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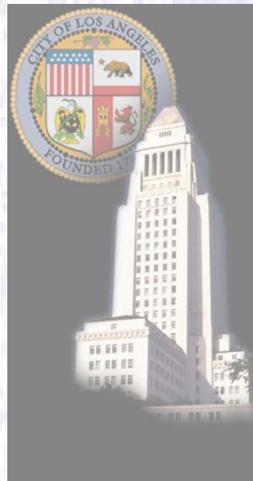


COLLECTION SYSTEM SETTLEMENT AGREEMENT



A deliverable of the Settlement Agreement and Final Order between the city of Los Angeles and Santa Monica Baykeeper et. al.

June 30, 2006



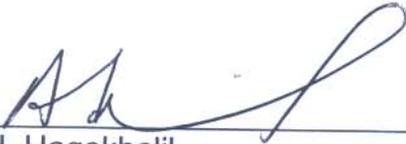
City of Los Angeles
DEPARTMENT OF PUBLIC WORKS
BUREAU OF
SANITATION
Wastewater Engineering
Services Division

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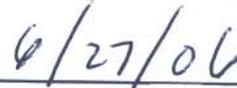
CERTIFICATION

Re: Settlement Agreement and Final Order – Civil Action No. 01-191-RSWL and Civil Action No. 98-9039-RSWL Consolidated – Rehabilitation and Replacement Report and Plan

I certify under penalty of law that this document and its attachments were prepared either by me personally or under my direction or supervision in a manner designed to ensure that qualified and knowledgeable personnel properly gathered and presented the information contained therein. I further certify, based on my personal knowledge or on my inquiry of those individuals immediately responsible for obtaining the information that to the best of my knowledge and belief the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing and willful submission of a materially false statement.



Adel H. Hagekhalil
Division Manager
Wastewater Engineering Services Division
Bureau of Sanitation



Date



**City of Los Angeles
Department of Public Works
Bureau of Sanitation
Wastewater Engineering Services Division**

Wastewater Collection System Rehabilitation and Replacement Report and Plan

*A deliverable of the Settlement Agreement and Final Order between
the City of Los Angeles and Baykeeper et. al.*

Final Report

June 2006



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Executive Summary

Background and Introduction

The City of Los Angeles entered a Collection System Settlement Agreement (Settlement Agreement) with the United States Department of Justice and the United States Environmental Protection Agency in August 2004. The primary intent of the Settlement Agreement is to reduce sanitary sewer overflows (SSOs). A key requirement of the Settlement Agreement is the development of a Rehabilitation and Replacement Report and Plan for the gravity sewer system. This document fulfills this requirement.

This Rehabilitation and Replacement Report and Plan (Plan) identifies the methodology for how rehabilitation and replacement projects have been identified and also summarizes how rehabilitation and replacement projects will be identified and planned in the future. This Plan also identifies the quantity of gravity sewer rehabilitation and replacement to be completed from Year 4 through Year 10 (July 1, 2007 through June 30, 2014) of the Settlement Agreement.

Methodologies and Approaches

The City is aggressively identifying structural condition deficiencies to address the deterioration of the collection system. The goal is to reduce the occurrence of sewer overflows that are caused by factors that are difficult to address through sewer cleaning or root treatment by implementing sewer rehabilitation and replacement projects. The rehabilitation and replacement program consists of four main components:

1. CCTV Inspection (with priority given to sewer basins with the highest number of SSOs per 100 miles).
2. Structural Condition Assessment and Needs Identification
3. Project Development and Prioritization
4. Project Implementation

The City's general approach to each of these components is described in this Plan. By the end of Year 10 of the Settlement Agreement, the City will plan rehabilitation and replacement projects in 100 of the 218 secondary sewer basins (sewer basins with pipe less than or equal to 15 inches in diameter). The City plans to have 75 of the secondary sewer basin plans developed by the end of Year 7 of the Settlement Agreement.

Rehabilitation and Replacement Forecast

While some rehabilitation and replacement projects have been identified, gravity sewer inspection and condition assessment will continue for many years into the future. However, the City has attempted to forecast the quantity of sewer rehabilitation and replacement projects with three basic methods:

1. Projects that have already been identified through inspection and condition assessment.

2. An estimate of the yield of rehabilitation and replacement projects based on analyzing the type and quantity of defects found in reaches that have been inspected but have not been through a full project planning process.
3. A long-term forecast of rehabilitation and replacement projects based on a statistical projection of rehabilitation and replacement yield rates in sewer reaches that have been inspected onto the population of sewer reaches that have not yet been inspected.

Utilizing these three basic techniques, the City has prepared a long-range sewer rehabilitation and replacement forecast. This approach has resulted in an estimate of 420 miles of rehabilitation and replacement in the Primary Sewers and the first 75 secondary sewer basins that will be planned by the end of Year 7 of the Settlement Agreement. The City estimates that this is the amount of rehabilitation and replacement mileage that can reasonably be constructed by the end of Year 10 of the Settlement Agreement since approximately 3 years are necessary to accomplish construction once secondary planning is completed. This results in a plan of 60 miles of rehabilitation and replacement per year for Year 4 through Year 10 of the Settlement Agreement. This forecast will be refined as additional inspection data is collected and as condition assessment efforts progress.

Measurement and Reporting

The Annual Progress Report for the Rehabilitation and Replacement Plan will include the following:

1. An Annual Summary Report,
2. An Annual Detailed Progress Report including an overview map of all reaches that have been repaired, rehabilitated or replaced during the previous fiscal year,
3. An explanation of any deviations from the original Plan, and
4. A description of any significant changes to the Rehabilitation and Replacement Plan.

The format for the Annual Summary Report and the Annual Detailed Progress Report has been included in Section 4 of the Plan.

Section 1 – Introduction

The City owns, operates, and maintains an extensive collection and conveyance system that collects sewage over a 470 square miles area from the 4,000,000 residential customers as well as commercial, institutional, and industrial enterprises within the City and conveys the sewage to one of the City's four treatment facilities.

The collection system ranges in diameter from 6 inches to 150 inches and consists of approximately 6,700 miles of primary and secondary sewers which includes approximately 130 miles of abandoned sewers and approximately 70 miles of sewers within City limits and owned by other agencies. This plan focuses on approximately 6,470 miles of City-owned sewer that are currently in service. Of these 6,470 miles, approximately 5,820 miles are secondary sewers (sewers ranging in diameter from 6 inches to 15 inches) that collect flow from building laterals and convey the sewage to the primary sewer system. In addition, approximately 650 miles of primary sewers (sewers greater than 15 inches in diameter) convey sewage from the secondary sewers to treatment facilities.

Important attributes of the sanitary sewer system include:

- Approximately 63 percent of the total length is greater than 50 years old.
- Approximately 86 percent of the total length is constructed from vitrified clay pipes (VCP) and over 10 percent is constructed from concrete pipe.
- Approximately 77 percent of the total length are 8 inches in diameter.

This Rehabilitation and Replacement Report and Plan (Plan) will discuss the methodologies the City employs to identify collection system structural condition deficiencies within the 6,470 miles of City-owned sewers that are in service. The Plan will process the City will follow to create and prioritize rehabilitation and replacement projects to address these deficiencies. This Plan will also forecast the quantity of gravity sewer rehabilitation and replacement to be completed from Year 4 through Year 10 of the Settlement Agreement.

1.1 Role of Plan in Spill Reduction Program

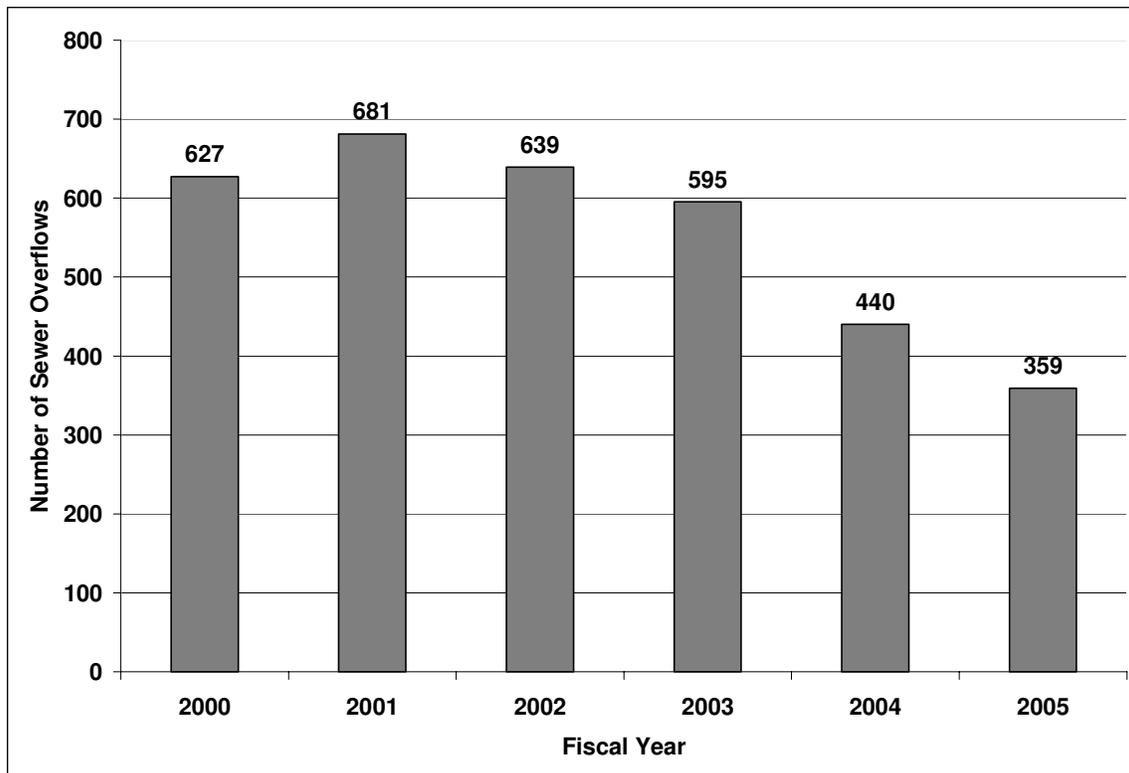
The City has a mature spill reduction program. The spill reduction program has four main components:

1. An aggressive maintenance program to manage Sanitary Sewer Overflow (SSOs) caused by factors that can be influenced by periodic maintenance;
2. An aggressive Fats, Oils, and Grease (FOG) Control Program to minimize the introduction of FOG into the collection system;
3. A comprehensive capacity assurance program to identify and correct capacity deficiencies in the collection system, and;

4. An aggressive capital improvement program to identify and remove collection system defects that can cause SSOs and that can not be managed effectively using a periodic maintenance program.

Over the past six years these programs have proven to be highly effective and have resulted in a 47 percent reduction in the annual number of sewer overflows from Fiscal Year 2000 to Fiscal Year 2005 as shown in Figure 1-1.

Figure 1-1. City of Los Angeles Sewer Overflows - Fiscal Years 2000 to 2005



Two of the most effective overflow reduction programs to date are the City’s sewer cleaning and root control programs. Analysis of sewer overflows shows that sewer reaches on the program had 38.1 sewer overflows per year per 100 miles prior to introduction into the Root Control Program. During Calendar Year 2005, these same sewer reaches now have approximately 7.3 sewer overflows per year per 100 miles after introduction to the Root Control Program. This program has proven to be highly effective at reducing the risk of sewer overflows in sewer reaches with known root problems.

This Plan focuses on the fourth component of the spill reduction program and will describe the City’s plan to focus capital improvement projects on sewer reaches that have defects and other factors that are known to increase the occurrence of sewer overflows and that cannot be effectively managed by an aggressive maintenance program.

1.2 Previous Rehabilitation and Replacement Initiatives

In addition to this Plan, the City has other ongoing sewer rehabilitation and replacement initiatives that have not been included in detail in this Plan. The City’s other ongoing sewer rehabilitation initiatives include:

- Cement Sewer Replacement Program (CSRP)
- Accelerated Sewer Replacement Program (ASRP)

These previous initiatives to address known system deficiencies date back to the early 1990’s. The City originally began a program to rehabilitate and replace deteriorated cement sewers as part of the CSRP until this program was interrupted by the Northridge Earthquake in January 1994. After the Northridge Earthquake, the CSRP was placed on hold to address structural deficiencies caused by earthquake damage as part of the Accelerated Sewer Replacement Program which is still ongoing. More recently, the City reinitiated the Cement Sewer Replacement Program and began incorporating projects into the capital improvement program to address deteriorated cement sewers. Projects that were planned to be completed as part of the CSRP and the ASRP between July 1, 2004 and June 30, 2007 were incorporated into the Settlement Agreement to be completed in Year 1 through Year 3 of the agreement. All gravity sewer rehabilitation and replacement projects planned for implementation after Year 3 of the Settlement Agreement have been incorporated into this Plan.

1.3 Settlement Agreement Requirements

The Settlement Agreement requires the City to submit a Rehabilitation and Replacement Report and Plan. The following paraphrases the requirements identified on Page 27 of the Settlement Agreement¹.

The Rehabilitation and Replacement Report and Plan shall:

- 1. Utilize a comprehensive and systematic inspection and structural condition assessment methodology which enables the City to identify sewers requiring rehabilitation and replacement and to prioritize necessary rehabilitation and replacement projects.*
- 2. Focus on sewers targeted for rehabilitation and replacement based on overflow history, age (with particular attention to sewers constructed prior to 1960), material of construction, maintenance factors, and other factors deemed appropriate by the City.*
- 3. Project the necessary rehabilitation and replacement work for Year Four through Year Ten of the Settlement Agreement. This projection shall specify the number of miles of sewer reaches to be rehabilitated or replaced on an annual and Three-Year Rolling Average basis. The rehabilitation and replacement mileage proposed in the Rehabilitation and Replacement Report and Plan for Years Four through Ten shall not be less than a minimum of 50 miles per Year on an annual*

basis and a minimum of an average of 60 miles per Year on a Three-Year Rolling Average basis.

- 4. Be consistent with the City's methodologies that call for timely rehabilitation and replacement of reaches in Condition D and E, in accordance with City procedures, and provide for the rehabilitation and replacement of other reaches necessary to reduce the risks of SSOs and ensure the long-term sustainable renewal of the City's infrastructure.*
- 5. Include a list of reaches known to date to be in Condition D or E and describe the City's strategies for addressing the other reaches in the targeted sewers.*

Section 2 – Methodologies and Approaches

The overall goal of the City’s Rehabilitation and Replacement Program is to support the long-term sustainability of the collection system infrastructure. The City has already implemented and is currently optimizing an aggressive sewer cleaning, root control, and fats, oils, and grease control program to reduce and minimize the occurrence of sewer overflows from the collection system.

Over the next decade, the City is also aggressively identifying and addressing structural condition deficiencies and collection system deterioration to reduce the occurrence of sewer overflows that are caused by factors that are difficult to address using sewer cleaning or root treatment approaches. The rehabilitation and replacement program consists of four main components:

1. CCTV Inspection
2. Structural Condition Assessment and Needs Identification
3. Project Development and Prioritization
4. Project Implementation

Each of these program components are discussed in detail in the following sections.

2.1 CCTV Inspection

CCTV inspection provides essential information leading to the determination of an appropriate rehabilitation and replacement decision and solution. The City has CCTV inspection crews that perform CCTV inspections in support of operational activities. The City also has private contractors performing CCTV inspections to support the rehabilitation and replacement program. CCTV inspections are performed by trained inspectors employing a defect coding system to document and categorize system appurtenances, structural, and condition defects. CCTV inspection videos are recorded for review by City personnel to support planning and design processes.

2.1.1 Program Approach and Prioritization

Rehabilitation and replacement program CCTV inspections are performed as part of a comprehensive and systematic program that is closely coordinated with the system-wide sewer cleaning program. Sewers that are 15 inches in diameter and less have been divided into 218 secondary sewer basins (secondary basins). Sewers greater than 15 inches in diameter have been divided into 25 primary basins.

Secondary basins are first cleaned and then inspected in priority order. The original basin cleaning and inspection priority was determined using an analysis of stoppage and spill history, miles of concrete pipe, maintenance cleaning findings, and pipe age. These factors were, and are currently, accurate indicators of sewer overflow risk from the City’s collection system. The effectiveness of this approach can be illustrated by the fact that approximately 45 percent of the collection system has been inspected, and the sewer

basins that have been inspected accounted for approximately 73 percent of the City’s sewer overflows from 2000 through 2005. Secondary basin cleaning and inspection priorities are reviewed on an annual basis and modified based on analysis of best available information.

The City has grouped secondary sewer basins into the five groups listed in Table 2-1: Basins 1-20 (Basin Group 1), Basins 21-50 (Basin Group 2), Basins 51-75 (Basin Group 3), Basins 76-100 (Basin Group 4), and the remaining basins. Basin Group 1 through Basin Group 4 will be planned by Year 10 of the Settlement Agreement. Table 2-1 lists each of these Basin Groups along with a total of SSOs from January 2000 through December 2005, percent of total SSOs, percent of miles in the Basin Group versus total system miles, and a calculation of the Spill Factor. For a specified time period, the Spill Factor is calculated for a group of reaches using the following formula:

$$\text{Basin Group Spill Factor} = \frac{(\text{SSOs from the Basin Group} / \text{SSOs from the Entire System})}{(\text{Miles in the Basin Group} / \text{Miles in the Entire System})}$$

The Spill Factor can also be calculated by dividing the number of sewer overflows per 100 miles from a group of reaches by the average number of sewer overflow per 100 miles from the entire system. Table 2-1 shows that the first 75 basins that will be planned constitute 33 percent of the system and will address where 63 percent of the sewer overflows occurred over the past six years. Additionally, Table 2-1 shows that the first 100 basins planned will address deficiencies and needed improvements in areas where 76 percent of the sewer overflows occurred over the past six years.

Table 2-1. Basin Groups and Spill Factors

Basin Group	Basins	Total SSOs ¹	% of Total SSOs	% of Total Miles	Basin Group Spill Factor
1	1-20	757	24.8%	10.5%	2.36
2	21-50	792	25.9%	13.7%	1.89
3	51-75	371	12.1%	8.5%	1.43
4	75-100	394	12.9%	12.7%	1.02
Remaining	101+	741	24.3%	54.6%	0.44
	Grand Total	3055	100.0%	100.0%	1
1 through 3	1-75	1920	62.8%	33%	1.92
1 through 4	1-100	2314	76%	45%	1.67

1. From January 2000 through December 2005.

Table 2-1 shows the City is focusing cleaning, inspection, and capital program resources on locations in the City that are causing the majority of sewer overflows.

2.1.2 CCTV Inspection in Support of Operations and Maintenance

CCTV inspections supporting operations and maintenance activities are primarily performed by City crews. These inspections are performed mainly to identify the cause of sewer overflows or, at the request of City crews, to identify the cause of system issues encountered during sewer maintenance activities. These inspections often lead to corrective actions in the form of rehabilitation and replacement projects or maintenance program modifications.

2.1.3 Rehabilitation and Replacement Program Inspections

Rehabilitation and replacement program inspections are performed primarily by CCTV inspection contractors as part of a systematic program to inspect the entire collection system before the end of Year 10 of the Settlement Agreement. Similar to operational inspections, information collected during these inspections is used to assess the condition of the system and identify reaches requiring rehabilitation or replacement as well as to support maintenance program modifications.

2.1.4 Defect Coding System

The City developed a defect coding system for identifying and categorizing sewer defects. These standard defects are used by both City CCTV crews and CCTV contractors to document defects identified during sewer inspections. A list of the City's current defect codes is included in the technical memorandum titled *Sewer Condition Categories*, dated March 1994².

The City is currently evaluating the possibility of using the NASSCO defect coding system in the future. The main reason for this potential migration to the NASSCO defect coding system is to adopt the emerging national standard for sewer defect coding used by all CCTV inspection contractors in the United States and eliminate the need for specialized training and costly information system modifications charged by contractors to handle customized defect coding systems.

2.1.5 Condition Ranking

Each sewer defect has a numerical score associated with each point defect or a score per lineal foot for each continuous defect. The City utilizes the sum of these scores divided by the length of the sewer reach to calculate a normalized score per lineal foot for each sewer reach. The City uses the score per lineal foot for a sewer reach to develop a condition ranking for each reach that places the reach into one of five condition ranks ranging from A to E. This process is described in detail in the technical memorandum titled *Sewer Condition Categories*, dated March 1994². The general condition description of each of the five condition ranks is shown in Table 2-2.

Table 2-2. Sewer Condition Ranks

Condition Rank	Description	Action Identified
A	<u>Very Good</u> • Condition is almost like-new sewer reach.	<u>No Repairs</u> Future routine inspection
B	<u>Good</u> • Light Cracks localized • Light Corrosion localized • Light Roots localized	<u>No Immediate Repairs</u> Routine Maintenance Program. Schedule next inspection in the order of sewer system priority.
C	<u>Fair</u> • Moderate Cracks/Fractures • Moderate Corrosion continuous • Moderate Infiltration continuous • Moderate Roots continuous	<u>Routine Repairs as Needed</u> Includes planning, environmental documentation, technical investigations, design, reviews, bid and award following established priorities.
D	<u>Poor</u> • Severe Cracks/Fractures • Broken Reach with Holes • Severe Corrosion • Severe Infiltration/Roots	<u>Repairs</u> Includes regular bid and award, fast track construction, accelerate planning/design, and monitoring.
E	<u>Emergency</u> • Collapsed Pipe (PX) • Dirt Pipe (CPD) • Crown of Pipe Gone (CPC, CG) • Void in Backfill around pipe • Full Flow Obstruction/Blockage	<u>Emergency Repair</u> Initiate Special Order Procedure "Urgent Necessity "

2.1.6 CCTV Inspection Data Quality Control

The City has a comprehensive quality control program to review and correct the accuracy of inspection data. CCTV inspection data is collected and stored in a database that utilizes data validation queries to flag simple database errors that result from nonconformance with data collection and data entry standards. Database errors are reviewed and corrected as part of the CCTV inspection review process. CCTV review is performed on all reaches where CCTV contractors have identified any number of major or minor structural defects and on a random sampling of reaches where the CCTV contractor has not identified any major or minor structural defects and the reach has ranked “B” or better.

2.2 Structural Condition Assessment, Needs Identification, and Project Development

The City has a comprehensive process to analyze and categorize CCTV inspection information to identify rehabilitation and replacement needs. The process was originally developed in the early 1990’s and documented in the technical memorandum titled *Sewer Condition Categories*, in March 1994². More recently, the City updated this process

based on the best available information and practices developed in the industry over the past decade. This has resulted in three distinct processes that can result in the identification of repair, rehabilitation, and replacement needs of sewer reaches and the development of rehabilitation and replacement projects. These processes are:

1. Emergency/Expedited Process;
2. Primary Sewer Planning Process, and;
3. Secondary Sewer Planning Process.

2.2.1 Emergency/Expedited Process

The City has a process to identify and expedite repair, rehabilitation and replacement on sewer reaches that have defects deemed as high risk and that could lead to imminent system failures or sewer overflows. The emergency/expedited process begins with the review of incoming CCTV data. As described previously, CCTV data is received by the City and uploaded into a CCTV database. During CCTV inspection data quality control review, the CCTV reviewer will identify sewer reaches containing defects that create either an emergency condition or high-risk of sewer overflow. These defects are placed on a list of reaches that are reviewed by the Project Development Team (PDT). The PDT is comprised of City and consultant staff representing operations, planning, and design divisions. The PDT meets once per week to review reaches identified as candidates for the emergency or expedited process and determines an appropriate action. This emergency/expedited process provides the City with a means to identify and expedite repair, rehabilitation, and replacement on emergency and critical sewer reaches years faster than through the traditional basin planning process.

2.2.1.1 Process for Selection of Reaches for PDT Review

In addition, sewer reaches that have a condition “E” ranking are placed as highest priority for CCTV review and are reviewed immediately. Condition “E” ranked reaches will have one of four “critical” defects that include:

- Crown Gone (CG)
- Corrosion Pipe Crown Gone (CPC)
- Corrosion Pipe Dirt Pipe (CPD)
- Pipe Collapsed (PX)

Other defects that are not considered critical may result in a reach being selected for PDT review. These defects include:

- Alignment Vertical Severe (AVS)
- Corrosion Pipe Soil Exposed (CPE)
- Corrosion Pipe Invert Gone (CPI)
- Corrosion Pipe Severe (CPS)

- Infiltration Joint Severe (IJS)
- Infiltration Pipe Severe (IPS)
- Joint Broken (JB)
- Joint Open (JO)
- Joint Offset Severe (JSS)
- Pipe Broken (PB)
- Pipe Cracks (PCL, PCM, PCR, PCS)
- Pipe Deformed (PD)
- Pipe Fractures (PFL, PFM, PFR, PFS)
- Pipe Hole (PH)
- Lateral Protruding Severe (PS)

The CCTV Reviewer will evaluate these defects and will decide which reaches to forward to PDT.

2.2.1.2 PDT Review and Referral Process

The PDT reviews CCTV inspection reports and videos forwarded by the CCTV reviewers. The PDT determines whether to move forward with repair, rehabilitation, or replacement of the reach using existing contract vehicles for emergency or expedited projects or to refer the reach to the primary or secondary sewer planning process. Reaches selected by the PDT for action are submitted to the Bureau of Engineering for expedited design and construction.

2.2.2 Primary Sewer Planning Process

The process for sewer master planning of the primary system is described in detail in the Capacity Report and Plan³. The main focus of primary sewer planning is the anticipation and identification of future capacity needs and the development of primary sewer projects to address these needs. In addition to identifying capacity needs and capacity-related projects, the primary sewer planning process includes a review of CCTV inspection data and sewer condition ranking to determine if a repair, rehabilitation, or replacement project is necessary in primary sewer reaches. Each primary sewer reach with a “D” condition ranking is evaluated to determine an appropriate repair, rehabilitation, or replacement project to restore the reach to a “C” ranking or better. Each primary sewer reach with a “C” condition ranking is evaluated on a case-by-case basis to determine whether a repair, rehabilitation, or replacement project is necessary.

2.2.3 Secondary Sewer Planning Process

In March 2005, the City updated the guidelines for identifying rehabilitation and replacement needs as described in Section 2.2.3.1. The City began using these revised

guidelines as the basis for identifying rehabilitation and replacement needs in Basin Group 1 with the understanding that these guidelines would again be updated prior to planning Basin Groups 2, 3, and 4.

The City is currently in the process of updating secondary basin planning guidelines for identifying rehabilitation and replacement needs as described in Section 2.2.3.2. The City will begin using these revised guidelines to perform secondary basin planning beginning with Basin 21, the first basin in Basin Group 2. The City will also continue to update and optimize the guidelines based on asset management principles and approaches.

2.2.3.1 Summary of Project Planning Guidelines for Basin Group 1

Reaches in the first 20 secondary sewer basins to be planned have been categorized by the existence of major defects and obsolete structures. The major defect and obsolete structure categories that are currently evaluated for rehabilitation or replacement are summarized in Table 2-3.

These renewal guidelines are included in each of the Secondary Sewer Plan reports that have been created by the City. Each of these plans include a general structural and hydraulic assessment of the sewer basin as well as a detailed description of the defect criteria and scoping process used to identify rehabilitation and replacement needs and development of project packages. An example of one of these reports is titled *Secondary Sewer Plan H30, Hollywood*⁴ created July 2005.

Table 2-3. Definition of Risk Categories for Basin Group 1

Risk Category	Definition of Risk Category
"B", "C", or "D" - Roots	Reaches that are condition ranked "B", "C", or "D" and have at least one medium or severe root defect at a joint.
"C" - Concrete	Concrete reaches that are condition ranked "C" that may be fairly or substantially corroded.
"C" or "D" - Structural	Reaches that are condition ranked "C" or "D" with structural defects.
6-inch - Roots	6-inch diameter reaches that have at least one medium or severe root defect at a joint.
6-inch – Non-Roots	6-inch diameter reaches that do not have any medium or severe root defects.
Metal > 30 Years	Metal reaches (cast iron or ductile iron) greater than 30 years old.
Obsolete Structures	Reaches that include terminal lampholes, clean-outs, non-operational flush tank mechanisms, chimney risers, or 6-inch drop connections.

Secondary sewer basin planners apply these risk categories to each sewer reach through analysis of defect codes and the existence of indicators of elevated sewer overflow risk such as roots, structural defects, etc. Planners then use this categorization to identify a repair, rehabilitation, or replacement solution by applying the Secondary Sewer Renewal Program Guidelines that are summarized in Table 2-4.

Table 2-4. Summary of Secondary Sewer Renewal Program Guidelines by Risk Category for Basin Group 1

Risk Category	Planning Guideline
"B" - Roots	Line.
"C" - Roots	Renew.
"D" - Roots	Replace.
"C" - Concrete	Renew.
"C" - Structural	No action required.
"D" - Structural	Renew.
6-inch - Roots	Evaluate. Replace with 8-inch if roots cannot be managed through maintenance.
6-inch - Non-Roots	Evaluate. Replace with 8-inch if necessary.
Metal > 30 Years	Analyze each case and replace accordingly.
Obsolete Structures	Evaluate. Replace if adjacent to a pipe rehabilitation or replacement project.

2.2.3.2 Summary of Project Planning Guidelines for Basin Groups 2, 3, and 4

The City is currently in the process of revising the project planning guidelines for Basin Groups 2, 3, and 4. Each Basin Group has been analyzed separately to determine the types of risk categories that most accurately identify reaches with elevated sewer overflow risk categories in each Basin Group. Analysis of sewer overflows in these Basin Groups has shown that the risk categories listed in Table 2-5 are the most effective at predicting the risk of sewer overflows within these basins.

These risk categories were developed by analyzing CCTV data, age, material, and maintenance data to isolate factors that indicate elevated sewer overflow risk. Table 2-6 summarizes the Spill Factor for each risk category in each basin group. A Spill Factor greater than 1 indicates that the group of reaches has an above average risk of sewer overflows.

Table 2-5. Definitions of Risk Categories for Basin Groups 2, 3, and 4

Risk Category	Definitions of Risk Category
Metal > 30 Years	Cast Iron, Ductile Iron, or Steel pipe greater than 30 years old.
"D" or worse	Reaches with a Condition Ranking "D" or "E".
Major Defects	Reaches that have at least one major defect. Major defects are primarily structural defects and include: <ul style="list-style-type: none"> • Severe bends, sags, and pipe deformation • All defects indicating missing pipe, broken pipe/joints, collapsed pipe, fractures, or large holes in the pipe • Open joints and severe offset joints • Severe corrosion • Severe infiltration • Severe protruding laterals
Severe Roots	Reaches that have at least one severe root defect in the pipe or at a joint.
> 50 % Medium Roots	Reaches with medium roots defects in the pipe or at joints along more than 50 percent of the total reach length.
Obsolete Structures ¹	Reaches that include terminal lampholes, clean-outs, non-operational flush tank mechanisms, chimney risers, or 6-inch drop connections.

1. The existence of an obsolete structure is not an indicator of elevated sewer overflow risk. Obsolete structures do hinder maintenance efforts and are targeted for removal when in proximity to a planned sewer reach rehabilitation or replacement project.

Table 2-6. Spill Factors for Basin Groups 2, 3, and 4 for Reaches in Risk Categories

Risk Category	Basin Group 2 (Basins 21-50)	Basin Group 3 (Basins 51-75)	Basin Group 4 (Basins 76-100)	Grand Total
Metal > 30 Years	3.21	0.00	2.97	1.97
"D" or worse	1.95	3.05	1.54	2.06
Major Defects	2.50	2.01	1.82	2.17
Severe Roots	1.80	0.72	0.95	1.29
> 50% Medium Roots	1.81	3.16	0.85	1.74

Table 2-6 shows that Spill Factors are well above 1 for each risk category in Basin Group 2. In Basin Groups 3 and 4, the Spill Factor for the "Severe Roots" category is below 1. Additionally, for Basin Group 4, the Spill Factor for the ">50% Medium Roots" category is also below 1. For each Basin Group, the City will plan to address reaches in risk categories that have a Spill Factor greater than 1 with a rehabilitation and replacement solution. The City will not plan to rehabilitate or replace reaches in the "Severe Roots" risk category in Basin Groups 3 and 4 or reaches in the ">50% Medium Roots" risk category in Basin Group 4 with a rehabilitation or replacement solution. In these cases the City will continue aggressive sewer cleaning and root control practices.

This approach is validated by analysis of the City’s sewer cleaning and root control program as discussed in Section 1.1. The City’s sewer cleaning and root control program has proven to be highly effective at reducing the risk of sewer overflows in sewer reaches with known root problems. The City recently performed an asset management-based analysis of reaches with root-related defects and determined that sewers with no major structural defects and severe or medium root defects located at the pipe joint or in the pipe can be effectively addressed through aggressive maintenance practices and root control techniques. In addition, the City has analyzed the cost-benefit of root control approaches versus rehabilitation and replacement approaches and has found that maximizing the useful life of reaches with root problems using maintenance and root control techniques provides the best overall value to the customer when root-related sewer overflows can be effectively controlled. As a result of these analyses, the City will aggressively maintain and monitor reaches with known root defects and will select individual reaches for renewal if it is determined that factors leading to sewer overflows cannot be effectively managed through maintenance.

Table 2-7 summarizes the revised guidelines for secondary sewer renewal planning by the risk categories defined in Table 2-5 and by Basin Group.

Table 2-7. Summary of Revised Secondary Sewer Renewal Program Guidelines by Risk Category and Basin Group

Basin Group	Risk Category	Planning Guideline
2, 3, and 4	Metal > 30 Years	Analyze each case and replace accordingly.
2, 3, and 4	“D” or worse	Replace if 6-inch or if more than 1 point repair per 100 feet. Point repair or line if feasible.
2, 3, and 4	Major Defects	Replace if 6-inch or if more than 1 point repair per 100 feet. Point repair or line if feasible.
2	Severe Roots	Point repair or line.
2, 3	> 50 % Medium Roots	Line.
2, 3, 4	Obsolete Structures	Evaluate. Replace if adjacent to a pipe rehabilitation or replacement project.

2.2.3.3 Secondary Basin Planning for Basins 101 Through 218

Secondary basin planning for Secondary Basins 101 through 218 will occur after Year 10 of the Settlement Agreement and will not be addressed as part of this Plan. Reaches in Basins 101 through 218 that contain critical defects or other high risk factors will be identified during the PDT process as described in Section 2.2.1. These defects will be addressed if deemed to be an emergency situation or worthy of an expedited project.

2.2.3.4 Watermark Analysis and Flow Gauging

The secondary sewer basin planners also perform a watermark analysis on reaches within a sewer basin to identify reaches that have a flow depth greater than 50 percent of the diameter of the reach. Reaches that are identified during the watermark analysis are

selected for flow gauging and these results are incorporated into the rehabilitation and replacement decision-making process. This process is described in detail in the example secondary basin planning report titled *Secondary Sewer Plan H30, Hollywood*, created July 2005⁴.

2.2.3.5 Project and Plan Development

The final step of the secondary sewer basin planning process is the grouping of reaches selected for renewal into project packages. The result of the entire planning process is the development of a *Secondary Sewer Plan* that identifies all reaches selected for renewal along with pertinent information to support design as well as identification of groupings of selected reaches into project areas. The City’s goal is to complete all secondary sewer basin planning for 100 of the secondary sewer basins by Year 10 of the Settlement Agreement. Table 2-8 shows a high-level schedule for the completion of secondary basin planning by Basin Group and Settlement Agreement Year.

Table 2-8. Number of Secondary Basins Planned by Settlement Agreement Year

Settlement Agreement Year	Basin Group	Number of Basins	Cumulative Number of Basins	Total Basin Miles ¹	Miles per Basin
1	1	10	10	284	28.4
2		10	20	311	31.1
3	2	13	33	267	20.5
4		10	43	251	25.1
5		7	50	259	36.9
6	3	16	66	242	15.1
7		9	75	239	26.5
8	4	8	83	273	34.2
9		11	94	254	23.1
10		6	100	191	31.8
Total		100		2571	25.7

1. This is the total secondary basin miles that will be assessed.

2.3 Project Prioritization

Each of the four processes described in Section 2.2 result in the creation of sewer rehabilitation and replacement projects. The emergency projects are addressed immediately through existing emergency services contracts. The expedited projects are dispatched and addressed in a matter of months and are completed in the order the projects are dispatched. The primary and secondary sewer projects are placed into the wastewater capital improvements program and are scheduled for design and construction in the same order as planned since primary sewers and secondary sewer basins are planned in priority order.

The City has a process to review project priorities on an annual basis as part of the Wastewater Capital Improvements Program (WCIP) annual reviews and to accelerated or decelerated project schedules if deemed necessary. Additionally, the City has a Program Review Committee (PRC) that meets monthly to review and modify project scope and schedule if deemed necessary.

2.4 Project Implementation

Planned and prioritized emergency, primary, and secondary sewer projects are delivered to the Bureau of Engineering for implementation. Reaches selected for emergency action are submitted to the Bureau of Engineering for expedited design and construction. Projects planned as part of the primary or secondary planning process are designed and constructed by the Bureau of Engineering in the order projects are received unless reprioritized by the PRC. The Bureau of Engineering reviews all information provided with project plans and performs field investigations and alternatives analysis to determine the final repair, rehabilitation, or replacement solution for each reach selected for renewal. Modifications to the renewal solution are communicated to the primary and secondary basin planners for final approval. This information is utilized during the Renewal Guidelines revision process to identify opportunities to modify and optimize the planning process to generate rehabilitation and replacement solutions that more closely align with final design solutions.

Section 3 – Identifying and Forecasting Rehabilitation and Replacement Projects

The Rehabilitation and Replacement Forecast in this Plan is for the repair, rehabilitation and replacement of gravity sewers during Year 4 through Year 10 (Fiscal Year (FY) 2008 through FY 2014) of the Settlement Agreement. As described in the following sections, the Rehabilitation and Replacement Forecast validates the City’s Plan for FY 2008 through FY 2014 for the completion of a minimum of 50 miles per year in any given year and a three-year rolling average of 60 miles per year. This equates to a plan for the repair, rehabilitation or replacement of approximately 420 miles of gravity sewers over this 7-year period.

3.1 Method to Identify Repair, Rehabilitation, and Replacement Projects for Reaches with a Condition Ranking of “D” or “E”

The Settlement Agreement requires the City to rehabilitate or replace all sewer reaches that have a “D” or “E” condition ranking. To identify repair, rehabilitation, and replacement projects for reaches with a condition ranking of “D” or “E”, the City utilizes the following basic process:

- Step 1: All sewer reaches with a condition ranking of “D” and “E” are identified. The City’s condition ranking process is summarized in Section 2.1.5.
- Step 2: All reaches with a condition ranking of “E” are referred for emergency repair via the emergency/expedite process described in Section 2.2.1. The City intends to continue this practice in the future, ensuring all emergency repairs will be completed for the City’s entire system, not for just the basins that will be planned through Year 10 of the Settlement Agreement.
- Step 3: All reaches with a condition ranking of “D” are currently referred to the Bureau of Engineering for repair, rehabilitation or replacement via the primary and secondary sewer planning processes or through the emergency/expedite process as described in Section 2.2.

3.2 Identifying Additional Rehabilitation and Replacement Projects

In addition to gravity sewers with a Condition Ranking of “D” or “E”, the City has identified other rehabilitation and replacement projects for implementation both prior to Year 4 of the Settlement Agreement and during Years 4 through 10 of the Settlement Agreement. The existing projects were identified utilizing the following methods:

1. Other Rehabilitation and Replacement Programs as discussed in Section 1.2. Since 1994, the City has identified, planned and/or constructed approximately 467.5 miles of rehabilitation and replacement projects under these other programs. This quantity of rehabilitation and replacement projects is shown in Table 3-1.

Section 3 – Identifying and Forecasting Rehabilitation and Replacement Projects

2. Existing Rehabilitation and Replacement Projects that have already been identified by the City. This consists of approximately 83.5 miles of projects that have been identified and planned for construction after Year 3 of the Settlement Agreement.
3. Rehabilitation and Replacement Projects identified in Basins 1 through 20 of the Secondary Basin Planning Process. This process is discussed in more detail in Section 3.2.1.

3.2.1 Method to Identify Rehabilitation and Replacement Projects in the Secondary Basin Planning Program

The City’s gravity sewer rehabilitation and replacement project identification process for Basin Group 1 of the secondary basin planning program is summarized in Section 2.2.3.1. Utilizing this project identification process on Basin Group 1 (Basins 1 through 20) of the Secondary Basin Planning program identified a potential total of 133.2 miles of rehabilitation and replacement projects that were referred to the City’s Bureau of Engineering for further analysis and design. The results of the secondary planning process for Secondary Basins 1 through 20 are summarized in Tables 3-1.

Table 3-1. Rehabilitation and Replacement (R&R) Projects Completed Since 1994 or Currently Planned

Item Number	Description of Projects	Miles of Rehabilitation and Replacement Projects Currently Planned
1	Previous Rehabilitation and Replacement Efforts (Prior to Settlement Agreement or Included in Years 1 Through 3 of the Settlement Agreement) - See Section 1.2	467.5
2	Year 4 Rehabilitation and Replacement Projects - See Section 3.1	83.5
3	Rehabilitation and Replacement Projects Identified in Basins 1 through 20 of the Secondary Basin Planning Process	133.2
4	Total Miles of Gravity Sewer Rehabilitation and Replacement Projects Currently Identified Since 1994 (Sum of Item 1 + Item 2 + Item 3):	<u>684.2</u>
5	<i>Total Miles of Gravity Sewer Rehabilitation and Replacement Projects Currently Identified for Years 4 Through 10 of the Settlement Agreement (Sum of Item 2 + Item 3):</i>	<u>216.7</u>

3.3 Forecasting Rehabilitation and Replacement Projects for Years 4 through 10 of the Settlement Agreement

While some rehabilitation and replacement projects have already been identified, gravity sewer inspection and condition assessment will continue for many years into the future. To develop a more realistic Plan, the City has attempted to forecast the quantity of sewer rehabilitation and replacement projects that will be identified utilizing the following methods:

1. A forecast of rehabilitation and replacement projects that will result from the Primary Basin Planning Process. This process is discussed in Section 3.3.1.
2. An estimate of the yield of rehabilitation and replacement projects for Basins 21 through 100 of the Secondary Basin Planning Program based on analyzing the type and quantity of defects found in reaches that have been inspected but have not been through a full project planning process. This process is described in Section 3.3.2.
3. A long-term forecast of rehabilitation and replacement projects for Basins 21 through 100 of the Secondary Basin Planning Program based on a statistical projection of rehabilitation and replacement yield rates in sewer reaches that have been inspected onto the population of sewer reaches that have *not* yet been inspected. This process is described in Section 3.3.2.

Utilizing these methods, the City has prepared a Gravity Sewer Rehabilitation and Replacement Forecast for the basins that will be evaluated through Year 10 of the Settlement Agreement. This forecast will be refined and adjusted as additional inspection data is collected and as the City's planning efforts progress.

3.3.1 Forecasting Future Rehabilitation and Replacement Projects from Primary Basins

The City's Primary Basin Planning process is detailed in Section 2.2.2. For the purposes of forecasting the quantity of rehabilitation and replacement projects that will be identified during the Primary Basin Planning process, the City will refer all condition "D" or worse reaches for rehabilitation or replacement.

While all reaches with a TV Rank of "C" will be evaluated and will be referred for rehabilitation or replacement only if necessary, these reaches were included in the rehabilitation and replacement forecast shown in Table 3.2. The actual quantity of rehabilitation and replacement projects for the Primary Basins will be adjusted based on the outcome of the detailed evaluation of reaches with a TV Rank of "C".

3.3.2 Forecasting Future Rehabilitation and Replacement Projects from Secondary Basins

The City has prepared a sewer rehabilitation and replacement project identification process for use in Secondary Planning Basins 21 through 100 of the Secondary Basin Planning program. This process is summarized in Section 2.2.3.2.

Section 3 – Identifying and Forecasting Rehabilitation and Replacement Projects

While basins 21 through 100 have not entered the secondary basin planning process, the City wants to forecast the total quantity of sewer rehabilitation and replacement that will be required in these remaining basins. This forecast has been divided into two parts:

1. An estimate of the yield of rehabilitation and replacement projects based on analyzing the type and quantity of defects found in reaches that have been inspected but have not been through a full project planning process, and
2. A forecast of rehabilitation and replacement projects based on a statistical projection of rehabilitation and replacement yield rates in sewer reaches that have been inspected onto the population of sewer reaches with similar age and material characteristics that have not yet been inspected.

The results of this forecast are presented in Table 3-2.

Table 3-2. Forecast of Rehabilitation and Replacement Projects for the Remainder of the City's Wastewater Collection System

Item Number	Reaches Evaluated When Preparing the Forecast	Forecast of Miles of Rehabilitation and Replacement Projects	Cumulative Forecast of Gravity Sewer Rehabilitation and Replacement Projects (Miles)
1	Total Miles of Gravity Sewer Rehabilitation and Replacement Projects Currently Planned for Years 4 Through 10 of the Settlement Agreement (See Item 5 in Table 3-1):	216.7	216.7
2	All Reaches in Primary Planning Basins That Have Been Inspected as of April 5, 2006 But Have Not Been Through the full Primary Planning Process	20	236.7
3	All Reaches in Secondary Planning Basins 21 through 50 That Have Been Inspected as of April 5, 2006 But Have Not Been Through the Secondary Basin Planning Process	120.2	356.9
4	Remaining Reaches in Secondary Planning Basins 21 through 50 That Have Not Been Inspected as of April 5, 2006	20.5	377.4
5	All Reaches in Secondary Planning Basins 51 through 75 That Have Been Inspected as of April 5, 2006 But Have Not Been Through the Secondary Basin Planning Process	36.3	413.7
6	Remaining Reaches in Secondary Planning Basins 51 through 75 That Have Not Been Inspected as of April 5, 2006	7	<u>420.7</u>
7	All Reaches in Secondary Planning Basins 76 through 100 That Have Been Inspected as of April 5, 2006 But Have Not Been Through the Secondary Basin Planning Process	40.8	461.5
8	Remaining Reaches in Secondary Planning Basins 76 through 100 That Have Not Been Inspected as of April 5, 2006	16.3	477.8

3.3.3 Forecast of Future Rehabilitation and Replacement Projects

Table 3-2 summarizes all of the forecasts for sewer rehabilitation and replacement in the Primary Basins and in the Secondary Planning Basins 21 through 100. The methods utilized to prepare these forecasts are detailed in Sections 3.3.1 and 3.3.2.

3.4 Plan for Gravity Sewer Rehabilitation and Replacement Projects (Year 4 through Year 10)

This Plan is for Years 4 through 10 of the Settlement Agreement (FY 2008 through FY 2014). The City has set an annual target of 60 miles per year of rehabilitation and replacement for Years 4 through 10 of the Settlement Agreement based on the following reasons:

- The City will complete the planning for Secondary Basins 21 through 75 by the end of Year 7 of the Settlement Agreement (see Table 2-8 for the Secondary Basin Planning Schedule).
- The City forecasts that approximately 420.7 miles of rehabilitation and replacement projects will be identified through existing projects, Primary Basin planning, and through the planning of Secondary Basins 1 through 75 (see Item 6 of Table 3-2).
- Once rehabilitation and replacement projects are identified by the City's planning process, the City requires approximately 3 years to complete design, bidding and construction of these projects. As a result, projects planned after Year 7 of the Settlement Agreement can not reasonably be completed by the end of Year 10 of the Settlement Agreement.

The City will reasonably be able to accomplish construction of approximately 420 miles of gravity sewer rehabilitation and replacement by the end of Year 10 of the Settlement Agreement. This results in a plan for a total of approximately 60 miles per year of rehabilitation and replacement during years 4 through 10 of the Settlement Agreement. The target quantity of rehabilitation and replacement for Year 4 thru Year 10 are detailed in Table 3-3.

Table 3-3. Target Gravity Sewer Rehabilitation and Replacement Quantity – Year 4 Through Year 10 of the Settlement Agreement

Settlement Agreement Year	City of Los Angeles Fiscal Year	Target Quantity of Rehabilitation & Replacement (Miles)¹	Settlement Agreement Requirement for 3-Year Rolling Average of Rehabilitation & Replacement (Miles)²
4	2008	60	N/A
5	2009	60	N/A
6	2010	60	60
7	2011	60	60
8	2012	60	60
9	2013	60	60
<u>10</u>	2014	<u>60</u>	<u>60</u>
Total		420	

1. While the City's target gravity sewer rehabilitation and replacement quantity each year will be 60 miles, the Settlement Agreement states that the minimum quantity of sewer rehabilitation and replacement per year is 50 with a 3-year rolling average of 60 miles per year.
2. The Settlement Agreement requires that a 3-year rolling average of 60 miles per year of rehabilitation and replacement must be maintained. During Years 4 and 5, a 3-year rolling average will not be available. Beginning in Year 6, the City will begin reporting a 3-year rolling average as required by the Settlement Agreement.

3.5 List of Pipes Known to be in Condition D or E

As required by the Settlement Agreement, this report includes a list of all reaches known to be in Condition D or E. The list is included in Appendix A on a compact disc in Adobe AcrobatTM (.pdf) format. This list was generated from CCTV dated that was available on April 5, 2006.

Section 4 – Progress Measurement and Reporting

Beginning in 2008, an Annual Progress Report will be prepared summarizing the gravity sewer rehabilitation and replacement projects completed during the previous fiscal year. This report will be issued each year on or before September 1.

4.1 Annual Progress Report

The Annual Progress Report for the Plan will include the following:

1. An Annual Summary Report,
2. An Annual Detailed Progress Report including and overview map of all reaches that have been repaired, rehabilitated or replaced during the previous fiscal year,
3. An explanation of any deviations from the original Plan, and
4. A description of any significant changes to the Plan.

A brief description of each section of the Annual Progress Report is included in the following sections.

4.1.1 Annual Summary Report

The Annual Progress Report will include an Annual Summary Report of all gravity sewer repair, rehabilitation and replacement projects completed during the previous calendar year including the mileage of sewer reach rehabilitation and replacement associated with these projects.

See Table 4-1 for an example of the format for the Annual Summary Report for the Plan.

4.1.2 Annual Detailed Progress Report

In addition to the Annual Summary Report, the City will provide an Annual Detailed Progress Report for the Rehabilitation and Replacement Plan. The Annual Detailed Report will include a summary of all reaches that have been repaired, rehabilitated, or replaced during the previous fiscal year. See Table 4-2 for an example format for the Annual Detailed Progress Report for the Rehabilitation and Replacement Plan.

In addition to the information shown in Table 4-2, the Annual Detailed Progress Report will include an overview map depicting the location of each sewer reach that has been repaired, rehabilitated, or replaced during the previous fiscal year.

Section 4 – Progress Measurement and Reporting

Table 4-1. Example - Annual Summary Report for the Rehabilitation and Replacement Report and Plan

Settlement Agreement Year	1. City of Los Angeles Fiscal Year	2. Target Rehabilitation & Replacement Quantity (Miles)	3. Actual Mileage of Rehabilitation & Replacement (Miles)	4. Surplus or Shortfall this Year vs. Plan (Column 3 Minus Column 2) ¹	4. 3-Year Rolling Average of Rehabilitation & Replacement (Miles) ²	5. Surplus or Shortfall During this Year Based on 3-Year Rolling Average (Column 4 Minus 60 Miles per year)
4	2008	60	_____	_____	N/A	N/A
5	2009	60	_____	_____	N/A	N/A
6	2010	60	_____	_____	_____	_____
7	2011	60	_____	_____	_____	_____
8	2012	60	_____	_____	_____	_____
9	2013	60	_____	_____	_____	_____
10	2014	60	_____	_____	_____	_____

1. While the City’s target gravity sewer rehabilitation and replacement quantity each year will be 60 miles, the Settlement Agreement states that the minimum quantity of sewer rehabilitation and replacement per year is 50 with a 3-year rolling average of 60 miles per year.
2. During Years 4 and 5, a 3-year rolling average will not be available. Beginning in Year 6, the City will begin reporting a 3-year rolling average as required by the Settlement Agreement. The Settlement Agreement requires that a 3-year rolling average of 60 miles per year of rehabilitation and replacement must be maintained.

Table 4-2. Example - Annual Detailed Progress Report for the Rehabilitation and Replacement Report and Plan

Project Name	Reach Identification Number	Type of Renewal (Repair, Rehabilitation or Replacement)	Length (ft)	Reach Material	Reach Diameter	Original Installation Date	Sewer Condition Rank Prior to Renewal

4.1.3 Explanation of any Deviations from the Original Plan

If the Annual Summary Report indicates that the City has not achieved the required mileage of sewer line rehabilitation and replacement (either on annual or three-year rolling average basis), the Annual Progress Report will identify and explain the reasons why the mileage requirements were not achieved.

If the City exceeded the required mileage of sewer line rehabilitation and replacement (either on an annual or Three Year Rolling basis), the City is eligible to “bank” the excess mileage as provided for by Paragraphs 28 and 29 of the Settlement Agreement. The Annual Progress Report shall identify the number of miles the City proposes to bank and document the basis for the City’s position that it has exceeded the mileage requirements in this Settlement Agreement. Sewer repair, rehabilitation and replacement mileage that is banked in accordance with Paragraphs 28 and 29 of the Settlement Agreement may be counted towards the City’s target mileage of repair, rehabilitation and replacement in a future year.

4.1.4 Description of Significant Changes to the Rehabilitation and Replacement Report and Plan

Since the Settlement Agreement covers many years, unforeseen conditions may arise that require an adjustment to the detailed programs included in the City’s Plan. If significant changes are made, the City will document the changes in the Annual Progress Report.

Section 5 - References

1. Settlement Agreement and Final Order, EPA/Baykeeper Settlement Agreement.
2. Sewer Condition Categories, March 1994, Technical Memorandum, City of Los Angeles.
3. Wastewater Collection System Capacity Report and Plan, June 2006, City of Los Angeles.
4. Secondary Sewer Plan H30, Hollywood, July 2005, City of Los Angeles.

APPENDIX A

List of Reaches Known to be in Condition D or E

The list of reaches known to be in Condition D or E is included on the attached compact disc in Adobe Acrobat™ (.pdf) format. This list was generated from CCTV dated that was available on April 5, 2006.