EXECUTIVE SUMMARY

INTRODUCTION

The Wastewater Master Plan Update provides a comprehensive review and evaluation of the City of Chula Vista's wastewater collection, conveyance, and treatment capacity requirements under the existing (2012) and ultimate (2050) conditions. Based on findings of the evaluation, the Plan recommends facility improvements and financing alternatives to ensure that aging infrastructure remains serviceable and to allow for the continued build out of the City's General Plan.

The City of Chula Vista is located in southwestern San Diego County, approximately seven miles north of the international border with Mexico. Incorporated in 1911, the City is located at the center of one of the richest cultural, economic and environmentally diverse zones in the United States. It is the second-largest City in San Diego County with a population of over 250,000. Chula Vista boasts more than 50 square miles of coastal landscape, canyons, rolling hills, mountains, and a variety of natural resources and quality infrastructure. A map of the City's location is shown in Figure 1-1. The City has historically been one of the fastest growing cities in San Diego County having a population of 173,556 in 2000 (2005 Adopted General Plan) to what it currently has, over 250,000 and what it is projected to have approx. 330,000 (SANDAG Series 12) in 2050.

The City is responsible for the maintenance, operations and management of all sewer collection systems that transport flows generated within the City. It maintains nearly 500 miles of sewer main lines and 12 wastewater lift stations. The City's collection facilities convey wastewater flow generated within 8 main drainage basins to connections to regional sewerage facilities located along San Diego Bay to the west and Sweetwater River to the north. Flows are ultimately conveyed to transmission and treatment facilities operated by the City of San Diego's Metropolitan Wastewater Department (METRO). Currently the City owns capacity rights of 20.864 million gallons per day (mgd) within the METRO system.

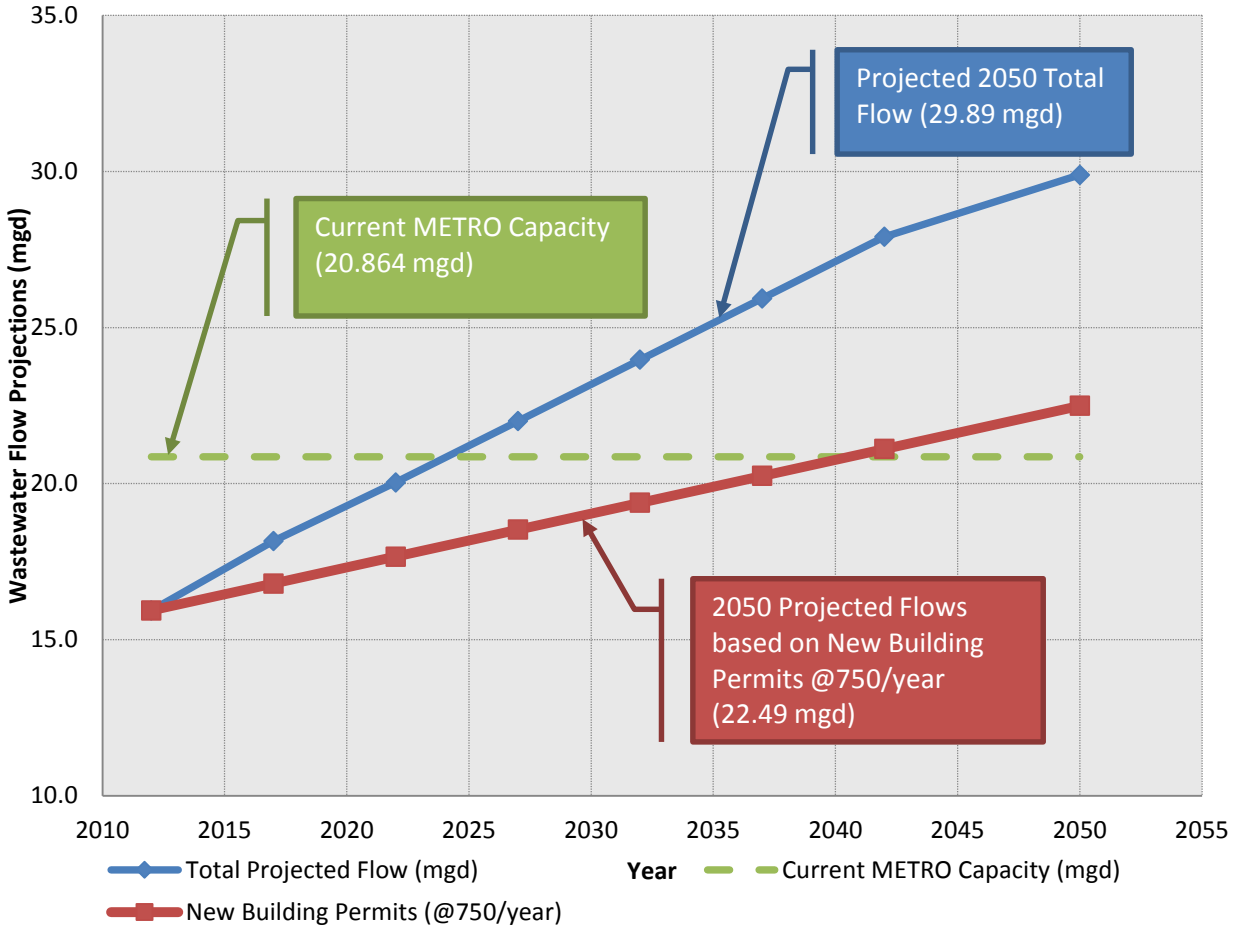
In order to plan and develop a wastewater capital improvement program that ensures reliable and cost-effective service, the City retained the services of Infrastructure Engineering Corporation (IEC) to develop this Wastewater Master Plan Update.

The purpose of the Wastewater Master Plan Update is to 1) re-evaluate the system capacity through 2050, 2) assess the capacity of existing lift stations, 3) evaluate the treatment capacity alternatives, 4) develop of a capital improvement plan (CIP) for rehabilitation and expansion of the collection system and treatment alternatives, and 5) recommend a revised capacity fee for new development within the City. Specific recommendations for pipeline replacements, lift station facilities and treatment capacity will be made in 5-year increment starting in 2012 (existing) and include 2017, 2022, 2027, 2032, 2037, 2042 and 2050. The CIP includes the recommended system improvements to address existing and projected capacity constraints as well as the acquisition of additional regional treatment capacity. This recommended CIP forms the basis for the updated capacity fee and capital facilities financing plan and will be used in wastewater rate evaluations to be completed in separate financial studies.

FLOW PROJECTIONS

Wastewater generation within the City of Chula Vista is collected by City-owned facilities and conveyed to connections to METRO conveyance and treatment facilities for treatment and disposal. The City's current capacity at METRO is 20.864 mgd. Future City flow projections based on current growth projections indicate that this capacity may be exceeded within the next 10-15 years. Figure ES-F1 shows the projected growth projections based on the 2005 Approved General Plan including General Plan Amendments in 2013, 2013 Otay Ranch General Development Plan Projections and the San Diego Association of Governments (SANDAG) population Projections.

Figure ES-F1: Projected Wastewater Flows



Based on the Approved 2005 General Plan including General Plan Amendments in 2013, 2013 Otay Ranch General Development Plan Projections and the San Diego Association of Governments (SANDAG) population Projections, the estimated average City wastewater flow rate at 2050 is 29.89 mgd. The City requested using an average of 750 new building permits per year based on the 2010-2013 City's Permit Plus database, the growth is much slower, resulting in approximately 22.49 mgd in 2050. Table ES-T1 provides SANDAG population projections in relation to the projected flow.

It should be noted that this master plan update has included the area in the county known as Village 13; however, estimated flows from this development were not included as part of the City's hydraulic model, flow projections, CIP analysis, treatment capacity needs, nor Sewerage Capacity Charge calculation. It is assumed that once the county development has been defined and authorized, the county will update the necessary documents.

Table ES-T1: Recommended Wastewater Flow Projections

Year	Total Projected Flow (mgd)	SANDAG Population*
2012	15.73	249,382
2017	17.59	255,382
2022	19.46	271,913
2027	21.32	282,785
2032	23.18	293,610
2037	25.05	306,922
2042	26.91	318,270
2050	29.89	330,049

LAND USE DUTY FACTORS

Utilizing the existing water billing records from 2009 through 2011, land use duty factors were developed and shown in Table ES-T2. These land use duty factors were used for developing wastewater flow projections.

Table ES-T2: Wastewater Duty Factors

Land use	Recommended Wastewater Duty Factors based on 2009-2011 Water Demands			
	GPD/Capita	Gal/DU	gpd/acre	gpd/1000 sq-ft
Single Family	63	230	-	
Multi-Family	55	182	-	
Commercial	-	-	1,401	80
Industrial	-	-	712	80
Government/Office/Public Institution	-	-	1,313	80
Elementary School	12	-	1181	
Junior/Middle/High School	13	-	1080	
Olympic Training Center	-	-	582	
Open Space/Recreation	-	-	410	

1. GPD/1000-sq-ft has been added and used for new developments with known building square footage.

DESIGN CRITERIA

The hydraulic model is the primary tool for evaluating the capacity of the pipes in a sewer collection system. An effective hydraulic model accurately represents collection system facilities and collection system flows for capacity analysis.

In analyzing a wastewater system, it is necessary to derive standards regarding the amount of flow that may be efficiently conveyed by a given wastewater pipeline. In an effort to provide reliable gravity sewer service while minimizing excessive wear or energy usage through force mains and lift stations, sanitary sewers shall be designed according to the following criteria:

- Existing Pipelines 12-inch and smaller, d/D shall not exceed 0.7

- Existing Pipelines larger than 12-inch, d/D shall not exceed 0.85
- New Pipelines 12-inch and smaller, d/D shall not exceed 0.50
- New Pipelines larger than 12-inch, d/D shall not exceed 0.75

HYDRAULIC DEVELOPMENT AND ANALYSIS

An evaluation of the available capacity of the City's existing wastewater collection system was completed to identify sewer reaches that may be undersized to accommodate existing and/or future wastewater flows. Based on the findings of the evaluation, phased facility improvements were identified to reduce the potential for sanitary sewer overflows as well as to allow for projected growth within the City's service area.

This Master Plan Update has developed a hydraulic wastewater collection system model for the City utilizing InfoSWMM 12.0, Update 1. IEC utilized the City's existing sewer model in InfoWORKS and converted over to InfoSWMM for developing an updated hydraulic model. A set of dynamic simulations were developed, and were used to evaluate wastewater system requirements during peak flow conditions, and to develop a recommended set of existing and future system improvements.

Based on the hydraulic analysis presented in Chapter 6, all deficient gravity mains were grouped and prioritized into 46 projects that consist almost entirely of pipeline upsizing. This upsizing comprises of approximately 2.5% of the City's total collection system. There are areas/projects designated as Developer Imposed Fee (DIF) and Developer Exaction Fee projects that were separated out of the CIP costs since those fees will be paid for by the developers already designated to those projects. Pipeline improvements were based on the collection systems ability to meet PWWF scenarios, while meeting the established design criteria.

In addition to the pipeline replacement projects, two new pipelines and one new manhole were added along the south perimeter of the City along Main Street allowing for flow diversion from the 10-inch pipeline into the existing 42-inch. In addition to the new pipelines allowing for flow diversion, two more new pipelines were added, one stretch of 8-inch diameter pipe along Main Street and one stretch of 10-inch diameter along Otay Valley Rd. These added pipes allow for flow splits and flow continuity based on the existing infrastructure. These improvements allow for optimizing the existing infrastructure and minimizing the number of pipelines in the area to be replaced allowing for the additional growth.

A separate asset management program will be incorporated in with the City's hydraulic model utilizing Innovyze CapPlan, identifying and scoring City assets. CapPlan will work in conjunction with the hydraulic model and its results, ultimately developing a rehabilitation and implementation plan for the aging infrastructure as well as the associated risks to pipeline failure throughout the City. A separate document will be submitted to the City following the Master Plan Update; however, both documents with the model will be utilized in conjunction with each other.

CAPITAL IMPROVEMENT PROGRAM (CIP)

Cost estimates for each project were developed based upon the unit costs presented in Chapter 7, the proposed diameter and the estimated length of each project. In addition to pipeline replacement costs, additional treatment capacity exceeding the 20.864 mgd at METRO was also evaluated. A summary of those costs per five year increment are provided in ES-T3.

Table ES-T3: Summary of Proposed Capital Improvement Costs and Additional Treatment Capacity

Year Proposed	Pipeline Improvements	Manhole/Flow Meter Vault Replacements	Wastewater Flow Projections (MGD)	Additional Treatment Capacity Required (MGD)
Existing	$5,000,100	$265,000	15.73	-
2017	$3,210,600	$265,000	17.59	-
2022	$1,462,100	$60,000	19.46	-
2027	$242,000	$65,000	21.32	1.14
2032	$328,400	$105,000	23.18	3.10
2037	$1,828,600	$180,000	25.05	5.07
2042	$2,078,300	$125,000	26.91	7.04
2050	$1,612,400	$465,000	29.89	9.03

Treatment capacity alternatives were evaluated per a report for the City completed by RMC in April 2012, *City of Chula Vista Acquisition of Additional Wastewater Capacity Project*. Alternative 1 includes the costs associated with purchasing additional Metro Capacity, Alternative 2 includes a new City owned Recycled Water Treatment Plant and Alternative 3 includes additional costs with a Point Loma WWTP upgrade to Secondary Treatment. The three alternatives account for the additional 9 mgd of wastewater flows from the City in 2050. Those alternatives and corresponding costs are summarized in Table ES-T4.

Table ES-T4: Summary of Proposed Capital Improvement Costs and Treatment Capacity Alternatives

Description	Alternative 1	Alternative 2	Alternative 3
Pipelines/Manholes/Flow Meter Vault	$ 10,762,400	$ 10,762,400	$ 10,762,400
Treatment Costs			
METRO	$ 151,833,600		
New Treatment Plant		$180,354,800	
PLWWTP Secondary Expansion			$ 288,567,700
Total CIP	**$ 162,596,000**	**$191,117,200**	**$ 299,330,100**
Total CIP minus Existing Improvements	***$ 157,595,900***	***$186,117,100***	***$ 294,330,000***

CAPACITY FEE EVALUATION

As part of the Master Plan Update, Bartle Wells Associates (BWA), a sub consultant to IEC, was tasked with updating the wastewater capacity fee. The purpose of the capacity fee is to recoup the capital costs of facilities needed to serve new customers connecting to the wastewater system. This Master Plan outlines two options evaluated for calculating the wastewater capacity fee. Option 1 (Figure ES-F2) included the Buy-in to Existing Facilities and includes the depreciated value of existing City pipelines and the value of the City's existing capacity rights at Metro. Option 2 (Figure ES-F3) included the Incremental Capacity Expansion and including the cost of expanding City pipelines and building a City-owned recycled water treatment plant. As discussed in Chapter 3 of this report, future flow projections indicate the City must either purchase additional capacity in the Point Loma Wastewater Treatment Plant (PLWWTP) or construct City-owned treatment facilities in about 10 years.

The PLWWTP has been issued a waiver from the Environmental Protection Agency (EPA) which allows the plant to operate at an advanced primary treatment level. The waiver expires in 2015 at which time the PLWWTP may be required to upgrade and operate at a secondary treatment level. The City of San Diego's 2012 Recycled Water Study recommends upgrading the PLWWTP to accommodate a secondary treatment level capacity of 143 mgd and offloading 100 mgd of flow away from the PLWWTP to expanded recycled

water facilities. As a member agency of Metro, the City of Chula Vista will proportionally share in the cost of any upgrades proportional to the city's share of the overall capacity of the PLWWTP.

Alternately, the City could elect to maintain its current treatment rights in the Metro system and construct its own recycled water treatment plant to treat the build-out flows of new customers. Solids generated by the City-owned recycled water treatment plant would be routed back to PLWWTP for disposal. The City's capacity rights in the Metro system are based on flow and would not be impacted by additional solids.

Figure ES-F2: Buy-in to Existing Facilities

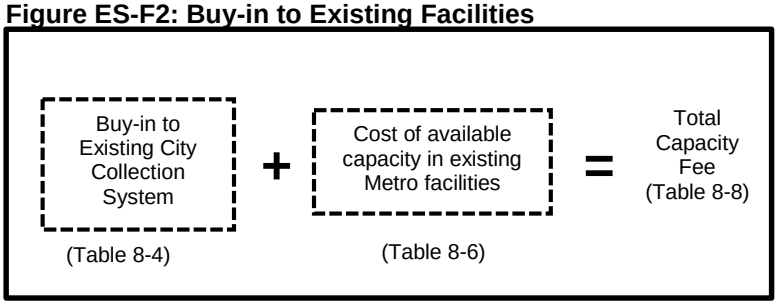
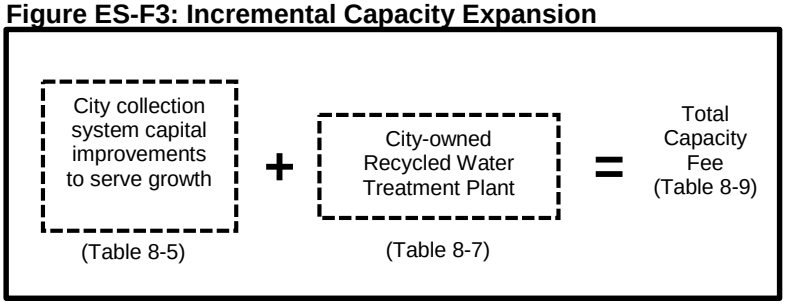


Figure ES-F3: Incremental Capacity Expansion



Both the Buy-in to Existing Facilities and the Incremental Capacity Expansion method are fair to customers and reflect the capital costs of providing capacity in the wastewater system. Ultimately, BWA recommends that the City utilize the Incremental Capacity Expansion method and resulting capacity fee of $3,450.00, a reduction from the current capacity fee of $3,478.00.

SEWER OVERFLOW EMERGENCY RESPONSE PLAN

IEC reviewed the City's existing Sewer Overflow Emergency Response Plan and associated procedures and identified suggested modifications and/or improvements. The suggested modifications to the existing Emergency Response Plan are in accordance the terms of the State of California Water Resources Control Board (SWRCB), Order No. 2006-0003, and a General Waste Discharge Requirement (WDR), also referred to as the Sewer System Management Plan (SSMP). As part of this task, IEC identified those measures still necessary to protect public health and/or the environment. Specifically, the Overflow Emergency Response Program must contain proper notification procedures, a sanitary sewer overflow (SSO) response program, as well as internal training requirements. While the City's Overflow Emergency Response Program is currently sufficient to satisfy the requirements of the SSMP, IEC has identified suggested improvements.

Additionally, in order to comply with Order No. R9-2007-0005, as adopted by the San Diego Regional Water Quality Control Board, IEC has recommended the inclusion of language regarding reporting of all SSO's in accordance with the order.