

# APPENDIX M

## Capacity Evaluation

Revision History			
Revision	Date	Approval	Reason
0	09/30/05		Original
1	04/24/09		•
2	04/15/11		•
3	09/14/12		•
4	03/26/14		•
5	10/08/14		•
6	11/14/16	E. Yong	• Updated status of the collection system capacity CIP projects; page 3
7	07/24/17	W. Smith	• Updated plan and Table M-1
8	07/20/18	W. Smith	• Updated page 3, paragraph 2: and Table M-1
9	07/11/19	J. Fenton	• Updated Plan and Table M-1
10	07/08/20	C. Falzone	• Updated Plan and Table M-1
11	09/21/21	T. Edwards	• Updated Plan and Table M-1; OCSD to OC San
12	09/19/22	T. Edwards	• Updated page 1 - paragraph 3, budget year, and Table M-1
13	09/22/23	T. Edwards	• Updated plan and Table M-1
14	09/19/24	T. Edwards	• Updated plan and Table M-1
15	03/11/25	EEC	• Update per WDR Order
16	09/23/25	T. Edwards	• Updated page 2 – paragraph 1, budget year, and Table M-1
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# Orange County Sanitation District System Evaluation and Capacity Assurance Plan

## Overview

Orange County Sanitation District (OC San) System Evaluation and Capacity Assurance Plan (SECAP) follows the General Waste Discharge Requirements (WDR) sequentially; that is, each section of the SECAP is presented in the order of and corresponds to a specific sub-section in the WDR which allows the reviewer and auditor to easily reference the WDR for further information if necessary. The goal of the SECAP is to develop user-friendly documents for staff use, regulator use, and public review as required by the WDR order. More detailed information can be obtained from the individually referenced documents, but this submittal is designed to specifically identify how the requirements of Attachment D, Section 8 (a) System Evaluation and Condition Assessment, (b) Capacity Assessment and Design Criteria, (c) Prioritization of Corrective Actions, and (d) Capital Improvement Plan.

## **WDR Attachment D Section 8.1 System Evaluation and Condition Assessment:**

Procedures to:

- *Evaluate the sanitary sewer system assets utilizing the best practices and technologies available;*
- *Identify and justify the amount (percentage) of its system for its condition to be assessed each year;*
- *Prioritize the condition assessment of system areas that:*
  - *o Hold a high level of environmental consequences if vulnerable to collapse, failure, blockage, capacity issues, or other system deficiencies;*
  - *Are located in or within the vicinity of surface waters, steep terrain, high groundwater elevations, and environmentally sensitive areas;*
  - *Are within the vicinity of a receiving water with a bacterial-related impairment on the most current Clean Water Act section 303(d) List;*
- *Assess the system conditions using visual observations, video surveillance and/or other comparable system inspection methods;*
- *Utilize observations/evidence of system conditions that may contribute to exiting of sewage from the system which can reasonably be expected to discharge into a water of the State;*
- *Maintain documents and recordkeeping of system evaluation and condition assessment inspections and activities; and*
- *Identify system assets vulnerable to direct and indirect impacts of climate change, including but not limited to: sea level rise; flooding and/or erosion due to increased storm volumes, frequency, and/or intensity; wildfires; and increased power disruptions.*

OC San Engineering Planning Division evaluates the capacity in the collection system every five to ten years and last completed a major model update as part of the 2019 Collections Capacity Evaluation Study Master Plan Update (2019 MPU) in 2020. The 2019 MPU and supporting model documentation outlines the updated steps and assumptions for the evaluation of the sewer collection system. This document includes the approach for estimating capacities, deficiencies, and a characterization of the flow components contributing to the sewer system for the years 2017 and 2040. The evaluation was done for dry weather and wet weather flow conditions. Assessments of inflow and infiltration for wet weather flow conditions were conducted as part of the evaluation. It should be noted that a 10-year design storm was utilized which reflects OC San's high level of service goals. The capacity model was calibrated using flow monitor data collected from November 2016 – May 2018. Additionally, OC San completed the Collections System Flow Level Monitoring Study (PS20-02) in 2025. The PS20-02 study verified the results of the latest collection system hydraulic model through flow monitoring at critical locations to validate and prioritize the capacity-driven collection system capital projects that were identified through previous studies (2019 MPU and 2006 Strategic Plan Update). Where deficiencies were found, projects were prioritized and recommended for inclusion in OC San's capital improvement program. Where alleviation of hydraulic deficiencies has occurred (either from changing flow conditions or more accurate modeling results) projects were canceled and are no longer a part of OC San's capital improvement program (see Table M-1 for current project status).

OC San accepts a limited quantity of dry weather urban runoff diversions to the sanitary sewer system. Each dry weather connection must be approved by the Board of Directors prior to connection. This is a permit-based program and hydraulic flow and capacity issues are assessed on a case-by-case basis as part of the permit review and approval process. OC San also utilizes the model to review major development proposals submitted to the Planning Division through the CEQA process. If not included in the CEQA documents, OC San staff requests wastewater flow estimates for large projects, projects tributary to known system deficiencies, and projects located in areas with rapid development or rapidly changing land use. The flow estimates are introduced to the model as inflows and model runs are executed that reflect present day dry and wet weather flow conditions. The results are evaluated for impacts. If the model indicates a capacity deficiency, OC San staff works with the member agency to better quantify the flows and identify possible solutions. Projects that are not a cause for concern are tracked; however, the flows are not incorporated into the model because the projects are only in the preliminary planning stages and may not be constructed. OC San staff is confident that increased flow patterns due to future projects will be reflected in the population estimates used as the basis for generating wastewater flows (developed by the Center for Demographic Research [CDR]). In any case, projects not reported to CDR are researched and consolidated as part of the periodic collection system capacity evaluation.

***WDR Attachment D, Section 8.2 Capacity Assessment and Design Criteria:***

*The Plan must include procedures to identify system components that are experiencing or contributing to spills caused by hydraulic deficiency and/or limited capacity, including procedures to identify the appropriate hydraulic capacity of key system elements for:*

- *Dry-weather peak flow conditions that cause or contribute to spill events;*
- *The appropriate design storm(s) or wet weather events that cause or contribute to spill events;*
- *The capacity of key system components; and*
- *Identify the major sources that contribute to the peak flows associated with sewer spills.*

*The capacity assessment must consider:*

- *Data from existing system condition assessments, system inspections, system audits, spill history, and other available information;*
- *Capacity of flood-prone systems subject to increased infiltration and inflow, under normal local and regional storm conditions;*

The project initiation criteria used in the 2019 MPU was as follows: 1) sewers larger than 12 inches in diameter were determined to be deficient where the model showed a surcharge of greater than two (2) feet, or if the surcharging came to within 5 feet of the ground surface, unless the system was designed to operate under a surcharged condition, without a spill occurring, during peak wet weather flow conditions, 2) sewer 12 inches in diameter or smaller were determined to be deficient when the ratio of the peak depth of flow to pipe diameter ( $d/D$ ) was greater than 1.0 (indicating that the pipe was full) during peak wet weather flow, 3)  $d/D$  was greater than 0.75 for existing pipes during peak dry weather flow, and 4)  $d/D$  was greater than 1.0 for lined pipes during dry weather flow. The project initiation criteria for capacity concerns are lower for smaller pipes because they are generally more affected by blockages and hydraulic inefficiencies such as offset joints. This allowed capital improvement projects to be scheduled and completed before spills would occur due to capacity restrictions.

OC San's design standards indicate that when redesigning sewers from 8 to 18 inches in diameter the desired ratio of peak depth of flow to pipe diameter ( $d/D$ ) is equal to 0.5. For pipes larger than 18 inches the desired ratio of the peak depth of flow to pipe diameter ( $d/D$ ) is equal to 0.75. As with all design criteria, the parameters listed here are guidelines. Each site-specific design will address project specific limitations and may not meet the strict bounds of the criteria above.

#### ***WDR Attachment D, Section 8.3 Prioritization of Corrective Action:***

*The findings of the condition assessments and capacity assessments must be used to prioritize corrective actions. Prioritization must consider the severity of the consequences of potential spills.*

The 2019 MPU identifies both short-term and long-term capital improvements needed to address identified hydraulic deficiencies. Prioritization of projects was based on the severity of the hydraulic deficiency and the potential consequences of spills occurring in those areas identified. Project recommendations were incorporated into OC San's

annual project validation effort the results of which are reflected in the Adopted Budget FY 2025-26 and Budget Update FY2025-26. Table M-1 includes the latest project status, project start date, as well as the reasons for the change in schedule (if applicable). Projects not previously included in OC San's CIP have been deleted from the table.

***WDR Attachment D, Section 8.4 Capital Improvement Plan:***

*The capital improvement plan must include the following items:*

- *Project schedules including completion dates for all portions of the capital improvement program;*
- *Internal and external project funding sources for each project; and*
- *Joint coordination between operation and maintenance staff, and engineering staff/consultants during planning, design, and construction of capital improvement projects; and Interagency coordination with other impacted utility agencies.*

OC San's CIP is validated annually, and major revisions are incorporated into the agency's budget cycle. The validation process consists of evaluating existing and certifying new CIP projects for the next ten-year period. Active and future projects in the CIP are described in detail in the budget book. Significant changes in the project scope and/or implementation schedule are noted within the project's justification portion of the project page.

Asset management is an essential part of OC San and our overall mission to deliver safe, economical, and reliable wastewater treatment services. Every part of our organization is involved in some aspect of asset management and ensuring that assets are designed, constructed, operated, and maintained to reliably deliver the required level of service to our customers. Through a very collaborative effort, each group plays an important role in ensuring that the individual asset management initiatives are properly executed.

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Table M-1 (2025)

Original Project ID	CIP Project No.	OC San Regional Facility	Source of Recommendation	Project Description	2009 FMP Recommendations	2019 MPU Recommendations	PS20-02 Recommendations	Status; Project Start or Construction Complete Date
N/A	1-24	Greenville-Sullivan Trunk	2019 MPU	The project includes replacing approximately 15,940 linear feet of 24 to 27-inch diameter pipe with 33 to 39-inch pipe in the City of Santa Ana. The project limits begin at the intersection of S. Greenville Street and W. Alton Avenue north to W. Edinger Avenue. The pipeline alignment continues west on W. Edinger Street and then north on S. Sullivan Street to Duchess Lane. The project limits conclude on Duchess Lane approximately 1,000 feet east of S. Sullivan Street.	N/A	New Project	Deficiencies predicted under 2020 and 2040 peak wet weather flows justify capacity-based improvements.	Project on-hold pending transfer agreement to the City of Santa Ana.
N/A	7-69	North Trunk	2019 MPU	The project includes replacing approximately 6,350 linear feet of 15-inch diameter pipe with 18-inch pipe. The project limits begin at the intersection of 17 <sup>th</sup> Street and Prospect Avenue west to Yorba Street and continues north on Yorba Street to Fairhaven Avenue.	N/A	New Project	No deficiencies predicted under 2020 and 2040 peak wet weather flows. Capacity-based improvements are not justified.	Condition-based rehabilitation project moving forward. Construction complete 05/2032.
N/A	X-084	Tustin Avenue Sewer	2019 MPU	The project includes replacing approximately 1,660 linear feet of 12-inch diameter pipe with 15-inch pipe in the City of Santa Ana. The project limits begin approximately 600 feet south of the intersection of Old Tustin Avenue and North Tustin Avenue continue north approximately 300 feet and continue east approximately 150 feet to the intersection of E. Lenita Avenue and a collector street. From there the project limits continue north along N. Tustin Avenue to approximately 500 feet south of the intersection of E. Santa Clara Avenue and N. Tustin Avenue.	N/A	New Project	No deficiencies predicted under 2020 and 2040 peak wet weather flows. Capacity-based improvements are not justified.	Project Cancelled
N/A	X-085	Hoover-Western Sub-trunk	2019 MPU	The projet includes replacing approximately 3,800 linear feet of 21-inch diameter pipe with 27-inch pipe in the City of Garden Grove. The project limits begin at Lampson Avenue and continue north of Western Avenue to approximately 1,100 feet north of Chapman Avenue.	N/A	New Project	Deficiencies predicted under 2020 and 2040 peak wet weather flows, but additional flow monitoring is required to justify capacity-based improvements.	Project also includes condition-based improvements in vicinity; Project Start 07/2032
N/A	X-086	Santa Ana River Interceptor	2019 MPU	The project includes replacing approximately 14,270 linear feet of 48 to 51-inch diameter pipe with 54 to 60-inch pipe in the City of Anaheim. The project limits begin at the intersection of E. La Palma Avenue and N. Tustin Avenue and continue east along E. La Palma Avenue to the intersection with S. Imperial Highway.	N/A	New Project	N/A	Project Start 01/2033
BPT_01	6-17	District 6	2006 SPU	Upsize approx. 3,700 feet of 15 to 21-inch pipe located in Pomona Avenue and Newport Blvd in the the City of Costa Mesa and Newport Beach	Continue with project	N/A	N/A	Project Completed
KNT_01	3-55	Westside Relief	2006 SPU	Upsize approx. 7,400 feet of 21 to 33-inch pipe in Crescent Ave. and La Palma Ave. in La Palma and Cypress	Delayed; depth of surcharge minimizes spill risk in the trunk. Monitor impact on the local sewer.	N/A	N/A	Project scope added to Rehabilitation of Western Regional Sewers (3-64). Construction complete 03/2028
KNT_02	3-60	Beach Relief/Knott	2006 SPU	Upsize approx. 11,100 feet of 42 to 48-inch pipe on Kingman Ave., Artesia Blvd., and Knott Ave. in Buena Park	Delayed; less demand due to economic downturn	Capacity portion of the project not necessary; previous model calibration methods over estimated the amount of inflow and infiltration	No deficiencies predicted under 2020 and 2040 peak wet weather flows. Capacity-based improvements are not justified, but additional flow monitoring is recommended.	Condition-based rehabilitation project moving forward. Construction complete 8/2028
KNT_03	11-25	Edinger-Bolsa Chica Trunk	2006 SPU	Upsize approx. 4,000 feet of pipe located on Bolsa Chica Street between Bolsa Ave. and Robinwood Dr. in Huntington Beach to 15-inch pipe	Project not warranted; surcharge depth presents minimal risk. Monitor impact on local sewer.	Model update indicates sewers are no longer capacity deficient	N/A	Condition-based rehabilitation project moving forward; Project start 07/2026
NHP_02	2-65 (original); 2-72 (current)	Cypress/Newhope Placentia	2006 SPU	Upsize approx. 34,800 feet of 27 to 48-inch pipe located in Yorba Linda Blvd. between Associated Rd. and State College Blvd. and in State College Blvd. from Yorba Linda Blvd. to East Orangewood Ave in the City of Fullerton and Anaheim	Modified; Portion of work to coincide with the City of Fullerton Grade Separation Project; remainder will become project 2-72	N/A	N/A	Project Completed
SAN_01	1-101	Construct New Regional Facility	2006 SPU	Construct 8-inch City of Santa Ana sewer to redirect house sewer laterals and upsize approx. 2360 feet of 21-inch pipe to 24-inch pipe on Warner Ave. to W. Alton Ave. in Santa Ana	Delayed; accommodate street construction moratorium	N/A	N/A	Project Cancelled
SAR_02	2-49	Taft Branch	2006 SPU	Upsize approx. 9,500 feet of 12-inch to 18-inch pipe with 15-inch to 24-inch diameter pipe along both Taft and Meats Avenues in the City of Orange	Delayed; less demand due to economic downturn	Significant change in scope (see new project description)	N/A	Project moving forward; Construction complete 02/2027

Table M-1 (2025)

Original Project ID	CIP Project No.	OC San Regional Facility	Source of Recommendation	Project Description	2009 FMP Recommendations	2019 MPU Recommendations	PS20-02 Recommendations	Status; Project Start or Construction Complete Date
SUN_01	7-62 (original); 7-63 (current)	Von Karman	2006 SPU	Upsize approx. 700 feet of pipe located in Campus Dr. in Irvine to 15-inch pipe	Delayed; depth of surcharge minimizes spill risk in the trunk. Monitor impact on the local sewer.	Model update indicates that sewers are no longer capacity deficient	N/A	Remove pipeline upsizing from MacArthur Pump Station Project (7-63); Construction complete 01/2031