

Appendix 5.10-1 Infrastructure Technical Report

Appendices

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WESTMINSTER MALL SPECIFIC PLAN

INFRASTRUCTURE TECHNICAL REPORT FOR HYDROLOGY,
SEWER, WATER, & WATER QUALITY

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DATE PREPARED: February 14, 2020

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CITY OF WESTMINSTER WESTMINSTER MALL SPECIFIC PLAN

INFRASTRUCTURE TECHNICAL REPORT FOR HYDROLOGY, SEWER, WATER, AND WATER QUALITY

CITY OF WESTMINSTER
COUNTY OF ORANGE, CALIFORNIA

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ACRONYMS & ABBREVIATIONS

ATS	Active Treatment System
BAT	Best Available Technology Economically Available
BCT	Best Conventional Pollutant Control Technology
BMP	Best Management Practice
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CWA	Clean Water Act
DAMP	Drainage Area Management Plan
DCV	Design Capture Volume
DU	Dwelling Units
EIR	Environmental Impact Report
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GCP	General Construction Permit
GIS	Geographic Information Systems
gpd	gallons per day
IRWMP	Integrated Regional Water Management Plan
LF	Linear Feet
LID	Low Impact Development
LIP	Local Implementation Plan
MCSD	Midway City Sanitation District
MGD	Millions of Gallons per Day
MS4	Municipal Separate Storm Sewer Systems
MWD	Metropolitan Water District of Southern California
MWDOC	Municipal Water District of Orange County
NOC	North Orange County
NOI	Notice of Intent
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
OCFCD	Orange County Flood Control District
OCWD	Orange County Water District
OCS	Orange County Sanitation District
RCP	Reinforced Concrete Pipe
ROW	Right-of-Way

RWQCB	Regional Water Quality Control Board
SF	Square Feet
SFHA	Special Flood Hazard Area
SOI	Sphere of Influence
SWPPP	Storm Water Pollution Prevention Program
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TGD	Technical Guidance Document
TMDL	Total Maximum Daily Load
UWMP	Urban Water Management Plan
WDID	Waste Discharge Identification Number
WDR	Waste Discharge Requirement
WQMP	Water Quality Management Plan
WQO	Water Quality Objective

1. INTRODUCTION & BACKGROUND

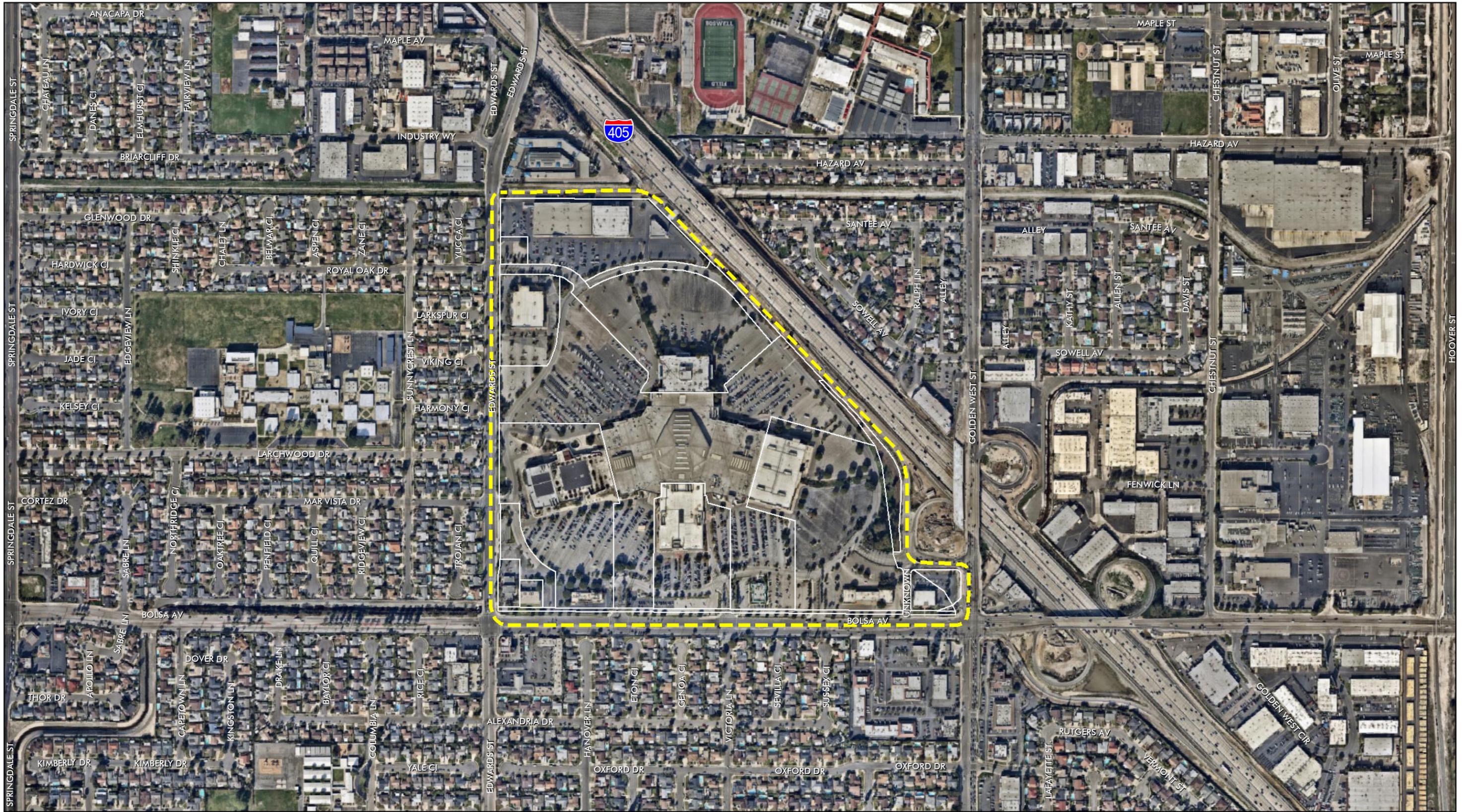
The Westminster Mall Specific Plan (“Specific Plan” or “WMSP”) is located in the southwestern portion of the City of Westminster (“City”) in Orange County. The City is proposing the Specific Plan to encourage redevelopment and revitalization of the City’s Westminster Mall area to support mixed-use residential and commercial needs through new land use and development framework. The Specific Plan area extends to the I-405 Freeway to the north and northeast, Edwards Street to the west, Bolsa Avenue to the south, and Goldenwest Avenue to the southeast. Interior drive aisles and parking run throughout the Specific Plan area.

The Specific Plan area encompasses approximately 103 acres and is currently used entirely for commercial/retail uses and associated parking. The WMSP proposes a variety of land use changes within the Specific Plan boundary. The proposed land use changes are summarized below in Table 1.

Table 1 Specific Plan Proposed Land Use

Land Use Designation	Square Footage	Units
Retail	600,000	--
Entertainment Retail	210,000	--
Restaurant	210,000	--
Office	180,000	--
Hotel	--	425 Rooms
3-Story Downtown Residential	--	300 DU
4-6 Story Wrap/Mini Podium Residential	--	1,200 DU
8-10 Story Podium Residential	--	1,500 DU
Total	1,200,000 SF	3,000 DU

See Figure 1 for an aerial overview of the Specific Plan area.



Aerial Date: 1/18/2020

Aerial Extent - Westminster Mall Specific Plan

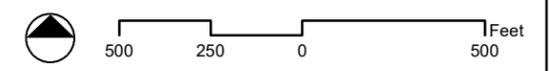
Westminster Mall Specific Plan

Figure 1

2/12/2020



 Specific Plan Boundary



This report analyzes the proposed land use changes within the Specific Plan area and how these changes may impact the existing infrastructure that lies within or immediately downstream. For those areas where the land use changes may impact the existing infrastructure, measures will include a review of the Master Plans of Drainage, Water, and Wastewater systems, as well as the existing drainage (storm drain systems), sewer systems, water systems, and water quality systems currently in place. Measures to reduce potential impacts to surface water quality as a result of post-construction operations will be addressed within this report. This includes structural Best Management Practices (BMPs) and Low Impact Development (LID) strategies for post-construction water quality protection and water conservation strategies. Additional details on water quality will occur during the site planning process through the City of Westminster and the development of site-specific (e.g. project-specific) Water Quality Management Plans (WQMPs).

2. ENVIRONMENTAL SETTING

2.1 HYDROLOGY

The purpose of the hydrology evaluation is to evaluate the existing status of the storm drain system based on best available information (Master Plan of Drainage, specific studies within the Specific Plan study area, Capital Improvement Projects, public works staff, etc.) and determine if the system can accommodate the proposed land use changes. Where applicable, storm drain system improvements will be identified to support the proposed land plan based on the most current Master Plan of Drainage and supporting studies.

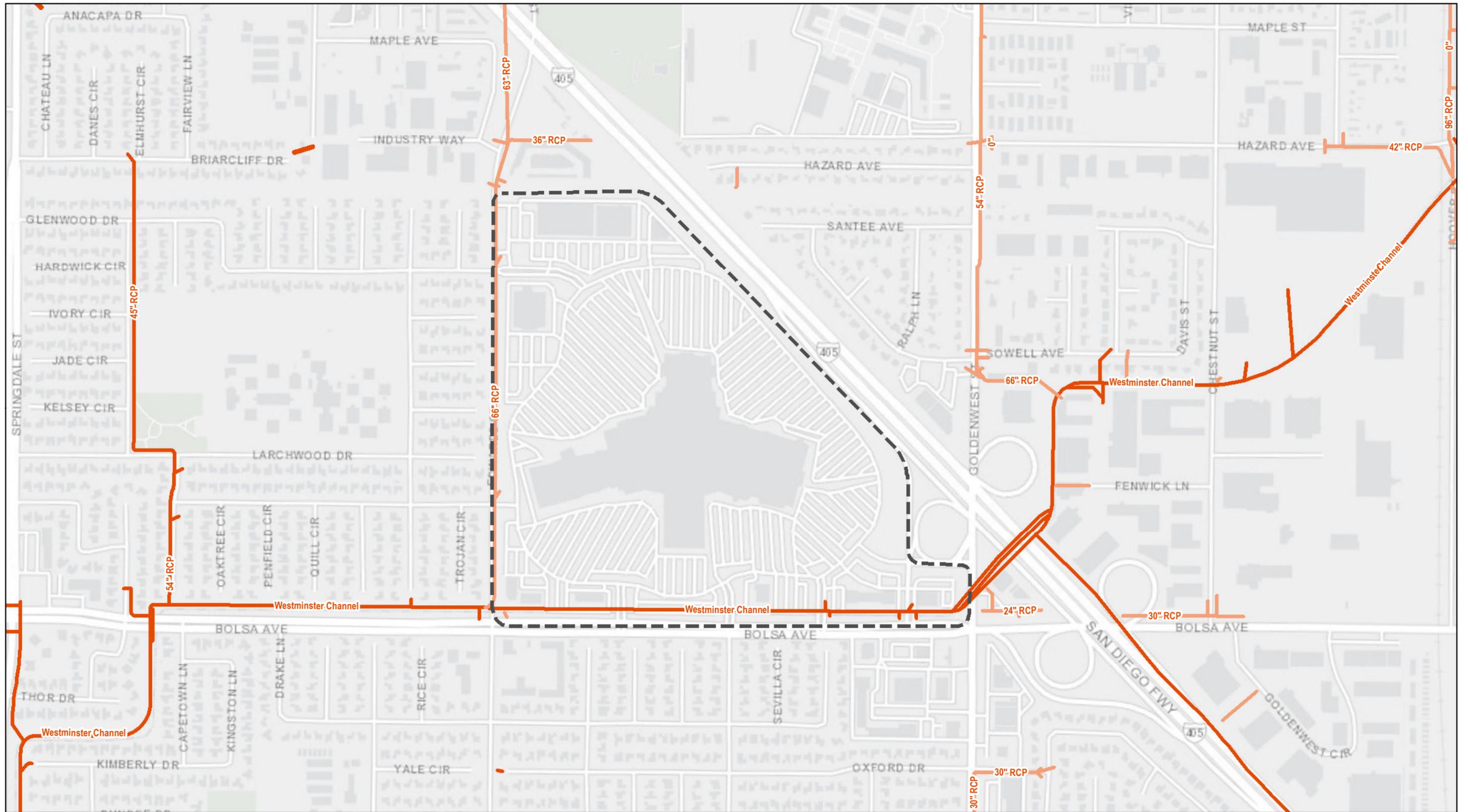
2.1.1 Watershed Setting and Existing Drainage Facilities

The WMSP site resides within the Anaheim Bay Huntington Harbour Watershed within the regional Santa Ana River Watershed. The Anaheim Bay-Huntington Harbor Watershed is located in northern Orange County, approximately 25 miles south of Los Angeles and 85 miles north of San Diego. The Anaheim Bay-Huntington Harbor Watershed is composed of a number of channels, none of which is a dominant river for the watershed, with each draining a substantial portion of the watershed. The Specific Plan area drains to the Westminster Channel (OCFCD C04) through City and County storm drain lines and confluences with Bolsa Chica Channel (OCFCD C02) (see Figure 2). The Westminster Channel is concrete-lined and serves entirely urbanized subwatershed.

The WMSP area is served by three primary flood control and drainage systems.

- 1) Private Storm Drain lines ranging from 10" to 30" in diameter currently serve the WMSP site. Flows drain from the northeast of the site to the southwest, and connect to both City and Orange County Flood Control District (OCFCD) infrastructure.
- 2) The City operates and maintains the adjacent storm drain system including catch basins and a pipeline that runs along Edwards Street that ranges from 63" to 66" in diameter as it runs downstream.
- 3) OCFCD operates and maintains the Westminster Channel which runs along Bolsa Avenue to the south of the WMSP area.

Runoff from the WMSP area generally sheet flows across impervious surfaces, prior to draining to on-site storm drain infrastructure through grate inlets and catch basins. Under existing conditions, the WMSP area is estimated to be approximately 90% impervious, using the OC hydrology manual criteria. Flows drain to the Westminster Channel either through City infrastructure or directly from the site to the Channel. Flows ultimately drain to Anaheim Bay, Huntington Harbour and the Pacific Ocean. See Figure 2 for existing storm drain facilities within and surrounding the WMSP boundary.



Existing Storm Drain Systems

Westminster Mall Specific Plan



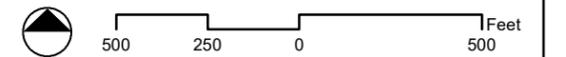
Specific Plan Boundary

City Storm Drain Lines

OCFCD Storm Drain Lines

Figure 2

4/9/2020



2.1.2 Existing Floodplain Mapping

The National Flood Insurance Act (1968) established the National Flood Insurance Program, which is based on the minimal requirements for flood plain management and is designed to minimize flood damage within Special Flood Hazard Areas. The Federal Emergency Management Agency (FEMA) is the agency that administrates the National Flood Insurance Program. Special Flood Hazard Areas (SFHA) are defined as areas that have a 1 percent chance of flooding within a given year, also referred to as the 100-year flood. Flood Insurance Rate Maps (FIRMs) were developed to identify areas of flood hazards within a community.

The WMSP area is split between two FIRMs. The northerly 8-acres is covered under Firm map No. 06059C0119J and is designated as flood zone "X" (shaded). The balance of the WMSP area is covered under FIRM map No. 06059C0232J and is designated with two flood zones. The most southerly 270 feet, adjacent to the north side of Bolsa Avenue, is designated as flood zone "A" and is a special flood hazard area subject to inundation by the 1% annual chance flood. The portion north of the flood zone "A" is designated as flood zone "X" (shaded). Flood zone "X" is defined by FEMA as those areas subject to a 0.2% chance of flooding; areas of 1% annual chance of flooding with average depths of less than 1-foot or with drainage areas less than 1-square mile; and areas protected by levees from a 1% annual chance flood. Flood zone "A" is a special flood hazard area and has no base flood elevation determined. See Figure 3 below for flood zones within and adjacent to the Specific Plan area.

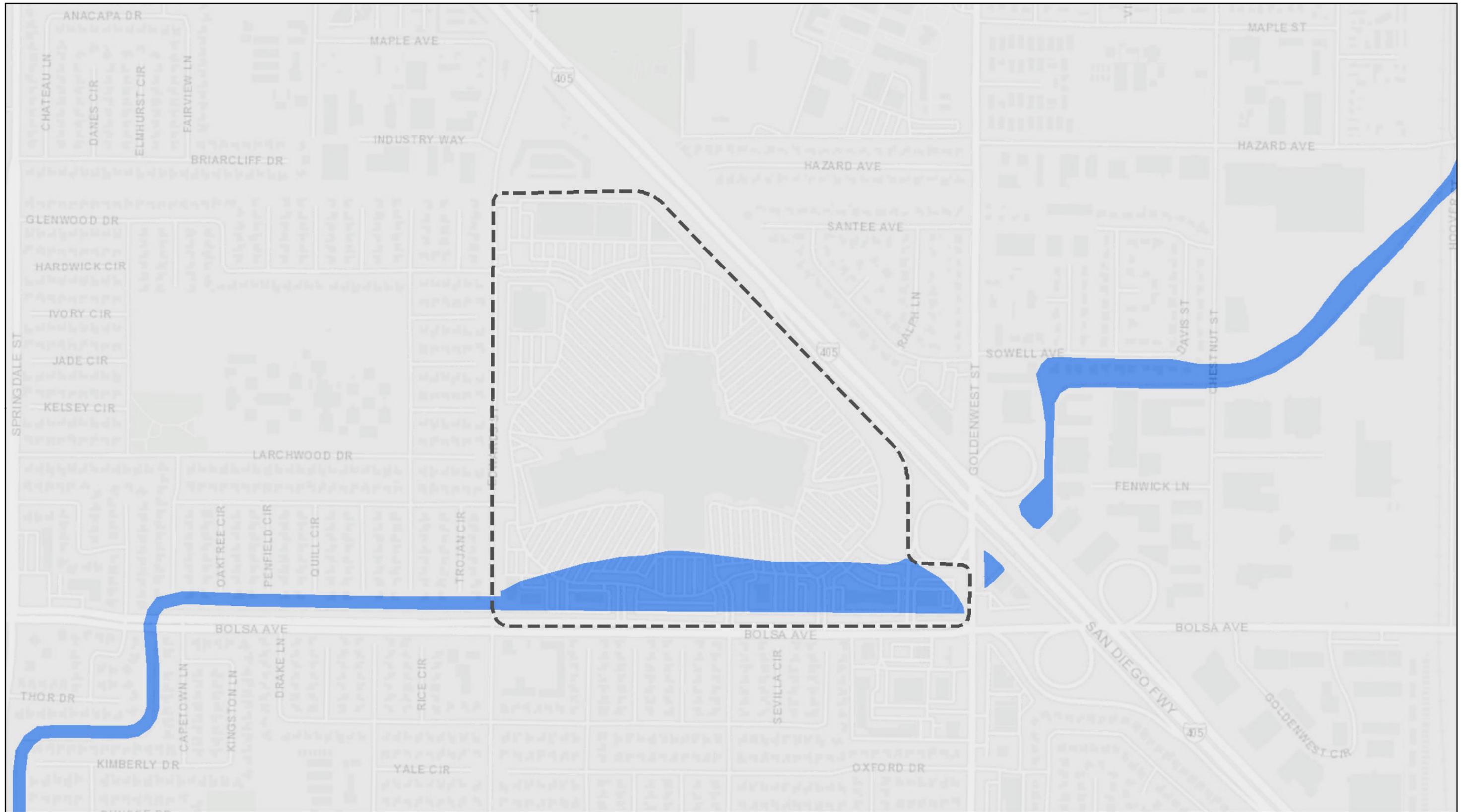
2.1.3 2004 City of Westminster Master Plan of Drainage Update

City of Westminster Modeled Stormwater System

The 2004 Stormwater Master Plan includes hydrologic modeling for the City of Westminster storm drain lines to determine existing capacity. The Master Plan divided the City into 93 major basins that discharge into County storm drains and mapped 151,184 lineal feet of the City's storm drain system with pipe diameters that equal to or greater than 24" in diameter. Of the 134,959 feet of modeled drains, 95.7% were pipe sections, 1.7% were Box sections with the remaining 2.6% being open channel sections. The analysis included computation of the 2-, 5-, 10-, 25-, 50- and 100-year storm events and the flow capacity of the existing storm drain systems to determine where improvements are recommended.

The analysis returned a number of deficient segments in need of improvement and areas susceptible to localized flooding. However, none of these areas were within the boundary or immediate vicinity of the Specific Plan area and would not have any impact on the existing or proposed conditions of the WMSP.

Deficient segments and areas in need of improvement are added to the City's long-term capital improvement list. Any deficient segments found within the WMSP area in the future will be added to the City's improvement list or will be improved as part of redevelopment activities and agreements associated with the Specific Plan.



FEMA Flood Zones

Westminster Mall Specific Plan



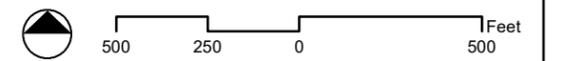
Specific Plan Boundary

FEMA Flood Zones

- A
- X

Figure 3

2/12/2020



2.2 SEWER & WASTEWATER INFRASTRUCTURE

The purpose of the sewer/wastewater evaluation is to determine if the existing sewer system can accommodate the proposed land use changes at the Specific Plan level. In order to determine that, a program level analysis of the existing sewer and water systems are required. The analysis is based on information provided by the City of Westminster, Midway City Sanitation District (MCSD) and Orange County Sanitation District (OCSD).

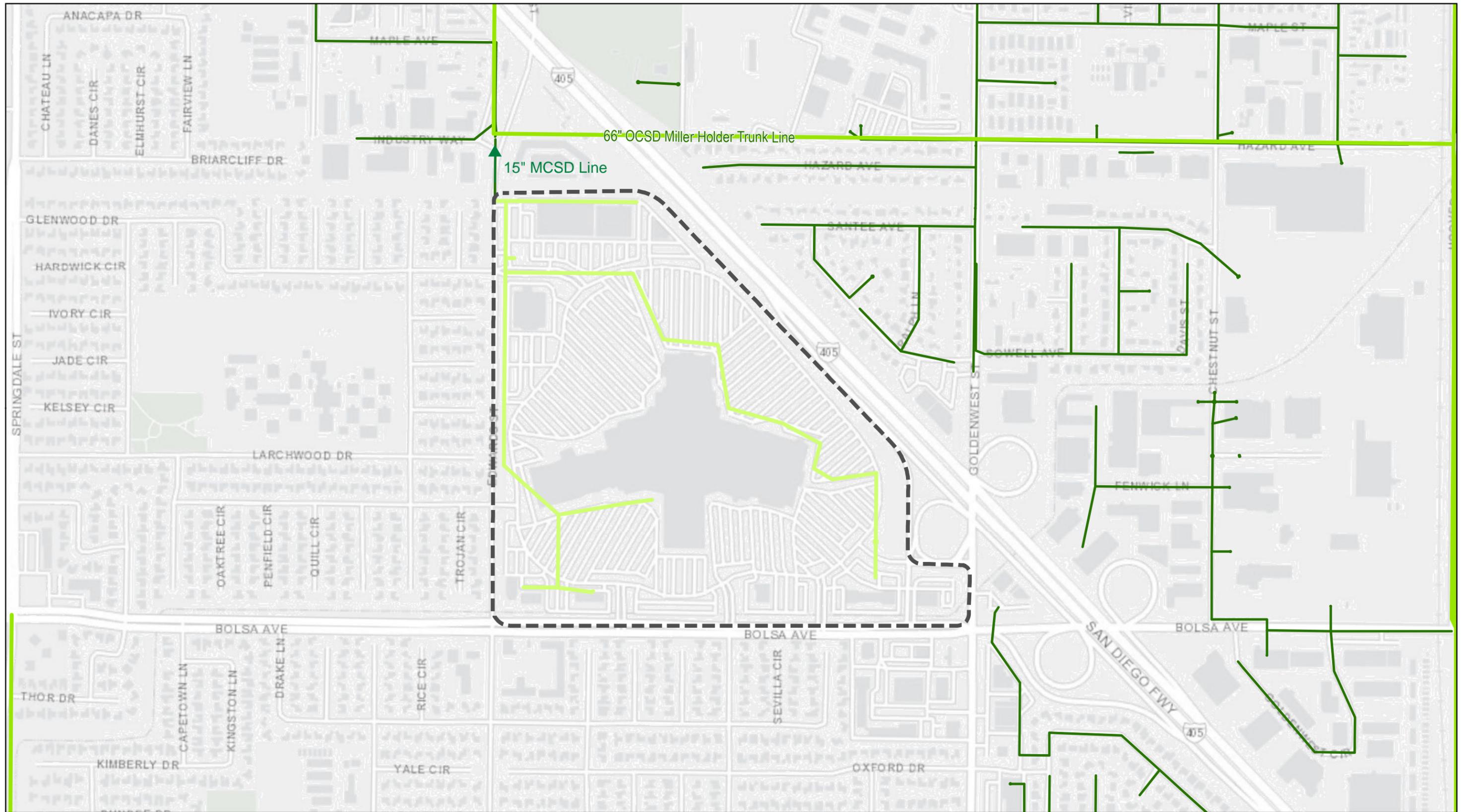
2.2.1 Existing Sewer System and Facilities

The sewer infrastructure system in the City is maintained by primarily MCSD. MCSD sewer infrastructure ultimately ties into the OCSD regional trunk lines for wastewater treatment. The MCSD services a population of approximately 100,000 people over 10.4 square miles. The MCSD sewer system is comprised of approximately 174 miles of gravity flow sewer lines ranging in size from 6"-8", approximately 1.12 miles of force main sewer lines ranging in size from 8"-18" and four lift stations. OCSD is a public agency that provides wastewater collection, treatment, and disposal services for approximately 2.5 million people in central and northwest Orange County. OCSD sewer trunk lines range from 15"-95" throughout the City of Westminster.

Under existing conditions, the WMSP area is served by a series of private 12" to 15" vitrified clay pipes (VCP) with 6" laterals¹. These flow from on-site buildings towards the north and west, before connecting with a 15" MCSD line. After connecting through MCSD infrastructure, flows ultimately tie to the 66" OCSD Miller-Holder trunk line. Flows within the Miller-Holder trunk line drain to OCSD Reclamation Plant No. 2 for treatment. However, flows can be diverted to either Reclamation Plant No.1 or Reclamation Plant No. 2 based on available plant capacities and modeled inflows.

Figure 4 shows the existing sewer infrastructure surrounding the Specific Plan Area.

¹ Per 1973 As-Built plans for the Westminster Mall site



Existing Sewer Systems

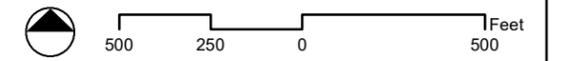
Westminster Mall Specific Plan



- Specific Plan Boundary
- MCSD Sewer Lines
- OCSD
- Private Sewer Lines (6"-15")

Figure 4

2/14/2020



2.2.2 Existing Sewer Flows

For each land use within the WMSP boundary, sewer generation was estimated to provide a baseline condition and to allow for comparisons against proposed land use changes under the Specific Plan. Footprints of the existing development (i.e. retail and restaurant.) were utilized along with their corresponding flow/generation factors to develop existing condition flow rates. Sewer generation factors from the OCSD Design Construction Requirements for Sanitary Sewers were used for estimating commercial sewer flows based on existing land use².

Table 2 provides a summary of the existing wastewater flows for the WMSP area. Details and calculations are provided in Appendix A.

Table 2 Existing Condition Average Daily Sewer Flows

Specific Plan Area	Acreage	Number of Dwelling Units	Non-Residential SF ¹	Average Sewer Flow (GPD)
Westminster Mall	103	0	1,360,000	70,623

Notes:
 GPD gallons per day SF square feet
¹ Non Residential includes commercial, retail, and restaurant land uses

Under the existing conditions, average daily sewer flows are estimated at 0.07 million gallons per day (MGD) for the Specific Plan area. As mentioned, the WMSP flows connect to a 15" MCSD sewer main, flowing north within Edwards Street before connecting to the OCSD Holder-Miller trunk line. Determination of the existing condition average daily sewer flows will allow for comparison against the proposed land use average daily sewer flows in Section 3.2.1.

2.2.3 Existing Sewer Capacity Assessment

MCSD Sewer Master Plan

The MCSD Sewer System Master Plan (April, 2015) highlights capital improvements that have been previously made to the sewer system and calculated flow rates from a hydraulic model to determine the adequacy of the existing backbone sewer system to convey existing and ultimate sewer loadings. The sewer system currently has a capacity of 18 million gallons per day (MGD) and was operating at 5 MGD signifying sufficient capacity for existing land uses and future development. Approximately 10 regional improvements have been made to the sewer system from 2003-2010, however none of these were in or adjacent to the WMSP area. In addition, MCSD staff confirmed there were no deficiencies with the existing 15" MCSD sewer line that connects the Specific Plan sewer flows to the OCSD Miller-Holder trunk line³.

OCSD Capital Improvement Program

The OCSD Capital Improvement Program (CIP) highlights OCSD's continuous effort to keep its facilities operating at optimal levels. The 2019-20 CIP lists several projects within their regional sewer conveyance system. There are currently no distribution system projects within the Specific Plan area.

² OCSD. 2017. Final Report and Recommendations on Wastewater Rates, Fees, and Charges. Available at: <https://www.ocsd.com/Home/ShowDocument?id=23431>

³ Meeting with MCSD Staff; 2/5/2020.

OCSD has a 10-Year Net CIP outlay which allocates the available budget to various projects throughout its service area. The majority of the budget (58%) is allocated to the reclamation plants. Approximately 23% is allocated to the existing collections/distribution system.

OCSD's 2006 Facilities Master Plan noted that a 2030 improvement project was anticipated for the Holder-Miller trunk line serving the WMSP area. As of the 2009 Facilities Master Plan, the project was recommended to be delayed due to estimated cost increases⁴. However, after additional discussion with OCSD staff, it has been confirmed that there are no existing capacity issues with the regional sewer infrastructure that serves the WMSP area.⁵

⁴ Orange County Sanitation District. 2009 Facilities Master Plan.

⁵ Email correspondence with OCSD staff; 2/20/2020.

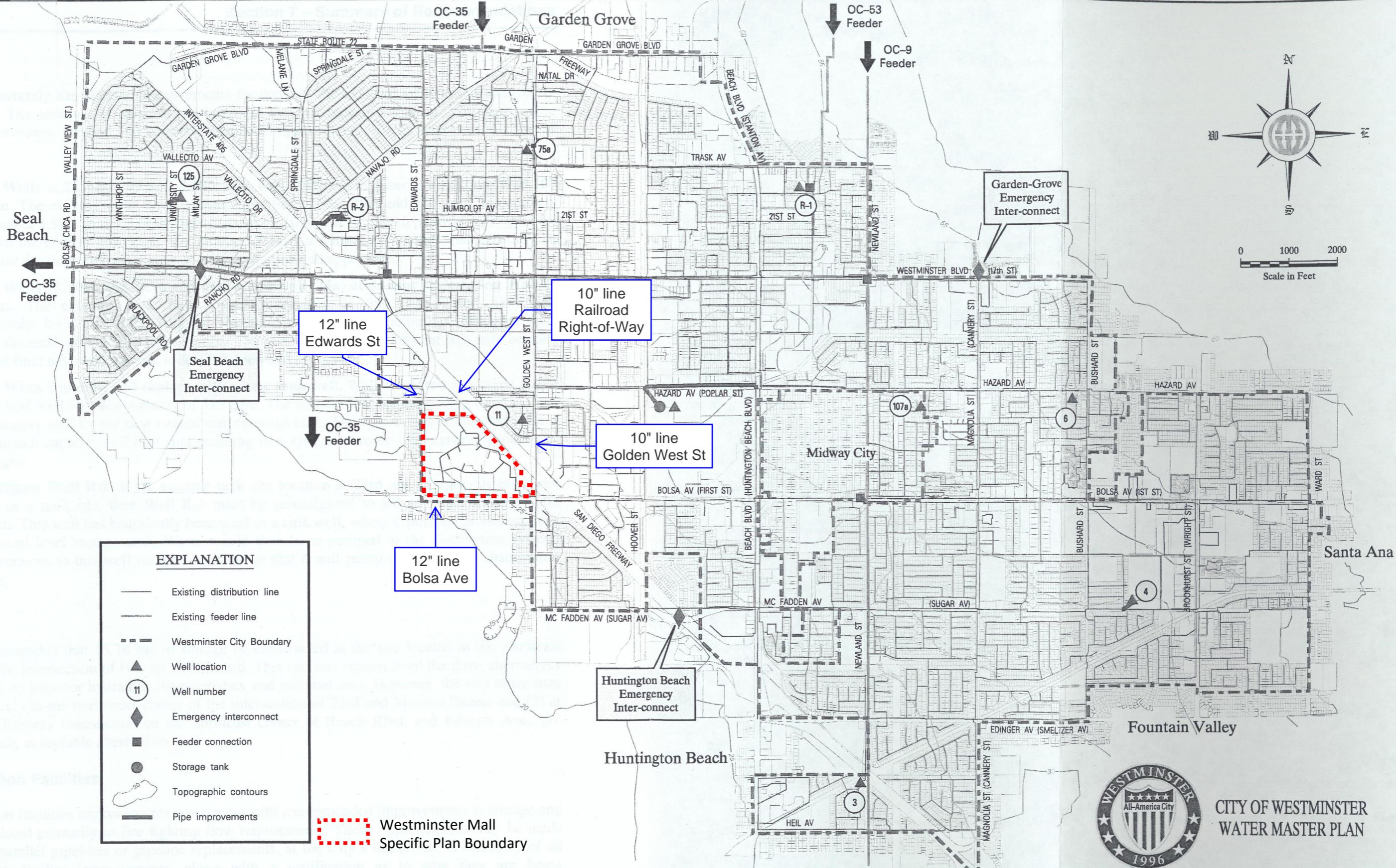
2.3 EXISTING WATER DISTRIBUTION SYSTEM

The purpose of the water system evaluation is to describe and evaluate the existing status of the water distribution system and identify any known deficiencies or improvements required to support existing and future uses. The analysis is based on information provided by the City of Westminster.

2.3.1 Existing Water System

The City of Westminster is the water service provider and distributes water to the City's residents and businesses including the Specific Plan area. Westminster receives water from two main sources: imported water from Metropolitan Water District (MWD) and groundwater pumped and treated from city-owned wells. The City has a 16-million-gallon reservoir facility that was constructed in 2003 and consists of two 8 million gallon storage tanks, four booster pumps and a 2,800-gallon per minute (gpm) well. Approximately 75% of the City's water supply is from ten city-owned groundwater wells that are located within the City's boundaries.

Per inspection of the 1973 as-built plans for the Westminster Mall site, the WMSP area is currently served by a single loop water distribution network. A 12" ductile iron pipe (DIP) serves the north, east, and south side tied to a 10" DIP on the west side, completing the loop. On-site water systems are fed by a 12" City line on Bolsa Avenue. See Figure 5 for locations of the existing water facilities. See Figure 5 for existing water systems serving the WMSP area.



EXPLANATION	
	Existing distribution line
	Existing feeder line
	Westminster City Boundary
	Well location
	Well number
	Emergency interconnect
	Feeder connection
	Storage tank
	Topographic contours
	Pipe improvements

Westminster Mall Specific Plan Boundary



CITY OF WESTMINSTER
WATER MASTER PLAN

Figure 5
Existing Water Systems

2.3.2 Existing Water Demand

Similar to the sewer/wastewater analysis, acreages of development (i.e., commercial, retail, etc.) and number of dwelling units for existing and proposed conditions were utilized along with their corresponding demand factors to identify potential changes in water demand under implementation of the Specific Plan. Water demand factors were supplied from the 2019 City of Westminster Water Master Plan Update. Water usage for landscaping was estimated using the Estimated Total Water Use (ETWU) methodology. Table 3 provides a summary of the existing conditions water demand for each area subject to land use changes. Detailed calculations are provided in Appendix B.

Table 3 Existing Condition Average Water Demand

Specific Plan Area	Acreage	Number of Dwelling Units	Non-Residential SF ¹	Landscaped Area ²	Average Water Demand (GPD)
Westminster Mall	103	0	1,360,000	319,614	70,150

Notes:

GPD - gallons per day SF - square feet

¹ Non Residential includes commercial, retail, and restaurant land uses

² Existing landscaped area estimates based on aerial imagery.

Demands based on Estimated Annual Water Use equation: $(E_{to} * \text{plant factor} * \text{landscaped area} * 0.62) / \text{irrigation efficiency}$. Utilizing CIMIS Reference Evapotranspiration Zones Map ET of 49.7 in/yr; and conservative plant factor of 0.7 and irrigation efficiency of 0.81 for existing condition.

Under the existing conditions, average daily demands are estimated at 0.07 MGD. Determination of the existing condition average daily water demands will allow for comparison against the proposed land use average daily water demands in Section 3.3.1.

2.3.3 Existing Water System Analysis

2019 Water Master Plan Update

The 2019 Water Master Plan Update (WMPU) serves as the guiding document that outlines the capacity and improvements required to the City’s water distribution facilities to meet the needs of current and future development, through project build-out conditions. The analysis includes the development of a hydraulic model to determine the capacity of the existing water distribution system and analysis under a “built-out” demand scenario to determine any impacts to the system. The report also identifies capital improvements to the City’s distribution and storage facilities based on results from the analysis. The results of hydraulic model determine areas in need of improvements under existing conditions.

The WMPU identified that no pressure improvements were required throughout the City, and that all distribution lines had adequate pressure. In addition, less than 0.01% of the total distribution system was found to achieve high pipeline velocity during peak hours, however no improvements were necessary to these high velocity segments. Finally, water mains were analyzed for providing adequate fire flows. Approximately 20,063 linear feet of main replacements were identified, to be reviewed and addressed on a case-by-case basis. None of these limited pipelines were located in the vicinity of the WMSP.

In addition to identifying improvement areas throughout the City's water system, the WMPU identified existing high demand water users and planned areas of demand increase per the City's General Plan buildout scenarios. Among existing individual water users, the Westminster Mall area was ranked second highest in the City. Proposed Westminster Mall area buildout demands anticipated an additional 0.40 MGD over existing subarea conditions.

2015 Urban Water Management Plan

The 2015 City of Westminster Urban Water Management Plan (UWMP) was released in June 2016 and was produced as a result of an ongoing 5-year comprehensive planning process that produces reports every 5 years. These plans estimate water supplies and demand for 25 years into the future. The 2015 UWMP evaluates the status of the existing water supply system, impacts of future growth conditions, and identifies opportunities to expand recycled water service areas. The 2015 UWMP concluded sufficient water supplies to meet water demands in an ultimate build out scenario through 2040 based on data produced by the Center for Demographic Research, California State University, Fullerton 2015.

2.4 WATER QUALITY

2.4.1 Regulatory Framework

Basin Plan for the Santa Ana Region

In addition to its permitting programs, the State Water Resources Control Board (SWRCB), through its nine Regional Water Quality Control Boards (RWQCBs), developed Regional Water Quality Control Plans (or Basin Plans) that designate beneficial uses and water quality objectives for California's surface waters and groundwater basins, as mandated by both the Clean Water Act (CWA) and the State's Porter-Cologne Water Quality Control Act. Water quality standards are thus established in these Basin Plans and provide the foundation for the regulatory programs implemented by the state. The Santa Ana RWQCB's Basin Plan, which covers the WMSP area, specifically (i) designates beneficial uses for surface waters and ground waters, (ii) sets narrative and numerical objectives that must be met in order to protect the beneficial uses and conform to the state's antidegradation policy, and (iii) describes implementation programs to protect all waters in the Region. In other words, the Santa Ana RWQCB Basin Plan provides all relevant information necessary to carry out federal mandates for the antidegradation policy, 303(d) listings of impaired waters, and related Total Maximum Daily Loads (TMDLs), and provides information relative to National Pollutant Discharge Elimination System (NPDES) and Waste Discharge Requirement (WDR) permit limits.

Total Maximum Daily Loads (TMDLs)

Under Section 303(d) of the Clean Water Act (CWA), states are required to identify water bodies that do not meet their water quality standards. Once a water body has been listed as impaired on the 303(d) list, a TMDL for the constituent of concern (pollutant) must be developed for that water body. A TMDL is an estimate of the daily load of pollutants that a water body may receive from point sources, non-point sources, and natural background conditions (including an appropriate margin of safety), without exceeding its water quality standard. Those facilities and activities that are discharging into a water body, collectively, must not exceed the TMDL. In general terms, Municipal Separate Storm Sewer Systems (MS4) and other dischargers within each watershed are collectively responsible for meeting the required reductions and other TMDL requirements by the assigned deadline.

The 303(d) listed impairments for the water bodies shown in Table 4 have not yet been established and are pending approval for TMDL establishments for 2019 to 2025.

Table 4 List of 303(d) Impairments and TMDLs

Water Body/Channel	List of 303(d) Impairments	TMDL
Westminster Channel	None	None
Bolsa Chica Channel	Ammonia, Indicator Bacteria, pH,	Estimated 2021 TMDL establishment for Ammonia, Indicator Bacteria, and pH.
Anaheim Bay	Nickel, PCBs, Toxicity	Estimated 2019 TMDL establishment for Nickel, PCBs, and Toxicity
Huntington Harbor	Chlordane, Copper, Indicator Bacteria, PCBs, Toxicity	Estimated 2019 TMDL establishment for Chlordane, Copper, Indicator Bacteria, and PCBs Estimated 2025 TMDL establishment for Toxicity

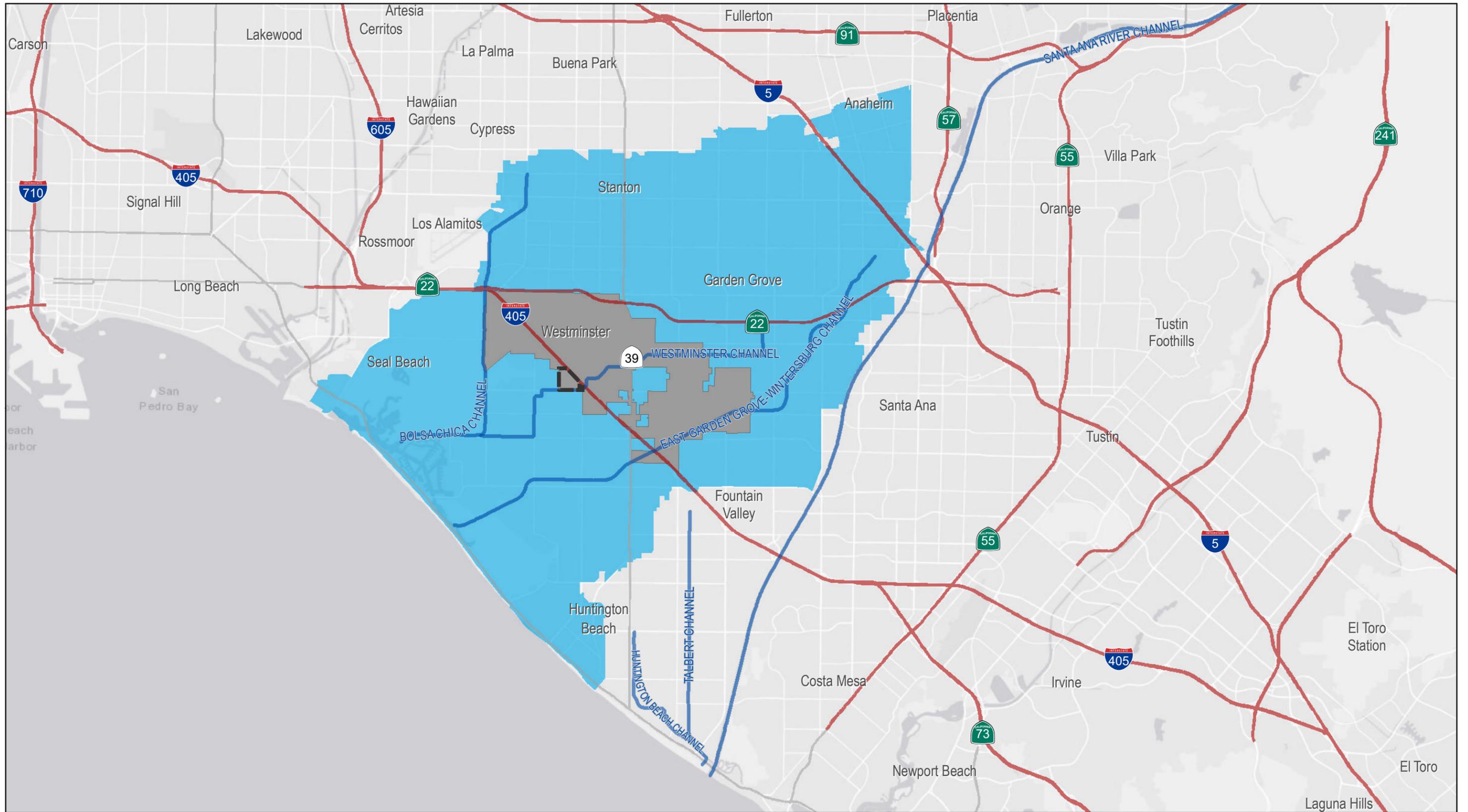
Source: 2014-16 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report) – Statewide. Found here: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2014-16.shtml

County of Orange MS4 Permit, Drainage Area Management Plan (DAMP) & Local Implementation Plans (LIP)

In May 2009, the Santa Ana RWQCB re-issued the North Orange County MS4 Storm Water Permit as WDR Order R8-2009-0030 (NPDES Permit No. CAS618030) to the County of Orange, the incorporated cities of Orange County, and the Orange County Flood Control District within the Santa Ana Region. Pursuant to this “Fourth-Term” MS4 Permit, the Co-permittees were required to update and implement the Drainage Area Management Plan (DAMP) for its jurisdiction, as well as Local Implementation Plans (LIPs), which describe the Co-permittees’ urban runoff management programs for their local jurisdictions.

Under the City’s LIP, land development policies pertaining to hydromodification and low impact development (LID) are regulated for new developments and significant redevelopment projects. The term “hydromodification” refers to the changes in runoff characteristics from a watershed caused by changes in land use condition. More specifically, hydromodification refers to “the change in the natural watershed hydrologic processes and runoff characteristics (i.e., interception, infiltration, overland flow, interflow and groundwater flow) caused by urbanization or other land use changes that result in increased stream flows and sediment transport.” The use of LID Best Management Practices (BMPs) in project planning and design is to preserve a site’s predevelopment hydrologic condition by minimizing the loss of natural hydrologic processes such as infiltration, evapotranspiration, and runoff detention. LID BMPs try to offset these losses by introducing structural and non-structural design components that restore these water quality functions into the project’s land plan. These land development requirements are detailed in the County-wide Model Water Quality Management Plan (WQMP) and Technical Guidance Document (TGD), approved in May 2011, which cities have incorporated into their discretionary approval processes for new development and redevelopment projects.

The LID hierarchy requires new developments and re-developments to implement BMPs under the LID hierarchy as described in the TGD. The LID hierarchy requires new projects to first infiltrate, then harvest and reuse, then biofilter stormwater runoff from their project site depending on site constraints. New projects and redevelopments within the City will follow the set hierarchy of BMP selection, and more runoff throughout the City will be effectively treated as development occurs.



Anaheim Bay-Huntington Harbor Watershed

Westminster Mall Specific Plan

Figure 6

2/14/2020

<p>FUSCOE ENGINEERING full circle thinking</p>	<p>Specific Plan Boundary</p>	<p>City of Westminster</p>	<p>Anaheim Bay-Huntington Harbour Watershed</p>	<p>10,000 5,000 0 10,000 Feet</p>
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5.10-1-25

General Construction Permit and Storm Water Pollution Prevention Plans (SWPPPs)

The Construction General Permit (CGP), Order No. 2012-0006-DWQ, NPDES Permit No. CAS000002, last updated by the SWRCB in July 2012, regulates storm water and non-storm water discharges associated with construction activities disturbing at least 1 acre of soil. Construction sites that qualify must submit a Notice of Intent (NOI) to gain permit coverage or otherwise be in violation of the CWA and California Water Code.

The CGP requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) for each individual construction project greater than or equal to 1 acre of disturbed soil area (regardless of the site's Risk Level). The SWPPP must list Best Management Practices (BMPs) that the discharger will use to control sediment and other pollutants in storm water and non-storm water runoff; the BMPs must meet the Best Available Technology (BAT) and Best Conventional Pollutant Control Technology (BCT) performance standards. Additionally, the SWPPP must contain a visual monitoring inspection program; a chemical monitoring program for sediment and other "non-visible" pollutants to be implemented based on the Risk Level of the site, as well as inspection, reporting, training and record-keeping requirements. Section XVI of the CGP describes the elements that must be contained in a SWPPP.⁶ Any proposed projects (new development or redevelopment) greater or equal to 1 acre within the WMSP area will be subject to the CGP and SWPPP requirements.

2.4.2 Existing Groundwater Conditions

Regional Groundwater Conditions

The Specific Plan area lies within the Orange County Groundwater Basin (OC Basin). The OC Basin is the source of approximately 60 to 70 percent of the water supply for 2.3 million people. OCWD is responsible for managing the OC Basin. To maintain groundwater quality, OCWD conducts an extensive monitoring program that serves to manage the OC Basin's groundwater production, control groundwater contamination, and comply with all required laws and regulations. A network of nearly 700 wells provides OCWD a source for samples, which are tested for a variety of purposes. OCWD collects 600 to 1,700 samples each month to monitor Basin water quality. These samples are collected and tested according to approved federal and state procedures as well as industry-recognized quality assurance and control protocols.

The OC Basin also has prescribed beneficial uses and water quality objectives as stated in the Santa Ana RWQCB Basin Plan that are described below.

Local Groundwater Conditions

The WMSP area is located on an area of shallow groundwater, approximately 5 to 10 feet below ground surface per the Orange County Technical Guidance document. Despite the presence of Type B soils and a lack of groundwater contamination within the immediate vicinity, infiltration for the project site is likely infeasible due to shallow groundwater. Site specific borings and percolation testing will be required as a part of project-level analysis as described in more detail in Section 3.4.2.

⁶ California State Water Resources Control Board. (2008). Storm Water Program: Construction Program. Retrieved January 27, 2020, from http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml

3. PROPOSED BUILDOUT CONDITIONS

The purpose of the proposed conditions evaluation is to determine potential impacts related to the proposed land use zoning associated with the WMSP. The proposed Specific Plan consists of land use changes that will intensify and increase existing land uses within the WMSP area, including the development of multi-family homes and apartments, hotels, and commercial retail uses. Based on the proposed land use changes, runoff is anticipated to decrease overall while sewer and water demands are anticipated to increase. Additional details are provided below for hydrology, sewer, and water as well as water quality.

3.1 HYDROLOGY

The purpose of the proposed conditions evaluation is to evaluate impacts associated with the proposed land use changes at a Specific Plan level, characterize changes as compared to the existing runoff conditions and identify if additional storm drain facilities are anticipated to manage runoff flow quantities.

3.1.1 Proposed Drainage Conditions

Under existing conditions, the WMSP area is entirely developed, consisting of a large commercial center with smaller satellite buildings, parking lots, and minimal landscaping throughout. Under the proposed conditions, significant changes in land use will occur across the 103 acre Specific Plan Area. Table 5 provides a breakdown of the major land use changes in the WMSP area.

Table 5 Existing and Proposed Land Uses and Associated Runoff Coefficients

<i>Area</i>	<i>Acreage</i>	<i>Existing Imperviousness¹</i>	<i>Proposed Land Use Change²</i>	<i>Proposed Imperviousness¹</i>
Westminster Mall	103	90%	+3,000 MFR DUs -160,000 SF Commercial/ Retail	80%-85%

Notes:

¹Based on Orange County Hydrology Manual impervious cover estimates for Multi Family Residences and Commercial Properties

²Source: Specific Plan Land Use Data Provided by Placeworks, 2020

As shown above, an increase of 3,000 DUs is proposed under the WMSP as well as a decrease of 160,000 SF of commercial/retail area. Existing impervious conditions throughout the WMSP area as shown in Table 5 are estimated to be 90%, based on the Orange County Hydrology Manual methodology. The Orange County Hydrology Manual estimates impervious cover for multi-family residences (apartments, etc.) as 65-80% and commercial/mixed use land use imperviousness as 90%⁷. Therefore, as 3,000 multi-family DUs are proposed within the WMSP, while a large portion of the existing commercial land use will remain. The proposed impervious percentage for the WMSP is estimated to be 80-85%. Therefore, it is anticipated that runoff

⁷ Los Angeles County Department of Public Works. 2006. *Hydrology Manual*

from the WMSP area will ultimately decrease in the proposed condition as compared to the existing condition and that on-site detention for flood control will not be required. This will be confirmed with the City and OCFCD during the final design phases of the Specific Plan.

Existing on-site storm drain infrastructure is likely to be removed as part of project-specific buildout. New storm drains will be appropriately located and sized to convey flows respective to their tributary area for the design storm required by City and County requirements. Infrastructure will connect to either the 66" City of Westminster line on Edwards Avenue or the Westminster Channel and discharge to Anaheim Bay-Huntington Harbor as under existing conditions. Any noted deficiencies as a result of infrastructure improvements will be corrected on an as-needed basis.

3.2 SEWER & WASTEWATER INFRASTRUCTURE

3.2.1 Proposed Wastewater System Flows

Under the proposed condition, sewer flows will increase significantly due to the increase in multi-family residential and commercial-restaurant land uses. A total increase of 3,000 DUs, and approximately 1,200,000 sf of non-residential uses are proposed under the ultimate build out condition. Using the same commercial flow methodology as the existing conditions (Section 2.2.2), proposed sewer demand flows are provided in Table 6. Residential sewer flows were calculated using residential water demand factors multiplied by a 0.95 sewer flow factor. See Appendix A for additional details.

Table 6 Proposed Condition Average Daily Sewer Flows

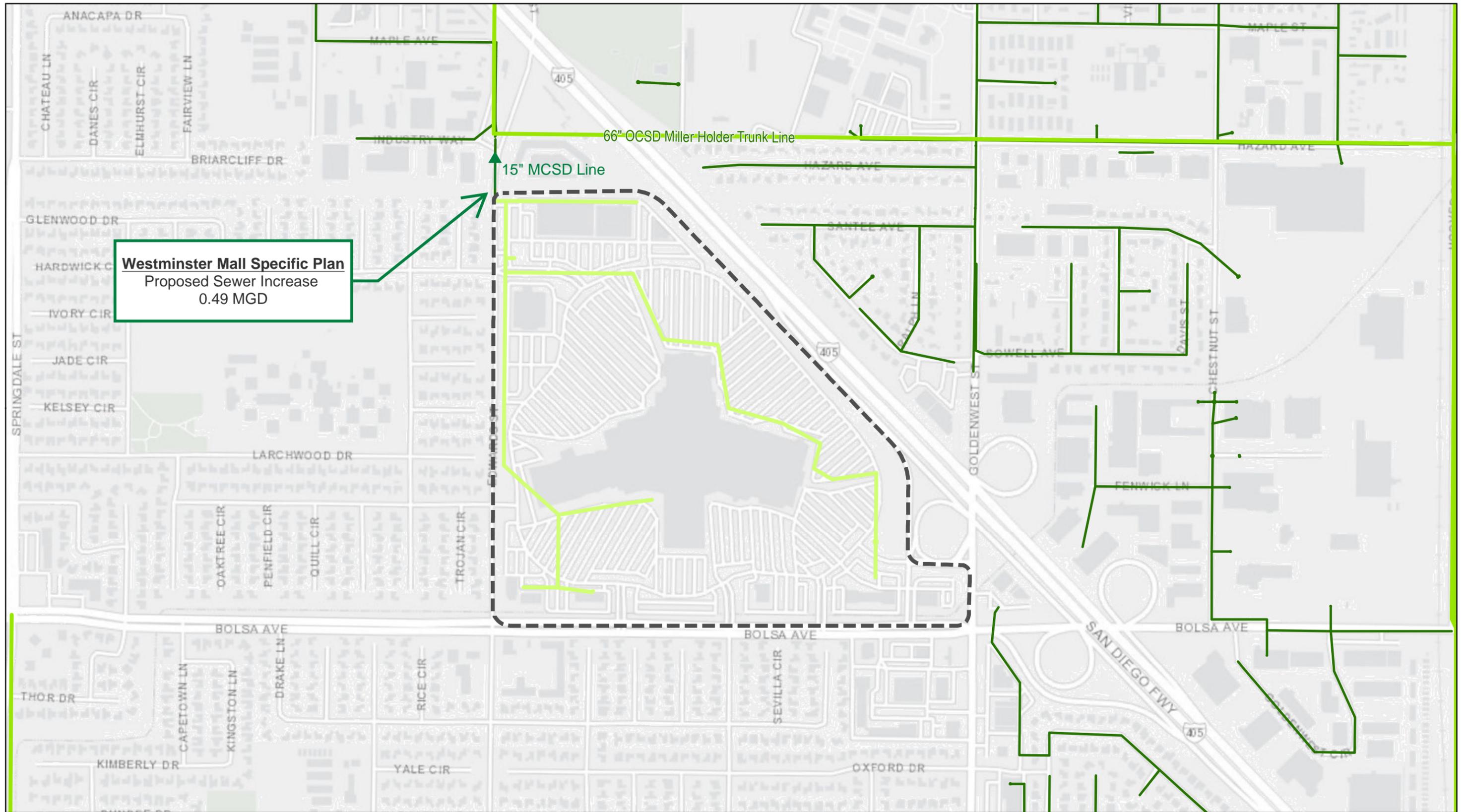
<i>Area</i>	<i>Number of Dwelling Units</i>	<i>Non-Residential SF¹</i>	<i>Proposed Average Daily Flow (GPD)</i>	<i>Existing Average Daily Flow (GPD)</i>	<i>Change in Sewer Flows (GPD)</i>	<i>% Increase</i>
Westminster Mall	3,000	1,200,000	556,026	70,623	485,403	687

1. Non-Residential includes commercial, retail and mixed land uses

Notes:

GPD gallons per day SF square feet

Full implementation of the land use changes has the potential to increase sewer flows by 0.49 MGD within the Specific Plan area. Figure 7 highlights areas that will experience increased sewer flows from land use changes. The increased sewer flows will connect through an existing 15" MCSD line before connecting to the OCSD Miller-Holder trunk line north of the Specific Plan boundary. The Miller-Holder trunk line drains to OCSD Regional Treatment Plant No.2. The proposed increases in sewer flows could also impact OCSD sewer trunk lines downstream of the Specific Plan Boundary.



Proposed Sewer Demands

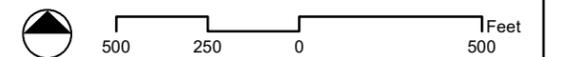
Westminster Mall Specific Plan



- Specific Plan Boundary
- MCSD Sewer Lines
- OCSD
- Private Sewer Lines (6"-15")

Figure 7

2/14/2020



3.2.2 Proposed Sewer/Wastewater System

As mentioned in Section 2.2.3, there are no MCSD segments identified as having capacity issues within or adjacent to the Specific Plan area, per the MCSD Sewer System Master Plan (April 2015). In addition, the MCSD Sewer System Master Plan found that the system for the entire service area has a capacity of 18 MGD and existing operating flows of 5 MGD. The proposed increase of 0.49 MGD will not exceed the available regional capacity of MCSD's system.

Under proposed WMSP buildout, all on-site sewer infrastructure is anticipated to be demolished with new infrastructure sized for the proposed land uses. Proposed sewer infrastructure will continue to tie into the existing 15" MCSD line. While the 15" line is currently in good condition with no capacity issues noted, a project-specific sewer study will be required to model impacts from the proposed project buildout to determine if any new deficiencies will occur. In the case of noted deficiencies or potential deficiencies, MCSD has processes in place to work with developers of the WMSP to upsize the deficient segments.⁸

MCSD utilizes development fees for new connections and proposed flow increases to improve existing low capacity sewer lines and upsize existing lines. While development fees come through MCSD, the MCSD works with OCSD to finalize fees for new sewer connections⁹. Any future development in the Specific Plan area will be required to pay additional fees associated with the increase in wastewater flows.

Correspondence with OCSD staff concluded that the proposed increases in sewer flows from the WMSP would cause no regional sewer capacity issues.¹⁰ Although OCSD has no deficient lines serving the Specific Plan area, it utilizes development fees to cover associated costs with providing any incremental expansions in service or infrastructure as a result of new development that increases the quantity or flow rate of wastewater discharge¹¹. Potential impacts to OCSD facilities and associated OCSD review requirements and connection fees will need to be analyzed on a project by project basis.

⁸ On-site Meeting with MCSD Staff, 2/5/2020

⁹ Ibid.

¹⁰ Email correspondence with OCSD staff; 2/20/2020.

¹¹ OCSD. Sewer Fees. Available at: <https://www.ocsd.com/residents/sewer-fees>

3.3 WATER INFRASTRUCTURE

3.3.1 Proposed Water Demand

Under the proposed condition, water demands will increase significantly due to the increase in multi-family residential, commercial, and mixed land uses. A total increase of 3,000 DUs, and a total of approximately 1,200,000 sf of non-residential uses are proposed under the ultimate build out condition, plus an estimated increase of 10 acres of landscaping. Table 7 shows the changes in water demands based on the proposed land use changes within the WMSP area, using the same commercial methodology as for the existing conditions. Residential per capita demand factors were supplied from the 2019 Water Master Plan Update, while residents per DU were supplied by Placeworks as part of the Specific Plan buildout estimates. Detailed calculations and associated exhibits are included in Appendix B.

Table 7 Proposed Condition Average Daily Water Demand

Area	Number of Dwelling Units	Non-Residential SF ¹	Proposed Landscaping ²	Proposed Water Demand (GPD)	Existing Water Demand (GPD)	Change in Demand (GPD)	% Increase
Westminster Mall	3,000	1,200,000	755,214	588,827	70,150	518,677	739

Notes:

GPD gallons per day SF square feet

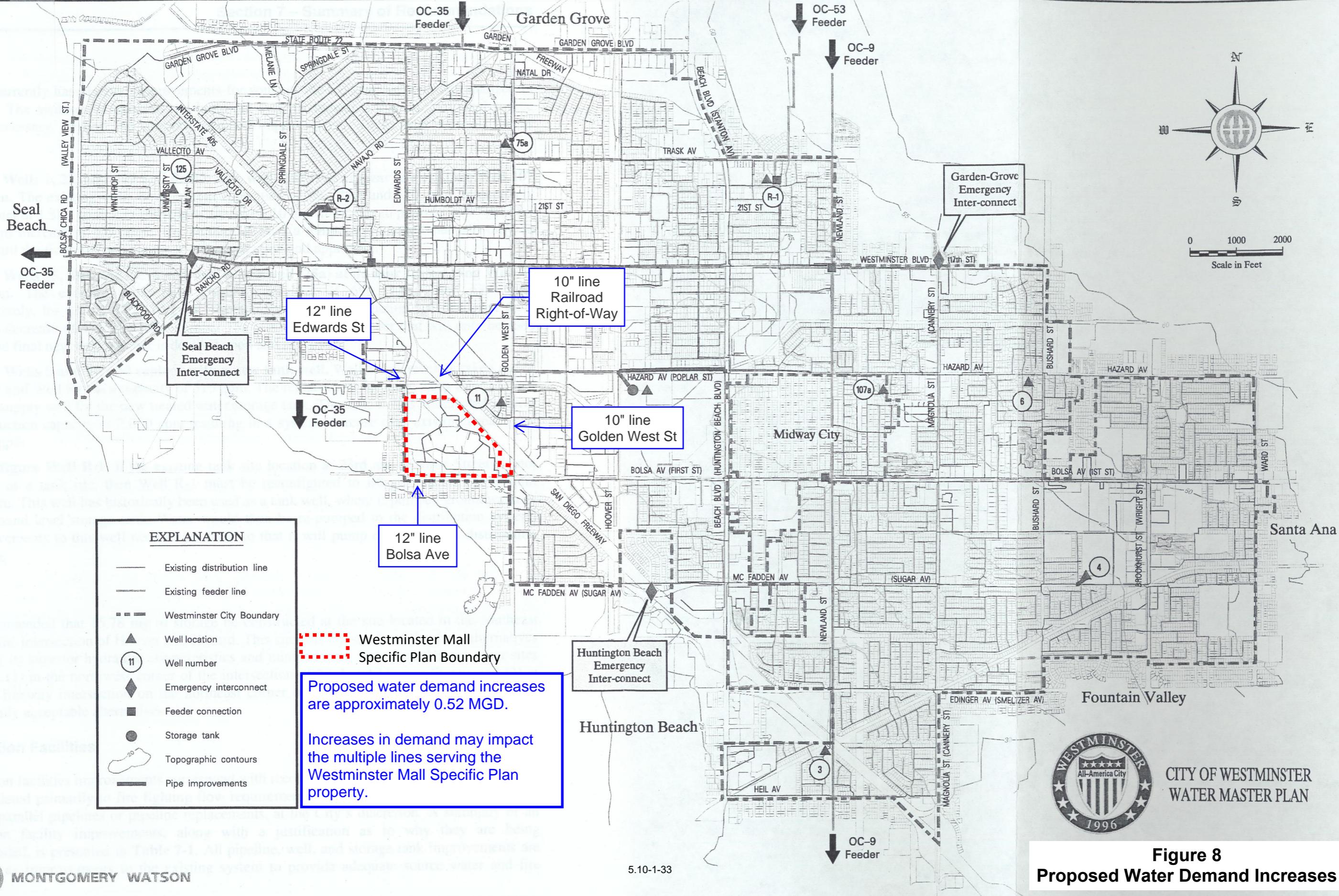
¹ Non Residential includes commercial, retail, and mixed land uses

²Estimated landscaping based on existing landscaped estimates plus an additional 10 acres of landscaped areas under proposed conditions.

Demands based on Estimated Annual Water Use equation: $(Eto * \text{plant factor} * \text{landscaped area} * 0.62) / \text{irrigation efficiency}$. Utilizing CIMIS Reference Evapotranspiration Zones Map ET of 49.7 in/yr; and conservative plant factor of 0.7; and irrigation efficiency of 0.81 for proposed condition.

Full implementation of the land use changes has the potential to increase water demand by 0.52 MGD (581 acre-feet per year (AFY)) within the Specific Plan area. Like increases in sewer flows, water demands will primarily come from the additional 3,000 dwelling units and 142,000 sf of proposed restaurant space.

The anticipated increases in water demands are greater than the estimated increases of 0.4 MGD for the WMSP area reported in the 2019 WMPU. This difference can be attributed to the additional dwelling units proposed under the WMSP as compared to what was anticipated during the City’s general planning efforts. In addition, conservative demand factors were utilized for this water demand analysis.



EXPLANATION

- Existing distribution line
- Existing feeder line
- Westminster City Boundary
- Well location
- Well number
- Emergency interconnect
- Feeder connection
- Storage tank
- Topographic contours
- Pipe improvements

Westminster Mall Specific Plan Boundary

Proposed water demand increases are approximately 0.52 MGD.

Increases in demand may impact the multiple lines serving the Westminster Mall Specific Plan property.

WESTMINSTER
All-America City
1996

CITY OF WESTMINSTER
WATER MASTER PLAN

Figure 8
Proposed Water Demand Increases

3.3.2 Proposed Water System

The WMSP is not located in an area with any deficient segments or improvement projects, per the 2019 WMPU. However, per electronic correspondence with City staff dated January 22, 2020, all existing waterlines within the WMSP area will most likely require relocation and upsizing, based on demand scenarios. In addition, the existing 10" and 12" water lines located within the railroad right-of-way to north of the WMSP area will require relocation/upsizing. '

Once the proposed land use is finalized for the Specific Plan, the City will run their hydraulic model to determine any deficiencies within City water lines serving the property. In the case where there are deficiencies identified, the developer will be required to upgrade the City infrastructure to serve the Specific Plan land uses. The City will work closely with the developer to design and approve of any upgrades.

3.4 WATER QUALITY

Throughout construction, buildout, and operation of the WMSP, BMPs will be employed in order to protect local water resources and limit impacts from stormwater pollution. During construction, BMPs will aim to reduce sediment mobilization and prevent sediment from entering the storm drain system. Post-construction BMPs will be designed to reduce pollutants from on-going, longer term operations based on site-specific analysis. Sections 3.4.1 and 3.4.2 below describe the proposed water quality measures in more detail.

3.4.1 Construction Activities

Clearing, grading, excavation and construction activities associated with the proposed project may impact water quality due to sheet flow erosion of exposed soils and subsequent deposition of particulates in local drainage conveyance facilities. Grading activities, in particular, lead to exposed areas of loose soil, as well as sediment stockpiles, that are susceptible to uncontrolled sheet flow. Although erosion occurs naturally in the environment, primarily from weathering by water and wind action, improperly managed construction activities can lead to substantially accelerated rates of erosion that are considered detrimental to the environment.

Construction General Permit

Prior to the issuance of grading permits, the project applicants shall provide evidence that the development of the projects one acre or greater of soil disturbance shall comply with the most current Construction General Permit (CGP) and associated local National Pollutant Discharge Elimination System (NPDES) regulations to ensure that the potential for soil erosion is minimized on a project by project basis.

Construction Best Management Practices (BMPs)

The CGP requires that a construction SWPPP must be prepared and implemented at all construction projects with 1 acre or greater of soil disturbance, and revised as necessary as administrative or physical conditions change. The SWPPP must be made available for review upon request, and shall describe construction BMPs that address pollutant source reduction, and provide measures/controls necessary to mitigate potential pollutant sources. These include, but are not limited to: erosion controls, sediment controls, tracking controls, non-storm water management, materials & waste management, and good housekeeping practices¹².

Prior to commencement of construction activities within the Specific Plan area, the project-specific SWPPP(s) will be prepared in accordance with the site-specific sediment risk analyses based on the grading plans, with erosion and sediment controls proposed for each phase of construction for the individual project. The phases of construction will define the maximum amount of soil disturbed, the appropriate sized sediment basins and other control measures to accommodate all active soil disturbance areas and the appropriate monitoring and sampling plans.

¹² California Stormwater Quality Association. (2003, January). *Stormwater Best Management Practices Handbook for New Development and Redevelopment*. Retrieved January 27, 2018, from <http://www.cabmphandbooks.com>

3.4.2 Post-Construction Activities

With the proposed land use changes, development resulting from the WMSP may result in long-term impacts to the quality of storm water and urban runoff, subsequently impacting downstream water quality. Developments similar to the proposed project can potentially create new sources for runoff contamination through changing land uses. As a consequence, the Specific Plan may have the potential to increase the post-construction pollutant loadings of certain constituent pollutants associated with the proposed land uses and their associated features, such as landscaping, roadways and residential uses.

To help prevent long-term impacts associated with land use changes and in accordance with the requirements of the City of Westminster LIP and consistency with OC DAMP and Fourth-Term MS4 permit, new development and significant redevelopment projects must incorporate LID/site design and source control BMPs to address post-construction storm water runoff management. In addition, projects that are identified as Priority Projects are required to implement site design/LID and source control BMPs applicable to their specific priority project categories, as well as implement treatment control BMPs where necessary. Selection of LID and additional treatment control BMPs is based on the pollutants of concern for the specific project site and the BMP's ability to effectively treat those pollutants, in consideration of site conditions and constraints. Further, both Priority projects must develop a project-specific Water Quality Management Plan (WQMP) that describes the menu of BMPs chosen for the project, as well as include operation and maintenance requirements for all structural and any treatment control BMPs.

Since the Specific Plan area does not include a specific or detailed development plan, and the Specific Plan will likely consist of multiple phases of development, a project-specific WQMP will not be developed for the Specific Plan at this time. Future project-specific WQMPs, preliminary and/or final, will be prepared consistent with the prevailing terms and conditions of the City's LIP, OC DAMP, and Model WQMP at the time of project application. Moreover, LID and water quality treatment solutions prescribed in project specific WQMPs shall be designed to support or enhance the regional BMPs and efforts implemented by the City as part of their City-wide efforts to improve water quality.

Unlike flood control measures that are designed to handle peak storm flows, LID BMPs and treatment control BMPs are designed to retain, filter or treat more frequent, low-flow runoff or the "first-flush" runoff from storm events. In accordance with the Fourth-Term MS4 Permit for North Orange County, the LID BMPs shall be sized and designed to ensure on-site retention of the volume of runoff produced from a 24-hour 85th percentile storm event, as determined from the County of Orange's 85th Percentile Precipitation Map.¹³ This is termed the "design capture volume", or DCV. The 2011 Model WQMP and its companion Technical Guidance Document provides design criteria, hydrologic methods and calculations for combining use of infiltration, retention, and biofiltration BMPs to meet the required design capture volume.

In accordance with the MS4 Permit and Technical Guidance Document, the use of LID features will be consistent with the prescribed hierarchy of treatment provided in the Permit: infiltration, evapotranspiration, harvest/reuse and biotreatment. As the WMSP project site is located in an

¹³ Figure XVI-1 in the Technical Guidance Document (County of Orange, May 19, 2011).

area of shallow groundwater, infiltration will likely be infeasible. However, site-specific studies will be conducted during final design to confirm feasibility. If infiltration is confirmed infeasible, harvest and reuse of stormwater will undergo a feasibility analysis as part of project-level planning. If both infiltration and harvest and reuse are found to be infeasible, biofiltration will be used to treat on-site runoff.

4. CONCLUSION

The proposed land use changes under the Westminster Mall Specific Plan will increase the demand of potable water and sewer flows over existing conditions while largely maintaining existing runoff conditions. No deficiencies under existing conditions were noted for sewer, water, and storm drain infrastructure. The City of Westminster, MCSD, OCSD, and OCFCD each have methods in place for prioritizing, funding, and correcting deficient infrastructure. In all cases, project specific analyses will be required during final design to evaluate individual storm drain, water and sewer facilities related to the individual projects.

Based on the existing built out condition and the proposed land use changes under the WMSP including the implementation of low impact development features, no substantial additional sources of pollutants or significant increases in runoff for the 85th percentile storm event are anticipated. Based on the findings of this technical study, the incorporation of site design/LID features, and infiltration/biotreatment BMPs as required under the MS4 Permit and local LID requirements, the individual projects will adequately reduce project related impacts to hydrology and water quality to a level less than significant.

5. TECHNICAL APPENDICES

Appendix A Sewer Demand Calculations

Appendix B Water Demand Calculations

APPENDIX A

SEWER DEMAND CALCULATIONS

Westminster Mall Specific Plan Existing Condition Sewer Flows

	Building(s)		Parcel	Demand	Unit of Measure	Total Demand
	Units	Square Feet	Acres	GPD		GPD
WMSP						
Residential						
Single Family Home	-	--	--	206 /Unit		0
3-Story Rowtown	-	--	--	185.26 /DU		0
4-6 Story Wrap/Mini Podium	-	--	--	164.02 /DU		0
8-10 Story Podium	-	--	--	142.78 /DU		0
Residential Total	-	--	0.00	--		0
Commercial						
Commercial	--	-	0.00	2262 /acre		0
Hotel & Motels	--	-	0.00	100 /room		0
Office Buildings	-	-	0.00	2262 /acre		0
Parking Lots (Commercial Use Properties)	-	-	0.00	2262 /acre		0
Professional Buildings	-	-	0.00	2262 /acre		0
Restaurant	-	68,000	1.56	2262 /acre		3,531
Retail	-	1,292,000	29.66	2262 /acre		67,091
Wholesale & Manufacturing Outlets	--	-	0.00	2262 /acre		0
Commercial Total	-	1,360,000	31.22	--		70,623
Government						
Government Parcel	--	--	0.00	176.3 /1000 sf		0
Government Total	--	--	0.00	--		0
Institutional						
Churches	--	-	0.00	210 /1000 sf		0
Schools (Private)	--	-	0.00	180.4 /1000 sf		0
Institutional Total	-	-	0.00	--		0
Total	-	1,360,000	31.22	--		70,623

* Commercial sewer flow factors based on the OCS Design Construction Requirements for Sanitary Sewers

Westminster Mall Specific Plan Proposed Condition Sewer Flows

	Building(s)		Parcel	Demand	Unit of Measure	Total Flow
	Units	Square Feet	Acres	GPD		GPD
WMSP						
Residential						
Single Family Home	-	--	--	206 /Unit		0
3-Story Rowtown	300	--	--	175.997 /DU		52,799
4-6 Story Wrap/Mini Podium	1,200	--	--	155.819 /DU		186,983
8-10 Story Podium	1,500	--	--	135.641 /DU		203,462
Residential Total	3,000	--	--	--	--	443,243
Commercial						
Retail	--	600,000	13.77	2262 /acre		31,157
Entertainment Retail	-	210,000	4.82	2262 /acre		10,905
Hotel	425	-	0.00	118.75 /room		50,469
Restaurant	-	210,000	4.82	2262 /acre		10,905
Office	-	180,000	4.13	2262 /acre		9,347
Professional Buildings	-		0.00	2262 /acre		0
Store Combination	-		0.00	2262 /acre		0
Stores	-		0.00	2262 /acre		0
Wholesale & Manufacturing Outlets	--		0.00	2262 /acre		0
Commercial Total		1,200,000	27.55	--	--	112,783
Total	3,000	1,200,000	27.55	--	--	556,026

*Residential and hotel sewer flows based on water demand factors multiplied by a 0.95 sewer flow factor

** Commercial sewer flow factors based on the OCSD Design Construction Requirements for Sanitary Sewers

APPENDIX B

WATER DEMAND CALCULATIONS

Westminster Mall Specific Plan Existing Condition Water Demands

	Building(s)		Parcel	Demand	Unit of Measure	Total Demand
	Units	Square Feet	Acres	GPD		GPD
WMSP						
Residential						
Single Family Home	-	--	--	206 /Unit		0
3-Story Rowtown	-	--	--	185.26 /DU		0
4-6 Story Wrap/Mini Podium	-	--	--	164.02 /DU		0
8-10 Story Podium	-	--	--	142.78 /DU		0
Residential Total	-	--	0.00	--	--	0
Commercial						
Commercial	--	-	0.00	1500 /acre		0
Hotel & Motels	--	-	0.00	125 /room		0
Office Buildings	-	-	0.00	1500 /acre		0
Parking Lots (Commercial Use Properties)	-	-	0.00	1500 /acre		0
Professional Buildings	-	-	0.00	1500 /acre		0
Restaurant	-	68,000	1.56	1500 /acre		2,342
Retail	-	1,292,000	29.66	1500 /acre		44,490
Wholesale & Manufacturing Outlets	--	-	0.00	1500 /acre		0
Commercial Total	-	1,360,000	31.22	--	--	46,832
Landscaping						
Landscaped Area	-	319,614	7.34	ETWU Method		23,318
Total	-	1,679,614	38.56	--	--	70,150

* Commercial water demands based on 2019 City of Westminster Water Master Plan Update

Westminster Mall Specific Plan Proposed Condition Water Demands

	Building(s)		Parcel	Demand	Unit of Measure	Total Flow
	Units	Square Feet	Acres	GPD		GPD
WMSP						
Residential						
Single Family Home	-	--	--	206 /Unit		0
3-Story Rowtown	300	--	--	185.26 /DU		55,578
4-6 Story Wrap/Mini Podium	1,200	--	--	164.02 /DU		196,824
8-10 Story Podium	1,500	--	--	142.78 /DU		214,170
Residential Total	3,000	--	--	--	--	466,572
Commercial						
Retail	--	600,000	13.77	1500 /acre		20,661
Entertainment Retail	-	210,000	4.82	1500 /acre		7,231
Hotel	425	-	0.00	125 /room		53,125
Restaurant	-	210,000	4.82	1500 /acre		7,231
Office	-	180,000	4.13	1500 /acre		6,198
Professional Buildings	-		0.00	1500 /acre		0
Store Combination	-		0.00	1500 /acre		0
Stores	-		0.00	1500 /acre		0
Wholesale & Manufacturing Outlets	--		0.00	1500 /acre		0
Commercial Total		1,200,000	27.55	--	--	94,447
Landscaping						
Landscaped Area	-	381,147	8.75	ETWU Method		27,807
Total	-	1,581,147	36.30	--	--	588,827

*Residential water demand calculated based on an assumption of 59 GPCD, based on the 2019 Water Master Plan Update

**Per Westminster Mall Specific Plan, resident per unit assumptions are as follows: 3-Story Rowtown - 3.14, 4-6 Story Wrap - 2.78, 8-10 Story Podium - 2.42

*** Commercial water demands based on 2019 City of Westminster Water Master Plan Update