

ELEMENT 8 - SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

The Seaside County Sanitation District authorized Wallace Group in January 2009 to develop a Sewer Master Plan (SMP), which evaluated the collection system's hydraulic capacity and developed a Capital Improvement Plan (CIP) and implementation schedule in order to respond to deficient areas identified in these evaluations. The 2011 SMP was completed on May 10, 2011.

There are no appendices to this element, to avoid duplication. The list of District CIP is in Element 4, Operation and Maintenance Program, Appendix 4F City of Seaside Capital Improvement Program 2008/09 to 2013/14 and Appendix 4G SCSD Capital Improvement Plan 2013/14 to 2018/19.

8.1 Regulatory Requirements

WDR Order No. 2006-0003-DWQ Section D.13(viii) states:

The Enrollee shall prepare and implement a capital improvement plan (CIP) that will provide hydraulic capacity of key sanitary sewer elements for dry weather peak flow conditions, as well as the appropriate design storm or wet weather event. At a minimum, the plan must include:

- (a). **Evaluation:** Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to an SSO discharge caused by hydraulic deficiency. The evaluation must provide estimates of peak flows (including flows from SSOs that escape the system) associated with conditions similar to those causing overflow events, estimates of key system components, hydraulic deficiencies (including components of the system with limiting capacity) and the major sources that contribute to the peak flows associated with overflow events;
- (b). **Design Criteria:** Where design criteria do not exist or are deficient, undertake the evaluation identified in (a) above to establish appropriate design criteria; and
- (c). **Capacity Enhancement Measures:** The steps needed to establish a short- and long-term CIP to address identified hydraulic deficiencies, including prioritization, alternatives analysis, and schedules. The CIP may include increases in pipe size, I/I reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP may include an implementation schedule and may identify sources of funding.
- (d). **Schedule:** The Enrollee shall develop a schedule of completion dates for all portions of the capital improvement program developed in (a)-(c) above. This schedule may be reviewed and updated consistent with the SSMP requirements as described in [WDR Order 2006-0003-DWQ] Section D.14.

8.2 Evaluation

The 2011 SMP contains the following studies which gathered and evaluated the following information to develop the Fiscal Year 2011/12 and future SCSD CIP and implementation schedule:

8.2.1 Chapter 2: Land Use and Population

The 2011 SMP researched and gathered data from existing and future land use and population forecasts for SCSD to improve understanding of existing and future wastewater flow characteristics. The two sources of data utilized were the General Plan and Housing Element for each of the three member agency cities. The second source was the Association of Monterey Bay Area Government (AMBAG) 2008 Regional Forecast.

8.2.2 Chapter 3: Collection System Overview

Information was gathered from utilities and maintenance staff regarding the condition of manholes, sewer line problem areas, and the four (4) SCSD lift stations which are maintained by MRWPCA.

The information gathered was used to determine the priority of CIP projects which are contained in Element 4, Operation and Maintenance Program, Appendix 4F City of Seaside Capital Improvement Program 2008/09 to 2013/14 and Appendix 4G SCSD Capital Improvement Plan 2013/14 to 2018/19.

8.2.3 Chapter 4: Wastewater Flows

In-line flow monitoring was conducted at eight (8) different locations on main trunk lines throughout SCSD from February 10, 2009 to March 26, 2006:

- (i) **27-inch:** Located on Bay Avenue at Seaside Lift Station
- (ii) **Amador:** Located on Canyon Del Rey @ Amador Avenue
- (iii) **Rosita:** Located on Rosita Road @ Angelus Way
- (iv) **Contra Costa:** Located on Contra Costa Street @ Palm Avenue
- (v) **Victory Toyota:** Located on Del Monte Boulevard @ Victory Toyota
- (vi) **Broadway:** Located on Broadway Avenue, just east of Fremont Blvd
- (vii) **Cypress Ford:** Located on The Mall @ Cypress Ford
- (viii) **Love Chevrolet:** Located on The Mall @ Love Chevrolet

From the in-line flow monitoring, Seaside Lift Station wastewater flow data from MRWPCA from January 2002 through May 2009, and data from Metcalf and Eddy, Wastewater Engineering Treatment and Reuse, 4th Addition, the wastewater generation characteristics of various existing development types within SCSD were developed, and a peaking factor analysis was conducted and presented in Chapter 4.

8.2.4 Chapter 5: Inflow and Infiltration

Data collected during the in-flow monitoring allowed for the analysis of the impact that Inflow and Infiltration (I/I) has on the SCSD collection system and the identification of CIP projects.

8.2.5 Chapter 6: Lift Station Evaluation

A physical, hydraulic, and emergency response time performance evaluation was conducted at each of the four (4) SCSD lift stations.

The hydraulic performance evaluation reviewed the sufficiency of each lift station wet well capacity to operate under a Worst Case Scenario (volume of flow coming into the lift station is exactly half the flow rate of the pump), Average Daily Flows, Peak Hour Dry Weather Flow.

From this evaluation it was determined that one of the four lift stations (the Del Monte Lift Station) requires redesign to address present and future hydraulic constraints.

The emergency response time for an operator to respond to a total pump failure due to power outage or other anomaly was also evaluated. The amount of time between the high water alarm and overflow was estimated and resulted in further recommendations for each lift station described below:

- (i) **Station #19 Del Monte Lift Station:** Emergency generator or additional wet well volume storage should be added; emergency response time to respond to a sewage overflow is inadequate (sixteen (16) minutes in best case scenario, one (1) minute in worst case scenario).
- (ii) **Station #20 Rosita Lift Station:** Remove or plug bypass line to for additional response time (one hour more) to respond to a sewage spill.
- (iii) **Station #21 – Military Lift Station:** Physically this lift station is in poor condition with extensive evidence of corrosion and requires replacement.
- (iv) **Station #22 – Tioga Lift Station:** No recommendations. Response time adequate.

8.2.6 Chapter 7: Collection System Analysis

A hydraulic model of the sewer collection system was developed with the MWHSoft® InfoSWMM sewer modeling program, Suite 7.0 Service Pack1 Update 9. InfoSWMM utilizes Manning's Equation for open channel flow (gravity pipes), Dynamic Wave analysis for flow routing through the collection system, and the Hazen-Williams Equation for pressurized flow conditions (force mains or surcharged pipes). Model results were evaluated for pipeline capacity, flow velocity, and maximum d/D ratio under various flow conditions.

Under existing flow conditions the following sewer line segments were found to be deficient:

- (i) Luzern Street Manhole D7-5 to Manhole C8-108;
- (ii) La Salle Avenue Manhole C8-108 to Manhole C8-33;
- (iii) Del Monte Boulevard Manhole B8-81 to Manhole B9-28;
- (iv) Birch Avenue Manhol C9-6 to Manhole B9-86 and Manhole C8-19 to Manhole C9-6;
- (v) Fremont Boulevard Manhole B9-75 to Manhole B9-21, Manhole B9-21 to Manhole B9-28, and Manhole B9-58 to Manhole B9-60

The following locations had marginal system capacity, which is defined as sewer pipe having flow close to design standards:

- (i) Ortiz Avenue Manhole B9-23 to Manhole A9-51
- (ii) Sierra Avenue to Hilby Avenue anhole C11-98 to Manhole C11-87
- (iii) Broadway Avenue Manhole C8-33 to Manhole C8-24 and Manhole C8-3 to Manhole B8-81
- (iv) LaSalle Avenue Manhole C8-33 to Manhole C8-24 and Manhole C8-3 to Manhole B8-81

Pipes with low pipe velocity (less than two feet per second under SCSD minimum specifications), and excessive pipe travel time (exceeding thirty minutes manhole to manhole) were identified and highlighted for maintenance and utility staff to increase maintenance (flushing and vacuuming).

Lastly, future flow impacts to the collection system were analyzed, discussed, and project upgrades to segments of sewer line and lift stations were identified.

8.2.7 Chapter 8: Region D1 Analysis

Region D1 is owned by the City of Monterey, an analysis was conducted to determine if it is feasible and cost effective for SCSD to provide sewer service to this Region.

8.2.8 Chapter 9: Capital Improvement Projects (CIP)

This Chapter presented the proposed Capital Improvement Projects (CIP), with a brief description of the proposed projects and a preliminary cost estimate for each proposed improvement for Seaside County Sanitation District (SCSD). Also included in the CIP recommendations are general timelines and scheduling for the needed improvements, and general guidelines for cost allocations relative to existing and future developments.

The near term capital improvement projects were ranked to determine what priority the existing recommended projects should be constructed. The 2011 SMR evaluated each of the projects in five categories: overflow to a water body of the state, hydraulic capacity (d/D), community impact, maintenance hot spots, and cost. Each category was provided a weighted importance factor based on what factors are more important than others. The importance factor is multiplied by the score the project received and then summed together to determine its final score.

*Although the projects are ranked as described above, it should be noted that **all** projects identified in the Near-Term CIPs are a result of deficiencies in the existing collection system due to existing needs and are therefore all important to be constructed within the next 1 to 6 years for the first 11 projects and within the next 15 years for projects 12 through 18. It is also recommended that SCSD review these projects periodically to determine if any substantial changes have occurred that may re-prioritize a project to a higher ranking.*

The CIP 2011 SMP costs are based on engineering judgment, confirmed bid prices for similar work in the Central Coast area, consultation with vendors and contractors, established budgetary unit prices for the work, and other reliable sources. The cost estimates are approximate and should be used for planning purposes only. Actual project costs will vary depending upon economic conditions at the time of construction. As noted previously, these costs are based on Year 2009 dollars (McGraw-Hill ENR Construction Cost Index of 8592) and need to be escalated to the year or years scheduled for the work.

The 2011 CIP additionally provided a summary of the future recommended CIPs, or Long Term Projects, and their estimated costs. These projects are not ranked. The costs are based on engineering judgment, confirmed bid prices for similar work in the Central Coast area, consultation with vendors and contractors, established budgetary unit prices for the work, and other reliable sources. The cost estimates are approximate and should be used for planning

purposes only. Actual project costs will vary depending upon economic conditions at the time of construction. As noted previously, these costs are based on Year 2009 dollars (McGraw-Hill ENR Construction Cost Index of 8592) and need to be escalated to the year or years scheduled for the work.

Following the tables in the 2011 SMP, project description sheets are provided for each project noted. The project description sheets provide the following information:

- (i) Project name
- (ii) Project trigger
- (iii) Project benefit
- (iv) Project need
- (v) Project cost
- (vi) Project schedule
- (vii) Project description
- (viii) Project map

These description sheets are currently in use by SCSD in the planning for each project, and for inclusion in fiscal year budget requests.

8.2.9 Chapter 10: Rate Study

This Chapter presents the sewer rate study prepared by David Taussig & Associates with support from District staff, District Board and Wallace Group.

The District intends to use sewer rates to fund the following projects from the 2011 SMP which in Element 4, Operation and Maintenance Program, Appendix 4F City of Seaside Capital Improvement Program 2008/09 to 2013/14 and Appendix 4G SCSD Capital Improvement Plan 2013/14 to 2018/19.

While certain costs have been allocated to new development outside the District's current service boundary, the proposed rate structure assumes that existing development will have to carry the full cost of the three (3) Long Term Projects until sufficient capacity fee revenues become available.

This is because the facilities are needed to serve future development within the existing service boundary and the District may not be able to wait to accumulate sufficient funds from new development to construct the facilities. As discussed above, the estimated capacity fee revenues will partially offset the costs of facilities needed to serve both existing and future development over the fifteen (15) year term.

8.3 Design Criteria

The District uses Standard Plans for the Public Works Construction, 2009, by Public Works Standards, Inc. which is included as Appendix 5A to Element 5, Design and Performance Provisions to this SSMP.

Element 5 also specifies design criteria for improvement plans, gravity sewer mains, gravity sewer laterals, pump lift stations and other appurtenances (must be designed by a Professional Engineer licensed in California).

8.4 Capacity Enhancement Measures

The District's 2011 SMP included a list of recommended short- and long-term CIPs in Chapter 9 as described above in Section 8.2, which addresses and identifies hydraulic deficiencies, including prioritization, alternatives analysis, and schedules.

The SCSD CIP list was revised in July 2013 to schedule projects out from FY 2013/14 to FY 2018/19.

The CIP list is in Element 4, Operation and Maintenance Program, Appendix 4F City of Seaside Capital Improvement Program 2008/09 to 2013/14 and Appendix 4G SCSD Capital Improvement Plan 2013/14 to 2018/19.

8.5 Schedule

The SCSD CIP list was revised in July 2013 to schedule projects out from FY 2013/14 to FY 2018/19 and is available in Appendix 4G SCSD Capital Improvement Plan 2013/14 to 2018/19.