
PERFORMANCE AUDIT OF THE STORM WATER DIVISION

The Storm Water Division Can Further Improve the Efficiency of Its Infrastructure Maintenance and Code Enforcement Efforts, but the City Ultimately Needs to Address Significant Storm Water Funding Shortages

Office of the
City Auditor

City of San Diego



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THE CITY OF SAN DIEGO

June 14, 2018

Honorable Mayor, City Council, and Audit Committee Members
City of San Diego, California

Transmitted herewith is a performance audit report of the Transportation and Storm Water Department Storm Water Division. This audit was conducted in accordance with the City Auditor's Fiscal Year 2017 Audit Work Plan, and the report is presented in accordance with City Charter Section 39.2. The Results in Brief are presented on page 1. Audit Objectives, Scope, and Methodology are presented in Appendix B. Management's responses to our audit recommendations are presented after page 77 of this report.

We would like to thank staff from the Transportation and Storm Water Department and, in particular, the Storm Water Division for their assistance and cooperation during this audit. All of their valuable time and efforts spent providing us information both in the office and in the field is greatly appreciated. The audit staff members responsible for this audit report are Danielle Novokolsky, Megan Garth, Andy Hanau, and Kyle Elser.

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Results in Brief

Storm water is a vital resource that replenishes the nation's waterways, including our rivers, lakes, and oceans. Storm water runoff carries pollutants such as dirt, oil, chemicals, and lawn fertilizers directly to streams and rivers, where they can harm fish and wildlife populations, kill native vegetation, foul drinking water supplies, and make recreational areas unsafe and unpleasant. It is important for storm water to not only be free of pollutants, but to also be transported through a storm drain system that is adequately maintained and sufficient in size to minimize flooding.

The City of San Diego's (City) Transportation and Storm Water Department Storm Water Division (SWD) leads the City's storm water management efforts by operating and maintaining the City's vast storm water infrastructure, including drains, pipes, and pump stations. Additionally, SWD is responsible for maintaining compliance with a wide variety of local, state, and federal water quality regulations. Combined, these efforts aim to reduce pollutants in storm water to the maximum extent practicable, minimize flood risk, and protect and enhance the quality of receiving waters, such as San Diego Bay, Mission Bay, and the San Diego River. Adequate maintenance and repair of the City's storm drain system is essential to San Diego residents' quality of life, health, and safety. Consequences of inadequate maintenance include flooding, sink holes, property damage, increased maintenance costs, and public liability costs.

We conducted a performance audit focusing on opportunities to improve storm water asset management, to increase storm water revenues, and to enhance the efficiency of storm water code enforcement case management, monitoring, and reporting. We had three findings, detailed below.

Finding 1: To More Quickly and Efficiently Replace Corrugated Metal Pipes, Storm Water Division Should Complete a Detailed Analysis to Further Support Its Plans to Optimize the Size of Its In-House Pipe Repair Crew

Failure to adequately fund maintenance of the City's storm drain system in years past has resulted in a large storm water infrastructure backlog, and resulting increases in public liability costs and costly emergency repairs. The primary cause of storm drain pipe failures is the City's remaining corrugated metal pipes (CMP). Therefore, repairing and replacing CMP as quickly and efficiently as possible is one of the SWD's key goals to minimize the risk of costly emergency repairs and mitigate the threat to the public. However, even though almost all remaining CMP has

already exceeded its expected life, it will take approximately 95 years to replace all remaining CMP at the current pace.

SWD has recently implemented cost-saving measures by creating an in-house pipe repair crew (crew) to conduct repairs in lieu of a contractor and by evaluating the potential to use pipe lining to extend the life of deteriorating CMP. However, we found some limitations to SWD's ability to maximize the benefits of these efforts. Specifically, we found:

- The crew's size has limited SWD's ability to utilize the crew to cut costs to the maximum extent. However, SWD has not completed a detailed analysis to determine the optimal size of the crew. As a result, SWD continues to over-rely on costly contracted repairs and be too slow and inefficient in its replacement of CMP;
- SWD is still in the process of entering into a contract for proactive rehabilitation via pipe lining; and
- Although SWD already has CMP condition assessment data, the data may be too outdated to accurately establish priorities for proactive repairs by the crew and for pipe lining.

An optimized in-house crew appears to have the potential to save millions of dollars per year in maintenance costs, and further savings can be achieved through pipe lining. Therefore, we recommend:

- SWD continue with its plan to conduct an analysis to determine the optimal size of its in-house crew and equipment needs, and use this analysis to support continued funding requests for additional crew staff, as needed. If sufficient additional funding is not provided during the budget process, SWD should determine whether funds can be reallocated to the optimal size crew;
- SWD continue with its plan to enter into a contract for pipe lining, utilize existing condition assessment data to help determine which pipe segments may be good candidates for pipe lining, and reallocate resources to fund pipe lining, if necessary; and
- SWD determine the feasibility of conducting proactive repairs; consider requesting funding for an updated condition assessment, if needed; and continue to use its condition assessment data to establish priorities for proactive repairs and pipe lining.

Finding 2: Storm Water Funding is Insufficient to Fund Current and Future Storm Water Needs and the City Has Not Taken Action to Develop and Pursue a Long-Term Funding Strategy

While SWD can cut costs by improving maintenance efficiency and continuing to refine the methods it uses to meet water quality requirements, the current gap between SWD's revenues and funding needs is so large that it cannot be closed through efficiencies alone. In just the next five years, fiscal year (FY) 2019 through FY 2023, SWD needs to spend approximately \$891 million to meet its spending needs, however, SWD has only identified \$433 million in available funding, leaving a shortage of \$459 million. Therefore, to ensure that SWD maintains compliance with water quality requirements and that storm water services are sufficiently funded, it is imperative for SWD to employ strategies to help address this funding gap.

We found that the City has not taken action to adequately address storm water funding needs. Specifically, we found:

- City officials have long been aware that storm water funding is insufficient, yet have not taken actions to increase storm water revenues in over 20 years;
- City residents are likely unaware of the magnitude of the City's storm water funding shortage because City officials have not created a communications plan to educate residents regarding the importance of storm water issues; and
- The City has not conducted outreach to stakeholders to solicit their knowledge of storm water needs and their preferences on how to fund these needs, and used this information to develop a long-term funding strategy.

Educating the public, soliciting feedback on funding options, and developing a long-term funding strategy are essential to addressing SWD's funding gap. Therefore, we recommend:

The Communications Department, in consultation with SWD, develop and execute a strategic communications plan designed to educate stakeholders on specific storm water issues, including: flood prevention, the storm water funding gap, the deferred capital backlog, ongoing operational and capital costs, and water quality regulations;

- SWD solicit public input to develop a long-term funding strategy to meet SWD's present and future operational and capital needs; and

- If the selected funding mechanism(s) in the funding plan require voter approval, SWD should retain a consultant to conduct an unbiased and statistically reliable survey of potential voters to estimate voter support for a variety of funding options.

Finding 3: A New Tracking System and Re-Inspection Fees Will Improve the Efficiency and Effectiveness of Storm Water Enforcement Efforts

To protect our waterways and wildlife, the federal National Pollutant Discharge Elimination System permit program (municipal permit) requires municipalities, communities, industries, and others, to use storm water controls, known as best management practices (BMPs). To meet these requirements, SWD conducts routine inspections on businesses and developments throughout the City to ensure proper BMP maintenance and operation. Routine inspections, combined with enforcement actions like written warnings, fines, and other penalties, are critical to reducing the risk of pollutants reaching the City's waterways and preventing illicit discharges.

We found that SWD's enforcement efforts can be improved with a new data management system and the issuance of re-inspection fees. Specifically, we found:

- SWD's data management system may contribute to difficulty in oversight of enforcement actions and case progress due to the lack of reporting capabilities, ability to store inspection documents, and ability to track enforcement actions. Although a new system is forthcoming in FY 2019, it is not yet clear what specific oversight and reporting capabilities the new system will include; and
- SWD inspectors do not currently assess a re-inspection fee, even when violations necessitate multiple re-inspections.

SWD should have the tools to efficiently manage its code enforcement caseload, and help recover excessive inspection costs and compel compliance as quickly as possible. Therefore, we recommend:

- SWD seek to include certain modern capabilities in the new system, such as reporting and monitoring features; and
- SWD establish and assess a re-inspection fee.

Recommendations

We issued a total of 9 recommendations, which are summarized above. SWD and the City Administration agreed to implement all 9 recommendations.

Background

In accordance with the Office of the City Auditor's Fiscal Year (FY) 2017 Audit Work Plan, we conducted a performance audit of the City of San Diego's (City) Transportation and Storm Water Department Storm Water Division (SWD) focusing on opportunities to improve storm water asset management and to increase revenues to SWD, and to enhance the efficiency of storm water enforcement efforts. The overall objectives of this audit were to:

1. Evaluate whether there are opportunities to improve storm water asset management prioritization, and whether the current balance of storm water infrastructure maintenance and replacement is optimized between in-house repairs and repairs that are contracted out through the Capital Improvement Program (CIP);
2. Evaluate whether opportunities exist to increase SWD revenues; and
3. Evaluate the efficiency of storm water code enforcement case management, monitoring, and reporting.

Storm Water Pollution Prevention is Essential to Keeping Our Waterways Clean & Storm Water Infrastructure Maintenance is Essential to Minimize Flooding, Sink Holes, and Threats to Health and Safety

In urban and suburban areas, much of the land surface is covered by impervious surfaces such as buildings and pavement, which do not allow rain and snowmelt to soak into the ground. Instead, most developed areas rely on storm drains to carry large amounts of storm water runoff from roofs and paved areas to nearby waterways. Storm water runoff carries pollutants such as dirt, oil, chemicals, and lawn fertilizers directly to streams and rivers, where they can harm fish and wildlife populations, kill native vegetation, foul drinking water supplies, and make recreational areas unsafe and unpleasant.

Population growth and urbanization are major contributors to the amount of pollutants in runoff as well as the volume and rate of runoff from impervious surfaces. Together, increased runoff and pollutants can cause changes to water quality that can result in habitat modification and loss, increased flooding, decreased aquatic biological diversity, and increased sedimentation and erosion. To protect these resources, the National Pollutant Discharge Elimination System permit (municipal permit), issued through the California State Regional Water Quality Control Boards, requires municipalities, communities, construction

companies, industries, and others, to use storm water controls known as best management practices (BMPs).¹

It is important for storm water to not only be free of pollutants, but to also be transported through a storm drain system that is adequately maintained and sufficient in size to minimize flooding. When storm drain pipes are not adequately maintained, rehabilitated, repaired, and replaced, pipe failures may occur resulting in emergencies that impact the health and safety of the public. Consequences of inadequate infrastructure maintenance of storm water systems include flooding, sink holes, property damage, increased maintenance costs, and public liability costs.

**Storm Water Division
Overview**

SWD is responsible for managing urban runoff to both minimize flood risk and protect and enhance the quality of receiving waters. SWD's mission is:

***“To Protect and Improve Water Quality and to Reduce Flood Risk
Through Efficient Storm Water Management”***

SWD is the lead office for the City's efforts to reduce pollutants in urban runoff and storm water to the maximum extent practicable. These activities include, but are not limited to, public education, employee training, water quality monitoring, source identification, code enforcement, watershed management, and development and implementation of BMPs within the City's jurisdictional boundaries. Additionally, SWD ensures compliance with all local, state, and federal water quality regulations.

SWD is also responsible for the operations and maintenance of the City's storm water network, which is comprised of approximately 48,000 storm drain structures, 900 miles of storm drain pipes, and 14 pump stations. This network conducts runoff and storm water flows into six different watersheds, which are San Diego Bay, San

¹ The municipal permit program, authorized by the U.S. Environmental Protection Agency, has been delegated to the State of California for implementation through the California State Water Resources Control Board (State Water Board) and nine Regional Water Quality Control Boards (Board). Each Board makes critical water quality decisions for its region, including setting standards, issuing municipal permits, determining compliance with those requirements, and taking appropriate enforcement actions.

Diego River, Mission Bay, Los Penasquitos, San Dieguito, and the Tijuana River.

SWD has five overall goals, as shown in **Exhibit 1**, which are carried out by the Operations and Maintenance Section and the Pollution Prevention Section.

Exhibit 1:

Storm Water Division’s Mission and Goals



Source: Transportation and Storm Water Department Storm Water Division’s 2013 Watershed Asset Management Plan.

Operations and Maintenance Section

The Operations and Maintenance Section is charged with ensuring that SWD’s wide array of infrastructure, such as storm drains, pipes, and channels, are well-maintained and are adequate to minimize the risk of flooding. For more information on this section, please see **Appendix C**.

Storm Water Pollution Prevention Section

Most of the Pollution Prevention Section’s activities are intended to help the City comply with various regulatory and permitting requirements related to water quality, which are discussed later in this section. For more information on this section, please see **Appendix C**.

**Storm Water
Infrastructure Assets**

The storm drain system, although not very visible to the public, is one of the City's largest assets. The City's storm drain system is composed of built structures, which include inlets, pipes, culverts, brow ditches, swales, pump stations, low flow diversions, and outfalls. These built structures have finite lives and replacement costs, and are required to achieve specified service levels to adequately convey storm water flows and manage flood risk within the City. According to the City's FY 2016 update to its Watershed Asset Management Plan (WAMP), which documents the state of the City's storm water assets, the estimated total replacement cost of the City's storm drain system (hard assets) is approximately \$4.8 billion.² For pictures of the City's hard assets, please see **Appendix C**. For Finding 1, we focused specifically on the storm drain system's aging corrugated metal pipes (CMP), as shown below in **Exhibit 2**.

Exhibit 2:

Corrugated Metal Pipes



Source: Photo provided by the Transportation and Storm Water Department Storm Water Division.

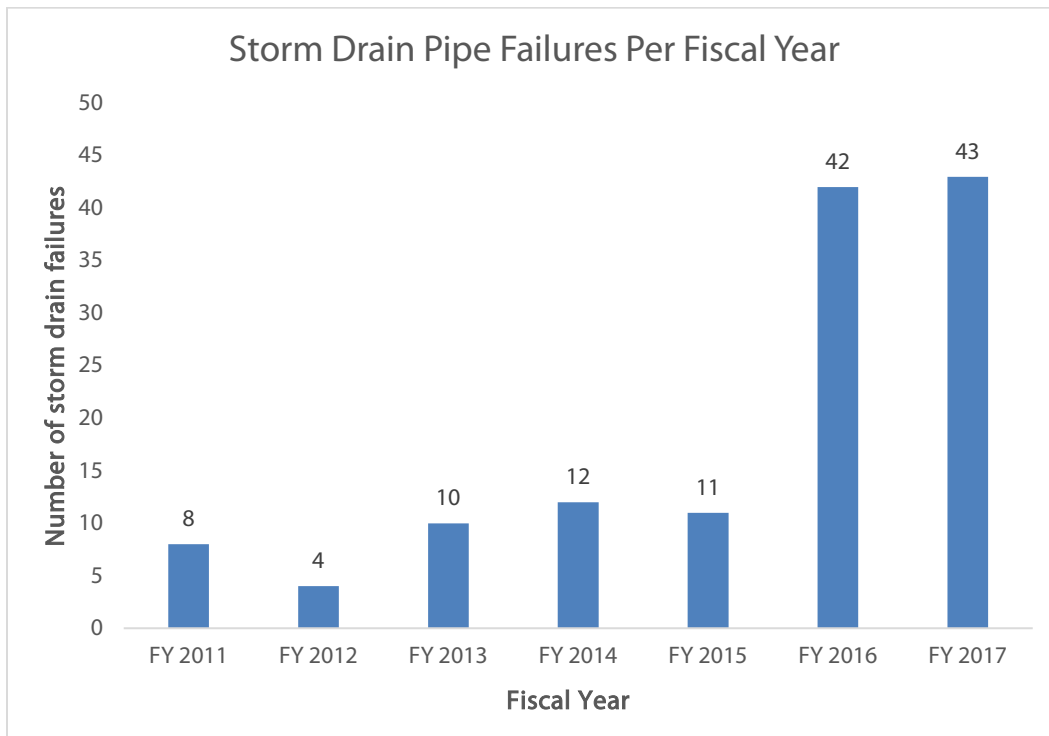
As further discussed in Finding 1, failure to adequately rehabilitate, repair, and replace these assets puts the City's residents' health and safety at risk, and can result in costly emergencies, as well as increases in maintenance costs, flooding, sinkholes, and public liability costs. The rate at which the City's aging storm drain system fails is also greatly influenced by the frequency of rainstorms. The

² The Watershed Asset Management Plan, originally developed in 2013, sought to document the assets owned and managed, assess condition, understand levels of service, assess risk, and analyze funding and resource needs.

City has experienced El Niño in recent years, which, coupled with the aging storm drain system, has resulted in increases in storm water pipe failures, and resulting emergencies and public liability costs. The increase in storm water pipe failures is displayed in **Exhibit 3**. In addition, as further discussed in Finding 1, recent years have had significantly higher public liability expenses related to storm water than previous years.

Exhibit 3:

Storm Drain Pipe Failures Have Become More Frequent in Recent Years



Source: OCA generated based on data from the Transportation and Storm Water Department’s Approved Budget documents.

Rehabilitation, Repairs, and Replacements

As further discussed in Finding 1, SWD rehabilitates, repairs, or replaces storm water pipes through four different processes depending on the severity of the deterioration or failure, risk to health and safety, and complexity of the repair or replacement. These processes are either through the emergency CIP process, non-emergency CIP process, repair by the in-house pipe maintenance crew, or rehabilitation via pipe lining. Additionally, when non-emergency pipe failures occur that have not yet been repaired through the CIP process, SWD monitors these failures during rain storms and deploys temporary pumps as needed to divert the storm water to prevent emergencies.

***The City's Remaining
Corrugated Metal Pipes
Pose a Significant Risk***

Currently, one type of storm drain pipe material in particular, CMP, poses a significant risk of failure. CMP is an outdated pipe material that is prone to failure and is no longer recommended for storm water pipe systems. As further discussed in Finding 1, CMP has a relatively short expected useful life of only 35 years. In comparison, reinforced concrete pipe, which is the new standard pipe material, has an expected useful life of 100 years.

**Storm Water
Regulations and
Requirements**

SWD leads the City's efforts to comply with a variety of water quality regulations which are designed to protect the quality of receiving waters by regulating the discharges of pollutants into waterways. Most water quality regulations are promulgated by the federal Clean Water Act of 1972, which introduced the municipal permit program, an effluent permit system for regulating point source (e.g., pipe, ditch, and sewer) discharges into the waters of the United States.³ The program requires the following storm water discharges to be covered by a municipal permit:

- Discharge associated with industrial activity;
- Discharge from a large or medium municipal separate storm sewer system; or
- Discharge which the U.S. Environmental Protection Agency (USEPA) or the state/tribe determines contributes to a violation of a water quality standard or which is a significant contributor of pollutants to waters of the United States.

The City obtains its municipal permit from the San Diego Regional Water Quality Control Board (Board) and reports annually to the Board on its compliance. If the City fails to demonstrate compliance with the municipal permit, the Board may assess penalties which can amount to \$10,000 per day per violation. Additionally, the USEPA can assess penalties in the amount of \$27,000 per day per violation. In fact, in FY 2014, the City settled with the Board for nearly \$950,000 after the Board issued an enforcement action against the City for its failure to address deficiencies in the design and installation of some storm water treatment systems on construction sites. Additionally, the City failed to implement the Standard Urban Storm Water Mitigation Plan requirements of the municipal permit. More recently, in FY 2018, the Board adopted a \$3.2 million settlement agreement with the City on allegations that the City failed to ensure that construction sites throughout

³ Effluent means sewage or other liquid waste that is discharged into a body of water, etc.

the City protected local streams and coastal lagoons from loose sediment. The alleged violations occurred between 2010 and 2015.

**Storm Water Division
Budget Overview**

SWD funds all operations, maintenance, and capital costs through a combination of the City’s General Fund, Infrastructure Fund, financing, and a modest stream of revenues. Due to increasingly stringent water quality regulations over the last several years, SWD’s General Fund budget has increased from \$35 million in FY 2011 to \$61 million in FY 2017, an increase of 74 percent. Similarly, SWD’s capital expenditures increased from approximately \$8.7 million in FY 2011 to \$23 million in FY 2017, an increase of 164 percent.

***Storm Water Division’s
Revenues Average
Approximately \$13
million Per Year***

SWD receives revenues from a variety of sources including parking citations from its street sweeping program, storm water enforcement penalties, and grants from federal, state, and local agencies. While these sources of revenue can vary, SWD’s dedicated source of revenue is its storm drain fee (storm water fee), which was implemented in FY 1991, last increased in FY 1997, and consistently generates approximately \$5.7 million in annual revenues. Single family residences pay \$0.95 per month while all multi-family, commercial, and industrial facilities pay \$0.0647 per hundred cubic feet (HCF) of water used. **Exhibit 4** shows SWD’s revenue sources and amounts from FY 2013 through FY 2017.

Exhibit 4:

Storm Water Division’s Revenues Average \$13 Million Per Fiscal Year

	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Federal Grants	\$0.3 M	\$1.1M	\$0.7M	\$0	\$0
State Grants	\$0.4M	\$2.0M	\$0.7M	\$0.1M	\$0.2M
Parking Citations	\$5.0M	\$5.6M	\$4.8M	\$5.2M	\$5.1M
Storm Water Fee	\$5.7M	\$6.0M	\$5.8M	\$5.4M	\$5.6M
Storm Water Enforcement	(\$0.2M)	\$0.3M	\$0.3M	\$0.2M	\$0.1M
Other Revenues	\$0.7M	\$0.6M	\$0.5M	\$1.5M	\$2.7M
Total Revenues	\$11.9M	\$15.5M	\$12.7M	\$12.4M	\$13.8M

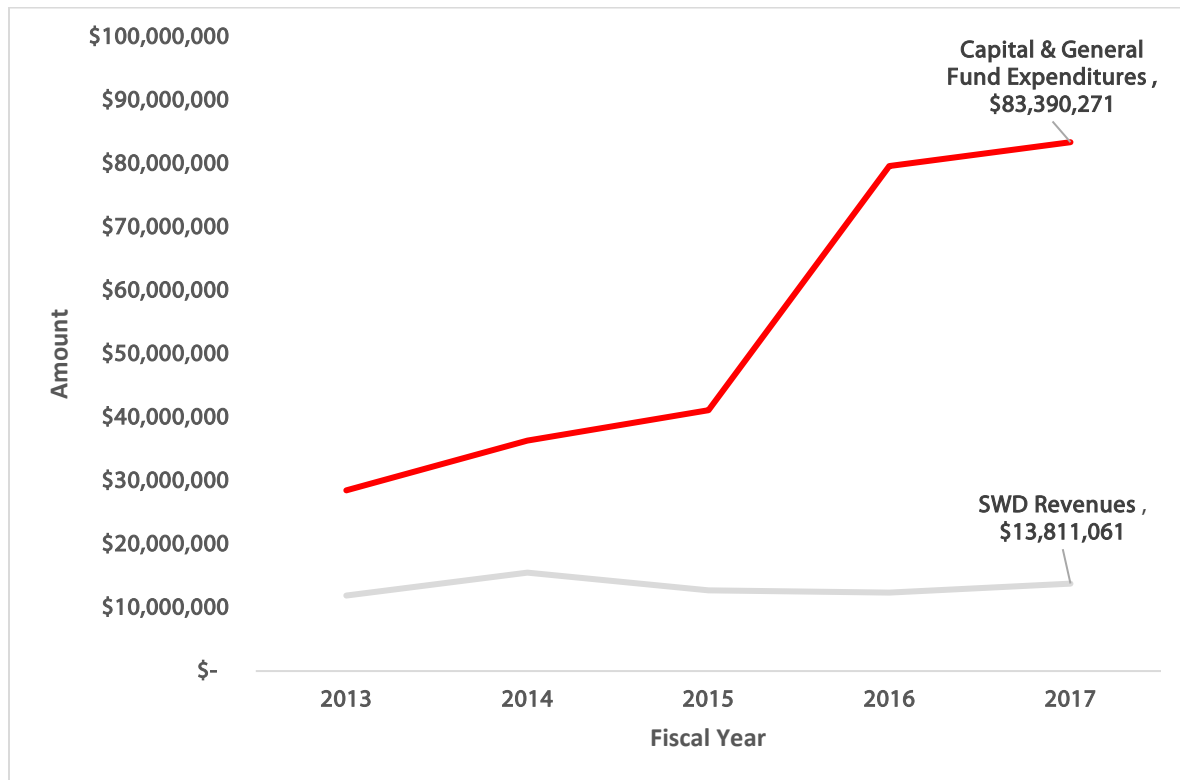
Source: OCA generated based on data from SAP.

The Funding Gap for Storm Water Division's Costs Is Increasing and May Grow to \$459 million by 2023

Exhibit 5 below shows the increasing gap between SWD's actual operational and capital costs and its revenues from FY 2013 to FY 2017. Revenues have remained relatively flat while expenses have increased dramatically. SWD's operating and capital costs are expected to increase in the future as a result of increasing regulations and the City's deferred capital improvement backlog which continues to increase as storm water infrastructure needs continue to be underfunded. The City's Capital Infrastructure Planning Outlook for FY 2019 through FY 2023 identifies storm water infrastructure as one of the highest areas of public interest for investment and identifies the total need at \$563 million. In addition, operational costs for the next five years are expected to add \$328 million, with a combined need of approximately \$891 million. With only \$433 million in identified funding from the General Fund, Infrastructure Fund, and financing, this leaves a funding gap of \$459 million by FY 2023.

Exhibit 5:

Capital and General Fund Expenditures Greatly Exceed Storm Water Division's Revenues



Source: OCA generated based on data from SAP.

Audit Results

Finding 1: To More Quickly and Efficiently Replace Corrugated Metal Pipes, Storm Water Division Should Complete a Detailed Analysis to Further Support Its Plans to Optimize the Size of Its In-House Pipe Repair Crew

Maintenance and repair of the City of San Diego's (City) storm drain system is vital to San Diego residents' quality of life, health, and safety. Failure to adequately maintain the storm drain system in years past has resulted in a large storm drain infrastructure backlog, and increases in public liability costs and costly emergency repairs. The City's failing corrugated metal pipes (CMP) are the primary cause of pipe failures, despite CMP accounting for only approximately 4 percent of the City's storm drain pipes. Therefore, repairing and replacing CMP as quickly and efficiently as possible is one of the Transportation and Storm Water Department Storm Water Division's (SWD) key goals to minimize risk and mitigate threat to the public. However, at its current rate of replacement, it will take SWD approximately 95 years to replace the approximately 36 miles of CMP remaining in the City, most of which has already exceeded its useful life and is at risk of failure.

SWD has recently implemented cost-saving measures by creating an in-house pipe repair crew (crew) to conduct repairs in lieu of a contractor and by evaluating the potential to use pipe lining to extend the life of deteriorating CMP. While these efforts are laudable, we found some limitations to SWD's ability to maximize the benefits of these efforts. Specifically, we found:

- The crew's size has limited SWD's ability to utilize the crew to cut costs to the maximum extent. However, SWD has not completed a detailed analysis to determine the optimal size of the crew. As a result, SWD continues to over-rely on costly contracted repairs and be too slow and inefficient in its replacement of CMP;
- SWD is still in the process of entering into a contract for proactive rehabilitation via pipe lining; and

- Although SWD already has CMP condition assessment data, the data may be too outdated to accurately establish priorities for proactive repairs by the crew and for pipe lining.

Given its resource constraints, SWD needs to be as efficient as possible. An optimized in-house pipe repair crew appears to have the potential to save the City millions of dollars per year, with rehabilitation via pipe lining generating additional cost savings. Therefore, we recommend:

- SWD continue with its plan to conduct an analysis to determine the optimal size of its crew and equipment needs, and use this analysis to support continued funding requests for additional crew staff, as needed. This analysis should include a review of all projects on SWD's Capital Improvement Program (CIP) Needs List to determine which projects can be completed by the crew, and include a projection of future repair and replacement needs. If sufficient additional funding is not provided during the budget process, SWD should determine whether funds can be reallocated to the optimal size crew; and
- SWD continue with its plan to enter into a contract for pipe lining, utilize existing condition assessment data to help determine which pipe segments may be good candidates for pipe lining, and reallocate resources to fund pipe lining, if necessary.

SWD determine the feasibility of conducting proactive repairs; consider requesting funding for an updated condition assessment, if needed; and continue to use its condition assessment data to establish priorities for proactive repairs and pipe lining.

What We Found

Our audit revealed that the SWD's replacement of the City's remaining CMP is too slow and not as efficient as possible. Specifically, we found:

- Although replacing the City's remaining CMP is a top priority for SWD, there is still approximately 36 miles of CMP spread throughout the City, the majority of which has exceeded its useful life and is at risk of failure. At the current rate of replacement, it will take approximately 95 years for all remaining CMP to be replaced;

- Although CMP makes up only about 4 percent of the City's storm drain pipes, CMP-related failures drive the majority of SWD's repair work. This demonstrates that CMP is especially prone to failure. Therefore, it is imperative for SWD to replace the remaining CMP as quickly as possible; and
- Although condition assessment data is available, SWD's ability to use this data to prioritize and complete proactive repairs is limited.

SWD currently relies mainly on costly emergency and non-emergency CIP projects to replace the City's remaining miles of CMP. Although its newly formed in-house pipe crew is more cost-effective, the crew's current size limits SWD's ability to utilize the crew to cut costs to the maximum extent. Therefore, SWD's current process of replacing CMP is costly and not as efficient as possible.

***There is Still
Approximately 36 miles
of Corrugated Metal
Pipes Spread throughout
the City, the Majority of
Which Has Exceeded Its
Expected Useful Life***

We found that the City's rate of replacing CMP, the storm water pipe material most prone to failure, is far too slow to keep up with current and future rates of deterioration.⁴ Although the SWD has made replacing the City's remaining CMP a top priority, we found that there is still approximately 36 miles of CMP spread throughout the City, the majority of which has already exceeded its expected useful life.⁵ SWD estimated that on average, approximately 2,000 feet of CMP is replaced per year in response to failures. However, at that rate, it would take the City approximately 95 years to replace all remaining CMP. The expected useful life of CMP is only 35 years. Therefore, at the current rate of replacement, likely all remaining CMP will degrade and fail before it can be replaced, putting the City at risk of increased rates of storm water emergencies, which are costly and can pose immediate risks to health and safety. Specifically, storm

⁴ The City banned the use of corrugated metal pipes (CMP) in 1992 due to its high rate of failure.

⁵ Our data reliability testing revealed that the data we used to help determine the number of remaining miles of CMP had some reliability issues in terms of correctly categorizing pipe material. Specifically, we found that not all pipe segments listed as CMP were actually CMP when the material was verified in the field. However, it is also likely that some segments not listed as CMP were actually CMP, although this could not be verified based on existing data. According to Storm Water Division (SWD), the conveyance system data was the most complete and accurate data set available. We therefore continued to use the data for our analyses, and we removed those segments found not to be CMP from our calculations. In addition, SWD had previously determined that there is still approximately 35 miles of CMP remaining throughout the City. We therefore concluded that our calculation of approximately 36 miles is reasonable.

water failures can result in sinkholes, flooding, and property damage, thereby impacting residents' quality of life.

Based on SWD's data, we estimate:

- Approximately 90 percent (almost 29 miles) of the City's remaining CMP has likely already exceeded its expected useful life;
- Approximately 94 percent will have exceeded its expected useful life within the next 5 years; and
- All (100 percent) of CMP will have exceeded its expected useful life within the next 20 years.⁶

The need to rehabilitate and replace CMP generally increases as CMP pipes age. Therefore, in coming years, the majority of the City's remaining CMP will require rehabilitation or replacement. Furthermore, although we did not conduct a thorough review of the ages of other storm water pipe materials, in addition to CMP, SWD will have to address the maintenance and replacement needs of other pipe materials in coming years.

Although the City's Remaining Corrugated Metal Pipes Makes Up Only a Small Portion of the City's Storm Drain System, Corrugated Metal Pipe-Related Projects are Prevalent on Storm Water Division's Capital Improvement Program Needs List

As shown in **Exhibit 6**, CMP-related projects made up over 60 percent of SWD's complete, current, and planned CIP projects from 2009 through FY 2017, even though CMP makes up only about 4 percent of the storm drain system. According to SWD, all projects on its CIP Needs List, aside from a few green infrastructure projects, were put on the list in response to emergency and non-emergency pipe failures.

⁶ This data is based on only approximately 13 miles of corrugated metal pipes (CMP) for which installation date data is available. However, according to Storm Water Division, it is reasonable to assume that the distribution of ages is similar for all other segments of CMP for which no installation date data is recorded.

Exhibit 6:

Corrugated Metal Pipe (CMP) Failures Are Prevalent on Storm Water Division’s Capital Improvement Program (CIP) Needs List Even Though Only 4% of the City’s Storm Drain Pipes Are Still CMP

Projects Related to CMP Made Up the Majority of the Storm Water Division's Complete, Current, and Planned CIP Projects from 2009 through FY 2017	
29 of 35 Emergency Projects are Related to CMP*	125 of 202 Non-Emergency Projects are Related to CMP
% of All CIP Projects Related to CMP:**	
65%	

*This is the number of projects identified by Storm Water Division (SWD) and the Public Works Department as having received an emergency sole source contract. Additional emergency repairs may have occurred as part of existing Capital Improvement Program (CIP) projects.

**This calculation does not include green infrastructure CIP projects. If calculated including the seven green infrastructure projects on SWD’s CIP Needs List, the percentage of all CIP projects related to CMP is approximately 63 percent.

Source: OCA generated based on SWD’s Master CIP Needs List and Geographic Information System (GIS) Conveyance data.

Furthermore, as shown in **Exhibit 6** above, we determined that there were at least 35 storm water pipe emergencies that occurred between 2009 and FY 2017 that had sole source emergency contracts.⁷ Of those 35 emergency repairs, 29 (83 percent) were CMP emergencies and 6 (17 percent) were non-CMP emergencies. Those emergency repairs totaled approximately \$27 million, approximately \$15.6 million (58 percent) of which was caused by CMP failures.

⁷ According to the Public Works Department, not all emergency failures had sole source emergency contracts because some emergency repairs were incorporated into existing Capital Improvement Program projects. In addition, the City had not been tracking sole source emergency contracts during this entire period. Therefore, there may have been additional emergency failures related to the City’s storm drain pipes that are not accounted for in this number.

Although Condition Assessment Data is Available, Storm Water Division’s Ability to Use the Data to Complete Proactive Repairs Is Limited

SWD had a contractor assess the condition of all CMP from 2009–2012. However, because of the size of the existing in-house pipe repair crew and because SWD is overwhelmed addressing pipe failures, SWD’s ability to conduct proactive repairs on the City’s deteriorated storm drain pipes is limited. As mentioned above, SWD has over 200 projects on its CIP Needs List that were put on the list in response to pipe failures. Therefore, although SWD recently completed some proactive repairs using its newly formed in-house pipe repair crew, and stated that it used the condition assessment results to help prioritize pipe segments based on risk, SWD has for the most part not had the opportunity to use this information to initiate proactive repairs. In addition, SWD stated that at this point the CMP condition assessment data is almost 10 years old and although new condition assessments of high priority locations are occurring on an ongoing basis, a CMP condition assessment may need to be updated.

As a result, as shown in **Exhibit 7** below, we found that 72 percent of CMP pipes assessed as needing replacement, rehabilitation, or spot repair have yet to be incorporated into the CIP Needs List. Because these pipes were assessed as needing rehabilitation or replacement almost a decade ago, they likely may be the next pipes to result in emergency or non-emergency failures.

Exhibit 7:

Because Storm Water Division’s (SWD) Ability to Conduct Proactive Repairs is Limited, Many Pipes Recommended for Replacement, Repair, or Rehabilitation Almost a Decade Ago Have Yet to be Incorporated into the Capital Improvement Program (CIP) Needs List

Many Pipes Recommended for Replacement, Rehabilitation, or Spot Repair During the CMP Condition Assessment Have Yet to Be Incorporated into SWD’s CIP Needs List		
# of pipes recommended for replacement, rehabilitation, or spot repair	# of which included on CIP Needs List	% incorporated into CIP Needs List
678	189	28%
% that still need to be incorporated into CIP Needs List	72%	

Source: OCA generated based on Storm Water Division’s (SWD) corrugated metal pipe Condition Assessment data and SWD’s Capital Improvement Program Needs List.

The Current Method of Addressing Corrugated Metal Pipe Failures is Not as Efficient and Cost-Effective as Possible

SWD currently relies mostly on costly emergency and non-emergency CIP projects to replace the City's remaining miles of CMP, which limits the number of miles that can be replaced for a given amount of time and money. The length of time it takes for a failed pipe to be repaired or replaced depends on the severity of the failure and the risk it poses to health and safety. Failed pipes can take anywhere from one month to several years to be replaced.

Storm water pipes can be rehabilitated, repaired, or replaced through four different processes depending on the severity of the failure, risk to health and safety, and complexity of the repair or replacement. These four processes are: (1) emergency CIP project; (2) non-emergency CIP project; (3) in-house pipe crew repair; and (4) rehabilitation via pipe lining.

When a pipe failure occurs, the Public Works Department's (Public Works) engineering team evaluates the failure and determines whether the failure constitutes an emergency. A failure is defined as an emergency if it puts public health and safety at immediate risk. If a failure is determined to be an emergency, a contractor will be used from Public Works' sole source contractor list. According to Public Works, the City cannot upgrade the asset during an emergency CIP repair and must do only the minimum possible to remove the emergency risk. As a result, most emergency repairs are only partial or temporary repairs. Although the emergency repair removes the immediate risk to health and safety, often the pipe ends up on the CIP Needs List for a full replacement in the future, resulting in additional costs and repetitive work. In addition, SWD stated that emergency CIP repairs typically cost more than non-emergency CIP work because there is a premium for mobilizing resources and equipment more quickly to remove the risk to health and safety as soon as possible.

We found that most emergency pipe failures that occurred from 2009 through FY 2017 received a temporary or partial repair through an emergency CIP project. Specifically, we found that only 4 of the 35 emergency CIP projects were full replacements. The other 31 emergency CIP projects, which accounted for approximately \$21 million in emergency costs, were either temporary or partial replacements. Therefore, all 31 of those projects will have to go through the CIP process again for a full replacement. According to SWD, the full replacement via non-emergency CIP, once initiated and allocated funding, then takes 3–5 years to be completed.

According to examples provided by SWD, repairs by the in-house crew cost only about 20–36 percent of the cost of similar repairs through non-emergency CIP. Based on estimates provided by SWD, the average cost of in-house crew repairs is about \$205 per foot of pipe, and the average cost of non-emergency CIP repairs is about \$570 per foot of pipe. Therefore, repairs by the in-house crew may cost only 36 percent of the cost of completing a similar repair through the non-emergency CIP process.⁸ SWD also stated that the cost of using the crew can in some cases be as low as 20 percent of the cost of going through the CIP process.⁹ According to SWD, this difference in cost is because contract work can be more complex than the work performed by the in-house crew. In addition, SWD stated that using the crew is cheaper in part due to the crew's existing knowledge of City infrastructure and availability of equipment.

Relying on emergency and non-emergency CIP for repair and replacement of aging storm water pipes is inefficient and more expensive than the alternatives of using the in-house pipe repair crew and pipe lining whenever possible. According to SWD, the crew has the potential to perform many repairs significantly faster and cheaper than through CIP. However, because the crew is not currently at its optimal size, and is already completing as many projects as possible given its current size, the crew's ability to complete additional repairs from the CIP Needs List is somewhat limited. Also, as indicated in the flowchart at **Exhibit 8**, according to SWD, the crew currently has a backlog of about 40 projects, but can only complete about 1–2 projects per month given current staffing and resource levels. In addition, although pipe lining is a cost-effective option for rehabilitation, SWD is only in the early stages of entering into a contract for pipe lining, therefore pipe lining is not included in the flowchart displaying the current process of addressing pipe failures and deterioration.

⁸ In addition, a non-emergency Capital Improvement Program (CIP) project completed on Arden Way in which 174 linear feet of 18-inch corrugated metal pipe (CMP) was replaced with reinforced concrete pipe cost \$191,000. Storm Water Division (SWD) stated that a similar repair completed by the in-house repair crew would have only cost approximately \$50,000 (equivalent to only 26 percent of the cost of the repair through a CIP contractor).

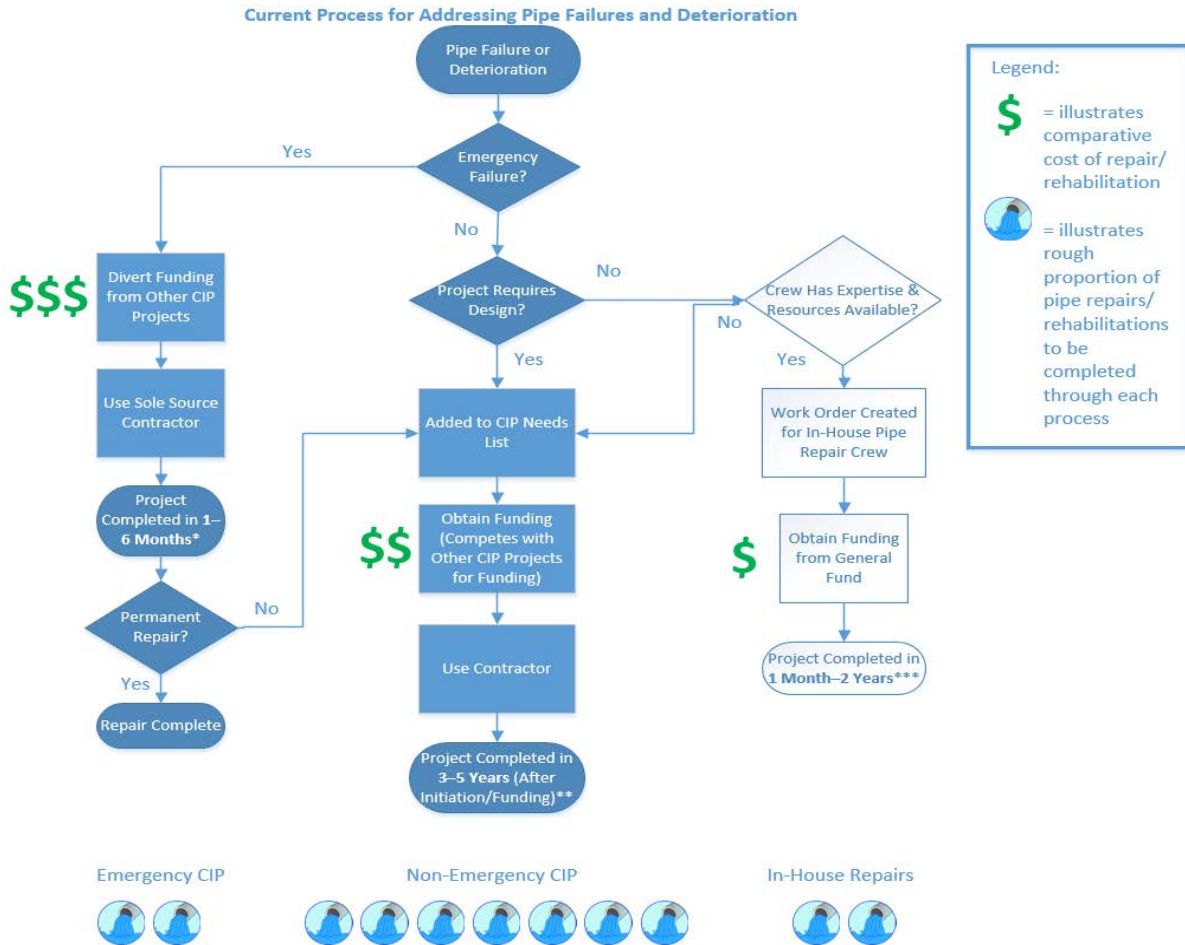
⁹ SWD stated that in some cases, a \$250,000 repair via the non-emergency CIP process could also be completed for approximately \$50,000 (equivalent to only 20 percent of the cost of the repair through a CIP contractor) via the in-house pipe crew.

Exhibit 8:

The Current Process Underutilizes the In-House Pipe Repair Crew & Does Not Include Proactive Rehabilitation via Pipe Lining

The majority of pipe repairs are currently completed via emergency and non-emergency Capital Improvement Program projects.

The in-house pipe crew has a backlog of about 40 projects, but can only complete about 1–2 projects per month.



*This timeframe is from the start of the construction (which can precede the start of the sole source emergency contract) to completion of the repair.

**This timeframe is from when the project obtains funding through the Capital Improvement Program (CIP) process to completion of the repair. Lower priority projects may sit on the CIP Needs List for years before being initiated/obtaining funding.

*** This timeframe is from when the project is identified as a project that the in-house crew can complete to completion of the repair. Actual construction generally takes 1-2 months; however, due to the current backlog, projects may sit on the backlog for up to 2 years. Once the crew is at its optimal size, the backlog is expected to decrease.

Source: OCA generated based on various documents and interviews with Storm Water Division staff.

What Should Have Occurred

Pipes should be repaired and replaced as efficiently as possible, and ideally before they fail and cause emergencies. Because CMP has a useful life of only 35 years and is prone to failure, timely rehabilitation and replacement of CMP is crucial for preventing emergencies. In addition, according to the Government Finance Officers Association (GFOA), it is important to give substantial thought to the structure of the organization to position all employees for maximum efficiency. Specifically, we found:

- Given its resource constraints, SWD needs to be as efficient as possible in its repair and replacement of the City's remaining CMP. SWD's newly formed in-house pipe repair crew can help SWD be more efficient. For maximum efficiency, the crew should be at its optimal size and receive sufficient funding to complete as many repairs as possible;
- SWD has existing condition assessment data that it may be able to use to proactively inspect and rehabilitate certain pipe segments using pipe lining; and
- The City's Watershed Asset Management Plan (WAMP) recommends SWD increase the use of both the in-house crew and pipe lining.

Given Its Resource Constraints, Storm Water Division Needs to be as Efficient as Possible

SWD has a newly formed in-house pipe repair crew (crew) that according to SWD, can be utilized to repair and replace aging storm water pipes more quickly and cost-effectively than through emergency and non-emergency CIP projects. Specifically, SWD has stressed that the crew offers the following benefits to the City:

- **Efficiency** – the ability to enhance drainage capacity to undersized conveyance systems in a timely manner and alleviate the potential for flooding;
- **Cost savings** – a significant reduction in the funding needed per project vs. the private sector;
- **Improved response times vs. CIP** – typical CIP projects take 3–5 years to complete (once initiated), whereas the crew can respond within months of the failure; and
- **Enhanced customer service** – customers see a faster turnaround on projects, mitigation of potential hazards within the public right-of-way, and alleviation of potential slope failures.

According to examples provided by SWD, repairs by the in-house crew cost a fraction (approximately 20–36 percent) of the cost of similar repairs completed by a contractor through the CIP process. In addition to being more cost-effective, in-house projects take significantly less time than non-emergency CIP projects. Non-emergency CIP projects take 3–5 years (once initiated), whereas repairs by the in-house crew take only a couple of months.

Therefore, to cut costs to the maximum extent and to more quickly and efficiently address its pipe failures, SWD’s crew should be at its optimal size. Furthermore, according to the GFOA, it is important to give substantial thought to the structure of the organization to position all employees for maximum efficiency. Thus, for maximum efficiency, the crew should be at its optimal size and receive sufficient funding to complete as many repairs as possible. As further discussed later in this finding, SWD has stated that it is aware of the need to make the crew its optimal size and is already planning on completing an analysis to determine the optimal size and request funding for additional full-time equivalent staff (FTE) accordingly.

It is important to note that pipe failures must meet certain requirements to be repaired by the crew. Limitations of the crew include whether the failure is in the public right-of-way, how deep the pipe is, the pipe’s diameter, among other factors. Therefore, SWD will still have to use the emergency CIP and non-emergency CIP processes to address some pipe failures.

***Storm Water Division
May Be Able to Utilize
Existing Data to
Proactively Rehabilitate
Pipes Using Pipe Lining***

SWD stated that it is in the process of contracting out for pipe lining. According to SWD, pipe lining is a cost-effective means of extending the useful life of CMP by approximately another 50 years and is therefore a good alternative for pipes that need rehabilitation. As mentioned earlier, SWD has available condition assessment data for the City’s remaining CMP. Although this data is now several years old, it is possible that it can be utilized as a starting point to determine which pipe segments may be good candidates for pipe lining. However, if SWD determines that the existing condition assessment data is too outdated to be useful, an updated condition assessment may be warranted. Utilizing pipe lining for proactive rehabilitation of pipes, whenever appropriate, can help prevent costly emergency failures from occurring.

The City's Watershed Asset Management Plan Recommends Increasing the Use of the In-House Pipe Repair Crew and Pipe Lining

The 2016 update to the City's WAMP estimated the total replacement cost for existing CMP pipes at \$87 million and recommended SWD focus on the immediate need of CMP replacement within five years using the following approach:

- In-house crew repairs of 5 miles of CMP in 5 years (cost of \$1.5 million per year);
- Lining of 10 miles of CMP in 5 years (cost of \$2 million per year); and
- CIP repairs of 20 miles of CMP in 5 years (cost of \$12 million per year).¹⁰

This approach would cost \$77.5 million, therefore saving the City \$9.5 million. Additional cost savings may result from the CMP being replaced at a faster rate because CMP-related emergencies may decrease accordingly.

The current process includes limited proactive repair and, as shown in **Exhibit 8** on pg. 22, filters the majority of repairs and replacements through the emergency and non-emergency CIP processes with only a small portion of repairs and replacements completed through the crew. In contrast, the recommended future approach, as shown in the flowchart in **Exhibit 9**, would reallocate resources to the crew and optimize the size of the crew so that more repairs and replacements could be completed through this more efficient and cost-effective process. The crew would complete as many CMP replacements as possible given the crew's new optimal size, resources, and skills, and the number of repairs going through the more expensive emergency and non-emergency CIP processes would be limited to the greatest extent possible. The recommended future approach would also include reallocating resources to proactively rehabilitate pipe segments that are good candidates for pipe lining. The new process would resemble the process flowchart in **Exhibit 9**.

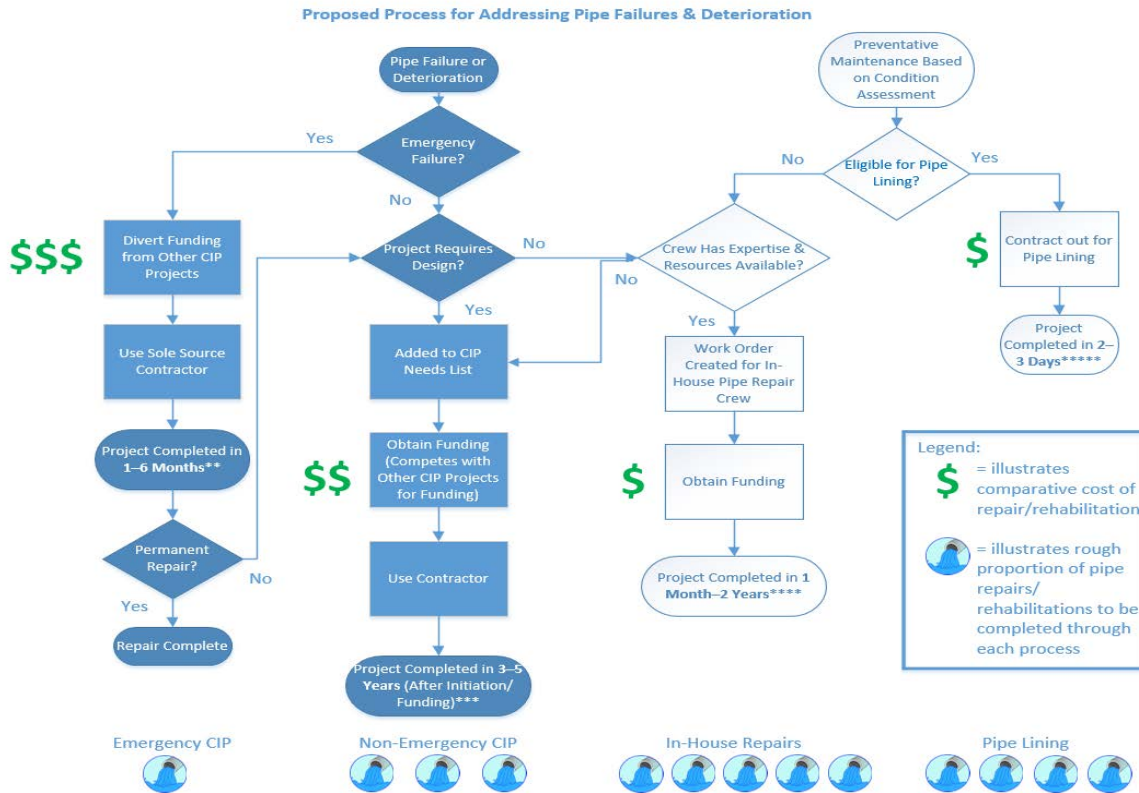
¹⁰ Storm Water Division shared a different version of this plan that would span over 8 years instead of 5 years, starting in FY 2018. This plan includes in-house repair of 5 miles of corrugated metal pipes (CMP) at \$679,000 per year, pipe lining of 10 miles of CMP at \$1.3 million per year, and increased CMP of 20 miles at \$7.5 million per year. This plan would cost \$75.8 million over the 8-year period and replace 35 miles of CMP.

Exhibit 9:

To Improve Efficiency, Storm Water Division Should Complete as Many Repairs and Rehabilitations as Possible Through the In-House Pipe Repair Crew and Pipe Lining

*The number of repairs completed through the Capital Improvement Program processes should be limited to the greatest extent possible.**

As many repairs and rehabilitations as possible should be completed via the in-house crew and pipe lining.



*In some cases, Capital Improvement Program (CIP) may still be the preferred approach. For example, if a repair project can be bundled as part of a larger CIP project to ensure a cost-effective and more efficient “one-dig” approach, then CIP may be the best option.

**This timeframe is from the start of the construction (which can precede the start of the sole source emergency contract) to completion of the repair.

***This timeframe is from when the project obtains funding through the CIP process to completion of the repair. Lower priority projects may sit on the CIP Needs List for years before being initiated/obtaining funding.

****This timeframe is from when the project is identified as a project that the in-house crew can complete to completion of the repair. Actual construction generally takes 1-2 months; however, due to the current backlog, projects may sit on the backlog for up to 2 years. Once the crew is at its optimal size, the backlog is expected to decrease.

*****This timeframe is only representative of the actual time spent lining the pipes.

Source: OCA generated based on various documents and interviews with Storm Water Division staff.

Impact Of Not Taking Action

As mentioned in the Background, one of SWD’s main goals is to provide flood risk management for the protection of public safety, property, and infrastructure. SWD’s ability to meet this goal is dependent on how quickly the City’s remaining CMP is replaced. Specifically, we found:

- If SWD does not take action to more quickly and efficiently rehabilitate, repair, and replace the City’s remaining CMP, the City will be at risk of additional emergency pipe failures, flooding, sinkholes, threats to resident health and safety, and property damage; and
- If CMP is not replaced more quickly, the City may experience increases in emergency costs and public liability costs.

If Storm Water Division Does Not Take Action to More Efficiently Replace Its Aging Pipes, Corrugated Metal Pipes Will Continue to Deteriorate and Pose a Risk to Health and Safety

If SWD does not improve its process for replacing the City’s remaining CMP, the City will be at risk of additional pipe failures that may result in flooding, sinkholes, and threats to resident health and safety, as well as resulting public liability costs. Because CMP has a short expected useful life of only 35 years and is particularly prone to deterioration, continuing to replace the City’s remaining CMP at the current rate will likely result in many CMP failures in coming years. Examples of deteriorated CMP are shown in **Exhibit 10** below.

Exhibit 10:

Examples of Deteriorated Corrugated Metal Pipes



Source: Storm Water Division’s photos of deteriorated corrugated metal pipes.

As shown in **Exhibit 11** below, a CMP pipe failure caused a massive sinkhole in University City in 2011 that spanned 50 feet in length, 20 feet in width, and 8 feet in depth. Such large sinkholes pose a risk to the health and safety of the public. As a result of the sinkhole, water services to nearby residences and businesses were disrupted, causing inconvenience to residents and leading businesses to send workers home. In addition, traffic had to be re-routed through a private parking lot. If SWD does not take action to more quickly replace the City's remaining CMP, more sinkholes will likely occur in coming years.

Exhibit 11:

A Sinkhole Spanning 50 Feet Long Developed in University City Due to a Faulty Corrugated Metal Pipe



Source: NBC San Diego.

If Corrugated Metal Pipes Are Not Replaced More Quickly, the City May Experience Increases in Emergency Costs and Public Liability Costs

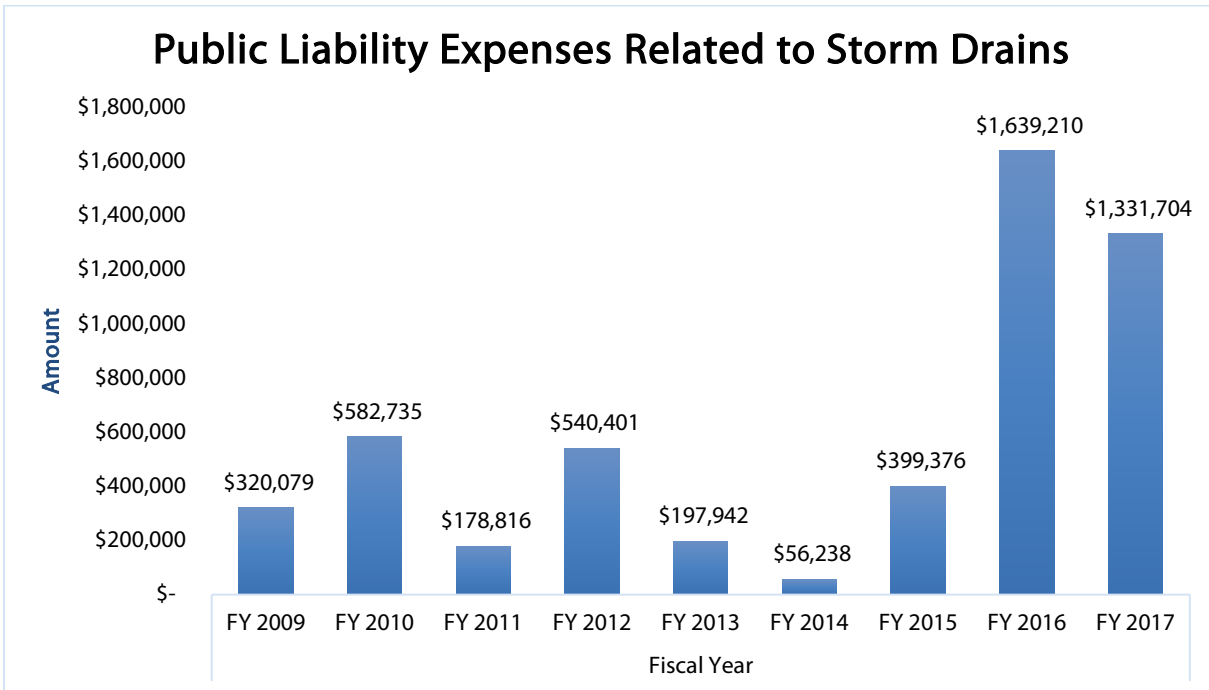
Emergency costs for CMP-related storm water emergencies and public liability costs for storm water have increased in recent years and will likely continue to increase as the remaining CMP pipes age. The number of storm water emergencies varies from year to year due to weather patterns that impact the stress level on the City's storm water system. However, given that most of the remaining CMP has already exceeded its useful life, the City will likely experience an increase in storm water emergencies before all pipes can be replaced at the current rate of replacement.

In the event of a storm water emergency, funding is diverted from existing CIP projects, as needed. Although the goal is to not delay any existing CIP projects, according to Public Works, which is responsible for reallocating the funding, some projects may become delayed due to the reallocation of funds. Therefore, the more storm water emergencies the City experiences, the less funding will be available to address pipe failures already on the CIP Needs List.

In addition, as shown in **Exhibit 12** below, although public liability expenses related to storm drains vary from year to year, recent years have been significantly higher than previous years. FY 2016 and FY 2017 both had public liability expenses over \$1 million, whereas previous years had public liability expenses ranging from \$56,000 to \$580,000. According to data provided by the City’s Risk Management Department, the majority of the public liability expenses were likely related to storm drain failure.¹¹

Exhibit 12:

Public Liability Expenses Related to the City’s Storm Drains Have Increased in Recent Years



Source: OCA generated based on the Risk Management Department’s Public Liability data.

¹¹ We could not determine from the data how many of these storm drain failures were caused by failed corrugated metal pipes.

Why This Occurred

Several factors have contributed to SWD’s slow replacement of the City’s remaining CMP. Specifically, we found:

- Resource and staffing restrictions have limited SWD’s ability to proactively repair and rehabilitate the City’s aging storm drain pipes;
- SWD has not yet received requested funding for additional FTEs for the crew, and has not yet conducted an analysis to determine the optimal size of the crew.¹² Specifically, SWD has not reviewed all existing projects on its CIP Needs List to determine which projects the crew may be able to complete at a faster and cheaper rate than through the emergency and non-emergency CIP processes. This information is critical to determining the optimal crew size and demonstrating cost savings; and
- SWD is still in the process of entering into a contract for pipe lining.

Limited Funding and Resources for Storm Water Infrastructure Impacts Storm Water Division’s Ability to Conduct Proactive Replacement of Corrugated Metal Pipes

As further discussed in Finding 2, the City’s storm water needs are significantly underfunded. Due to limited resources, combined with the time and resources spent reacting to emergency CMP failures, SWD’s ability to proactively repair and replace the City’s aging storm drain pipes is limited. Instead, SWD has had to act almost exclusively on a reactionary basis to repair and replace CMP as it fails, despite having data on the condition of the City’s remaining CMP pipe segments from a condition assessment completed by a contractor from 2009–2012.

Storm Water Division Has Not Yet Received Requested Approval for 7 Additional Full-Time Equivalent Staff to Meet the Intended Size of the Pilot Program of the Crew and Has Not Yet Conducted an Analysis to Determine the Optimal Size of the Crew

SWD currently only has funding and approval for half of the FTE’s that were intended to make up the pilot program of the crew. SWD requested funding for an additional 7 FTE’s for the crew in FY 2018, but did not receive approval and funding from the City. We note that the Mayor’s Proposed Budget for FY 2019 includes funding for the requested FTEs. However, until the budget is finalized, it is not certain whether SWD will receive the requested approval. According to SWD, the requested additional FTEs were not meant to make the crew its optimal size, but were meant to make the crew the intended size of its pilot phase and allow the crew to complete more work. Once SWD completes an analysis to

¹² The Mayor’s Proposed Budget for FY 2019 includes funding for the requested full-time equivalent staff to meet the intended size of the in-house pipe repair crew pilot program. However, until the budget is finalized, it is not certain whether Storm Water Division (SWD) will receive the requested approval. In addition, once SWD completes an analysis to determine the optimal size of the crew, additional FTEs may be needed.

determine the optimal size of the crew, additional FTEs may be needed.

SWD stated that it has not yet completed an analysis to determine the optimal size of the crew because the crew is still in its pilot phase. However, SWD stated that it plans to complete such an analysis and request additional FTE's to staff the crew accordingly. Until SWD optimizes the size of the crew, its capability to maximize cost savings using the crew is limited.

In addition, SWD has not reviewed all projects on its current CIP Needs List to determine which projects the crew could potentially complete faster and cheaper than through a CIP contractor. Although the crew has already accumulated a backlog of work and is not yet at its optimal size, it would be helpful for SWD to know which projects the crew can potentially complete once it is allocated additional resources. Such a review could also be used to support SWD's budget request for additional staffing for the crew.

Storm Water Division is in the Process of Entering into a Contract for Pipe Lining

SWD has recognized the benefits of utilizing pipe lining to cost-effectively extend the useful life of deteriorating CMP and is already in the process of entering into a contract for pipe lining. In addition, SWD has noted that according to its condition assessment data, approximately 10 miles of CMP segments may be good candidates for pipe lining.

Storm Water Division Could More Quickly and Efficiently Replace the City's Remaining Corrugated Metal Pipes

Overall, without optimizing the size of the in-house crew and allocating funding for pipe lining, SWD will not be able to complete projects as efficiently as possible, and will continue to spend excessive amounts on emergency CIP and non-emergency CIP projects that could otherwise be done in-house or via pipe lining at a fraction of the cost. This inefficiency limits the amount of pipe rehabilitation or replacement work that can be done per dollar.

While SWD needs to complete a detailed analysis of current and future projects that could be handled by an optimized in-house crew to accurately estimate total savings that could be achieved, an optimized in-house crew appears to have the potential to save millions of dollars per year in maintenance costs, with further savings possible through pipe lining as well. For example, based

on estimates provided by SWD, the current pilot crew can complete approximately 12 – 24 projects per year at a cost of \$724,000. SWD provided examples and estimates indicating that these projects were completed at a fraction of the cost of contracting out similar repairs. While this is only a preliminary estimate, it is evident that the pilot in-house crew is generating significant savings, which would be magnified if the size of the crew is optimized to handle the greatest number of projects as possible. As noted earlier, there are still hundreds of CMP pipe segments that were recommended for repair or replacement almost a decade ago that have still not been addressed, and many of these could likely be handled by the in-house crew. In addition, by completing more projects, and completing them more quickly than through the contracted CIP process, the crew will likely help reduce the number of emergency and non-emergency pipe failures that occur.

Therefore, to ensure that SWD can complete the maximum amount of rehabilitation, repair, and replacement work per year at the lowest cost, we recommend the following:

Recommendation #1

To more quickly and efficiently replace the City’s aging corrugated metal pipes, the Transportation and Storm Water Department Storm Water Division (SWD) should continue with its plans to determine the optimal size of its in-house pipe repair crew (crew) and equipment needs, and continue to request funding for the additional staff, as needed. Specifically, SWD should conduct the following analysis to justify the funding request:

- Review all projects on its Capital Improvement Program Needs List and determine which projects the crew can complete; and
- Project future repair and replacement needs based on the City’s aging storm water pipes and condition assessment data to help determine the optimal size of the crew.

If SWD is not granted funding for additional FTEs to optimize the size of the crew (based on the results of the analysis above), SWD should develop and implement an annual process to analyze its funding and determine whether funds can be reallocated to fund additional repairs by the crew. (Priority 1)

Recommendation #2

To more efficiently and cost-effectively rehabilitate the City's aging corrugated metal pipes (CMP), and help lower the risk of CMP-related failures, the Transportation and Storm Water Department Storm Water Division (SWD) should:

- Continue with its plan to enter into a contract for pipe lining; and
- Continue to use its CMP condition assessment data to help determine which pipe segments may be good candidates for pipe lining rather than full replacement.

If SWD is not granted funding for a contract for pipe lining, SWD should develop and implement an annual process to analyze its funds and determine whether funds can be reallocated to fund a contract for pipe lining. (Priority 1)

Recommendation #3

To accurately measure the extent of deterioration and establish priorities for proactive repairs by the in-house crew or for pipe lining, the Transportation and Storm Water Department Storm Water Division (SWD) should continue with its Condition Assessment Program. Specifically, SWD should:

- Determine the feasibility of the division conducting proactive repairs;
- Consider requesting funding for an updated condition assessment of the City's remaining corrugated metal pipes if SWD determines that the existing data is too outdated to be useful and if SWD determines that the benefits of updating the condition assessment outweighs the associated costs; and
- Continue to use condition assessment data to establish priorities for proactive repairs and for pipe lining. (Priority 2)

Finding 2: Storm Water Funding is Insufficient to Fund Current and Future Storm Water Needs and the City Has Not Taken Action to Develop and Pursue a Long-Term Funding Strategy

The Transportation and Storm Water Department Storm Water Division (SWD) can become more efficient and cost-effective by optimizing the use of its in-house pipe repair crew and by continuing to refine the methods the City of San Diego (City) uses to meet mandatory water quality requirements. However, the current gap between SWD revenues and necessary expenditures is so substantial that it cannot be closed through efficiencies alone. In just the next five years, fiscal years (FY) 2019 through FY 2023, SWD needs to spend approximately \$891 million to adequately fund its water quality needs, but has only identified \$433 million in available funding, leaving a gap of \$459 million. Yet, SWD only expects to generate approximately \$66 million in revenues over that same period. With the remaining \$366 million coming from the General Fund and Infrastructure Fund, increased reliance on these funds diverts significant resources away from other critical needs like public safety, sidewalks, and streetlights. However, while SWD has assessed its funding needs, it has not taken further action to address this funding gap. Addressing the funding gap is essential to ensure that SWD's storm water services are sufficiently funded and that the City maintains compliance with the water quality regulations embodied in the federal National Pollutant Discharge Elimination System permit (municipal permit).

In the absence of strategies to properly address storm water funding needs, we found:

- City officials have long been aware that storm water funding is insufficient, yet have not taken actions to increase storm water revenues over 20 years;
- City residents may be unaware of the magnitude of the City's storm water funding shortage because City officials have not created a communications plan to educate residents regarding the importance of storm water issues; and

- As part of the financial planning process, the City has not conducted outreach to stakeholders to solicit their knowledge of storm water needs and their preferences on how to fund these needs.

According to government finance best practices, public participation and education is essential to government budgeting, particularly when revenues are insufficient to continue to provide all services at their current levels. Public involvement is critical to helping the government identify stakeholders' service preferences, priorities, and satisfaction levels. Equally important, a government should develop a long-term funding strategy in concert with a long-term strategic plan to identify how services will be funded in the long-term. With regard to these best practices, we made the following recommendations to SWD:

- Create a communications plan to educate residents regarding storm water funding needs and issues;
- Solicit public input to develop and pursue a long-term funding strategy to complement its strategic planning efforts; and
- Contingent upon the funding strategy's identification of voter-approved funding mechanisms (i.e., storm water fee increase, bond measure, general tax measure, etc.), perform a survey of residents to identify their funding preferences for storm water needs.

Lack of public input and continued inaction on the part of City officials has costly and cascading effects. Specifically, these effects include: greater reliance on the General Fund, increased risk of asset failure that may result in expensive repairs, risk of municipal permit noncompliance, and a growing deferred capital and operational backlog. Additionally, the public's lack of awareness limits their ability to aid the City in addressing its storm water needs.

What We Found

Our audit revealed that the SWD's capital and operational needs are substantial, and far exceed existing revenues and other available funding. Specifically, we found:

- Storm water needs have increased significantly, driven by a combination of the City's historic underfunding of capital and operational needs and increasingly stringent water quality regulations with correspondingly little financial support from state and federal agencies;
- Over the next five years, SWD needs to spend approximately \$891 million to fully fund its capital and operational needs but has identified only \$433 million in General Fund, debt financing, and Infrastructure Fund funding, leaving a funding gap of approximately \$459 million;
- This funding gap will continue to fuel more deferred maintenance and underfunding of municipal permit compliance;
- The General Fund and Infrastructure Fund must contribute a large subsidy of \$366 million (or \$73.2 million annually) over the next five years to make up the gap between SWD's revenues, estimated at \$66.3 million over that same period, and identified funding of approximately \$433 million for operational and capital needs;
- Cost savings efforts and current revenue sources combined are not sufficient to address the storm water funding gap; and
- The City does not have a communications plan to educate residents on storm water funding needs; therefore, residents are likely unaware of the magnitude of these needs.

Storm Water Needs Are Substantial, Driven by Water Quality Regulations and the City's Underfunding of Capital and Operational Needs

We found that the City's storm water capital and operational needs are substantial. Over the next five years, these needs total approximately \$891 million. Water quality regulations, set by the California State Water Resources Control Board (State Water Board), drive many of these needs through the City's National Pollutant Discharge Elimination System permit program (municipal permit).¹³ In total, water quality compliance accounts for approximately \$403 million of the total need. Importantly, while the State Water Board has increased storm water regulations over many years, the California State Auditor

¹³ The National Pollutant Discharge Elimination System permit program, authorized by the U.S. Environmental Protection Agency, has been delegated to the State of California for implementation through the California State Water Resources Control Board (State Water Board) and nine Regional Water Quality Control Boards (Boards). Each Board makes critical water quality decisions for its region, including setting standards, issuing municipal permits, determining compliance with those requirements, and taking appropriate enforcement actions.

concluded in a recent report that the State Water Board has correspondingly offered little financial support to local jurisdictions in the form of grants or financial guidance.¹⁴ Furthermore, the report noted that the State Water Board has not adequately considered the costs local jurisdictions would incur to comply with the requirements. As a result, many California jurisdictions, including the City and other municipalities we benchmarked with, are struggling financially to comply with the requirements.

However, even without the need to meet water quality requirements, SWD's other storm water needs are still substantial, totaling over half of the \$891 million at \$489 million. These needs represent years of unfunded storm water capital projects and other operational costs. Given SWD's expected spending of \$433 million over the next five years, this would still leave a gap of \$56.2 million, thus continuing the City's pattern of underfunding storm water needs.

The Gaps between Storm Water Division's Revenues, Identified Funding, and Needed Expenses Continue to Grow Rapidly

According to the City's Independent Budget Analyst's (IBA) review of the City's Capital Infrastructure Planning FY 2019 – 2023 Outlook (CIP Outlook), SWD's capital needs, totaling \$563 million, are the largest General Fund-supported capital need with the largest funding gap of any of the City's other capital assets, such as streets, parks, and streetlights. In fact, SWD's capital costs have increased \$125 million since last year's CIP Outlook, primarily due to carrying forward unfunded needs from the previous year. In addition, operational costs for the next five years are expected to add \$328 million. With only \$433 million in identified funding from the General Fund and Infrastructure Fund, this leaves a funding shortage of \$459 million.

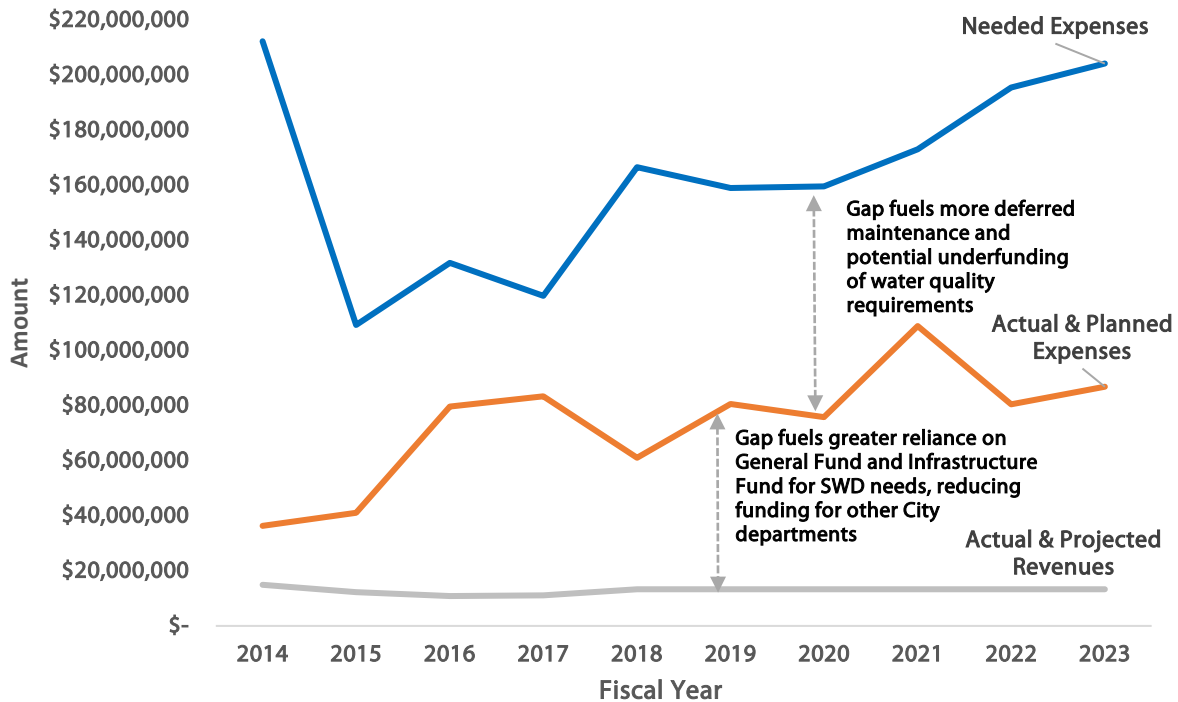
Furthermore, we found that SWD's lack of funding has created two gaps representing two different problems, as shown in **Exhibit 13**. First, SWD's revenue is expected to remain relatively flat at \$66.3 million (\$13.2 million per year) over the next several years while its actual operating and capital expenses continue to increase, totaling \$433 million over the same time period. Thus, a gap is created for which the General Fund and Infrastructure Fund must contribute more to make up the difference. This gap, which

¹⁴ "State and Regional Water Boards: They Must do More to Ensure that Local Jurisdictions' Costs to Reduce Storm Water Pollution are Necessary and Appropriate," California State Auditor, March 2018, <https://www.auditor.ca.gov/reports/2017-118/index.html>.

is represented by the difference between the gray line (SWD actual and projected revenues) and orange line (SWD actual and planned expenses) on the chart below, totals \$366 million over the next five years. This \$366 million must be diverted from other General Fund and Infrastructure Fund programs because SWD revenues are not sufficient to cover actual costs.

Exhibit 13:

Storm Water Division’s Lack of Funding Increases Its Capital Needs Backlog, Even with Significant General Fund and Infrastructure Fund Subsidies



Source: OCA generated based on data from SAP, the FY 2013 Watershed Asset Management Plan (WAMP) and FY 2017 update to the WAMP, and the FY 2019 – 2023 Capital Infrastructure Planning Outlook.

Second, an even larger gap is created over the next five years, which is the difference between SWD’s actual and planned expenses, and the total funding SWD would need to fully fund its activities. From FY 2019 through FY 2023, SWD expects to spend approximately \$433 million to cover operating and capital costs, which is far short of the estimated \$891 million needed to fully fund maintenance, operations, and water quality projects. This gap is represented by the difference between the orange line (SWD actual and planned expenses) and the blue line (estimated

SWD needed expenses to fully fund maintenance and operations) on the chart above. Underfunding over the next five years alone totals approximately \$459 million, and fuels more deferred maintenance and potential underfunding of water quality requirements, which has future water quality and infrastructure cost implications, and puts the City at risk of penalties from noncompliance.

Many City Residents are Likely Unaware of Storm Water Division's Underfunding and Lack of Revenues

We found that SWD does not have a strategic communications plan to educate residents on storm water funding issues and lack of revenues. As a result, many City residents are likely unaware of SWD's funding needs. While SWD's Think Blue campaign educates residents on pollution prevention activities, like properly disposing of oils, it's less geared toward educating residents about how the storm drain system works, its maintenance needs, and funding requirements. Indeed, Think Blue has identified several knowledge gaps among residents, including lack of awareness of the City's storm water infrastructure needs and lack of clarity that the City has two separate drainage systems: wastewater and storm water.

Storm Water Division's Pursuit of Several Strategies to Gain Efficiencies and Reduce Costs, While Helpful, Are Not Sufficient to Address the Storm Water Funding Gap

We found that while SWD has made some successful strides in reducing future costs, these cost reductions are not sufficient to address storm water funding needs in full. For example, as mentioned in Finding 1, SWD has created a pilot in-house pipe repair crew to perform repairs in lieu of hiring private contractors through the Capital Improvement Program (CIP). Repairs by this crew cost approximately 20 – 36 percent of the cost of similar repairs through non-emergency CIP. Expanding the crew size, per our recommendations, will enable SWD to save even more. However, skill and other limitations of the in-house crew will continue to necessitate that SWD hire outside contractors to perform some emergency and non-emergency CIP pipe repairs.

In another example, the City successfully negotiated with the San Diego Regional Water Quality Control Board (Board) to reduce its Total Maximum Daily Load (TMDL) requirements for Chollas Creek, resulting in a savings of approximately \$880 million (in 2013 dollars) over 20 years.¹⁵ Further, the City continues to collaborate with the Board to evaluate the possibility of extending

¹⁵ According to the U.S. Environmental Protection Agency, a "Total Maximum Daily Load (TMDL) is the calculation of the maximum amount of a pollutant allowed to enter a waterbody so that the waterbody will

compliance schedules to reduce annual funding needs through the U.S. Environmental Protection Agency's (USEPA) Integrated Planning Framework (IPF) program.¹⁶ Because the Board retains discretion whether to allow municipalities to utilize the IPF program, the City is actively seeking Board approval to incorporate the IPF program into the next five-year municipal permit issuance expected to be adopted in FY 2019. However, while reducing future compliance funding needs are helpful, as mentioned above, SWD's capital and operational needs are still substantial and exceed available revenues, independent of water quality compliance costs.

Current Revenue Sources Are Not Sufficient to Address Storm Water Funding Needs

While the efficiencies discussed above are helpful to reduce future costs, the lack of sufficient revenues to address current and future storm water needs continues to leave a storm water funding shortage. We found that SWD's revenue sources, averaging approximately \$13.2 million annually, are likely to remain consistent in the future. Specifically, although the storm water fee generates an average of \$5.7 million annually, absent a voter-approved fee increase, revenues are expected to remain the same in the future. Additionally, although grants are helpful, SWD has received approximately \$5.4 million in storm water grants from federal, state, and local agencies over the last five years, with several years yielding receipt of less than \$500,000. Grants are typically not a large source of additional funds because of scarcity, the competitive application process, and the often-burdensome administrative work that goes into administering the grant funds. Other cities we benchmarked with confirmed this reality.

Furthermore, SWD generates an average of \$5.1 million from parking citations issued through the street sweeping program; however, these revenues are not a significant source of storm water funding as the revenues barely cover the cost of administering the street sweeping program. Lastly, revenues generated from SWD's enforcement efforts have ranged widely from \$100,000 to \$260,000 but are consistently under \$500,000. As discussed in Finding 3, the establishment and assessment of a re-inspection fee can generate additional revenue, though this revenue is not likely to be significant.

meet and continue to meet water quality standards for that particular pollutant. A TMDL determines a pollutant reduction target and allocates load reductions necessary to the source(s) of the pollutant."

¹⁶ The Integrated Planning Framework program provides a framework for municipalities to extend compliance schedules and focus on the highest priority water quality issues when Clean Water Act funding need obligations exceed specified ratepayer affordability thresholds.

Why This Occurred

Dedicated funding for storm water is critical. In recognition of this, City officials implemented the storm water fee in FY 1991 to fully recover storm water costs and to reduce the burden on the General Fund.¹⁷ According to the Government Finance Officers Association (GFOA), “A government should adopt policies that identify the manner in which fees and charges are set and the extent to which they cover the cost of the service provided.” In light of this best practice, we found:

- As storm water costs have risen, City officials have been informed through numerous reports by other City entities and consultants for the need to increase storm water revenues yet they have not taken action to develop and pursue a long-term funding mechanism.
- While the passage of Proposition 218 in FY 1997 made it more difficult for the City to increase the storm water fee, City officials have not made any attempts to increase the fee through this process.
- Additionally, City officials have not sought out other voter-approved funding sources for storm water.
- Without a communications plan to educate stakeholders’ knowledge of storm water funding issues, City officials are effectively making the decision to underfund storm water needs unilaterally.

Despite Knowledge of Rising Storm Water Costs and the Need to Increase Storm Water Revenues, City Officials Have Not Taken Any Action

The City implemented the storm water fee in FY 1991 with the intent to fully recover water quality costs of storm water needs. In anticipation of increased future storm water costs due to more stringent regulations, the ordinance for the storm water fee provided the City Council (Council) with the authority to raise the fee each year via Council vote, similar to how water and wastewater rates are adjusted. However, officials have only raised the fee twice since its inception, with the last occurrence in FY 1997.

While the passage of Proposition 218 in FY 1997 made it more difficult to increase the storm water fee, City officials have not made any attempts to increase the fee through this process.¹⁸

¹⁷ The Infrastructure Fund did not exist in FY 1991; it was approved by voters in FY 2016.

¹⁸ Proposition 218, passed by California voters in FY 1997, requires the implementation or increase of property-related assessments and fees, like the storm water fee, to be approved by a majority vote of property owners affected by the fee or a two-thirds vote of the public. Property-related fees for water, wastewater, and trash collection are excluded from this requirement.

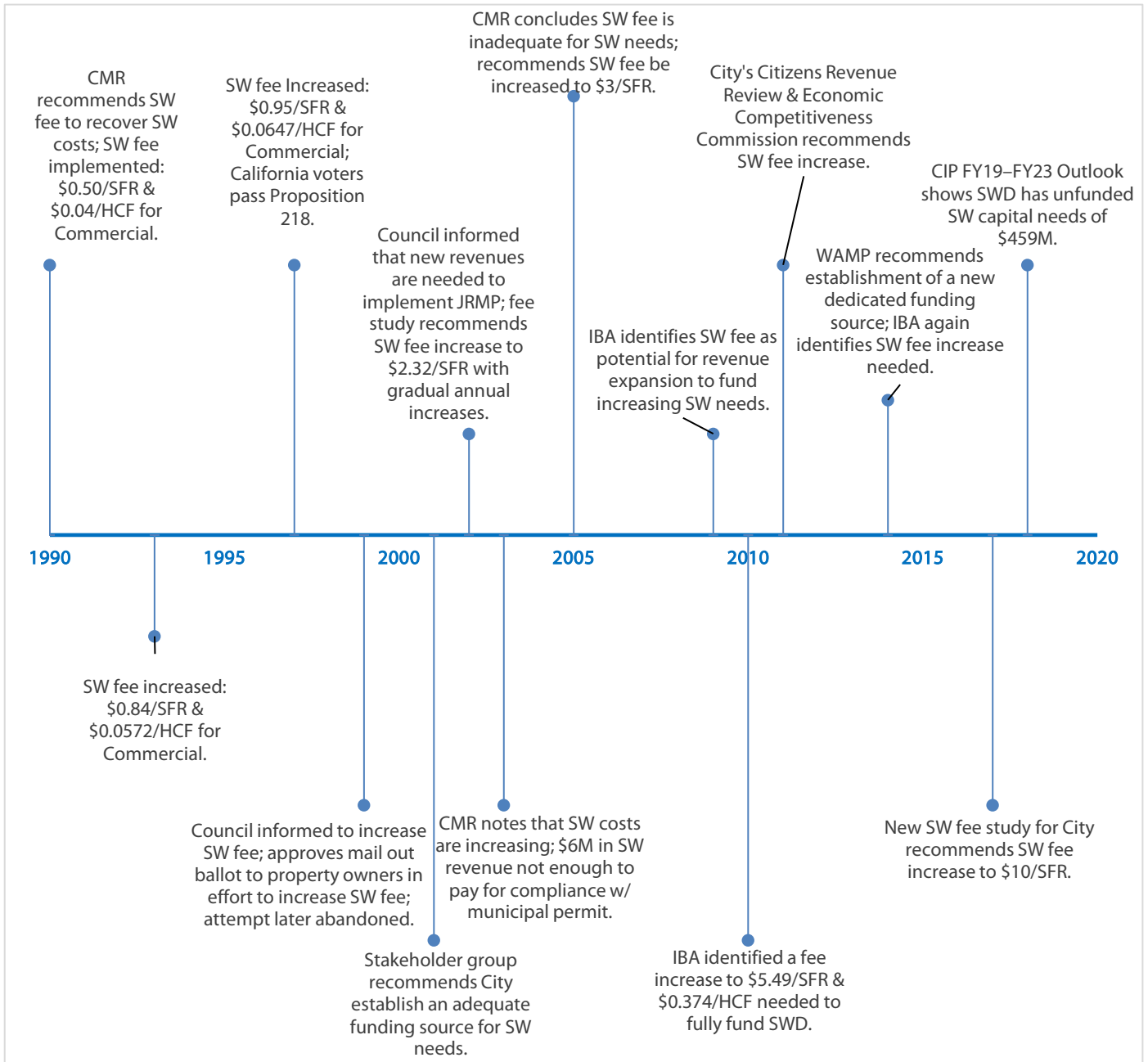
Additionally, City officials have not made any attempts to find alternative funding for storm water, such as bond measures or general tax measures, all of which require voter approval. However, we found that other municipalities, in response to their own rising storm water costs, have successfully implemented or increased their storm water fee, or have implemented general tax measures, since the passage of Proposition 218.

Within the City, the severe shortage of storm water revenue is a well-known and documented issue. As shown in **Exhibit 14**, City officials have reviewed at least 12 reports since the last fee increase in FY 1997 addressing the need to increase storm water revenues. These reports include those produced by consultants, the City Manager, IBA, and the City's Citizens Revenue Review and Economic Competitiveness Commission. The City has also allocated nearly \$1.3 million for fee studies to determine what storm water rate adjustments would be needed to recover storm water costs. The most recent fee study was completed in FY 2017.¹⁹ In addition, while SWD's 2013 WAMP documented SWD's current and future operational, capital, and municipal permit asset needs, it also recommended that SWD identify a new revenue source to fund these needs, noting that current revenues were insufficient. Furthermore, the WAMP provided several possible financing scenarios to address storm water needs, concluding that options for developing new revenues generally require voter-approval. However, in the five years since the WAMP's recommendation, no new revenue sources have been identified or pursued.

¹⁹ Storm Water Fee Study 2016:
https://www.sandiego.gov/sites/default/files/csd_stormwaterfeestudy_submission.pdf

Exhibit 14:

City Officials Have Been Regularly Informed that Storm Water Funding Is Insufficient



Notes:

Residential and commercial fees are monthly. M = million.

Abbreviations include: City Manager's Report (CMR), storm water (SW), single family residence (SFR), hundred cubic feet of water used (HCF), Jurisdictional Runoff Management Plan (JRMP), National Pollutant Discharge Elimination System permit (municipal permit), Independent Budget Analyst (IBA), Watershed Asset Management Plan (WAMP).

Source: OCA generated based on reports from the City Manager, IBA, and the City's Citizens Revenue Review and Economic Competitiveness Commission, fee studies, FY 2013 WAMP, City Council meeting minutes, resolutions, and ordinances, and FY 2019–2023 Five-Year Capital Infrastructure Planning Outlook.

Without a Communications Plan, City Officials Have Not Educated Stakeholders on Storm Water Funding Issues

While City officials have been informed of the need to address storm water funding issues, they have not developed and pursued a strategic communications plan to educate the public on these issues. In the absence of stakeholder education, City officials are effectively making the decision to underfund storm water needs unilaterally. With a communications plan, the City will be able to inform the public regarding the importance of storm water issues, including the municipal permit compliance needs. Educating the public will likely lead to more successful public support for storm water funding measures, particularly those requiring voter approval.

What Should Have Occurred

Government finance best practices provide guidance on how a government should include public participation when identifying revenues to support its services. Specifically, a communications plan serves to educate the public on important issues, like storm water. The application of public input allows for the public to take an active role in their government. Moreover, when a strategic plan has a corresponding long-term funding strategy, it demonstrates a government's long-term perspective for service delivery, budgeting, and assessment of long-term financial implications. Additionally, a resident survey conducted during the development of a long-term funding strategy is a valuable tool to assess public perception of storm water issues and determine which funding mechanism(s) to pursue. In light of these best practices, we found:

- City officials have not followed best practices which require the government to educate and solicit input from the public; a communications plan can successfully inform and obtain public perception regarding storm water issues;
- Development of a long-term funding strategy can help SWD identify and plan funding mechanism(s) to support its infrastructure and municipal compliance needs identified in its strategic plan; and
- Resident surveys provide valuable insight on the public's perception of storm water issues and discerns residents' preferences on how they prefer to fund storm water, especially through voter-approved measures. Indeed, we found several municipalities successfully obtained new storm water revenues through voter-approved measures with the use of a survey.

Public Participation is a Necessary Element in Planning, Budgeting, and Performance Management

As part of the long-term financial planning process, the GFOA states that determining a financial strategy is a highly participative process that involves elected officials, staff, and the public. Specifically, the GFOA states that involving the public is necessary to identify the public's perspective on services, priorities, preferences, and satisfaction levels. According to the GFOA, identifying public priorities is especially important in making budget decisions when revenues are not sufficient to continue to provide all services at their current levels, as is the case with the City's storm water services.

Public participation may take a variety of forms, including surveys, focus groups, neighborhood councils, among others, as inputs to decisions about service levels and preferences, community priorities, and organizational performance. Notably, the GFOA states that efforts to obtain public input must be well executed; superficial or poorly designed efforts may simply waste valuable staff time and financial resources.

We found that many municipalities that were successful in raising storm water revenues through voter-approved measures created a public communications strategy. The communications strategy helped these municipalities identify key messages, stakeholders to be reached, and methods on how, where, and when to reach these stakeholders.

A Long-Term Funding Strategy is Needed to Address Storm Water Division's Operational, Capital, and Municipal Permit Compliance Needs

The GFOA recommends that all governmental entities use some form of strategic planning to provide a long-term perspective for service delivery and budgeting, thus establishing logical links between authorized spending and broad organizational goals. Specifically, the GFOA states:

"Strategic planning is a comprehensive and systematic management tool designed to help organizations assess the current environment, anticipate and respond appropriately to changes in the environment, envision the future, increase effectiveness, develop commitment to the organization's mission and achieve consensus on strategies and objectives for achieving that mission."

According to SWD, the City is the only California municipality, that SWD is aware of, to have fully assessed its current and future operational, capital, and municipal permit compliance needs related to storm water. Within the last 10 years, SWD has successfully completed a comprehensive strategic plan with its completion of the Jurisdictional Runoff Management Plan (JRMP) and the Watershed Asset Management Plan (WAMP). This puts SWD ahead of other municipalities that may be struggling with storm water funding shortages but have not fully assessed all of their needs.

The GFOA recommends the preparation of a long-term funding strategy as an important complement to the strategic plan. Additionally, the GFOA states that a government should have a financial planning process that assesses the long-term financial implications of current and proposed policies, programs, and assumptions. Reflecting this guidance, the 2013 WAMP also recommended that SWD identify a dedicated funding source to address insufficient revenues. For SWD to continue to effectively carry out its mission and goals, a financial plan is essential to achieve long-term sustainability in light of SWD's service objectives and financial challenges. However, in the five years since the WAMP's completion, we found that SWD has not developed a long-term funding strategy to address its significant increasing costs.

***Other Municipalities
Have Successfully Passed
Ballot Measures for
Increased Storm Water
Funding by Engaging
the Public, Usually
Through a Survey***

In California, most new sources of revenue for storm water require voter approval, including local general taxes, local general obligation bonds (GO bonds), local special taxes (i.e., parcel taxes and sales tax add-ons), property-related assessments and fees (except for water, wastewater, and trash collection) and local non-property-related fees.²⁰ As a result, this requirement has constrained many California municipalities' ability to fund storm water needs in light of increasingly stringent and costly municipal permit regulations.

²⁰ Under Proposition 218, property-related assessments and fees (except for water, wastewater, and trash collection) require a majority vote of affected property owners; alternatively, property-related fees can be approved by two-thirds vote of the local general electorate. The storm water fee is a property-related fee under Proposition 218 and therefore subject to voter approval. Local non-property-related fees (e.g. a surcharge on chemicals) can generally be approved by local governing boards without the approval of voters. However, charges that are determined to be taxes are subject to voter approval.

However, as shown in **Exhibit 15**, of the 10 municipalities we reviewed with a storm water fee, 7 municipalities have implemented and/or increased their storm water fee since the passage of Proposition 218: City of Santa Clarita, City of Palo Alto, City of San Jose, City of San Clemente, Culver City, City of Oceanside; and the Vallejo Sanitation and Flood Control District. Additionally, we found that voters in the cities of Long Beach and Chula Vista approved general tax measures that provide some funding to their storm water programs as well as other infrastructure needs. In a separate 2014 study, the Public Policy Institute of California identified that voters in various California municipalities approved 60 of 73 ballot measures from 1997–2013 that included funding for storm water.²¹

²¹ These measures include general taxes, general obligation bonds, special taxes, property-related fees and assessments, and non-property related fees.

Exhibit 15:

Seven of the Ten California Municipalities We Reviewed with a Storm Water Fee Have Implemented or Increased their Storm Water Fees Since the Passage of Proposition 218

Municipality	Fee Amount for Single Family Dwellings (Monthly)	Increased/Implemented Storm Water Fee After Passage of Proposition 218
City of Palo Alto	\$13.65	Yes
City of Sacramento	\$11.31	No
Culver City‡	\$8.25	Yes
City of San Jose†	\$7.87	Yes
City of San Clemente °	\$5.10	Yes
City of Santa Clarita‡	\$2.00	Yes
Vallejo Sanitation & Flood Control District	\$1.97	Yes
City of Los Angeles	\$1.92	No
City of Oceanside~	\$1.40	Yes
City of San Diego	\$0.95	No
City of Chula Vista**	\$ 0.70	No

‡ Culver City voters approved an annual parcel tax of \$99 for single-family residences. For consistency, we have converted the annual amount to a monthly amount.

†The City of San Jose charges an annual storm sewer fee of approximately \$94.44 per year for single family residences. For consistency, we have converted the annual amount to a monthly amount.

°This is the monthly amount for a single-family residence on a private street; the rate is \$6.23/month for a parcel on a public street.

‡ The City of Santa Clarita has an annual fee of approximately \$24.04. For consistency, we have converted the annual amount to a monthly amount.

~ The City of Oceanside charges \$0.14 per unit of water consumed (1 unit of water = 748 gallons). The average single-family residence in Oceanside uses approximately 10 units of water per month. Thus, the storm water fee for an average single-family residence per month is approximately \$1.40 (\$0.14*10 units of water = \$1.40).

**City of Chula Vista voters approved a sales tax measure in 2016 to fund high priority infrastructure repairs, including storm drain replacement.

Source: OCA generated based on reviews of storm water management and funding from the cities of Palo Alto, Sacramento, Culver City, San Jose, San Clemente, Santa Clarita, Los Angeles, Oceanside, San Diego, Chula Vista; and the Vallejo Sanitation & Flood Control District.

In our review of other municipalities that successfully passed a voter-approved measure to obtain new revenues for storm water needs, we found that public involvement was a pivotal part of the financial planning process. These municipalities began their public inquiry with a survey to solicit stakeholders' knowledge of storm water issues, input on a possible fee increase, fee implementation, or other funding mechanism requiring voter approval, thereby following the GFOA's best practice of informing the public. In one instance, a residential survey identified that many people did not think storm water was an important issue, or in the case of the Vallejo Sanitation and Flood Control District (District), did not think that the District needed to spend more money on storm water management and flood prevention. Thus, this survey identified a knowledge gap and allowed the District to address this gap in its campaign efforts to implement its storm water fee. Other cities, like Culver City, performed storm water condition assessments first, determined how much money was needed to fix or replace these assets, educated the public, and then surveyed residents and/or property owners to gauge support and determine the amount people were willing to pay. Based on the survey results, the municipalities that successfully implemented or increased their storm water fee or passed a general tax measure followed many or all of the success factors shown in Exhibit 16 below.

Exhibit 16:**Key Factors and Lessons Learned for Successfully Obtaining Voter Approval for Storm Water Funding Measures**

Success Factor	Recommendations and Examples of Successful Factors from Other California Municipalities
Community Outreach	<ul style="list-style-type: none"> • Hold public hearings and presentations. • Reach out to local groups, community organizations, school boards, and colleges to educate people on the importance of storm water. • Send informational mailings and brochures (Santa Clarita emphasized that letters sent on official City letterhead got people's attention).
Resident Survey	<ul style="list-style-type: none"> • Hire a consultant to perform public opinion testing with residents to determine the depth of storm water and water quality knowledge. • Test possible storm water funding ideas through an unbiased, statistically reliable resident survey.
Appropriate Timing	<ul style="list-style-type: none"> • Acknowledge the importance of timing: some municipalities noted that timing was key as voters were not likely to favor new or increased storm water fees, bond issuances or tax measures for storm water during a time of economic recession or at a time when municipal officials are asking voters to approve funding measures for other services.
Assess Storm Water Needs	<ul style="list-style-type: none"> • Conduct a thorough assessment of storm water needs and costs (past, present, and future).²² • Identify specific projects to be funded with the fee increase (or tax measure, bonds, etc.).
Create Oversight Board	<ul style="list-style-type: none"> • Create an independent oversight board to ensure that storm water funds are spent specifically on storm water projects (Palo Alto and Chula Vista created such boards).
Visually Demonstrate Needs	<ul style="list-style-type: none"> • Show pictures of broken pipes alongside new ones, emphasize the risks of inaction. Multiple cities emphasized that visually demonstrating need is a powerful tool.
Media Outreach	<ul style="list-style-type: none"> • Work to educate local news reporters and help them get the message out.
Obtain Support from City Officials	<ul style="list-style-type: none"> • Liaise with internal government officials and external stakeholders to educate and gain support.
Follow Proposition 218 Process	<ul style="list-style-type: none"> • Hire a professional balloting company to initiate a public vote. A balloting company increases transparency and independence.

Source: OCA generated based on reviews of storm water management and funding from the following cities: Long Beach, Chula Vista, Palo Alto, Los Angeles, Sacramento, Oakland, San Jose, Santa Clarita, San Clemente, Oceanside, Poway, Culver City; and counties including Contra Costa and Los Angeles; and the Vallejo Sanitation & Flood Control District.

²² We note that Storm Water Division has completed these assessments through the Watershed Asset Management Plan and Jurisdictional Runoff Management Plan.

***A New California Law
May Make It Easier to
Increase Storm Water
Fees But Presently Faces
Legal Challenges***

In a recent legal development in FY 2018, the California Legislature and the Governor signed Senate Bill (SB) 231 into law, a bill clarifying the definition of sewer service so that projects designed to capture and clean storm water can be more easily funded, consistent with how municipalities fund water, sewer, and trash services. Prior to the bill's passage, Proposition 218 required storm water fees to be increased through a public vote whereas water, sewer, and refuse fees were exempt from this requirement. SB 231, effective on January 1st, 2018, purportedly allows municipalities to raise storm water fees without a Proposition 218 public vote. However, according to various publicly available legal commentary, there are potential legal issues with moving forward with this approach. Therefore, it is important that SWD consult with the Office of the City Attorney when developing options for pursuing any storm water fee increase.

**Impact Of Not Taking
Action**

As discussed throughout this report, proper maintenance, repair, and replacement of storm water infrastructure and water quality requirements established by the municipal permit are essential to residents' health and safety. Without adequate funding, SWD cannot fully meet its operational and capital needs and risks noncompliance with the municipal permit. Additionally, public participation plays an important role in addressing storm water needs. Specifically, we found:

- Without a communications plan, City residents may be unaware of the magnitude of storm water funding needs. Additionally, residents' ability to assist the City in determining its funding priorities is hindered; and
- Underfunding storm water needs increases future costs in a variety of ways.

***City Residents May Be
Unaware of the
Magnitude of Storm
Water Funding Needs***

Although City officials have long known that storm water revenues are insufficient to address increasing funding needs, no action has been taken to obtain public participation to identify a funding solution. We found that City officials have not developed a communications strategy to educate residents on SWD's limited revenues, high costs, and the impact that this imbalance has via underfunding of critical needs and diverting funding from other important City programs. As a result, it is unlikely that residents know the magnitude of storm water funding needs. Furthermore, without being educated on storm water needs (particularly since storm water revenues are limited), residents are hindered in their

ability to assist the City in determining its funding priorities. Similarly, without a funding strategy that incorporates public input via a survey or other means, the City does not know how residents prefer to address storm water funding needs. Thus, the City is effectively making the decision to underfund storm water needs.

***Underfunding Storm
Water Needs Only
Increases Future Costs***

Underfunding current storm water needs only increases real and potential future costs in a variety of ways. First, increased reliance on General Fund and Infrastructure Fund contributions to support rising storm water costs means that funding is diverted away from other City departments and programs that also rely on these funds. As mentioned in the background, SWD's General Fund budget has increased 74 percent since FY 2011 while SWD's revenues have remained flat at approximately \$13.2 million annually. Consequently, there are fewer dollars available to fund General Fund City departments, such as Police and Fire-Rescue, thereby potentially costing these departments reductions in service levels, while also failing to close the gap in storm water funding. Additionally, there are fewer dollars available to address other capital needs like sidewalks and streetlights.

Second, unfunded capital costs will continue to accrue to SWD's existing deferred backlog. Delaying critical asset maintenance, repairs, and replacement creates a higher risk of asset failure. As discussed in the Background, rising storm water asset failures in recent years increased the City's public liability costs. Furthermore, as detailed in Finding 1, slow replacement of the City's corrugated metal pipes will likely lead to increases in costly emergency repairs and puts City residents' health and safety at risk as pipe failures can cause sinkholes and flooding.

Third, underfunding or delaying the cost of compliance with water quality requirements increases the risk of the City falling into noncompliance. The San Diego Regional Water Quality Control Board (Board) may assess penalties against the City for noncompliance. Penalties from the State of California can amount to \$10,000 per day per violation, and penalties from the U.S. Environmental Protection Agency can amount to \$27,000 per day per violation. Each storm drain outfall that flows to a receiving water body may be assessed a separate violation.

Lastly, future City residents and taxpayers will have to pay for the underfunded storm water needs of prior years and the needs of future years. As a result, the inequity between past/present taxpayers and future taxpayers, all of whom benefit from use of the storm drain system, only increases with future users bearing the burden of having to pay more.

The growing gap between increasing storm water costs and the lack of significant revenues for storm water needs make it critical to evaluate the potential for obtaining a new funding mechanism, such as a general obligation bond, a general tax measure, raising the storm water fee, or other measure. Therefore, to help bridge this gap, we recommend the following:

Recommendation #4

To ensure that stakeholders are educated on storm water issues, the Communications Department should, in consultation with the Transportation and Storm Water Department Storm Water Division, develop and execute a strategic communications plan to educate stakeholders on specific storm water issues, including: flood prevention, the storm water funding gap, the deferred capital backlog, ongoing operational and capital costs, and water quality regulations. The plan will include execution options with resource considerations. (Priority 1)

Recommendation #5

To ensure that the City meets its municipal permit requirements, minimizes the risk of noncompliance, appropriately maintains the storm drain system, and avoids additional deferred maintenance costs, the Transportation and Storm Water Department Storm Water Division (SWD) should initiate the development of a long-term funding strategy to meet its present and future capital and operational needs identified in the Watershed Asset Management Plan (WAMP) and Jurisdictional Runoff Management Plan (JRMP). The funding strategy should be finalized and publicly documented once the WAMP and JRMP have been updated to reflect future compliance costs, to be determined upon completion of SWD's current negotiations with the San Diego Regional Water Quality Control Board regarding SWD's request to utilize the Integrated Planning Framework program. SWD should work with the City of San Diego's Independent Budget Analyst to review long-term funding options, such as: continued / increased reliance on the General Fund, general obligation bonds, a general tax measure, increasing the storm water fee, and any other options that may significantly contribute to closing the existing funding gap. Additionally, SWD should consult with the Office of

the City Attorney to ensure that the selected funding mechanism(s) meet legal requirements. When developing its funding strategy, SWD should:

- Identify stakeholders' preferences, priorities, and satisfaction levels. Such efforts should occur before a decision has been made, or to test various ideas and approaches. To elicit public input, SWD may use (but is not limited to) the following mechanisms:
 - Focus groups;
 - Interviews;
 - Comment (or point-of-service) cards;
 - Public meetings, such as hearings, "town hall" meetings, and community vision sessions;
 - Interactive priority setting tools;
 - Creating public or neighborhood advisory groups, committees, or task forces; or
 - Hire a consultant to conduct surveys.
 - Present the funding strategy to the City Council upon completion.

The funding strategy should include a plan to pursue the desired funding mechanism(s) based on consideration of information obtained from stakeholders, expert knowledge, objective data, and using the success factors identified by other municipalities in our report. (Priority 1)

Recommendation #6

If the selected funding mechanism(s) requires voter approval, then the Transportation and Storm Water Department Storm Water Division (SWD) should ensure that it hires a consultant to conduct an unbiased, statistically reliable survey of potential voters to estimate voter support for a variety of funding options deemed viable by the long-term funding strategy recommended above. When conducting the survey, the consultant should educate stakeholders on specific storm water issues, including: flood prevention, the storm water funding gap, the deferred capital backlog, ongoing operational costs, and water quality regulations. The consultant should then solicit voter opinions and include analysis regarding:

- Importance of water quality and flood reduction to residents and businesses;

- Whether, and how much residents or property owners are willing to pay for water quality measures, storm water infrastructure, and other SWD activities;
- Funding mechanism structure options, such as tiered fee rates, fee rates that adjust annually by inflation, a sales tax measure, general obligation bonds, etc.;
- Identify objections and strategies to overcome them; and
- Whether the funding mechanism can be obtained by a simple majority or a two-thirds supermajority.

Based on the survey results, SWD should modify the plan to pursue the selected funding mechanism(s) as needed, and execute the plan. (Priority 1)

Finding 3: A New Tracking System and Re-Inspection Fees Will Improve the Efficiency and Effectiveness of Storm Water Enforcement Efforts

The Transportation and Storm Water Department Storm Water Division (SWD) plays a key role in meeting the requirements of the National Pollutant Discharge Elimination System permit (municipal permit), meant to protect our waterways in the most efficient way possible. SWD accomplishes this in part by conducting routine best management practices (BMPs) inspections on businesses and developments through two programs: the Business Inspection Program (Business Program) and the Treatment Control BMP Inspection Program (Treatment Control Program). Routine inspections, combined with enforcement actions like written warnings, fines, and other penalties, are critical to reducing the risk of pollutants reaching the City's waterways and preventing illicit discharges.

To demonstrate compliance with the municipal permit, SWD must monitor and annually report the number of inspections performed to the San Diego Regional Water Quality Control Board (Board). Additionally, while voluntary compliance is the primary goal of storm water inspectors, in cases of repeated violations or extended noncompliance, the municipal permit requires the use of escalated enforcement actions, such as the issuance of fines and penalties. Furthermore, the assessment of re-inspection fees can help compel compliance with storm water regulations, reduce repeat inspections, and recover costs incurred by SWD to conduct repeated inspections of non-compliant properties.

However, we found that the efficiency and effectiveness of SWD's enforcement efforts can be improved with a new data management system and the issuance of re-inspection fees. Specifically, we found:

- SWD's data management system may contribute to difficulty in oversight of enforcement actions and case progress due to the lack of reporting capabilities, ability to store inspection documents, and ability to track enforcement actions. Although a new system is forthcoming in FY 2019, it is not yet clear what specific oversight and reporting capabilities the new system will include; and

- SWD inspectors do not currently assess a re-inspection fee, even when violations necessitate multiple re-inspections.

To improve its oversight of enforcement efforts and to ensure consistent enforcement actions, we recommend SWD continue to actively participate in the configuration of its new data management system. Furthermore, we recommend that SWD seek to include specific capabilities to improve the efficiency of case management, oversight and reporting, and train inspectors on the use of this new database. Lastly, to recover excessive costs from extended noncompliance, we recommend SWD establish and assess a re-inspection fee.

What We Found

Storm Water Division's Current Inspection Database Lacks the Functionality of a Modern Code Enforcement System

The nature of SWD's inspection data management system, Environmental Management Information System (EMIS), may contribute to difficulty in oversight of enforcement actions and case progress across the inspection programs. Specifically, because the system does not auto-generate notices of violation (NOVs), administrative citations (ACs), and civil penalty notice and orders (CPNOs), inspectors must manually issue them, making them more time-consuming to produce and more difficult to track. Additionally, the system does not allow for inspectors to set re-inspection deadlines to notify them when they should return to a property to see if a violation has been corrected, leaving inspectors to manually track these deadlines on their own. Therefore, resolution timelines and follow-up deadlines are more difficult and time-consuming for both inspectors and supervisors to track. Furthermore, because the system lacks reporting capabilities, assessing individual and overall inspection program performance is more difficult for supervisors to monitor. According to SWD staff, SWD is in the process of implementing a new data management system, scheduled to go live in July 2018, to enhance program oversight capabilities.

Storm Water Inspectors Do Not Issue Re-Inspection Fees

Furthermore, we found that SWD inspectors do not assess re-inspection fees, although the San Diego Municipal Code (SDMC) authorizes assessment of a re-inspection fee after the issuance of an NOV. Re-inspection fees may compel compliance more quickly and reduce the number of inspections necessary to ensure compliance, as well as recover excessive enforcement costs. In our review of the 5,383 inspections conducted by the Business Program in FY 2017, we found that inspectors conducted three or

more inspections of 98 businesses, for a total of 170 inspections. Assessment of re-inspection fees on the third inspection or after may have garnered an additional \$40,000 in revenue, more quickly compelled compliance, and reduced the need for additional inspections.²³

Why This Occurred

The Developer of Storm Water Division's Data Management System Has Been Slow to Respond to Requests for Updates to the System

Maintaining, monitoring, and annually reporting storm water inspection information to the Board is an important part of meeting municipal permit requirements. To assist with meeting these requirements, in 2014, SWD began using EMIS to manage all data from the Business Program and Treatment Control Program. However, while EMIS stores this information, it lacks the capabilities of a more comprehensive data management system to evaluate overall program performance. For example, because EMIS lacks reporting capability, SWD must download information into other electronic formats and compile reports, perform business/parcel inventory creation, and inspection tracking, outside of EMIS. This lack of reporting capability means that the annual Jurisdictional Runoff Management Plan (JRMP) report must be compiled through a manual, time-consuming process. Although SWD has notified EMIS' developer of the need for updates to the system, the developer has been slow to make changes to the system. In recognition of the need for a more comprehensive inspection database system, SWD states that it is scheduled to switch to a new system, Salesforce, at the beginning of FY 2019.

²³ The San Diego Municipal Code allows the issuance of a re-inspection fee once a Notice of Violation (NOV) has been issued. Storm Water D only issued NOVs in 49 of these cases. However, SWD can establish a policy to issue NOVs after the second inspection to facilitate the subsequent issuance of re-inspection fees when needed. These NOVs would not need to include monetary penalties. Therefore, our estimate of \$40,000 in re-inspection fee revenue is based on SWD issuing re-inspection fees whenever three or more inspections is required to correct a violation. Also, we did not perform data reliability testing on the inspections data, and SWD is unsure of its accuracy. Therefore, the amount that could be recovered through the issuance of re-inspection fees may be significantly more or less than our estimate of \$40,000.

What Should Have Occurred

An Efficient Data Management System Enhances Overall Program Performance and Evaluation

An efficient inspection data management system to track and report storm water inspection and enforcement information is critical to achieving SWD's goal of prohibiting discharge of pollutants to the maximum extent practicable. An efficient inspection data management system will aid in meeting municipal permit compliance requirements and help SWD assess overall inspection program performance. Specifically, the municipal permit not only requires SWD to track this information in a database, but also to submit an annual report to the Board to demonstrate that the City has met all inspection requirements. While EMIS tracks this information, its lack of reporting capability makes extracting the information and compiling the report a time-consuming and manual process. Additional reporting capability will allow for SWD supervisors to more easily evaluate overall inspection program performance. For example, reporting capability will inform SWD as to whether performance metrics are being met, such as the number of cases resolved in a 30-day period.

Updated technology can also decrease or eliminate SWD's reliance on hardcopy files in all aspects of the inspection process. Inspectors currently rely on hardcopy files to document inspections and any follow-up actions; however, only some of this information is stored in EMIS. The ability to upload case documents into the system, such as site photographs, would further decrease the need for hardcopy files while also creating easier access to case information, onsite and remotely. Additionally, the ability to generate and track enforcement actions like NOV's, AC's, and CPNO's, will alleviate inspectors' responsibility to handwrite these actions and allow inspectors to better track them.

Mobile access is another important feature of modern code enforcement systems. Due to EMIS' lack of mobile access, investigators must document inspection information in hardcopy files and return to the office to input case information into EMIS. This is time consuming and draws resources away from inspections and other enforcement activities. SWD's new system, Salesforce, is expected to have mobile access via tablet computers which will allow the investigators to inspect, research, and update case information in real time while in the field.

Lastly, establishing good record keeping procedures and training inspectors on the inspection, follow-up, and enforcement processes are critical components to successful implementation of a new data management system. These components will help ensure that all inspectors follow the same standards for capturing and entering information into the system, thereby reducing gaps or errors in information.

Re-inspection Fees Can Be Assessed After the Issuance of a Notice of Violation

While education and warnings are the first tools inspectors use to compel compliance, the assessment of fines and penalties, particularly the use of re-inspection fees, are additional tools inspectors can use in cases where violations persist. To compel compliance and recover costs associated with repeat inspections, in cases where violations persist, the SDMC allows for the assessment of a re-inspection fee when preceded by the issuance of an NOV. Additionally, under the municipal permit, which requires the use of escalated enforcement actions like fines and penalties, re-inspection fees can be considered an escalated enforcement action.

Impact Of Not Taking Action

Reduced Enforcement Efforts May Result with Inadequate Data Management System and No Re-Inspection Fee

An efficient data management system with reporting capability is critical for assessing overall inspection program performance and helpful for meeting municipal permit compliance reporting requirements. Lack of reporting capabilities makes it difficult for SWD to track performance metrics, such as the number of cases open at one time, the number of enforcement actions taken and by whom, and the number of cases with successful resolutions. Additionally, extracting information from EMIS and manually composing the annual JRMP report takes time away from other important enforcement activities.

The use of escalated enforcement actions like ACs and CPNOs are necessary and required actions to compel violators to correct storm water violations to minimize pollutant discharges to the City's waterways. Establishment and assessment of a re-inspection fee can be an additional tool to compel compliance. Without such a fee, violations may persist longer than necessary and result in more re-inspections that may not significantly increase the likelihood of compliance. As a result, the loss of revenues spent on re-inspections without cost recovery may lead to a further drain on the General Fund, (which could be spent on other programs).

More importantly, failing to use escalated enforcement actions like a re-inspection fee can put the City at risk of violating the municipal permit.

The efficiency and effectiveness of SWD's enforcement efforts can be improved with a new data management system and the issuance of re-inspection fees. Therefore, we recommend the following:

Recommendation #7

The Transportation and Storm Water Department Storm Water Division (SWD) should continue to actively participate in the implementation of the Salesforce platform. SWD should seek to include the following features necessary for efficient storm water enforcement management:

- The capability to electronically store and access essential case information, such as photos, documents, case notes, and supervisory review of escalated enforcement decisions, to reduce or eliminate the need for hard copy files;
- The capability to input follow-up deadlines for each step in the enforcement process, to alert inspectors when deadlines are approaching;
- The capability for SWD management and staff to generate reports for essential performance metrics on-demand, including measures SWD is required to report for the Jurisdictional Runoff Management Plan, as well as measures of efficiency, such as response times for complaints and average time to resolve a violation; and
- The capability to electronically generate, invoice, and track all enforcement actions (i.e., Notices of Violation, Administrative Citations, Civil Penalty Notices, and re-inspection fees).

In conjunction with the system implementation, SWD should continue to adjust, document, and implement policies and procedures for recording information on inspections and enforcement actions. In addition, SWD should train inspectors on the use of the new database system and all inspectors should receive refresher training, as needed. (Priority 2)

Recommendation #8

Once the new system is implemented, and in conjunction with the next update of the Jurisdictional Runoff Management Plan, the Transportation and Storm Water Department Storm Water Division (SWD) should perform an evaluation to determine how the new system is meeting its inspection and enforcement needs, especially with respect to ease of supervisory oversight and ensuring the consistent application of enforcement remedies. Based on the evaluation, SWD should request database updates, as necessary, to ensure a more consistent framework for monitoring the issuance of fines, penalties, and re-inspection fees. SWD should support its request for additional capabilities with a cost-benefit analysis using the estimated efficiencies that would be gained. (Priority 2)

Recommendation #9

The Transportation and Storm Water Department Storm Water Division should establish a re-inspection fee, and develop, document, and implement policies and procedures for when re-inspection fees should be issued, consistent with the City of San Diego's Municipal Code. (Priority 2)

Conclusion

The City of San Diego's (City) Transportation and Storm Water Department Storm Water Division (SWD) is responsible for managing a large portion of the City's infrastructure assets, including 48,000 storm drain structures, 900 miles of storm drain pipes, and 14 pump stations. These assets have a total estimated replacement cost of approximately \$4.8 billion, and maintaining them in good working order is essential to minimizing flood risk, ensuring public safety, and protecting property from flood damage. In addition, SWD is responsible for protecting and enhancing water quality by ensuring compliance with local, state, and federal environmental regulations, such as the federal Clean Water Act. We made a total of 9 recommendations for SWD and the City to improve the efficiency of storm water asset management; identify and pursue additional funding sources to ensure that resources are sufficient to carry out SWD's responsibilities; and enhance SWD's ability to efficiently manage its code enforcement operations and compel compliance more quickly when violations are identified.

For many years, the City failed to adequately fund maintenance of the City's storm water network, and as a result, the City's storm water assets have accrued a larger capital needs backlog than any other City asset type, exceeding unfunded needs for other assets like streets, sidewalks, and streetlights. The size of the backlog, and the limited funding available to address it, make it essential for SWD to conduct maintenance activities as efficiently as possible. We recommend that SWD continue with its plans to optimize the size of its in-house pipe repair crew, and support its funding request with detailed analysis of current and future maintenance needs that could be completed by the in-house crew more efficiently than through a contractor. Similarly, SWD should continue with its plan to enter into a contract for pipe lining, which can be more cost effective than replacing a deteriorating pipe. Additionally, SWD should determine whether the benefits of conducting a new condition assessment of its conveyance system, which may allow SWD to better prioritize its maintenance and repair activities, would outweigh the associated costs.

The costs associated with carrying out SWD's mission are substantial, with the cost of fully funding SWD's activities estimated at approximately \$891 million over the next five years alone. Many of these costs are derived from increasingly stringent water quality requirements, but the majority of SWD's costs are driven by the City's historic underfunding of its capital needs. Given that SWD only expects to generate \$66 million in revenues over the next five years, it is critical for the City and SWD to educate stakeholders on the importance of SWD's responsibilities and the current funding gap, and solicit public input to develop a long-term funding strategy in order to align funding capacity with resource needs. If any of the funding mechanism(s) in the funding strategy require voter approval, the City should retain a consultant to conduct an unbiased, statistically reliable survey to gauge voter support on a range of options and choose a course of action that has the greatest chance of success.

Finally, as it works to implement a new tracking system for its code enforcement operations, SWD should seek to include a range of modern features which will improve the efficiency of case management, monitoring, and reporting. SWD should also establish and assess re-inspection fees, which will help compel compliance more quickly when violations are identified and allow SWD to recover excessive inspection costs that are incurred when violations persist.

Recommendations

Recommendation #1

To more quickly and efficiently replace the City's aging corrugated metal pipes, the Transportation and Storm Water Department Storm Water Division (SWD) should continue with its plans to determine the optimal size of its in-house pipe repair crew (crew) and equipment needs, and continue to request funding for the additional staff, as needed. Specifically, SWD should conduct the following analysis to justify the funding request:

- Review all projects on its Capital Improvement Program Needs List and determine which projects the crew can complete; and
- Project future repair and replacement needs based on the City's aging storm water pipes and condition assessment data to help determine the optimal size of the crew.

If SWD is not granted funding for additional FTEs to optimize the size of the crew (based on the results of the analysis above), SWD should develop and implement an annual process to analyze its funding and determine whether funds can be reallocated to fund additional repairs by the crew. (Priority 1)

Recommendation #2

To more efficiently and cost-effectively rehabilitate the City's aging corrugated metal pipes (CMP), and help lower the risk of CMP-related failures, the Transportation and Storm Water Department Storm Water Division (SWD) should:

- Continue with its plan to enter into a contract for pipe lining; and
- Continue to use its CMP condition assessment data to help determine which pipe segments may be good candidates for pipe lining rather than full replacement.

If SWD is not granted funding for a contract for pipe lining, SWD should develop and implement an annual process to analyze its funds and determine whether funds can be reallocated to fund a contract for pipe lining. (Priority 1)

Recommendation #3

To accurately measure the extent of deterioration and establish priorities for proactive repairs by the in-house crew or for pipe lining, the Transportation and Storm Water Department Storm Water Division (SWD) should continue with its Condition Assessment Program. Specifically, SWD should:

- Determine the feasibility of the division conducting proactive repairs;
- Consider requesting funding for an updated condition assessment of the City's remaining corrugated metal pipes if SWD determines that the existing data is too outdated to be useful and if SWD determines that the benefits of updating the condition assessment outweighs the associated costs; and

Continue to use condition assessment data to establish priorities for proactive repairs and for pipe lining. (Priority 2)

Recommendation #4

To ensure that stakeholders are educated on storm water issues, the Communications Department should, in consultation with the Transportation and Storm Water Department Storm Water Division, develop and execute a strategic communications plan to educate stakeholders on specific storm water issues, including: flood prevention, the storm water funding gap, the deferred capital backlog, ongoing operational and capital costs, and water quality regulations. The plan will include execution options with resource considerations. (Priority 1)

Recommendation #5

To ensure that the City meets its municipal permit requirements, minimizes the risk of noncompliance, appropriately maintains the storm drain system, and avoids additional deferred maintenance costs, the Transportation and Storm Water Department Storm Water Division (SWD) should initiate the development of a long-term funding strategy to meet its present and future capital and operational needs identified in the Watershed Asset Management Plan (WAMP) and Jurisdictional Runoff Management Plan (JRMP). The funding strategy should be finalized and publicly documented once the WAMP and JRMP have been updated to reflect future compliance costs, to be determined upon completion of SWD's current negotiations with the San Diego Regional Water Quality Control Board regarding SWD's request to utilize the Integrated Planning Framework program. SWD should work with the City of San Diego's Independent Budget Analyst to review long-term funding options, such as: continued / increased reliance on the General Fund, general obligation bonds, a general

tax measure, increasing the storm water fee, and any other options that may significantly contribute to closing the existing funding gap. Additionally, SWD should consult with the Office of the City Attorney to ensure that the selected funding mechanism(s) meet legal requirements. When developing its funding strategy, SWD should:

- Identify stakeholders' preferences, priorities, and satisfaction levels. Such efforts should occur before a decision has been made, or to test various ideas and approaches. To elicit public input, SWD may use (but is not limited to) the following mechanisms:
 - Focus groups;
 - Interviews;
 - Comment (or point-of-service) cards;
 - Public meetings, such as hearings, "town hall" meetings, and community vision sessions;
 - Interactive priority setting tools;
 - Creating public or neighborhood advisory groups, committees, or task forces; or
 - Hire a consultant to conduct surveys.
 - Present the funding strategy to the City Council upon completion.

The funding strategy should include a plan to pursue the desired funding mechanism(s) based on consideration of information obtained from stakeholders, expert knowledge, objective data, and using the success factors identified by other municipalities in our report. (Priority 1)

Recommendation #6

If the selected funding mechanism(s) requires voter approval, then the Transportation and Storm Water Department Storm Water Division (SWD) should ensure that it hires a consultant to conduct an unbiased, statistically reliable survey of potential voters to estimate voter support for a variety of funding options deemed viable by the long-term funding strategy recommended above. When conducting the survey, the consultant should educate stakeholders on specific storm water issues, including: flood prevention, the storm water funding gap, the deferred capital backlog, ongoing operational costs, and water quality regulations. The consultant should then solicit voter opinions and include analysis regarding:

- Importance of water quality and flood reduction to residents and businesses;
- Whether, and how much residents or property owners are willing to pay for water quality measures, storm water infrastructure, and other SWD activities;
- Funding mechanism structure options, such as tiered fee rates, fee rates that adjust annually by inflation, a sales tax measure, general obligation bonds, etc.;
- Identify objections and strategies to overcome them; and
- Whether the funding mechanism can be obtained by a simple majority or a two-thirds supermajority.

Based on the survey results, SWD should modify the plan to pursue the selected funding mechanism(s) as needed, and execute the plan. (Priority 1)

Recommendation #7

The Transportation and Storm Water Department Storm Water Division (SWD) should continue to actively participate in the implementation of the Salesforce platform. SWD should seek to include the following features necessary for efficient storm water enforcement management:

- The capability to electronically store and access essential case information, such as photos, documents, case notes, and supervisory review of escalated enforcement decisions, to reduce or eliminate the need for hard copy files;
- The capability to input follow-up deadlines for each step in the enforcement process, to alert inspectors when deadlines are approaching;
- The capability for SWD management and staff to generate reports for essential performance metrics on-demand, including measures SWD is required to report for the Jurisdictional Runoff Management Plan, as well as measures of efficiency, such as response times for complaints and average time to resolve a violation; and
- The capability to electronically generate, invoice, and track all enforcement actions (i.e., Notices of Violation, Administrative Citations, Civil Penalty Notices, and re-inspection fees).

In conjunction with the system implementation, SWD should continue to adjust, document, and implement policies and procedures for recording information on inspections and enforcement actions. In addition, SWD should train inspectors on the use of the new database system and all inspectors should receive refresher training, as needed. (Priority 2)

Recommendation #8

Once the new system is implemented, and in conjunction with the next update of the Jurisdictional Runoff Management Plan, the Transportation and Storm Water Department Storm Water Division (SWD) should perform an evaluation to determine how the new system is meeting its inspection and enforcement needs, especially with respect to ease of supervisory oversight and ensuring the consistent application of enforcement remedies. Based on the evaluation, SWD should request database updates, as necessary, to ensure a more consistent framework for monitoring the issuance of fines, penalties, and re-inspection fees. SWD should support its request for additional capabilities with a cost-benefit analysis using the estimated efficiencies that would be gained. (Priority 2)

Recommendation #9

The Transportation and Storm Water Department Storm Water Division should establish a re-inspection fee, and develop, document, and implement policies and procedures for when re-inspection fees should be issued, consistent with the City of San Diego's Municipal Code. (Priority 2)

Appendix A: Definition of Audit Recommendation Priorities

DEFINITIONS OF PRIORITY 1, 2, AND 3 AUDIT RECOMMENDATIONS

The Office of the City Auditor maintains a priority classification scheme for audit recommendations based on the importance of each recommendation to the City, as described in the table below. While the City Auditor is responsible for providing a priority classification for recommendations, it is the City Administration’s responsibility to establish a target date to implement each recommendation taking into consideration its priority. The City Auditor requests that target dates be included in the Administration’s official response to the audit findings and recommendations.

Priority Class ²⁴	Description
1	Fraud or serious violations are being committed. Significant fiscal and/or equivalent non-fiscal losses are occurring. Costly and/or detrimental operational inefficiencies are taking place. A significant internal control weakness has been identified.
2	The potential for incurring significant fiscal and/or equivalent non-fiscal losses exists. The potential for costly and/or detrimental operational inefficiencies exists. The potential for strengthening or improving internal controls exists.
3	Operation or administrative process will be improved.

²⁴The City Auditor is responsible for assigning audit recommendation priority class numbers. A recommendation which clearly fits the description for more than one priority class shall be assigned the higher priority.

Appendix B: Objectives, Scope, and Methodology

- Objectives** In accordance with the Office of the City Auditor’s Fiscal Year (FY) 2017 Audit Work Plan, we conducted a performance audit focusing on the efficiency and effectiveness of the City of San Diego’s (City) Transportation and Storm Water Department Storm Water Division (SWD). The overall objectives of this audit were to:
1. Evaluate whether there are opportunities to improve storm water asset management prioritization, and whether the current balance of storm water infrastructure maintenance and replacement is optimized between in-house repairs and repairs that are contracted out through the Capital Improvement Program (CIP).
 2. Evaluate whether opportunities exist to increase SWD’s revenues; and
 3. Evaluate the efficiency of storm water enforcement case management, monitoring, and reporting

Scope and Methodology

Finding 1 To evaluate whether there are opportunities to improve storm water asset management prioritization, we analyzed current maintenance and infrastructure planning activities. This analysis focused specifically on the City’s remaining corrugated metal pipes (CMP). Using SWD’s data, we determined the approximate number of miles of remaining CMP and analyzed installation date data to estimate the percentage of the City’s remaining CMP that has already exceeded its expected useful life, as well as to approximate the percentages of the remaining CMP that will exceed its useful life in coming years. We also cross-referenced the data to demonstrate that rehabilitation and replacement becomes increasingly necessary as CMP pipes age.

We analyzed emergency CIP data from 2009 through FY 2017 to identify the financial impact on the City, and to determine the proportion of emergency pipe failures that were CMP-related. We used SWD’s CIP Needs List and cross-referenced with other data sources to determine the proportion of CMP-related complete, current, and planned non-emergency CIP projects. We also

analyzed the City's public liability costs related to storm drains and noted a trend of increasing liability costs.

We used examples provided by SWD to determine the relative costs of completing repairs using the in-house pipe repair crew rather than through CIP contractors. We noted SWD's plans for utilizing pipe lining to preventatively rehabilitate deteriorating pipes. In addition, we interviewed various personnel within SWD and accompanied storm water engineers on ride-alongs to view sites of storm water pipe repairs.

We tested the reliability of the emergency CIP data by comparing and consolidating multiple data lists, and tested the reliability of the Geographic Information System (GIS) Conveyance data by comparing to the CMP condition assessment data. We found some data reliability issues with the pipe material field of the GIS Conveyance data. Specifically, we found that not all pipe segments listed as CMP were actually CMP when the material was verified in the field. However, it is also likely that some segments not listed as CMP were actually CMP, although this could not be verified based on existing data. According to SWD, the conveyance system data was the most complete and accurate data set available. We therefore continued to use the data for our analyses, and we removed those segments found not to be CMP from our calculations.

Finding 2 To evaluate whether opportunities exist to increase SWD's revenues, we first determined SWD's current and future operational, capital, and compliance needs by reviewing SWD's Jurisdictional Runoff Management Plan (JRMP), Watershed Asset Management Plan (WAMP), and the FY 2019–2013 Five-Year Capital Infrastructure Planning Outlook. Next, we reviewed SWD's current sources of revenues, including grants, parking citation fees generated from street sweeping, storm water enforcement fines, and the storm drain fee (storm water fee) to determine the potential of increasing revenue. We also reviewed other potential sources of revenue including the availability of federal, state, and local grants, bond measures, and tax measures. As part of this review, we interviewed SWD staff, a fee study consultant, officials from other California municipalities, and Independent Budget Analyst (IBA) staff. Moreover, we reviewed the San Diego Municipal Code (SDMC), SWD operational and CIP budgets, City Council meeting minutes, multiple reports from the City Manager, City Council, City's Citizens Revenue Review Economic

Competitiveness Commission, and IBA, Proposition 218 legislation and reports, a California State Auditor report, storm water utility benchmarking studies, storm water fee studies, and the Government Finance Officers Association's (GFOA) government best practices.

Furthermore, we benchmarked with 15 peer municipalities in California to identify how they fund their storm water programs, whether via a storm water fee, by other means, or both. For municipalities that have successfully implemented or increased their storm water fee since the passage of Proposition 218 in FY 1997, we asked what methods they used to make this change. For municipalities that successfully implemented general tax measures through voter approval (i.e., the cities of Long Beach and Chula Vista), we asked what methods they used to make this change. As a potential new avenue to increase the storm water fee without a public vote, we reviewed new legislation signed by the California Governor in October 2017 and subsequent legal opinions regarding the feasibility of this new law.

We evaluated potential methods for storm water cost savings and efficiencies. Specifically, we reviewed the Chollas Creek study as an example of how the City could cut future municipal permit compliance costs. Furthermore, we interviewed SWD staff to determine the degree with which they negotiate with the San Diego Regional Water Quality Control Board to reduce compliance costs. Moreover, we learned about other storm water efficiencies from our 15 peer municipalities.

To determine next steps in addressing the lack of storm water funding, we reviewed the GFOA's government best practices regarding budgeting for services, public participation in government, and development of long-term strategic and funding plans. We analyzed these best practices in conjunction with factors that other municipalities used to successfully obtain additional storm water revenues through voter-approved means.

Finding 3 To evaluate the efficiency of storm water enforcement case management and monitoring, we interviewed SWD inspection staff regarding the capabilities of their current inspection database and the capabilities of a new, impending database that is anticipated to address many of the oversight limitations of the current database. To determine storm water inspection and enforcement requirements, we reviewed the municipal permit, JRMP, SDMC, and SWD policies and procedures for conducting inspections and issuing warnings, fines, and penalties. We accompanied a storm water inspector on a ride-along to observe how inspections are conducted in accordance with SWD's established policies, procedures, and practices.

To evaluate SWD's potential for issuing re-inspection fees to compel compliance with storm regulations more quickly, we reviewed the SDMC requirements for issuing re-inspection fees and consulted with the City Attorney's Office. To evaluate SWD's oversight of the inspection program, we reviewed inspections data from FY 2017 to determine the number of re-inspections that may have been eligible for the assessment of a re-inspection fee.

Internal Controls Our internal controls testing was limited to specific controls related to SWD asset management, financial planning, and code enforcement efforts. Specifically, with regard to asset management, we tested whether SWD had controls in place to ensure that infrastructure maintenance projects were completed through the most efficient means practicable for that project. With regard to financial planning, we tested whether the City had conducted sufficient financial planning to address SWD funding needs, in order to limit further deferred maintenance, ensure compliance with the municipal permit, and avoid funding impacts on other City programs. Finally, with regard to SWD code enforcement, we tested whether SWD had appropriate systems in place to efficiently manage its caseload, monitor inspection activity, and produce performance reports. We also tested whether SWD issues re-inspection fees to help recover excessive inspection costs and compel compliance more quickly.

Compliance Statement

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on the audit objectives.

Appendix C: Overview of Storm Water Division

The City of San Diego’s (City) Transportation and Storm Water Department Storm Water Division (SWD) is the lead office for the City's efforts to reduce pollutants in urban runoff and storm water to the maximum extent practicable. These activities include, but are not limited to, public education, employee training, water quality monitoring, source identification, code enforcement, watershed management, and development and implementation of BMPs within the City’s jurisdictional boundaries. Additionally, SWD ensures compliance with all local, state, and federal environmental regulations. Furthermore, SWD is also responsible for the operations and maintenance of the City’s storm water network, which is comprised of approximately 48,000 storm drain structures, 900 miles of storm drain pipes, and 14 pump stations. Exhibit 17 below details the activities of SWD’s two sections and associated groups.

Exhibit 17:

Key SWD Conducts a Variety of Activities to Protect San Diego’s Water Quality

<p>Operations & Maintenance Section</p> <p><u>Storm Water Infrastructure</u></p> <p>The Storm Water Infrastructure group handles SWD’s asset management and planning activities. This includes planning for long-term asset maintenance, repair, and replacement.</p>
<p><u>Operations & Maintenance Engineering</u></p> <p>The Operations and Maintenance Engineering group manages design and construction for storm water infrastructure maintenance as well as new/replaced infrastructure.</p>
<p><u>Storm Water Channels & Pump Stations</u></p> <p>The Storm Water Channels & Pump Stations group inspect, operate, maintain, and repair pipes, best management practices (BMPs), and pump stations. Additionally, they also conduct storm drain inspections and cleaning. Notably, the group has formed a new in-house pipe repair crew. As further discussed in Finding 1, the crew provides a more efficient and cost-effective method of repairing and replacing failed pipes in the public right-of-way. There are some limitations to the types of repairs that the crew can complete and the crew is currently not at its optimal size.</p>



Storm Water Pipes, Structures, & Sweeping

The Storm Water Pipes, Structures, and Sweeping group conducts regular inspections of storm water channels and cleans debris and vegetation out of channels as needed. When channels become blocked with sediment, debris, or vegetation, the risk of flooding increases. Additionally, this group conducts the City's street sweeping activities and includes parking enforcement officers who issue citations for vehicles in no parking zones established for street sweeping purposes. Runoff from street surfaces is a major contributor of storm water pollution. Street sweeping is an effective method of removing both the large and microscopic pollutants that collect on City streets.



Environmental Planning & Permitting

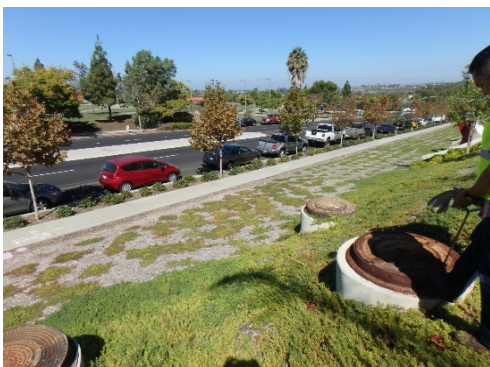
The Environmental Planning and Permitting group is responsible for securing the necessary permits for storm water asset maintenance, repair, and replacement. Many storm water assets are in sensitive environmental areas or contain sensitive environmental resources, and are heavily regulated by groups including the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, the California Coastal Commission, and the City itself. It can take an extensive amount of time to acquire these permits.

Source: Various documents and information provided by the Storm Water Division.

Pollution Prevention Section

Monitoring & Inspections

The Monitoring and Inspections group is responsible for enforcing BMP requirements of businesses in the City that have the potential to discharge pollutants into the storm drain system. This group is also conducts several municipal permit-required programs, including: Transitional Dry Weather Monitoring, Bight 2013, Total Maximum Daily Load, and Illicit Discharge and Elimination.

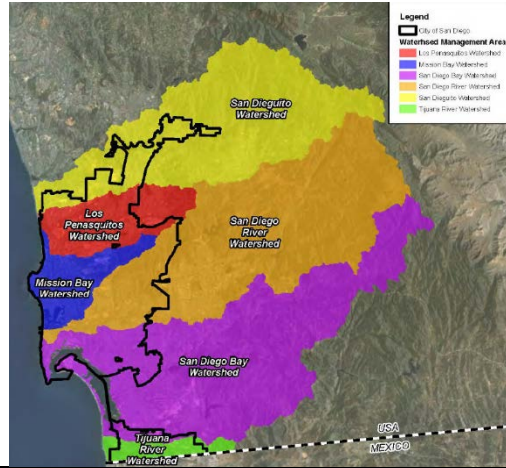


Construction & Development Standards

The Construction and Development Standards group employs multiple strategies to strengthen the City's compliance with challenging regulations from the California State Water Resources Control Board and the San Diego Regional Water Quality Control Board that apply to land development and construction. This includes establishing liaisons at the Public Works Department and Development Services Department and providing continuous support to these liaisons by way of developing manuals, templates and code updates, providing training and project-level assistance, and aiding City departments to address compliance concerns.

Watershed Planning

The Watershed Planning group coordinates the implementation and compliance reporting of Jurisdictional and Watershed Urban Runoff Management Programs designed to address the National Pollutant Discharge Elimination System permit (municipal permit).



Policy & Enforcement Group

The Policy and Enforcement group interprets and negotiates new storm water regulations and legislation that affect the City. Additionally, this group is responsible for ensuring that San Diego residents and businesses comply with municipal storm water regulations.

Grants & Contracts Group

The Grants and Contracts group pursues grants and procures SWD's contracts.

Source: Various documents and information provided by the Storm Water Division.



THE CITY OF SAN DIEGO

M E M O R A N D U M

DATE: June 12, 2018

TO: Eduardo Luna, City Auditor

FROM: Kris McFadden, Director, Transportation & Storm Water Department

SUBJECT: Management Response to City Audit of the Storm Water Division

The purpose of this memorandum is to provide Management's response to the Audit Report entitled "Performance Audit of the Transportation & Storm Water Department Storm Water Division". The Audit's primary objectives were to:

- Evaluate whether there are opportunities to improve storm water asset management prioritization, and whether the current balance of storm water infrastructure maintenance and replacement is optimized between in-house repairs and repairs that are contracted out through the Capital Improvement Program (CIP);
- Evaluate whether opportunities exist to increase Storm Water Division revenues; and
- Evaluate the efficiency of storm water code enforcement case management, monitoring, and reporting.

The Audit Report provided recommendations to improve efficiency and its' infrastructure maintenance and code enforcement efforts, and address funding needs. Below are the Departments' responses to the Audit Recommendations.

Recommendation #1: To more quickly and efficiently replace the City's aging CMP pipes, the Storm Water Division (SWD) should continue with its plans to determine the optimal size of its in-house pipe crew and equipment needs, and continue to request funding for the additional staff, as needed. Specifically, SWD should conduct the following analysis to justify the funding request:

- Review all projects on its CIP Needs List and determine which projects meet the criteria of being able to be completed by the in-house pipe crew; and
- Project future repair and replacement needs based on the City's aging storm water pipes and condition assessment data to help determine the optimal size of the crew.

If SWD is not granted funding for additional FTE for the in-house pipe crew, SWD should develop and implement an annual process to analyze its funding and determine whether funds can be reallocated to fund additional repairs by the in-house pipe crew. (Priority 1)

Management Response: Management agrees with this recommendation. Storm Water Division received funding for the in-house pipe repair crew in FY 17. Funding for additional pipe repair crew staff is included in the FY 19 budget, and the Storm Water Division will continue to move forward with its plan to evaluate the optimal size of the pipe repair crew.

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In addition, Storm Water Division will continue to utilize the in-house pipe repair crew for jobs where experience, equipment and funding are available. **Target Implementation Date: January 2019.**

Recommendation #2: To more efficiently and cost-effectively rehabilitate the City's aging corrugated metal pipes (CMP), and help lower the risk of CMP-related pipe failures, the Storm Water Division (SWD) should:

- Continue with its plan to enter into a contract for pipe lining; and
- Continue to use its CMP condition assessment data to help determine which pipe segments may be good candidates for pipe lining rather than full replacement.

If SWD is not granted funding for a contract for pipe lining, SWD should develop and implement an annual process to analyze its funds and determine whether funds can be reallocated to fund a contract for pipe lining. (Priority 1).

Management Response: Management agrees with this recommendation. Transportation and Storm Water Department will continue to move forward with a Minor Construction Job Order Contract (JOC) which will include pipe lining as an available task. **Target Implementation Date: September 2019**

Recommendation #3: To accurately measure the extent of deterioration and establish priorities for proactive repairs by the in-house crew or for pipe lining, the Storm Water Division (SWD) should continue with its Condition Assessment Program. Specifically, SWD should:

- Determine the feasibility of the division conducting proactive repairs;
- Consider requesting funding for an updated condition assessment of the City's remaining CMP if SWD determines that the existing data is too outdated to be useful and if SWD determines that the benefits of updating the condition assessment outweighs the associated costs; and
- Continue to use condition assessment data to establish priorities for proactive repairs and for pipe lining. (Priority 2)

Management Response: Management agrees with this recommendation. Storm Water Division will continue to utilize the available information to identify and conduct repairs as resources are available. The need to request funding for a new condition assessment will be evaluated during FY 19. **Target Implementation Date: July 2019**

Recommendation #4: To ensure that stakeholders are educated on storm water issues, the Communications Department should, in consultation with the Transportation and Storm Water Department Storm Water Division (SWD), develop and execute a strategic communications plan to educate stakeholders on specific storm water issues, including: flood prevention, the storm water funding gap, the deferred capital backlog, ongoing operational costs, and water quality regulations. The plan will include execution options with resource considerations. (Priority 1)

Management Response: Management agrees with this recommendation. Storm Water Division will work with the Communications Department to develop an education and outreach plan to educate stakeholders on the storm water specific needs of the City. **Target Implementation Date: January 2019 for plan development**

Recommendation #5: To ensure that the City meets its municipal permit requirements, minimizes the risk of non-compliance, appropriately maintains the storm drain system, and avoids additional deferred maintenance costs, the Transportation and Storm Water Department Storm Water Division (SWD) should initiate the development of a long-term funding strategy to meet its present and future capital and operational needs identified in the Watershed Asset Management Plan (WAMP) and Jurisdictional Runoff Management Plan (JRMP). The funding strategy should be finalized and publicly documented once the WAMP and JRMP have been updated to reflect future compliance costs, to be determined upon completion of SWD's current negotiations with the Regional Water Quality Control Board regarding SWD's request to utilize the Integrated Planning Framework program. SWD should work with the City of San Diego's Independent Budget Analyst to review long-term funding options, such as: continued / increased reliance on the General Fund, general obligation bonds, a general tax measure, increasing the storm water fee, and any other options that may significantly contribute to closing the existing funding gap. Additionally, SWD should consult with the Office of the City Attorney to ensure that the selected funding mechanism(s) meet legal requirements. When developing its funding strategy, SWD should:

- Identify stakeholders' preferences, priorities, and satisfaction levels. Such efforts should occur before a decision has been made, or to test various ideas and approaches. To elicit public input, SWD may use (but is not limited to) the following mechanisms:
 - Focus groups;
 - Interviews;
 - Comment (or point-of-service) cards;
 - Public meetings, such as hearings, "town hall" meetings, and community vision sessions;
 - Interactive priority setting tools;
 - Creating public or neighborhood advisory groups, committees, or task forces; or
 - Hire a consultant to conduct surveys.
- Present the funding strategy to the City Council upon completion.
- The funding strategy should include a plan to pursue the desired funding mechanism(s) based on consideration of information obtained from stakeholders, expert knowledge, objective data, and using the success factors identified by other municipalities in our report (Priority 1).

Management Response: Management agrees with this recommendation. Storm Water Division will continue to identify and explore funding options and advance discussions with the Regional Water Quality Control Board (Regional Board) to include Integrated Planning Framework language in the next MS4 Permit, and negotiations to utilize and implement the Integrated Planning Framework program. Completion of this process is subject to the Regional Board's schedule and approval. SWD will work with the IBA and consult with the Office of the City Attorney to review long-term funding options. **Target Implementation Date: January 2021**

Recommendation #6: If the selected funding mechanism(s) require voter approval, then the Transportation and Storm Water Department Storm Water Division (SWD) should ensure that it hires a consultant to conduct an unbiased, statistically reliable survey of potential voters to estimate voter support for a variety of funding options deemed viable by the long-term funding strategy recommended above. When conducting the survey, the consultant should educate stakeholders on specific storm water issues, including: flood prevention, the storm

water funding gap, the deferred capital backlog, ongoing operational costs, and water quality regulations. The consultant should then solicit voter opinions and include analysis regarding:

- Importance of water quality and flood reduction to residents and businesses;
- Whether, and how much residents or property owners are willing to pay for water quality measures, storm water infrastructure, and other SWD activities;
- Funding mechanism structure options, such as tiered fee rates, fee rates that adjust annually by inflation, a sales tax measure, general obligation bonds, etc.;
- Identify objections and strategies to overcome them; and
- Whether the funding mechanism can be obtained by a simple majority or a two-thirds supermajority.

Based on the survey results, (SWD) should modify the plan to pursue the selected funding mechanism(s) as needed, and execute the plan. (Priority 1)

Management Response: Management agrees with this recommendation. If the selected funding mechanism(s) require voter approval, SWD will advance and complete this task.

Target Implementation Date: January 2022

Recommendation #7: To ensure that its new tracking system provides sufficient capabilities to allow SWD management, supervisors, and staff to efficiently conduct and oversee code enforcement activities, we recommend the Transportation and Storm Water Department Storm Water Division (SWD) should continue to actively participate in the implementation of the Salesforce platform. The SWD should seek to include the following features necessary for efficient storm water enforcement management:

- The capability to electronically store and access essential case information, such as photos, documents, case notes, and supervisory review of escalation decisions, to reduce or eliminate the need for hard copy files;
- The capability to input follow-up deadlines for each step in the enforcement process, to alert inspectors when deadlines are approaching;
- The capability for Storm Water Division management and staff to generate reports for essential performance metrics on-demand, including measures SWD is required to report for the Jurisdictional Runoff Management Plan, as well as measures of efficiency, such as response times for complaints and average time to resolve a violation.
- The capability to electronically generate, invoice, and track all enforcement actions [i.e., Notices of Violation, Administrative Citations, Civil Penalty Notices, and re-inspection fees].

In conjunction with the system implementation, SWD should continue to adjust, document, and implement policies and procedures for recording information on inspections and enforcement actions. In addition, the Storm Water Division should train inspectors on the use of the new database system and ensure that all inspectors receive refresher training as needed. (Priority 2)

Management Response: Management agrees with this recommendation. Storm Water Inspections staff have been actively participating in the development of the City-wide Get it Done expansion being led by the Performance and Analytics Department. The capabilities to perform the above functions were identified during the system needs phase and included in the consultant work plan. Storm Water Division inspection staff have been involved in initial

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system testing and will be involved in user acceptance testing. **Target Implementation Date: January 2019**

Recommendation #8: Once the new system is implemented, and in conjunction with the next update of the Jurisdictional Runoff Management Plan, SWD should perform an evaluation to determine how the new system is meeting its inspection and enforcement needs, especially with respect to ease of supervisory oversight and ensuring the consistent application of enforcement remedies. Based on the evaluation, SWD should request database updates as necessary to ensure a more consistent framework for monitoring the issuance of fines, penalties, and re-inspection fees. SWD should support its request for additional capabilities with a cost-benefit analysis using the estimated efficiencies that would be gained. (Priority 2)

Management Response: Management agrees with this recommendation. Storm Water Division will evaluate the new system's performance after the system is operational. Requests for system fixes will be made as issues are discovered. The new system's reporting capabilities will be used for the FY 19 JRMP annual report. If new system requirements are identified through the development of the FY 19 JRMP annual report system upgrades will be requested as needed. **Target Implementation Date: January 2020**

Recommendation #9: The Storm Water Division should establish a re-inspection fee, and develop, document, and implement policies and procedures for when re-inspection fees should be issued consistent with the San Diego Municipal Code. (Priority 2)

Management Response: Management agrees with this recommendation. Storm Water Division will develop an implementation plan and identify and request funding and staffing needs in the FY20 budget request process. **Target Implementation Date: January 2020**

If you have any questions, please contact me at 619-236-6594.



Kris McFadden

Director, Transportation & Storm Water Department

cc: Kris Michell, Chief Operating Officer
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