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# Orange County Sanitation District Rehabilitation and Replacement Plan

## Overview

Orange County Sanitation District's (OCSD's) rehabilitation and replacement plan complies with WDR Section 13 iv (c). Collections Operations and Maintenance (Collections O&M) implement a CCTV program of pipelines and manholes that is consistent with PACP and MACP standards allowing the condition of the sewer pipes and manholes to be consistently ranked and the necessity of subsequent rehabilitation or replacement efforts to be prioritized. Short-term and long-term processes are in place to facilitate an appropriate response to on-going collection of data. These processes are discussed in more detail below; however, it is worth noting that OCSD is currently transitioning toward establishing internal processes that allow staff to evaluate condition as well as capacity deficiencies of collection system assets in-house and incorporating the information into our developing asset management program. Master planning will be completed intermittently to support rate study efforts and validate funding adequacy.

WDR Section 13 iv (c) states the following: [Enrollee shall] develop a rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should include a capital improvement plan that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short- and long-term plans plus a schedule for developing the funds needed for the capital improvement plan.

## Short-term Rehabilitation and Replacement Program

Every year Collections Operation and Maintenance Division updates and prepares an operating budget to fund their activities and expenses during the year. Many of these Repair and Replacement (R&R) activities are performed under contract by specialty contractors. For example, often CCTV data will indicate a pipeline has become damaged or needs rehabilitation. Collections O&M manages a contract that allows staff to quickly implement a lining of a damage pipe up to a pre-specified diameter. When necessary, Collections O&M works with the Engineering Planning Division (through the Project Clearinghouse Committee; discussed below) to coordinate major repairs on an asset in the collection system using CIP funds.

## Long-term Rehabilitation and Replacement Program

### 2017 Facilities Master Plan

While the asset management program is being implemented with in-house staff and overhauled to better incorporate agency-wide rehabilitation and replacement efforts, OCSD is currently relying on master planning efforts to identify and prioritize condition and capacity related collection system projects. OCSD has completed the 2017 Facilities Master Plan (2017 FMP) project. This effort entailed identifying and prioritizing capital needs for the treatment plants as well as the collections system for a twenty-year planning horizon. The project team has also established a process of evaluation that enables asset engineers for each of the process areas to easily repeat the prioritization process as new condition assessments become available. This is an important initial step in development of a more comprehensive asset management program. OCSD specifically addresses replacement and rehabilitation in its 2017 FMP and on-going project validation efforts. These projects and processes support OCSD's efforts in determining the agency's cash flow needs.

Previous master planning documents are listed below for reference:

### 2009 Facilities Master Plan

In December 2009, OCSD published Volume 3 (Final Report) of the Collection System portion of the 2009 OCSD Facilities Master Plan. Volume 3 was an update to the 2006 Collection System Strategic Plan Update developed by Montgomery Watson Harza (MWH). The update utilized a version of OCSD's computerized hydraulic model which incorporated revisions to the Geographical Information System (GIS) information. The GIS information is constantly being updated by OCSD personnel to better reflect current characteristics of the pipeline network. Out of 20 potential CIP projects identified in the 2006 Strategic Plan Update, eight of the projects were removed as not being required due to modeled capacity verification criteria; one project was significantly modified; and one project was delayed due to a street construction moratorium imposed by an Orange County city.

### Asset Management Plan FY 2013-14 and 2014-15

Coinciding with the two-year budget for Fiscal Year 2012-14, OCSD completed an update for the Asset Management Plan (AMP) using a consultant from Gutteridge, Haskins, and Daveys, Pty Ltd. (GHD) to run the TeamPlan software model. The software modeling effort predicts the remaining asset life for the collection system and plant facilities. The model management strategies were updated for this software model run. The update of the management strategies included a comprehensive review of the expected useful life of the collection system and plant facilities assets. The revised model assumptions are documented in the SP-151 project report. This information was used to update the Asset Management Plan for Fiscal Year 2013-15 and was also used as a reference during the project evaluation phase of the 2017 Facilities Master Plan.

## 2006 Strategic Plan Update

In early 2005, OCSD hired MWH Americas to develop a new computerized hydraulic model for the Collection System. The model was based upon InfoWorks CS computer software by Innovyze. In early 2006, MWH Americas completed the Collection System Strategic Plan Update which included the hydraulic model and training for OCSD staff. The model utilized OCSD's GIS data for the Collection System. The model developed as part of this effort is still being used to evaluate the current and future average daily flow, and peak dry and wet weather flow in the Collection System. It fully satisfies all State of California requirements mentioned in the 2006 Statewide General Waste Discharge Requirements (WDR) for the Sewer System Management Plan (SSMP).

OCSD is in the process of updating the model as part of the Collections Capacity Evaluation Study. The study, which is expected to be completed in January 2019, consists of collecting flow monitoring data, incorporating changes made to the physical collection system pipe and pump station network, updating OCSD service area sources of flow and developing dry and wet weather flow profiles, improve the modeling accuracy of the design storm and estimating inflow and infiltration trends. The study also includes scoping and prioritizing collection system capacity projects, provides training for staff, and develops tools using GIS software that will allow staff to keep the model up to date in house.

## Flow Monitoring Reports and Records

In 2002, OCSD hired the consultant ADS to perform a Long-term Flow Monitoring Program. This program involved using 150 flow meters strategically placed throughout the overall Collection System for a period of two years from May 2002 to May 2004. After which, the program was reduced to 75 flow meters from May 2004 to May 2007. This program was used to calibrate OCSD's computerized hydraulic model and establish a baseline of flow measurements for each major trunk and flow basin. Today, the long-term flow meters have been removed, and each major flow basin or trunk has its flow metered by the permanent flow meters located at the two treatment plants. Periodically, flow meters are placed for a special project or study as needs arise, and new CIP projects are developed.

As part of the Collections Capacity Evaluation Study, OCSD (November 2016 through October 2017) monitored the regional collection system utilizing approximately 85 monitors placed in strategic locations. The flow data is being used to calibrate the model as well as estimate the amount of inflow and infiltration enters the system during wet weather events.

## Capital Improvement Program (CIP) Projects Selection Process

OCSD reviews new and revises existing CIP projects annually through a validation effort. The effort prioritizes projects based on need, risk, and overall resource and cash flow constraints of the agency. This effort has been modified to align with OCSD levels of service which elevates the process to ensure future repeatability; yet, allows for dynamic changes in agency objectives.

The Planning Division leads the Project Clearinghouse Committee which meets bi-weekly to discuss proposed projects that are not previously identified during the annual CIP validation cycle; yet, may be necessary to act on in the short term. The Project Clearinghouse determines if these projects are necessary, and assigns the work to the appropriate OCSD department.

## Funding Process (Finance Department)

OCSD's Budget is adopted by the Board of Directors every year. This comprehensive document includes descriptions of all relevant policies, procedures, and processes. It includes a financial summary, an operations overview, a description of all operating divisions, an overview of the OCSD's self-insurance program, CIP details, and a debt service summary. Funding in general is part of the budget process which is spelled out in OCSD's Budget "Policies and Procedures" (Section 3). The Board of Directors sets fiscal policy for OCSD which includes a policy for reserves. District Summary (Section 4) of the OCSD Budget lists eight revenue categories and their anticipated funding level by fiscal year. The amount of reserves is itemized by revenue category and is projected forward for a duration of ten years.

The funding process for Joint Operations Fund is evaluated annually and involves each division reporting their needs to their division manager who in turn prepares an operating budget submission and negotiates with the Finance Department. The process is summarized in the "Operations Overview" (Section 5) of the budget.

The funding process for CIP projects is done annually through a CIP validation process under the direction of the Director of Engineering. This process involves the Project Management Office Division and the Planning Division. The results of the CIP validation process are screened based on various criteria such as capacity deficiency, new regulatory requirements, and condition assessment needs prior to being submitted to the Finance Department. The final listing and summary of the CIP Budget for Capital Requirements is listed in OCSD's Budget "Capital Improvements" (Section 8). This section includes a summary as well as a detailed listing of each Collection System CIP project with projected costs over a ten-year period.