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## TECHNICAL MEMORANDUM

TO: Derek Wieske (City of Fullerton)

PREPARED BY: Dylan Merlo (Woodard & Curran)  
Chris van Lienden (Woodard & Curran)

REVIEWED BY: Gisa Ju (Woodard & Curran)

DATE: May 7, 2021

RE: Sewer capacity assessment for the Streetlights Fullerton Development Project

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### 1. INTRODUCTION

The City of Fullerton (City) requires a sewer capacity analysis to evaluate the hydraulic effects of the sewer mains downstream of the proposed Streetlights Fullerton development at 229 E. Orangethorpe Avenue (Streetlights Fullerton). Streetlights Fullerton consists of mixed-use multi-family residential and neighborhood commercial development, which includes the addition of 329 multi-family residential units in a 5-story building and 7,900 square-foot of retail space on the ground floor. Streetlights Fullerton would be replacing existing mixed commercial-use spaces including small retail/office space, food service establishments, and vacant units. Appendix A shows the information provided for the development.

This brief Technical Memorandum (TM) describes the modeling work requested by the City of Fullerton to assess the hydraulic capacity of the City's sewer mains downstream of Streetlights Fullerton. The InfoSWMM model used for this evaluation was originally developed for the City's 2009 Sewer Master Plan (2009 Master Plan) and has been updated on an on-going basis to reflect new development projects and some changes to the sewer network, though the updates have not necessarily been comprehensive. The 2009 Master Plan estimated average dry weather wastewater flows of approximately 5,400 gallons per day (gpd) for the proposed development location, based on 2007/2008 water consumption data. Future loads in the 2009 Master Plan for this area were based on population and employment projections prepared by the Center for Demographic Research, which distributed projected growth across the city in Traffic Analysis Zones (TAZ). In the 2009 Master Plan, TAZ projections (with adjustments for some specific developments) were added on top of the existing loads to estimate future loads. The 2009 Master Plan did not identify any specific developments at Streetlights Fullerton location. For modeling purposes, it has been assumed that flows from the proposed development would replace the existing consumption-based flow and would be in addition to any projected growth in the TAZ.

The Streetlights Fullerton is assumed to connect to the existing 12-inch sewer main running along East Orangethorpe Avenue (which changes to West Orangethorpe Avenue at South Harbor Boulevard) at manhole 78-26, consistent with the 2009 Master Plan. This sewer connects to Orange County Sanitation District (OC SAN) sewers at the intersection of West Orangethorpe Avenue and Richman Avenue. Error! Reference source not found. shows the location of the development and the model sewer network. The 2009 Sewer Master Plan did not identify any capacity concerns in the City sewers downstream of the project under existing or buildout conditions.

## 2. MODEL RESULTS AND CONCLUSIONS

Wastewater flow projections for the residential units were estimated based on an Average Dry Weather Flow (ADWF) unit flow factor of 75 gallons per capita per day, and an assumed average of 2.93 persons per dwelling unit based on the city-wide average occupancy rate. The equivalent unit flow factor of 220 gallons per day per dwelling unit was used in a review of the Fullerton Transportation Center sewer flows, attached to the 2009 Master Plan. Flows projected by the developer were reviewed but ultimately disregarded to keep flow projections consistent with the 2009 Master Plan. Wastewater flow projections for the non-residential development were based on an ADWF unit flow factor of 0.1 gallons per day per square foot of building floor area. Projected average dry weather flows are summarized in **Table 1**; peaking factors were applied in the model by using the diurnal curves for residential and commercial spaces as developed in the 2009 Master Plan. Wet weather flows were also developed as part of model calibration for the 2009 Master Plan and assigned to each modeled node; the calibrated wet weather flows have not been changed.

**Table 1: Modeled Streetlights Fullerton Sewer Loads**

	Units	Unit Flow Factor	Average Dry Weather Flow (gpd)
Residential	329 DU	220 gpd/DU	72,380
Commercial	7,900 Square Feet	0.1 gpd/square foot	790
<b>Total</b>			<b>73,170</b>

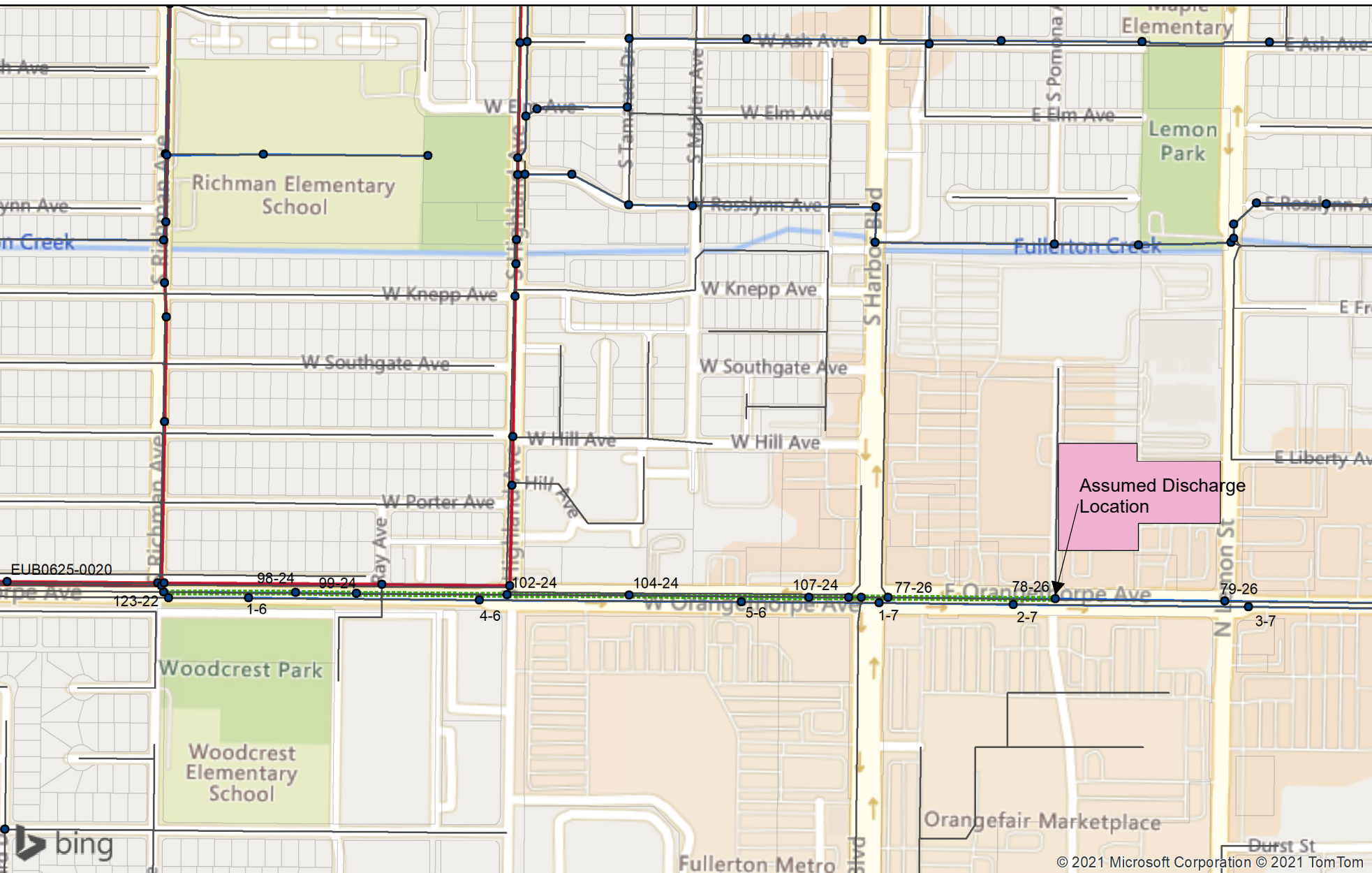
The model was run using the 2035 flow projections, with the addition of the Streetlights Fullerton projected flows, under dry weather and wet-weather design storm scenarios to determine whether the proposed development would cause any new capacity deficiencies.

The “trigger” criterion for capacity deficiencies, which identifies when an existing sewer has insufficient capacity and requires capacity relief, was defined to occur when pipe surcharge exceeds two feet over the pipe crown or if the hydraulic grade line reaches within five feet of ground surface.

Figure 2 and Figure 3 show the hydraulic profile of the City sewers downstream of the development under peak dry weather and peak wet weather conditions with Streetlights Fullerton. The modeled profiles are not appreciably different without Streetlights Fullerton, so are not presented.

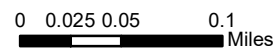
Based on these results, the model predicts that the increase in flows from Streetlights Fullerton would not trigger any capacity deficiencies, even under 2035 loads.

Figure Exported: 4/23/2021 1:42:30 PM By: dmerito Using: \\woodardcurran.net\shared\Projects\Fullerton\0234-002\00 Fullerton On: Call Services\B - Project\Work\Streets\Fullerton (229 E Orange\thorpe Ave)\GIS\Figure 1 - Development Location.mxd



**Figure 1**  
**Proposed Development Location**  
 Streetlights Fullerton Sewer Capacity Assessment

<b>Legend</b>	<span style="color: black;">●</span> Modeled manhole	<span style="background-color: #FFC0CB; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Proposed development location
	<span style="color: red;">—</span> OC SAN sewer	<span style="color: green;">- - - - -</span> Sewer downstream of proposed development
	<span style="color: blue;">—</span> Modeled City sewer	
	<span style="color: black;">—</span> Unmodeled sewer	



N

Project #: 0011744.01  
 Map Created: April 2021

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk.

Figure 2: Hydraulic Profile under Peak Dry Weather Flow conditions with Streetlights Fullerton

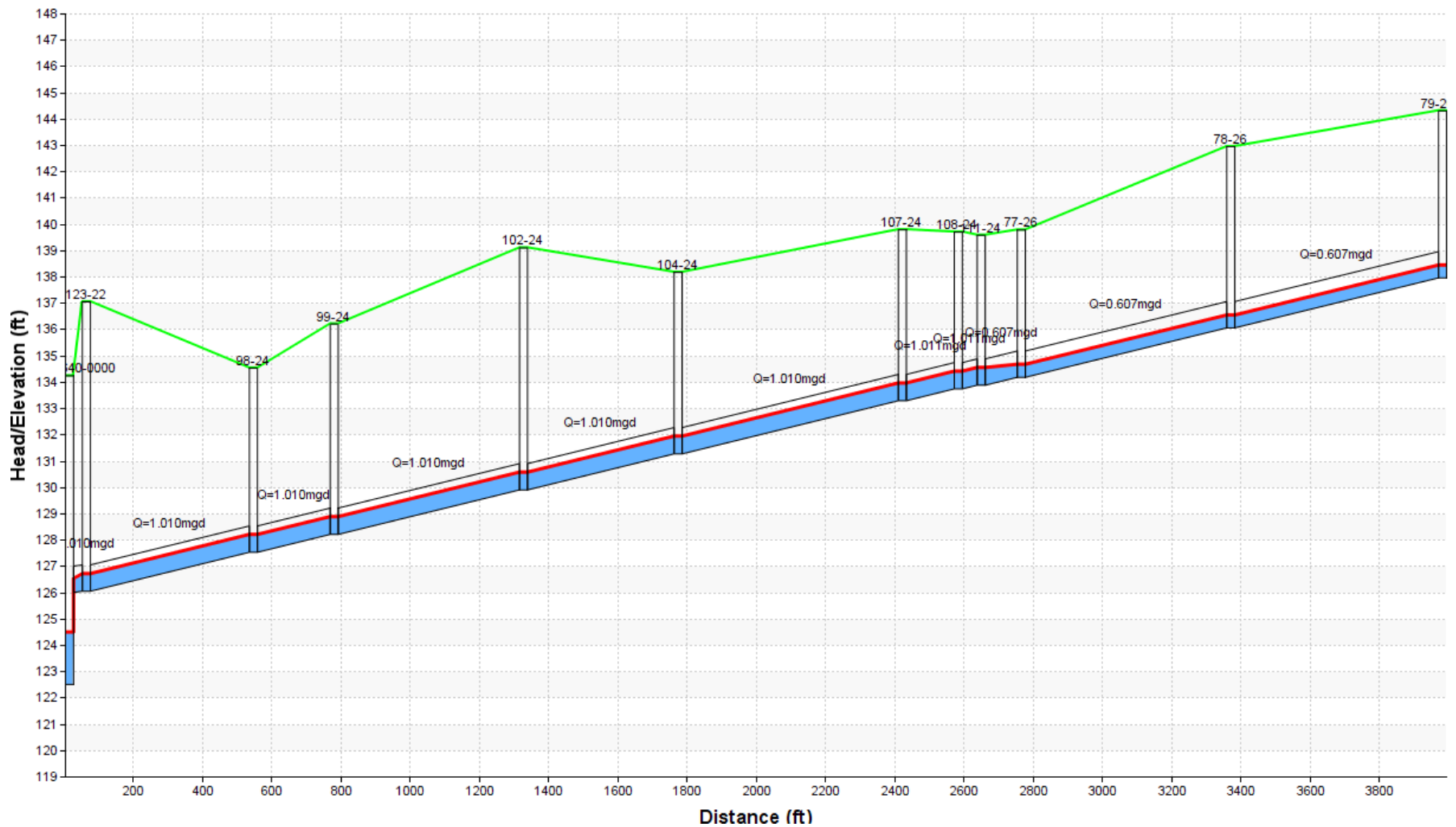
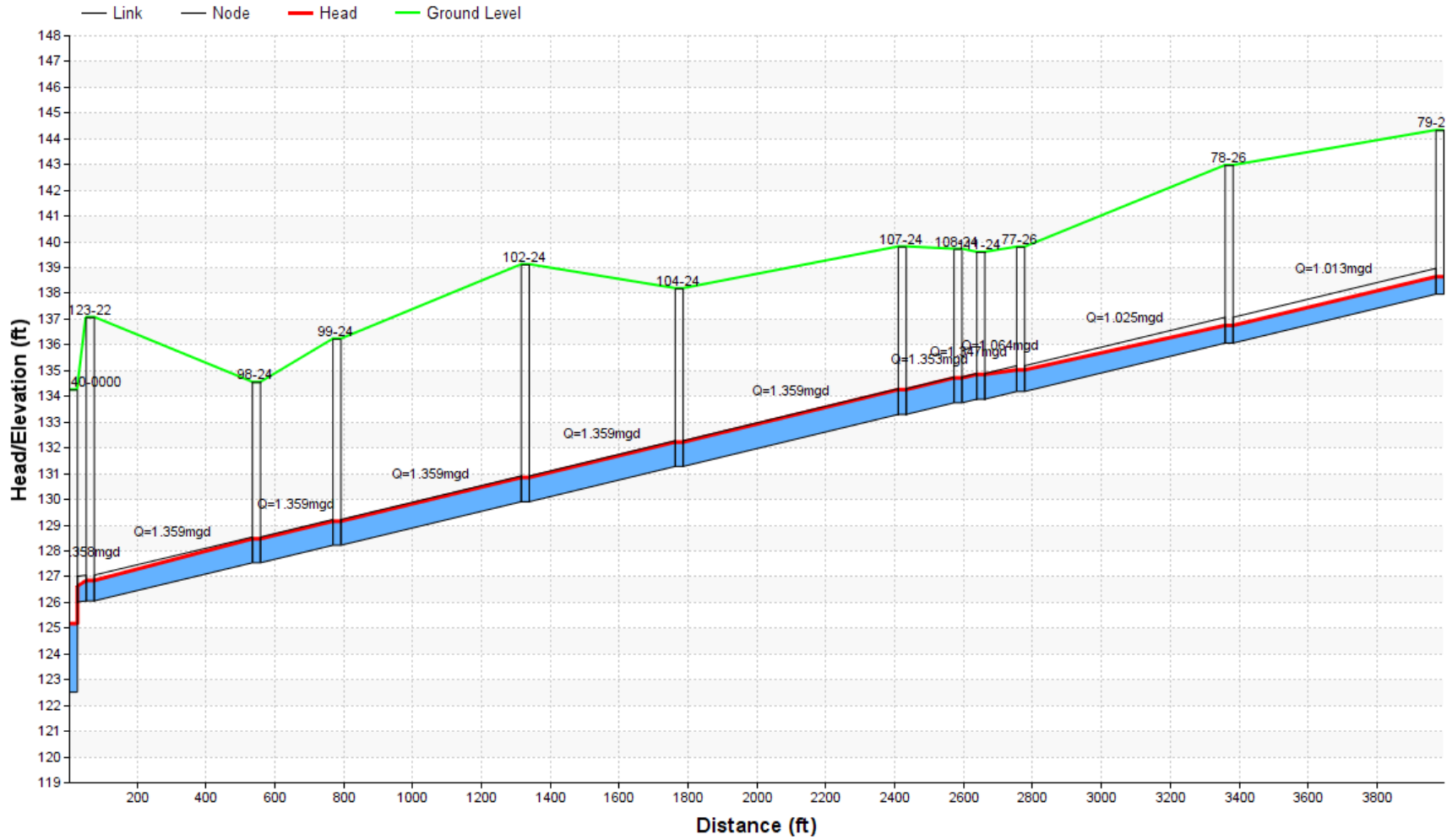


Figure 3: Hydraulic Profile under Peak Design Storm Conditions with Streetlights Fullerton



## APPENDIX A – DEVELOPMENT INFORMATION

# PRELIMINARY SEWER STUDY FOR:

## **SLR FULLERTON**

229 E. ORANGETHORPE AVE.  
FULLERTON, CALIFORNIA 92832  
PROJECT #: PRJ2020-00004

PREPARED FOR:

## **SLR FULLERTON DEVELOPMENT, LLC**

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PREPARED BY:

## **JOSEPH C. TRUXAW & ASSOCIATES, INC. CIVIL ENGINEERS & LAND SURVEYORS**

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(714) 935-0265



PREPARED ON: SEP. 16, 2020



## 1.0 PROJECT BACKGROUND

The proposed Project is a mixed-use multi-family residential and neighborhood commercial development which includes the addition of 329 multi-family residential units in a 5-story building and 7,900 sf of retail space on the ground floor. This proposed Project will be replacing existing mixed commercial use businesses including small retail/office, vacant units, and food service establishments.

### 1.1 EXISTING DEMAND

For this preliminary sewer study, the equivalent dwelling unit (EDU) determinations provided in the tables below are based on a 2020 Engineer's Report entitled "Water Standby Charge Assessment" prepared by the Willdan Group for the Three Valleys Municipal Water District. The method of assessment in the Report establishes the single-family residential parcel as the basic unit for calculation and assigns proportional EDU values based on property specific development status (land use).

Land Use	Parcel (Acres)	Equivalent Dwelling Units (EDUs)	Gallons per Day (GPD) (1 EDU = 250 GPD)
Commercial	5.15	<ul style="list-style-type: none"> <li>• 7.0 EDU/ acre for the first 5 acres</li> <li>• 1.75 EDU/acre after the 5<sup>th</sup> acre</li> </ul> = 7.26 EDUs	1,815

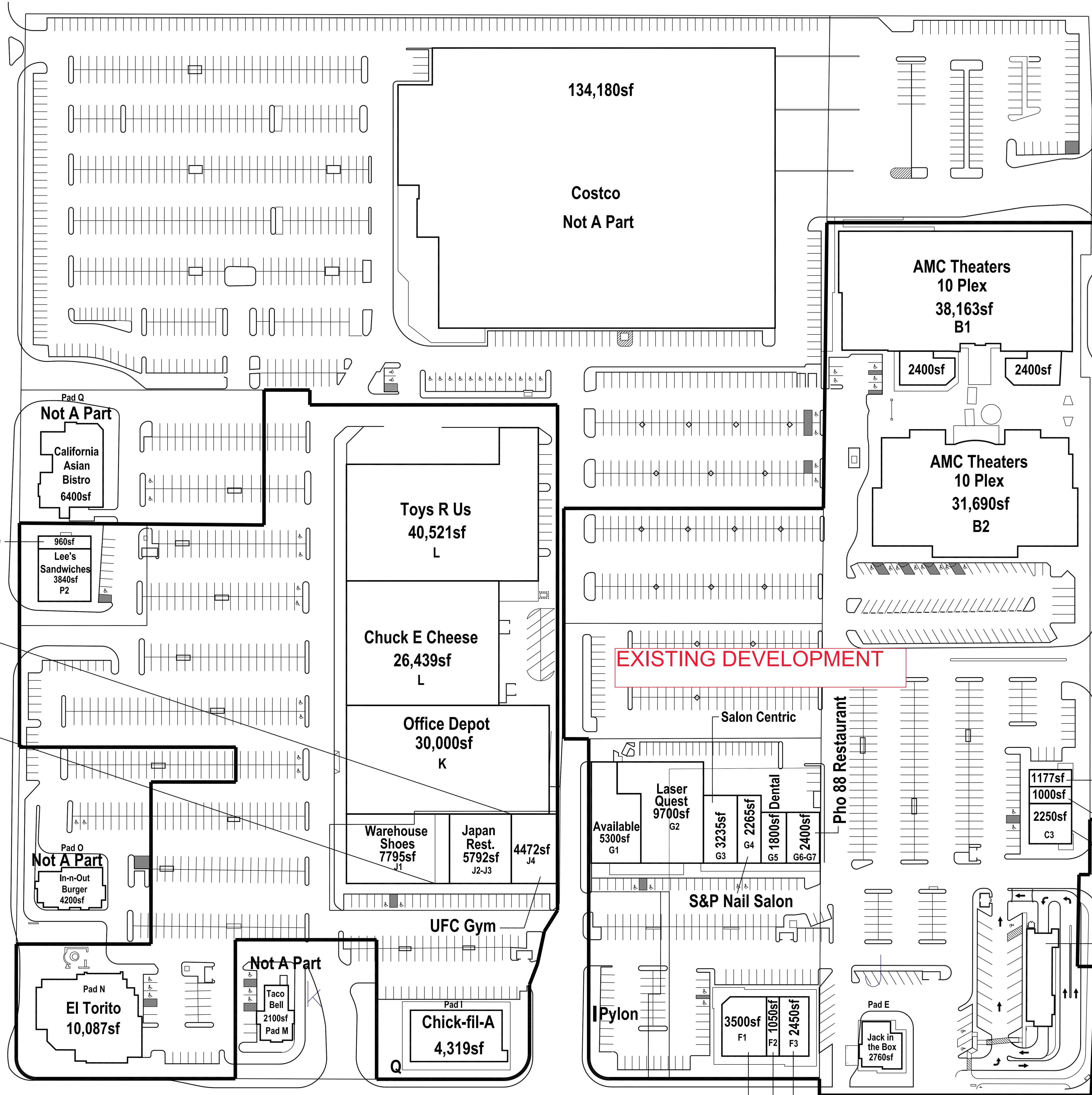
### 1.2 PROPOSED DEMAND

Land Use	Dwelling Units	Equivalent Dwelling Units (EDUs)	Gallons per Day (GPD) (1 EDU = 250 GPD)
Multi-Family Residential	329	<ul style="list-style-type: none"> <li>• 0.75 EDU/DU for the first 4 DU's</li> <li>• 0.5 EDU/DU after the 4<sup>th</sup> DU</li> </ul> = 165.5 EDU's	41,375

**An increase of approximately 39,560 GPD is anticipated.**



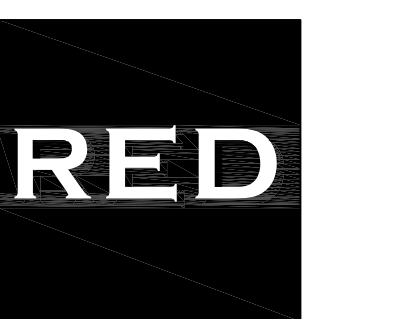
Harbor Boulevard



Orangethorpe Boulevard

Lemon Street

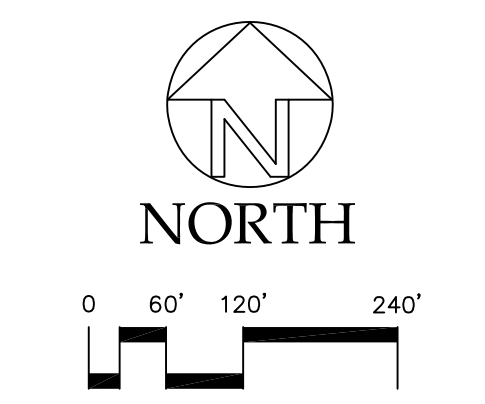
**FULLERTON TOWN CENTER**  
 FULLERTON, CA  
 SITE PLAN



RED DEVELOPMENT, LLC  
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 OVERLAND PARK, KS 66210  
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 WWW.REDEVELOPMENT.COM

NOTE:  
 UNASSIGNED TENANT SPACES ARE  
 SUBJECT TO CHANGE BASED ON  
 CONTINUED LEASING ACTIVITY.  
 DIMENSIONS ARE FROM LEASE LINE TO  
 LEASE LINE AND DO NOT REFLECT  
 CONSTRUCTION DOCUMENT DIMENSIONS.

PROJECT OPENED	1991
UPDATED	27 JAN 15
SCALE	NOT TO SCALE



Oahu Shave Ice & Ice Cream-C1  
 Available-C2  
 Hot Wok  
 Fast 5 Express Carwash 4900sf  
 Pad D

Thai Original BBQ Restaurant  
 Available  
 Metro PCS

