sewer mains found to have “medium” or “heavy” root condition findings. Changing these pipes’ cleaning frequencies to a 6-month time interval creates a need to clean an additional 3.12 miles of sewer mains annually.

Table 3-4. Root Control Program Proposed Cleaning Schedule Modifications					
Existing Frequency (Month)	Pipe Count	Geographic Mileage	Existing Annual Cleaning Mileage	Proposed Annual Cleaning Mileage	Annual Cleaning Mileage Increase
12	15	0.61	0.61	1.22	0.61
24	40	1.64	0.82	3.28	2.46
60	1	0.03	.006	0.06	0.05
Totals:	56	2.28	1.44	4.56	3.12

3.3.3 Grease Control Program

Table 3-5 presents information related to sewer main mileage changes for sewer mains found to have “medium” or “heavy” grease condition findings. Changing these pipes’ cleaning frequencies to a 6-month time interval creates a need to clean an additional 0.41 miles of sewer mains annually.

Table 3-5. Grease Control Program Proposed Cleaning Schedule Modifications					
Existing Frequency (Month)	Pipe Count	Geographic Mileage	Existing Annual Cleaning Mileage	Proposed Annual Cleaning Mileage	Annual Cleaning Mileage Increase
12	1	0.07	0.07	0.14	0.07
24	4	0.21	0.11	0.44	0.33
60	1	0.06	0.01	0.02	0.01
Totals:	6	0.34	0.19	0.60	0.41

3.3.4 Debris Control Program

Table 3-6 presents information related to sewer main mileage for sewer mains found to have “medium” or “heavy” debris condition findings.

Table 3-6. Debris Condition Findings’ Existing Cleaning Schedules	
Existing Frequency (Month)	Pipe Count
12	4
24	49
60	9
Total:	62

Sewer mains with diameters greater than 12 inches may not require an accelerated cleaning schedule shorter than twenty four months due to the capacity of these sewer mains to convey sewage flow effectively even though a steady-state debris level exists in the pipe invert. Therefore, Table 3-7 provides a clear focus for near-term changes needed to sewer main cleaning frequencies for sewer mains of diameters that are 12 inches in diameter or less. Changing these pipes’ cleaning frequencies to a 12-month time interval creates a need to clean an additional 0.75 miles of sewer mains annually.

Table 3-7. Small Diameter Pipe Debris Findings Cleaning Mileage Modifications

Existing Frequency (month)	Pipe Diameter (inches)	Pipe Count		Geographic Mileage	Existing Annual Cleaning Mileage	Proposed Annual Cleaning Mileage	Annual Cleaning Mileage Change
12	6	0	4	0.48	0.48	0.48	0
	8	3					
	12	1					
24	6	11	31	1.38	0.69	1.38	0.69
	8	14					
	10 to 12	6					
60	6	0	1	0.08	0.016	0.08	0.06
	8	0					
	12	1					
Totals:		36		1.94	1.19	1.94	0.75

3.3.5 New Mechanical Control Cleaning Program Schedule Summary

These condition finding-based analyses demonstrate that by increasing annual cleaning mileage requirements by a total of 4.28 additional miles, the City can initiate an effective mechanical cleaning program in 2013. This additional measure will provide for cleaning the City's most susceptible sewer mains in event frequencies better suited to prevent excessive materials from collecting in these sewer mains and causing sewer overflows and stoppages. By so doing, the City is implementing an important new measure which is designed to achieve SSO Reduction Goal compliance.

Section 4

Summary and Implementation Schedule

The plans, activities and actions provided in this Annual Wastewater Collection System Report demonstrate the City of Santa Barbara's commitment to providing the highest level of environmental service to its citizens at a budgetary cost consistent with provisions of the Consent Decree. By so doing, the City now is undertaking important new programmatic additional measures which are designed to achieve compliance with SSO Reduction Goals outlined in the Consent Decree.

A schedule which summarizes the City's commitment to continued progress in this regard is provided below in Table 4-1.

Table 4-1. Summary Schedule for Proposed Actions.		
Proposed Action	Start Date	Completion Date
CCTV Contract Work	January 2013	On-going
CCTV City Staff Work	January 2013	On-going
CIP Condition Assessment Work	January 2013	On-going
CIP Pipeline Construction Work	January 2013	On-going
Cleaning City Staff Work	January 2013	On-going
Cleaning Contract Work	As-needed	As-needed
City Management and Planning	January 2013	On-going

Appendices

Appendix A: ESRI GIS Shapefile Documentation

ESRI GIS Shapefile documentation associated with the 2012 Annual Wastewater Collection System Report has been appended electronically here (in CD-ROM format). Each Shapefile's component files are located in individual folders bearing the respective Shapefile name.

The files listed below are found on the accompanying CD-ROM disc:

- Storm sewer pipes the City considered to determine which sanitary sewer pipes are High Risk Pipes:
 - Stormdrainpipes.shp (GIS Data folder)
 - Stormdrainnodes.shp (GIS Data folder)
 - SDataHRPLocations.shp

- Sanitary sewer pipes the City considered to determine which sanitary sewer pipes are High Risk Pipes:
 - Sewermains.shp (GIS Data folder)
 - Sewerstructures.shp (GIS Data folder)
 - KnownHRPAugust2012.shp

- High Risk Pipes the City considered for repair, rehabilitation, and replacement:
 - KnownHRPAugust2012.shp
 - CIP Mileage Completed CY 2012 (folder)

- High Risk Pipes the City intends to repair, rehabilitate, or replace during the current Year:
 - Planned CY 2013 Rehabilitation Pipes (folder)

- List of Planned 2013 CCTV Pipes
 - PlannedCCTVEventsfor2013.shp

Appendix B: Cartegraph Database Documentation

Cartegraph database documentation associated with the 2012 Annual Wastewater Collection System Report has been appended electronically here (in CD-ROM format). Two database tables have been used for analysis work found in the Annual Report: the sewer main asset data table and the event data table. A MS Access database file provided in the CD-ROM contains these two data base tables.

Appendix C: Summary Description of 2012 SSOs

PDF documentation associated with the 2012 Annual Wastewater Collection System Report has been appended electronically here (in CD-ROM format). This file provides a narrative of each SSO event in 2012.