

SANITARY SEWER SYSTEM ANNUAL REPORT FISCAL YEAR 2023-2024



Cast-In-Place-Pipe (CIPP) Liner Installation

December 2024

City of San José
Sanitary Sewer System Annual Report
Fiscal Year (FY) 2023-2024

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I. HISTORY AND BACKGROUND

The City provides sanitary sewer service for the residents and businesses of San José and surrounding areas. The City owns and operates the sewer collection system consisting of approximately 2,030 miles¹ of pipes (which vary in size from 6 inches to 90 inches in diameter), including 14 miles of force mains, 17 pump stations and over 44,000 manholes. There are over 198,000 lateral connections to the system. The collected wastewater is conveyed to the San José - Santa Clara Regional Wastewater Facility (RWF) by major interceptor pipelines located in the northern part of San José. This system conveys an average flow of 83 million gallons per day. The City's sanitary sewer collection system benefits from the generally uniform topography of the Santa Clara Valley which allows the majority of the wastewater flows to be conveyed to the RWF using gravity sewer lines with minimal use of lift or pump stations.

The sewer system dates back to the late 1800's which consisted of a main outfall sewer constructed of brick. This system conveyed combined sanitary and storm flows directly into the San Francisco Bay. In the 1950's this combined system was separated, and sanitary flows were directed through the wastewater treatment facility (currently known as the RWF) prior to discharging into the bay. Approximately 85 % of the system, which was constructed between 1950 and 1980, is local collector pipes that are 10 inches or less in diameter.

In general, the sanitary sewer system is overseen and managed by the following departments:

- The Department of Public Works (DPW) designs and builds sanitary sewer infrastructure funded through the City's Capital Improvement Program. Public Works also reviews and inspects sanitary sewer improvements constructed by private developers and other public agencies. The Sanitary Capital and Master Planning Sections are part of the Transportation & Hydraulics Services Division in Public Works. These sections plan, design, and construct improvements to the sanitary sewer system, in an effort to provide safe and reliable sewer service to the current and future residents and businesses of San José and contributing agencies.
- The Department of Transportation's Infrastructure Maintenance Division (DOT) performs day-to-day operation and maintenance of the system.
- The Environmental Services Department manages the wastewater from the collection system to suitable treatment and discharge into the San Francisco Bay and for beneficial reuse to protect the environment and public health.

¹ Total length was updated in 2024 based on the latest GIS data to exclude sewer mains that were abandoned or owned by adjacent agencies or private developers.

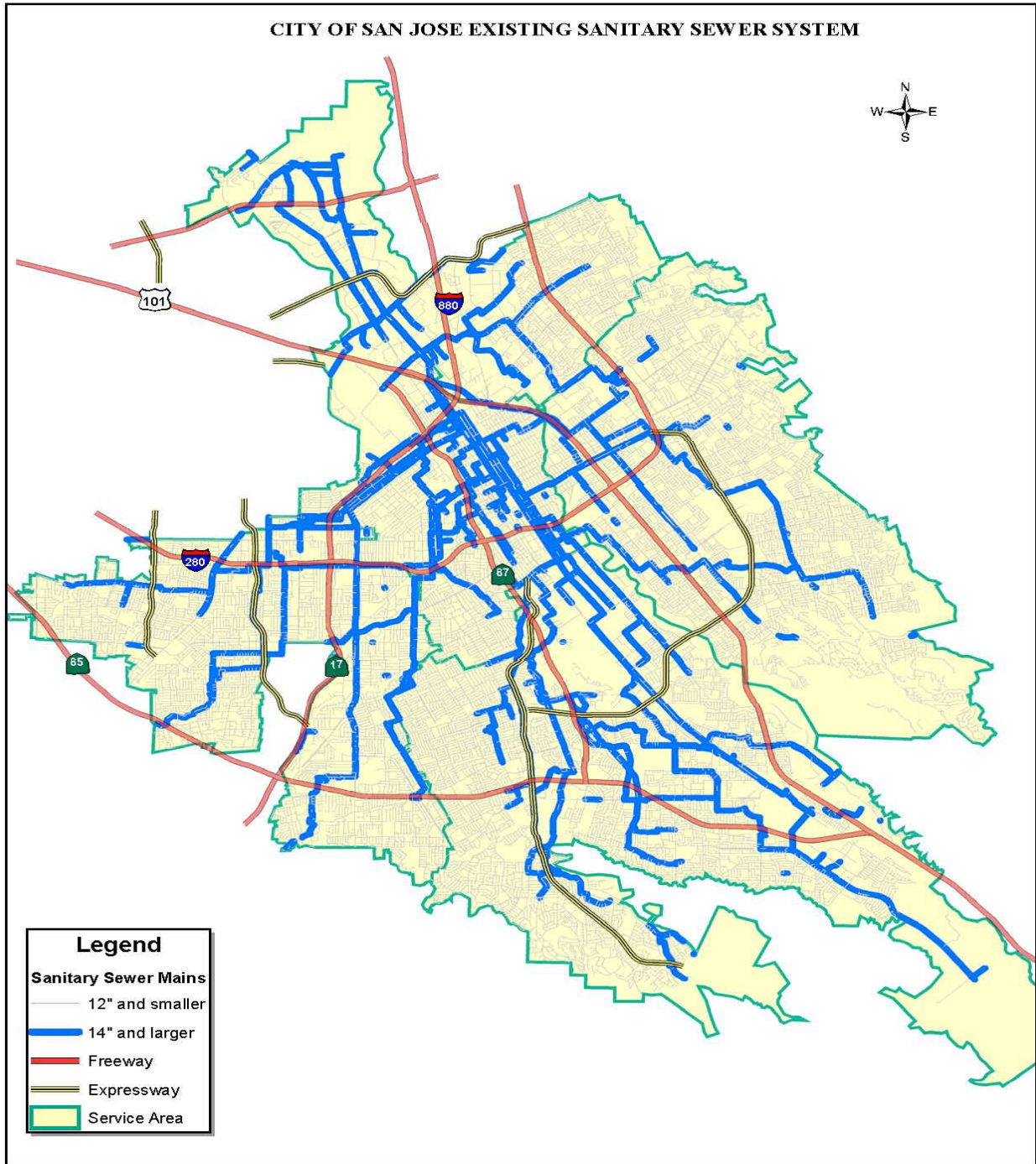


Figure 1 - City of San Jose Sanitary Sewer System

II. PROGRAM FUNDING

A. Adopted FY 2023-24 CIP Budget Revenue

Primary sources of funding include an annual transfer from the Sewer Service and Use Charge Fund, the Sanitary Sewer Connection Fee, and joint participation revenues. The Sewer Service and Use Charge Fund provides funding for capital improvement projects through the Sewer Service and Use Charge Capital Improvement Fund.

Sanitary Sewer Connection Fee Fund (Fund 540 - \$2,651,910; 5-Year CIP) – Connection fees are charged to developers for connecting to the City’s sanitary sewer system. Funds are restricted to the construction and reconstruction of the sewer system.

Sewer Service and Use Charge Capital Improvement Fund (Fund 545 - \$103,241,998; 5-Year CIP) Sewer service and use charges are collected from existing property owners of the City. This funding accounts for the majority of the construction and rehabilitation of the sanitary sewer collection system.

Joint Participation Revenues (\$2,130,000) – A portion of West Valley Sanitation District’s, County Sanitation District 2-3, and Cupertino Sanitation District’s sewage flows through the City’s collection system. This revenue consists of the respective agencies’ fair share contribution for the City’s expenditures on capital improvements on the shared system.

B. Adopted FY 2023-24 CIP Budget Expenditures

The Sanitary CIP Program consists of a \$243.0 million, 5-year budget. This funding is allocated between three broad categories which include capacity improvements, rehabilitation, and non-construction activities.

Capacity improvements are identified through the on-going collection of flow monitoring data which is input into the computerized hydraulic model of the sewer network. Improvements are based on existing capacity needs projected with the build out of the Envision 2040 General Plan. Projects in this category generally consist of upsizing of existing sewers or installation of new sewers designed to reroute sewage flows from under capacity sewers to sewers with more capacity.

Rehabilitation projects originate from on-going maintenance history and results of the closed-circuit television (CCTV) inspection and condition assessment programs. Projects typically consist of removal and replacement or rehabilitation of structurally compromised and root/grease prone sewers. Also included in this category is the rehabilitation of pump stations which typically involves upgrading of electrical and mechanical components. Public Works continues to coordinate with DOT to identify funding needs to rehabilitate and/or repair pump station facilities (e.g., a roof repair).

The primary expenditures for non-construction activities are for the flow monitoring/master planning and CCTV inspection/condition assessment programs. Each of these programs is essential to the planning and prioritization of capital improvements within the sanitary sewer system.

C. Adopted FY 2023-24 Operations and Maintenance Budget Expenditures

The annual ongoing sanitary sewer operating and maintenance budget is approximately \$18.7 million, which provides funding for the DOT administration, engineering, and maintenance teams.

III. PROGRAM ACTIVITY

A. Neighborhood Sewer Rehabilitation

Approximately 1,750 miles or 85 % of the City's sanitary sewer system is considered neighborhood sewers. The average age of the neighborhood sewer system is approximately 50 years. These sewers generally consist of smaller diameter (six to 10 inches) pipes constructed of vitrified clay or cast iron and buried three to six feet deep. These characteristics result in a variety of operational and maintenance issues including root intrusion, grease accumulation, corrosion (of the cast iron sewers), structural damage due to the depth of cover and the array of other utilities common at similar depths as the sewers. For these reasons, the vast majority of sanitary sewer overflows (SSOs) occur in these types of sewers.

During FY 2023-2024, 26 separate contracts were either awarded and/or completed to address issues in neighborhood sewers. The total value of these contracts was \$24.5 million. In order to address these issues in a timely and cost-effective manner, a variety of types of construction contracts and methods were implemented. Traditional remove and replace contracts were utilized for cast iron sewer replacements and for system replacements which required changes in horizontal or vertical alignment. Changes in alignment are typically necessary to improve flow and prevent grease accumulation. Rehabilitation contracts, which consist of insertion of a liner into the existing sewer or pulling in a new polyethylene pipe while breaking the old pipes, were utilized to repair sewers with mild to moderate damage and prevent root intrusion. Point repair contracts, which consist of multiple locations under a single contract, were utilized to repair sewers which had severe localized structural damage.

Capital projects on neighborhood sewers are often developed to address on-going, repeated maintenance activities by DOT. Three cast iron replacement projects were either awarded or completed in FY 2023-2024 to replace old and corroded cast iron sewer pipes with a more corrosion resistant ceramic-lined ductile iron pipe or vitrified clay pipe. In addition, 23 sewer rehabilitation and replacement projects were either awarded and/or completed in FY 2023-2024 to repair, replace and install cured-in-place-pipe liner on structurally defective pipes found in the system at various locations throughout the City,

and help reduce SSOs. In addition to the capital projects mentioned, City crews from the DOT Sewer Repair section completed 732 sanitary sewer point repairs.

Prior to these projects, the sewer systems in many of these areas required regular cleaning by DOT maintenance staff on a monthly or even weekly basis due to heavy grease accumulation, corrosion, and root intrusion in the sewer main pipes. Each cleaning effort consisted of an average of four hours with a two-person crew with a combination of vector/flushing truck.

The combined effort of capital improvements and DOT’s cleaning and maintenance program has resulted in a continued reduction in the number of SSOs, down from 192 in FY 2011-2012 to just 29 in FY 2023-2024, as shown in **Figure 2**.

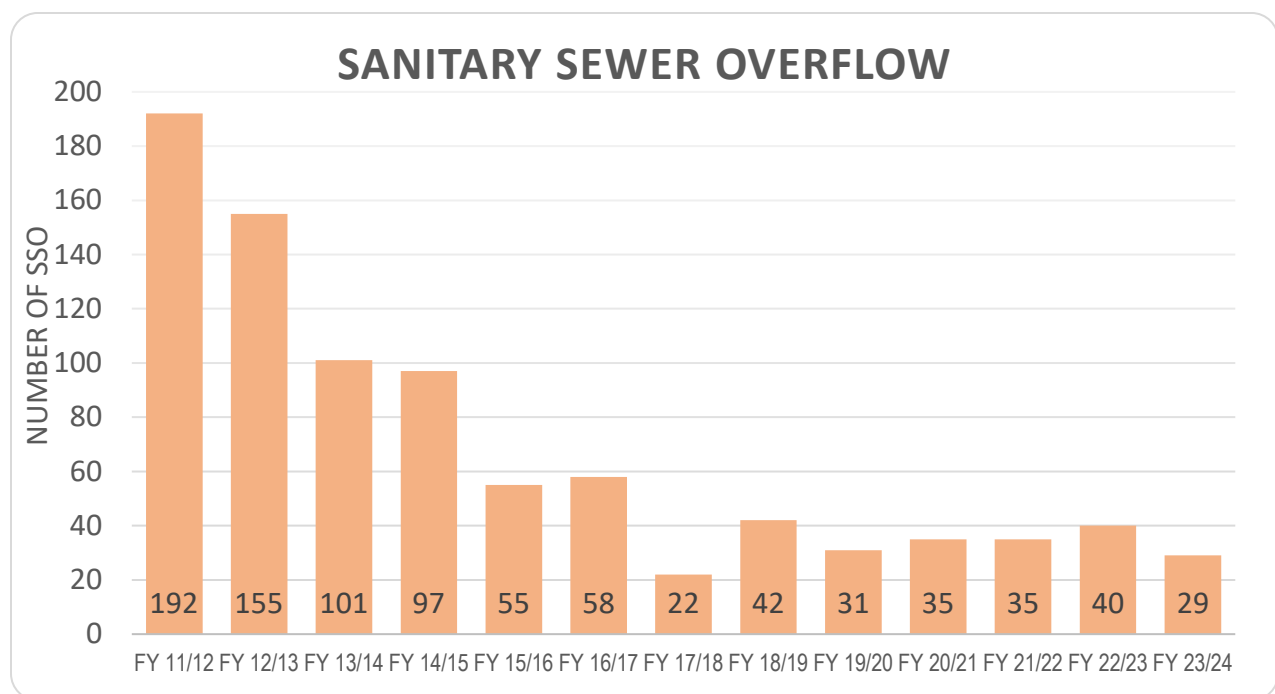


Figure 2 - Sanitary Sewer Overflow Summary

B. Exfiltration Abatement Program

On February 11, 2015, San Francisco Baykeeper (Baykeeper) filed a complaint against the City of San José based on alleged Clean Water Act violations of the City’s Stormwater Permit, including alleged unlawful discharges of pollutants from the San Jose stormwater system and alleged sewage discharges to the San José stormwater collection system from the San José sanitary collection system. The parties reached a voluntary agreement for resolution of the lawsuit and the Baykeeper Consent Decree (CD) was approved by the court on August 11, 2016. The City agreed to develop and implement an Exfiltration

Abatement Program to minimize the risk of wastewater leaking out of the sanitary sewer pipes and entering an adjacent storm sewer system. The Consent Decree requires the City to identify all High-Risk sanitary sewer pipes and repair or rehabilitate these pipes within the next 10 years. High-Risk pipes are sewer segments that meet all of the following conditions:

1. Sewer segments that are constructed of vitrified clay or reinforced concrete,
2. Sewer segments that cross above a storm pipe, or are above and within ten (10) feet horizontally of storm pipes,
3. Sewer segments that are 50 years or older with a condition assessment that identifies that the segment has a medium to severe crack, offset joint, or some other high grade structural defect per the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certificate Program (PACP) standards, and,
4. Sewer segments that are above the water table.

Sanitary sewer segments that are considered High-Risk will be repaired/rehabilitated by the City at an average rate of 6.5 miles annually and totaling 65 miles over the 10-year term of the Consent Decree. To ensure that the City of San José addresses as many High-Risk pipes as possible, four Sanitary Sewer Repair projects were completed in FY 2023-2024. The High-Risk sanitary sewer pipe segments on these projects were either replaced, repaired, or rehabilitated for a total of approximately 6.4 miles and a total cost of \$4 million. As of end of FY 2023-2024, the City's Exfiltration Abatement Program has repaired and rehabilitated approximately 56 miles of High-Risk pipes for an average of 8 miles annually exceeding the requirements of the Consent Decree.

C. Pump Stations

The average age of the City's 17 sanitary sewer pump stations is approximately 36 years. These facilities are listed below in Table 1. The standard design-life of the mechanical and electrical components of pump stations are 10 to 25 years. Due to the wide range of pumping capacity for each station, the total cost to rehabilitate and/or replace these pump stations is estimated to range between \$2 million and \$10 million each.

Generally, the structural rehabilitation of a pump station would prolong the life and improve the reliability of the system; similarly, the upgrades of the electrical, mechanical and data communication components will allow staff to monitor and operate these pumps remotely and reduce the maintenance effort required to keep these pump stations operating effectively.

Table 1 – Sanitary Pump Stations

Sanitary Pump Stations and Other Facilities (Alphabetical Order)		
Name	Year Built	Year Rehabilitated/Status
Pump Stations		
1. Basking Ridge	2006	Pumps replaced by DOT in 2011
2. Brookside	2013	New pump station
3. Communications Hill	2007	To be abandoned with Communications Hill Phase 3 public improvements in 2021.
4. Gateway	1988	Initial assessment in progress; possible abandonment/rehabilitation
5. Happy Hollow Zoo	1967	Pump replaced in 2009
6. Junction	1979	*
7. Lamplighter	1984	Force main condition assessment completed in 2008
8. Margaret	1952	*
9. Montague	1978	Design for replacement completed and pending easement acquisition
10. Nordale	1960	Rehabilitated in 2018
11. Nortech	1983	Condition assessment in progress
12. Padres	2012	New pump station constructed in August 2012
13. Ridder Park	1982	*
14. Spreckles	1975	Rehabilitated in 2014
15. Tea Garden	1986	Rehabilitated in 1997
16. Willow	2003	Rehabilitated in June 2019
17. Zero Waste (Los Esteros)	2014	*
Other Facilities (Odor Control Stations)		
18. Canoas Ferrous Chloride Injection	1962	Tank replacement in 2018
19. Canoas Soil Bed Filter	1994	Planned for assessment
20. Zanker Soil Bed Filter	1995	Condition assessed in 2008; planned for re-assessment

* No information on status

San Felipe Pump Station was removed from service in 2019

In FY 2022-2023, approximately \$4.15 million was allocated to complete the rehabilitation and upgrade of various pump station projects.

Montague Sanitary Pump Station - This station is located at the southeast corner of the intersection of Montague Expressway and North First Street. Built in 1978, the pump station has been offline since the mid-1980s as the pumping capacity of this station has been accommodated by the Lamplighter pump station to the north. The upgrade of the Montague Sanitary Pump Station is necessary to accommodate anticipated future

development in the area. Staff worked along with the City’s Real Estate Division to acquire a larger easement necessary for the expansion of the pump station. Staff will re-evaluate the design of the project and is anticipated to be finalized for bid and award in FY 2025-2026.

D. Interceptor and Capacity Improvements

The interceptor system runs from approximately Empire Street to the RWF and consists of four parallel large diameter (60 to 90-inch) sewers. The locations of various reaches of the system are designated by Phases I through VII, with Phase I located furthest to the north entering the RWF and Phase VII located near Empire Street, accepting flows from major trunk sewers. This system conveys approximately 80% of the total wastewater flows to the RWF. A schematic diagram of the interceptor system is shown in Figure 3 below.

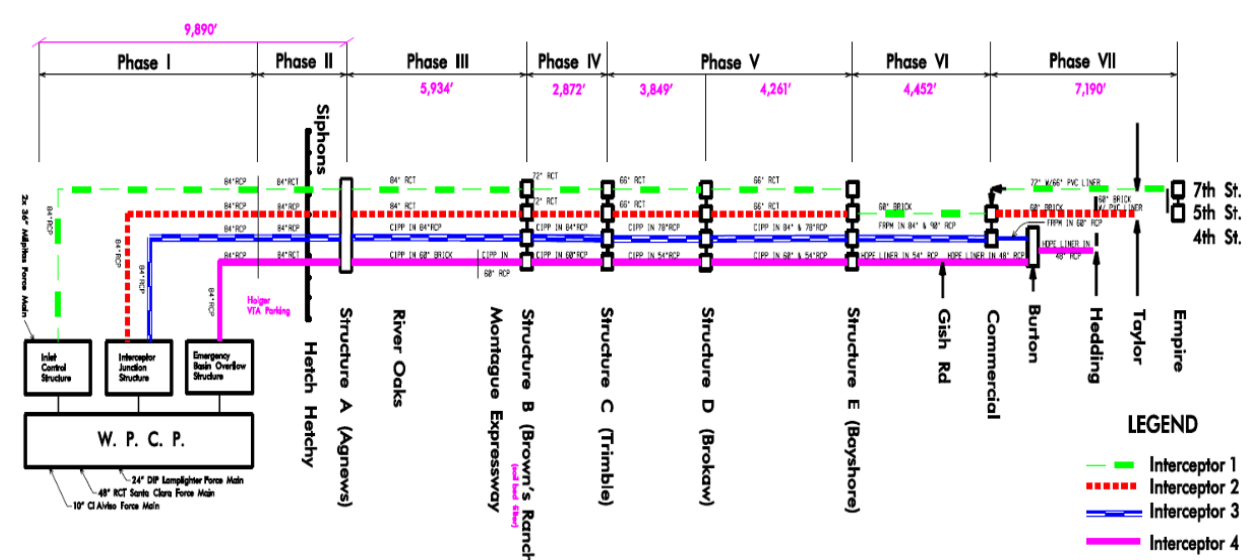


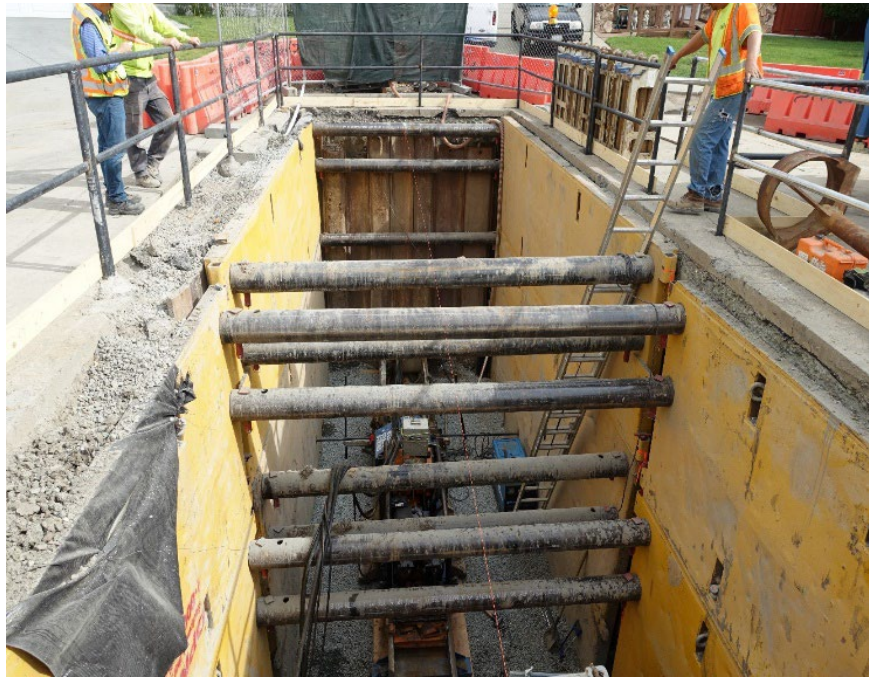
Figure 3 - Sanitary Sewer Interceptor System

Capacity improvements to the interceptor system between the RWF and U.S. Highway 101 (Phases I through VI) have been completed over the last two decades. Initiation of design for the Phase VII capacity improvements began in Spring 2024. Phase VII will be split into two phases, Phase VIIA and Phase VIIB. Phase VIIA is scheduled to complete design by Summer 2025 and will line approximately 5,500 feet of 36-inch, 54-inch and 60-inch diameter brick sewer in addition to upsizing approximately 1,300 feet of 48-inch diameter sewer to 66-inch for an estimated project cost of \$24 million. Phase VIIB will start design in Summer 2025 concurrent with the construction of the Phase VIIA. Phase VIIB will upsized 700 ft of 54-inch sewer to 60-inch and install 4,400 feet of new 66-inch sewer for an estimated project cost of \$32.5 million.

When completed, the interceptor system will maintain enough capacity to allow any one of the parallel interceptors to be taken out of service during dry weather for maintenance

and/or rehabilitation. The project will also review and evaluate potential odor concerns, if any, and will be addressed appropriately.

During the FY 2023-2024, six capacity improvement projects were in feasibility or design with an estimated cost of \$17 million, and another three were awarded in the amount of \$8.2 million. These improvement projects were developed to upsize the existing sanitary sewer system to improve capacity in the system.



E. Sanitary Sewer Condition Assessment Program

The Sanitary Sewer Condition Assessment (SSCA) Pilot Program was initiated by Public Works in 2010. The original pilot project utilized closed circuit television (CCTV) to video inspect and collect data on a 46-mile representative sample of the City's 2,030-mile sanitary sewer system. See Table 2 and Figure 4 below for a breakdown by year of the miles inspected via CCTV. The results from this study were used to determine the funding need and develop a road map for the comprehensive SSCA program. Likewise, DOT had made investments for additional equipment and personnel in conjunction with its operations and maintenance program which contributes to the SSCA program.

In 2013, the City procured a sanitary sewer asset management software program to develop risk assessments based on an array of the sewer's physical properties and consequence of failure. Since early 2014, City staff utilized the software, along with available CCTV data and maintenance records, to analyze collected data and determine the risk level of the City's sanitary sewer system. Based on the risk levels, staff has developed a priority list of the sanitary sewer basin areas to assess with a goal to inspect all small diameter pipes (10 inch or smaller) in 10 years. The City of San José currently has approximately 1,705 miles of small diameter sanitary sewer pipes.

Table 2 – CCTV Inspection

Year	Fiscal Year	Miles of Pipeline (from SSCA and CIP)	Miles of Pipeline (from DOT)
0	2010 Pilot and Prior to 2011	123.5	No data
1	2011-2012	26.4	No data
2	2012-2013	222.4	45.2
3	2013-2014	40.8	43.8
4	2014-2015	79.1	67.7
5	2015-2016	91.9	80.7
6	2016-2017	179.7	71.0
7	2017-2018	216.4	84.0
8	2018-2019	130.2	98.0
9	2019-2020	123.4	82.0
10	2020-2021	286.8	118
11	2021-2022	144.7	115
12	2022-2023	131.4	97
13	2023-2024	311*	95
	Total	2,107.7	997.4

** Additional miles of pipeline (approximately 134 miles) were CCTV inspected in FY 2023-2024. However, data for these inspections have not been entered into the InfoAsset Planner database as of this report. These additional miles of pipeline will be reported in FY 2024-2025.*

Six CCTV projects totaling an estimated contract cost of \$6.4 million were awarded in FY 2023-2024. Data for two of these projects have not been entered into the InfoAsset Planner database as of this report. The miles will be included in FY 2024-2025 report.

To minimize sanitary sewer repairs which would necessitate dig outs on a newly paved roadway, DOT video inspected sanitary sewer lines on roads scheduled to be resurfaced as part of the Pavement Maintenance Program. Repair of sewer defects identified on these roadways were coordinated so they were completed prior to paving. To ensure that the new pavement is preserved as long as possible, these segments would be CCTV'd if they were last inspected more than 5 years ago. Therefore, there may be some duplicate inspection miles performed by both DOT and Public Works.

Sanitary Sewer Condition Assessment Program

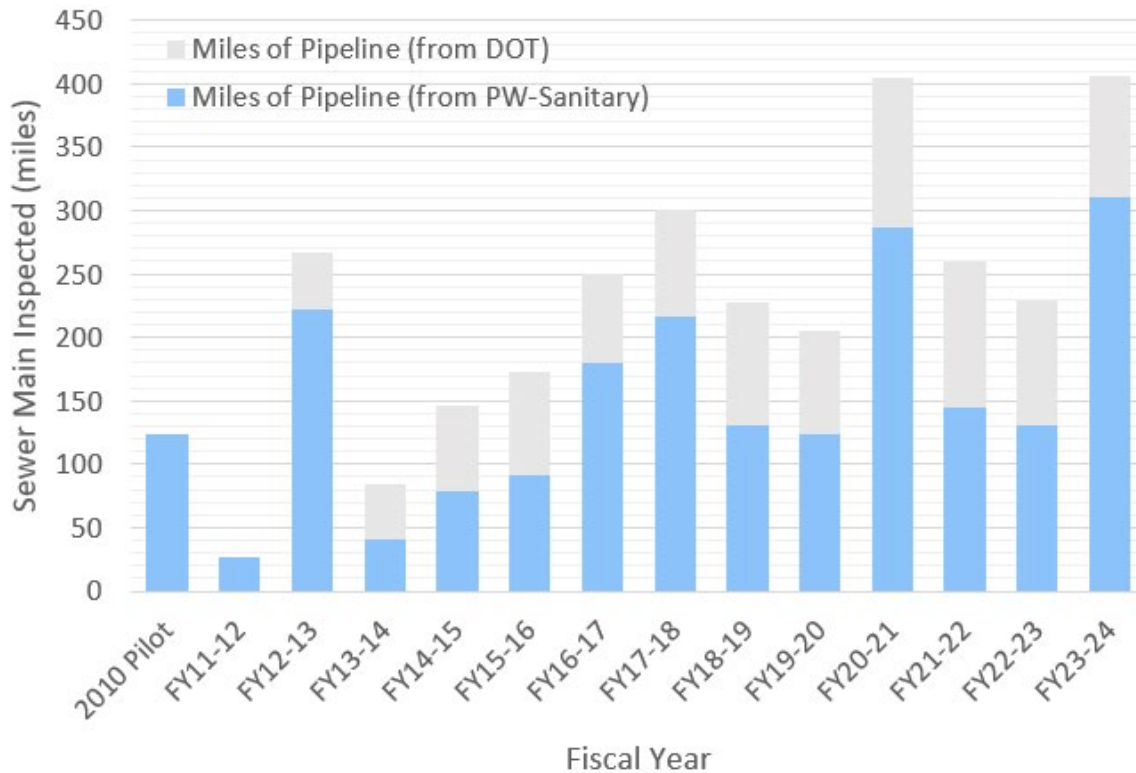


Figure 4 - Sanitary Sewer Condition Assessment

Data collected through Public Works’ CCTV contracts and DOT’s cleaning and CCTV inspection program will be used in developing the City’s Sanitary CIP program to proactively repair or rehabilitate these pipelines before they fail. A decision tree model has been created to determine the most appropriate repair or rehabilitation techniques for each pipeline. The model will be used to forecast and determine the total cost to repair and rehabilitate the City’s sanitary sewer system. As larger data sets are gathered through each year’s CCTV contracts, more analysis can be performed to better adjust the decision tree model.

As of the end of FY 2021-2022, the City had video inspected 100% of the system’s small diameter pipes (6 to 10 inches) and began the inspection and condition assessment of medium sized sewer pipes (12 to 30 inches in diameter). As of the end of FY 2023-2024, the City inspected 100% of the system’s medium diameter pipes, began the inspection and assessment of the system’s larger size sewer pipes (33 to 42 inches in diameter) and also began the second cycle of inspection of the system’s small diameter pipes, those that were initially inspected over a decade ago. The City will continue the condition assessment of larger diameter pipes as well as the second cycle of small diameter pipe inspection in FY 2024-2025. Funding to support this program is already included in the current 5-year budget.

F. Sanitary Sewer Interceptor Management Program

The Sanitary Sewer Interceptor Management Program was developed in FY 2021-2022 with an annual budget of \$3.0 million for the next five years. The program will clean, inspect, and evaluate the condition of the existing sanitary sewer interceptors and identify the needs for rehabilitation and repair. The program will also include the evaluation and rehabilitation of the City's odor control structures in the form of soil bed filters that will assist with reducing odors and corrosive sewer gases from the interceptor system.

G. Master Planning

1. Capacity Management

a. Sanitary Sewer Master Plan Studies (Capacity Assessments)

Sanitary sewer collection systems are designed to convey anticipated peak flows based on current and predicted/planned future demands under both dry weather and wet weather conditions. The State Water Resources Control Board (SWRCB) requires sewer agencies to prepare System Evaluation and Capacity Assurance Plans to evaluate the capacity of key system components and to develop capacity enhancement measures.

To evaluate the capacity of its sanitary sewer system and plan for capacity improvements, the City completed the *Sanitary Sewer Master Plan Capacity Assessment – Phase II and Update of Phase I* (Phase II) project in April 2013. The project evaluated the capacity performance of its trunk network, which includes sewer mains 10 inches and larger in diameter and some of the major pump stations in the system. In September 2013, the City also completed the *North San José Area Sanitary Sewer Capacity Assessment* report, which expanded the Phase II analysis to include pipes of six and eight inches in diameter in the North San José area. These two projects identified a total of 105 capacity improvement projects with an estimated \$188 million in capital improvement costs (2013 dollars). Program-level CEQA for the Phase II Master Plan project was approved as an Addendum to the Envision San José 2040 General Plan in June 2015.

Upon completion of the Phase II project, The City began effort on the *Sanitary Sewer Master Plan Phase III* project, which aimed to expand the trunk network to an all-pipe model that includes all smaller diameter (six-inch and -inch) pipes in the system. This all-pipe model would then allow the City to analyze the capacity of all sanitary sewer lines in its system and plan for necessary improvements.

As part of the Phase III project, City staff collected hundreds of manhole survey reports, incorporated both 2010 census population and 2015-2017 water billing data into the model, as well as collected flow and rainfall data through the City's ongoing temporary and long-term flow monitoring programs to use for model calibration. Staff also coordinated with DOT to collect pump station operation parameters in order to build all

pump stations into the model. City staff are working to incorporate 2020 Census data into the next iteration of the model.

To date, City staff has completed the all-pipe model in its entirety; the model now includes all sanitary sewer pipes in the system and all pump stations. The model has also been carefully calibrated for both dry and wet weather conditions, and staff has built future scenarios to reflect planned growth and land use intensifications per the *Envision San José 2040 General Plan* and the *North San José Policy Area Plan*. Additionally, staff has also completed a thorough capacity evaluation using the calibrated model and identified capacity improvement priorities under both existing dry and wet weather flow conditions. Figure 5 shows the identified priorities under the existing scenario.

Staff has developed solutions and alternatives to the all-pipe system capacity needs. The projects are prioritized into a multi-year Capacity Improvement Projects (CIP) Program based on severity and model confidence. The initial program consists of 76 projects, which include both new projects and re-scoped Phase II projects. The program would cost \$122.7 million (2021 dollars).

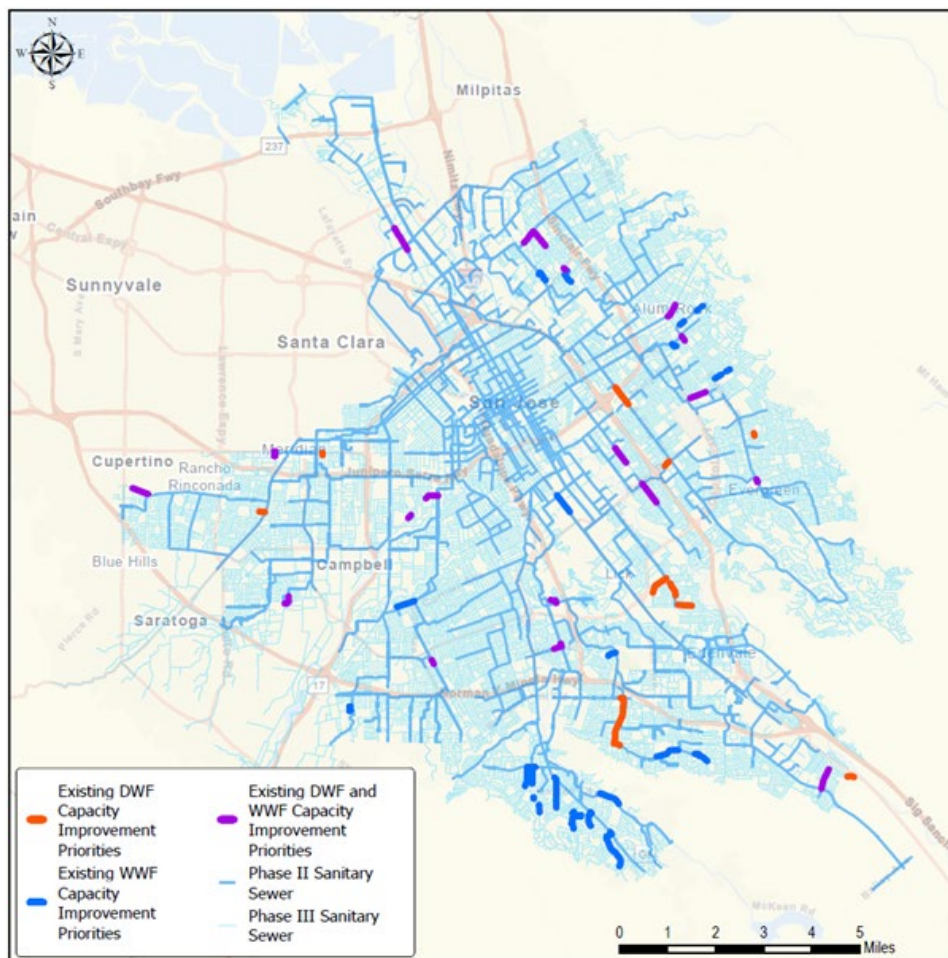


Figure 5 - Sanitary Sewer Capacity Assessment (Phase III All-pipe Model)

Master Plan Project Confirmation and Implementation

Prior to implementation, each CIP project will need to be confirmed and validated using available and/or new flow monitoring data and modeling analysis in order to be added to the 5-year CIP program. Ideally, flow data should include a period of rainy weather to validate wet weather priorities. If a wet season experiences a major storm, additional flow monitoring is needed in the next wet season. Based on the flow meter data projects may be confirmed, eliminated, or rescoped. As such, the CIP program is frequently updated according to results of these on-going confirmation activities.

To date, the City has implemented or is currently implementing 56 Master Plan CIP projects and the Interceptor Phase VII Improvement Project. Six of the projects are newly identified from Phase III. Nine projects were implemented by private developments. Projects in the future categories are improvements to address near-term and future growth, and their construction schedule will be re-evaluated as development projects are built. Figure 6 provides master plan project implementation schedules and status.

Flow Monitoring Program

The City has an ongoing long-term flow monitoring program that tracks wastewater flow and groundwater infiltration trends, monitors rain-dependent inflow and infiltration rates, and quantifies flows from tributary agencies in key sewer basins. The program consists of 36 flow meters and 16 rain gauges. Flow meters in this program are also equipped with alarm devices, which alert City staff of abnormal flow conditions or potential sanitary sewer overflows.

In addition to the long-term program, the City also conducts temporary flow monitoring on an as-needed basis for various purposes, such as for capacity project confirmations and verifications, review for land use developments and capital improvement projects, sewer operation and maintenance activities, and/or for ongoing model refinement.

Currently, the City maintains master agreements with two engineering firms to provide both long-term and temporary flow monitoring services for the City until the end of 2026. Recent flow monitoring programs have focused on validating existing dry weather and wet weather priorities identified in Phase III and identify the extent of stormwater intrusion into the sewer system.

Support for Economic Development

City staff coordinates with the Planning, Building and Code Enforcement Department, DOT, Environmental Services Department, and the Development Services Division of Public Works on an ongoing basis to review and analyze potential sewer capacity impacts for proposed development projects.

Development projects add sanitary flows to the system and may therefore trigger the need for a CIP downstream. Upon request by internal partners, City staff perform capacity analysis using the latest model and recommend improvements as needed.

In addition to providing continuing modeling support for major developments such as Downtown West, the all-pipe model allowed for more stream-lined analysis of developments and their impact on local sanitary lines.

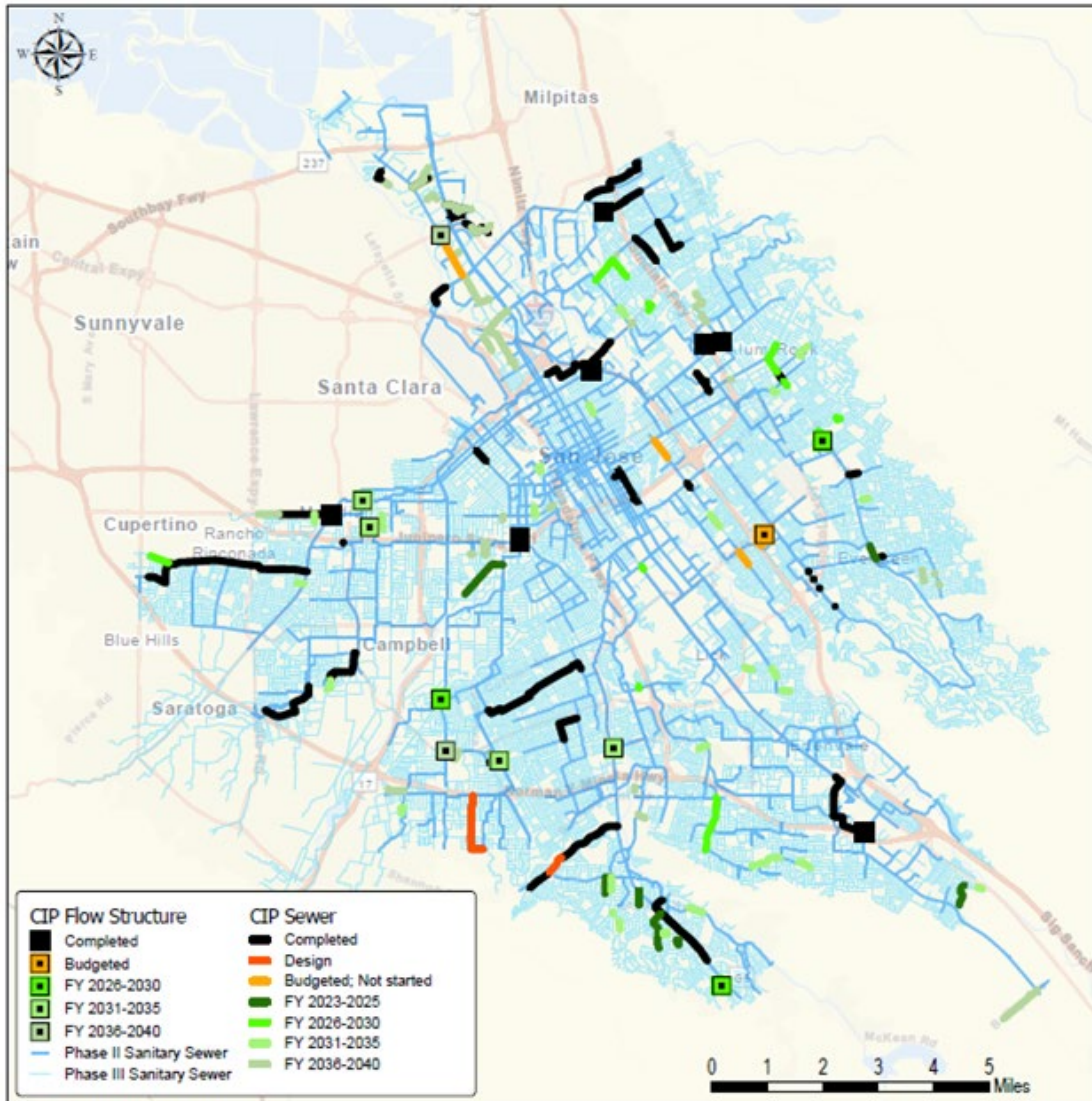


Figure 6 - Master Plan Sanitary Sewer Improvement Project Status

IV. OPERATIONS AND MAINTENANCE

Funded directly from the Sewer Service and Use Charge Fund, the day-to-day maintenance and operation of the sanitary sewer collection system is primarily the responsibility of the Department of Transportation (DOT). Functions performed by DOT generally include the following:

- Video inspection, cleaning, and removal of grease, rags, roots, and other debris from the City's sewer lines with a focus on local collector lines.
- Repairing localized failures and restoring capacity in the City's sewer mains and lower lateral pipes with City-approved property line cleanouts.
- Inspecting, maintaining, and repairing pumps at pump station facilities.
- Responding to and resolving reported sewer problems.

The primary goal of DOT's maintenance functions is to reduce or eliminate occurrences of Sanitary Sewer Overflows (SSOs) in which untreated sewage escapes the sewer system due to a sewer line blockage or other system malfunction. DOT has invested in and implemented a multi-year plan which has greatly reduced the number and severity of SSOs that occur in the City each year. Specific elements of this plan include the following:

- Assigning specific cleaning frequencies (e.g., weekly, monthly, annually, etc.) to sewer line segments to prevent stoppages in known problematic areas.
- Performing sewer line inspections to identify needed cleaning, root control, and repairs.
- Managing the First Responder Program to ensure timely response to reported sewer problems and prevent and reduce the impact of SSOs.
- Optimizing the Computerized Maintenance Management System (CMMS) and analyzing the performance of the sewer system, identifying and planning effective maintenance strategies, and evaluating and managing maintenance operations.
- Replacing obsolete and unreliable maintenance equipment and purchasing additional equipment to maximize the efficiency of maintenance operations.
- Providing training for the sewer line cleaning crews.

Performance data and information indicate that DOT's SSO reduction plan has been successful in reducing SSOs. Table 3 below highlights some of the results achieved by DOT over the past 10 years.

Table 3 – Performance Improvement Result

Key Indicator	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24
Number of SSOs	97	55	58	22	42	31	35	35	40	29
SSOs per 100 miles of pipe per year	4.3	2.4	2.5	1.1	2.1	1.6	1.7	1.7	2	1.4
Gallons of sewage spilled to surface water	49,188	35,018	19,318	3,920	19,823	78,166	64,872	451,349	136,079	67,012
Percent of reported sewer problems responded to within 30 minutes	71%	68%	69%	66%	57%	48%	46%	48%	43%	46%
Percent of SSOs responded to within 30 minutes	89%	81%	91%	86%	83%	87%	94%	78%	80%	80%
Miles of sewer lines cleaned	1035	993	936	942	1,021	752	819	839	704	858

Note: Prior to FY 2012-2013, DOT's timeliness standard for responding to reported sewer problems was 4 hours.

From FY 2015-2016 to the present, the results show a consistent downward trend in the number of SSOs, indicating that the investments and improvements made by DOT to reduce SSOs have paid off. The most significant contributor to the year-to-year variance in the total SSO number appears to be the amount of rainfall. The amount of rainfall during FY 2017-2018, was about half the normal amount of a typical storm season. The rainfall during FY 2015-2016, FY 2016-2017, and FY 2018-2019 was consistent with a typical storm season while the rainfall in FY 2019-2020, FY 2020-2021 and FY 2021-2022 was light which shows the consistent trend. The number of gallons of sewage lost to surface water increased in FY 2021-2022 due to one large overflow. DOT restarted the root control program in FY 2018-2019, and continued it through FY 2023-2024, applying treatment to more than 21,000 linear feet of pipe each fiscal year. The rate of response to reported sewer problems within 30 minutes has continued to decrease slightly from a high in FY 2013-2014 because of various factors, such as the reduction in staff hours during shelter-in-place, and increase in traffic congestion during rush hours, which may be attributed to recent economic growth in the region.

Currently, DOT receives approximately \$18.7 million in on-going funding each year to maintain and operate the sanitary sewer collection system. In FY 2015-2016, DOT was funded because of the River Watch Consent Decree with \$300,000 for the creation of a sewer lateral repair grant. The program launched in October of 2018 and has exhausted

the fund at the end of FY 2023-2024. Going forward, DOT expects the performance of the sanitary sewer system and the productivity of maintenance staff will be sustained with continuous investments in equipment, training, and personnel. Most notably, DOT has completed migrating the existing CMMS to a more advanced and capable Unity system and invested in additional technology. Staffing alignments will continue to be analyzed to optimize field productivity, data collection and overall sewer system management.

V. CONCLUSION

The Sanitary Sewer Capital Improvement Program continues to utilize strategic planning tools such as the Sanitary Master Plan models and Condition Assessment programs, in addition to input from our operations and maintenance partners in DOT, to prioritize and implement improvements to the sanitary sewer system. Construction of these improvements will ensure safe and reliable sewer service to current and future residents/businesses of San José and tributary agencies. Increasing regulatory oversight, reducing SSOs, and supporting economic development all require continued investment in active management, maintenance, and improvement of the City's 2,030 miles of sanitary sewer system. Increased capital funding for the sanitary capital program has expanded our ability to maintain and enhance the system. The \$32 million annual transfer which began in FY 2015-2016 and increased to \$35 million beginning FY 2021-2022, while still being short of the targeted revenue of \$37 million per year, has allowed staff to deliver projects and clear up most of the backlogged repairs.

Below is a summary of Sanitary Sewer CIP accomplishments in FY 2023-2024:

- Twenty (20) capital projects were awarded and thirteen (13) capital projects were completed to improve the capacity, restore the integrity and conveyance of the system reducing maintenance costs and the probability of SSOs and/or blockages.
- The Master Plan program has helped reduce the cost of development by providing efficiency in the sewer capacity review process and finding cost-effective measures to improve sewer capacity needed for land use development.
- 2,039 linear feet of structurally inadequate sewer were removed and replaced.
- 55,702 linear feet of moderately deteriorated sewers were rehabilitated.
- 406 miles of sewers were inspected by CCTV inspection.
- The Sanitary Sewer Master Plan was continually updated and calibrated to develop and prioritize sanitary sewer capacity projects.
- The Condition Assessment program was developed and assists with development of a prioritized and proactive rehabilitation program.
- More than 858 miles of sewer lines were cleaned.
- The continued development of the Computerized Maintenance Management System and technology enhancements have contributed to planning effective maintenance strategies to maximize efficiency.