CHAPTER 5. HYDRAULIC MODEL DEVELOPMENT

5.1 HYDRAULIC MODEL DEVELOPMENT

Utilizing the City's previously developed a sanitary sewer model in InfoWORKS originally created in 2005; IEC has redeveloped and updated the City's sewer system hydraulic model utilizing InfoSWMM (SWMM) 12.0 Update 1. This platform combines a fully dynamic hydraulic modeling engine developed and approved by the Environmental Protection Agency (EPA) with the GIS interface that can take advantage of the data that the City has built into its sewer system GIS database. The City's SWMM hydraulic model includes all pipes in the system and includes scenarios that model a design storm wet weather event, as required by the State Waste Discharge Requirement (WDR) 2006-003, with which the City must comply. Furthermore, InfoSWMM is user friendly for maintaining, and allows for complete GIS integration capabilities while allowing for the utilization of CapPlan Sewer 7.0. CapPlan Sewer is a complete decision support, asset management, and capital planning tool for sewer systems. CapPlan Sewer seamlessly integrates GIS information, CCTV video, Pipeline Assessment and Certification Program (PACP) condition databases, hydraulic modeling, CMMS, and other related information to help prioritize rehabilitation and replacement of sewer lines. The asset management evaluation of the City's wastewater collections system will be included in a separate Asset Management Report.

5.2 PHYSICAL REPRESENTATION

All City owned wastewater facilities, excluding laterals, were combined into one complete model. This included invert elevations, length, location and diameters for approximately 500 miles of gravity mains, as well as seven (7) active lift stations.

Three (3) steady-state scenarios were created in the hydraulic model for the Existing (2012), 2017, 2022, 2027, 2032, 2037, 2042 and 2050 time-increments: Average Dry Weather Flow (ADWF), Peak Dry Weather Flow (PDWF) and Peak Wet Weather Flow (PWWF). These scenarios were then loaded with the wastewater flow projections developed on a parcel-level as previously described.

5.3 PHYSICAL REPRESENTATION

Upon the completed development of a hydraulically accurate physical representation of the sewer collection system, a methodology must be developed for accurately simulating appropriate collection system sewer flow. Wastewater flows in the City's now current InfoSWMM hydraulic model are apportioned on a manhole-by-manhole basis.

The new development flows having no existing infrastructure and primarily located in the south east portion of the City were loaded into either the Salt Creek Interceptor or the Poggi Basin. Those developments with no pre-existing infrastructure were loaded using 100% of the developments projected flows in a manhole upstream of the development. The following Figure 5-1 and Table 5-1 identify those developments and associated manholes being loaded.

N

0 4,850 9,700 Feet

SAN MIGUEL
SR-125 SB
PROCTOR VALLEY
Aqua Vista
BONITA
CORRAL CANYON
EASTLAKE
HUNTE
OTAY LAKES
SR-125 SB
EASTLAKE PKWY
WUESTE
30TH
SR-54 WB
SR-54 EB
SR-54 EB
C
E ST
SR-54 WB
I-5 SB
I-5 NB
MARINA
4261
J
BROADWAY
F
BAY
6TH
3RD
HILLTOP
PASEO RANCHERO
TELEGRAPH CANYON
MEDICAL CENTER DR
OLYMPIC PARKWAY
PALOMAR
ORANGE
MAIN
BEYER
I-805 NB
I-805 SB
BRANDYWINE
OTAY VALLEY
HERITAGE
LA MEDIA
SR-125 NB
14157
14163
12844
12144
BIRCH
15197
15280
URBAN CENTER EAST
13964
13957
13952
13948
13949
13947
13940

Legend

- Manhole Locations for Development Loading
- City Parcels

Proposed Developments

- Bayfront
- Eastern Urban Center
- Freeway Commercial
- Otay Ranch Village 6-Marquis I and II
- Village 1
- Village 10
- Village 2_Poggi
- Village 2_SCI
- Village 3 4 North
- Village 4
- Village 7
- Village 8 East
- Village 8 West
- Village 9
- Existing City of Chula Vista Pipelines
- City of Chula Vista Boundary

Infrastructure ENGINEERING CORPORATION

City of Chula Vista
Wastewater Collection System Master Plan

Projected Manhole Loading Locations
FINAL

May 2014

Figure 5-1

Table 5-1: Proposed Developments with No Infrastructure and Associated Manhole Loadings

Manhole ID	Proposed Development
4261	Bayfront
12144	Otay Ranch Village 1
12844	Otay Ranch Village 2_SCI
13948	Otay Ranch Village 2_Poggi
13940	Otay Ranch Village 3 4 North
13947	Otay Ranch Village 8 East
13949	Otay Ranch Village 7
13952	Otay Ranch Village 8 West
13957	Otay Ranch Village 9
13964	Otay Ranch Village 10
14157	Otay Ranch Village 6-Marquis I and II
14163	Freeway Commercial
15197	Eastern Urban Center
15280	Eastern Urban Center