APPENDIX H

Stormwater Quality and Hydrology Technical Report

DRAFT

Stormwater Quality and Hydrology Technical Report for the College Boulevard Improvement Project

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ACRONYMS/ABBREVIATIONS

Acronym/Abbreviation	Definition
∑(CA)	weighted runoff coefficient
AGWA	Automated Geospatial Watershed Assessment
bgs	below ground surface
BMP	best management practice
C	runoff coefficient
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CIPP	cured-in-place pipe
DEM	Digital Elevation Model
EIR	environmental impact report
GIS	geographic information system
HSA	hydrologic subarea
I	rainfall intensity
MRM	Modified Rational Method
SDCHM	San Diego County Hydrology Manual
SWPPP	stormwater pollution prevention program
SWQMP	stormwater quality mitigation plan
T_c	time of concentration

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1 INTRODUCTION

1.1 Background

Results from the stormwater quality and hydrology technical studies conducted for the College Boulevard Improvement project (proposed project) are provided in this report (Technical Report). The Technical Report was prepared for the proposed project as part of its required environmental impact report (EIR) in accordance with the 2016 City of Oceanside (City) BMP Design Manual and the 2003 San Diego County Hydrology Manual (SDCHM).

The purpose of this report is to identify stormwater quality and hydrologic impacts as a result of the development of the proposed project. This report includes identification of potential stormwater pollutants associated with the project, a preliminary stormwater quality mitigation plan (SWQMP), and quantification of off-site and on-site runoff discharging onto and from the proposed project for pre-development and post-development conditions. Peak runoff calculations were performed for the 2-year, 10-year, and 100-year 6-hour storm events in accordance with the Modified Rational Method (MRM) as described in the SDCHM.

The hydrologic analyses in this Technical Report are preliminary in nature and subject to change should the boundary, site plan, or other components of the proposed project change. Plans, specifications, and recommendations found within this Technical Report are not approved and are not for construction purposes; contractors shall refer to the final approved construction documents for construction details.

1.2 Project Description

College Boulevard is proposed to be widened to a six-lane major arterial from Olive Drive to Old Grove Road, which would be consistent with the City of Oceanside's Circulation Element Year 2030 classification of College Boulevard (City of Oceanside 2012). Along this section, the City proposes road and right-of-way improvements to the corridor to enhance existing and future traffic operations, provide congestion relief and reduce queue lengths, improve safety conditions for the unsignalized intersections and access points along the corridor, and provide safer travel routes for bicyclists and pedestrians. In addition to widening College Boulevard from four to six lanes between Olive Drive and Old Grove Road, the proposed project would include certain improvements to College Boulevard from Waring Road/Barnard Drive to Marcella Street.

The following improvements to the affected portion of College Boulevard from Waring Road/ Barnard Drive to Marcella Street are proposed:

- Increase the curb radius from 30 feet to 50 feet to improve truck access and construct a two-tier retaining wall system at the southeast corner of the Waring Road/Barnard Drive intersection with College Boulevard.
- Widen approximately 600 feet of College Boulevard on the east side, north of Waring Road, to extend the bike lane and provide a third through lane; also, widen approximately 425 feet of College Boulevard on the west side, north of Barnard Drive, to extend the bike lane and provide a third through lane.
- Construct multi-tier retaining walls on College Boulevard on the east side, north of Waring Road, and construct an approximately 5-foot-high, 460-foot-long single-tier retaining wall on College Boulevard on the west side, north of Barnard Drive.
- On both sides of College Boulevard, for an approximate distance of 3,000 feet, move the parkway adjacent to the curb and reconstruct the sidewalk adjacent to the right-of-way line.
- Stripe new crosswalks at the College Boulevard/Roselle Avenue intersection and install traffic-calming chokers to narrow the travel way at approximately 600 feet north of Roselle Avenue.
- Lengthen the northbound left-turn pocket at the intersection with Marvin Street West and implement additional minor curb and striping improvements.
- Lengthen the southbound left-turn pocket at the intersection with Thunder Drive.
- Replace existing impermeable medians, where feasible, with permeable low-maintenance landscaping (drought-tolerant vegetation).

Additionally, in 2013, the City of Oceanside prepared a Master Plan of Drainage that assessed the drainage infrastructure inadequacies (e.g., undersized pipes) in the City. In the proposed project area, the Master Plan of Drainage identified a 78-foot storm drain segment between Olive Avenue and Loma Alta Creek that needs upsizing from a 36-inch-diameter cured-in-place pipe (CIPP) with a 42-inch-diameter CIPP. This improvement has been included as part of the proposed project.

2 PROJECT SETTING

The proposed project encompasses a 2.41-mile corridor along College Boulevard in the City of Oceanside, California. Currently, College Boulevard is a four-lane arterial road within this corridor. There are three different sections along College Boulevard that will undergo improvements. Section 1 (the northernmost section) starts at the intersection of College Boulevard and Old Grove Road and runs approximately 1.01 miles south through College Boulevard, ending approximately 0.06 miles south of the College Boulevard and Olive Avenue intersection. Section 2 starts approximately 0.10 miles south of the intersection of College Boulevard and Marcella Street and runs south through College Boulevard for approximately 0.09 miles, ending approximately 0.04 miles north of the College Boulevard and Thunder Drive intersection. Section 3 starts approximately 0.03 miles north of the intersection of College Boulevard and Marvin Street and runs south through College Boulevard for approximately 0.70 miles, ending approximately 0.02 miles south of the College Boulevard and Waring Road/Barnard Drive intersection. Figure 1 shows the vicinity map for the proposed project.

2.1 Regional Hydrology

The proposed project falls within the Loma Alta Hydrologic Subarea (HSA) and the El Salto HSA located within the Carlsbad hydrologic unit as identified in Table 1. The hydrologic unit, hydrologic area, and HSA information was obtained from the San Diego Hydrologic Basin Planning Area map (Region No. 9), prepared by the San Diego Regional Water Quality Control Board (SDRWQCB 1995) and approved by the State Water Resources Control Board on April 4, 2011.

Table 1
Proposed Project Hydrologic Characteristics

Hydrologic Unit	Hydrologic Area	Hydrologic Subarea
Carlsbad (904.00)	Loma Alta (904.10)	Loma Alta (904.10)
Carlsbad (904.00)	Buena Vista Creek (904.20)	El Salto (904.21)

Figure 2 shows the location of the proposed project with reference to the Loma Alta and El Salto HSAs. A comparison of the proposed project area with respect to the acreage of the Loma Alta and El Salto HSAs is presented in Table 2.

Table 2
Proposed Project Contribution to Hydrologic Subarea

Hydrologic Subarea	Area (Acres)	Approximate Proposed Project Area (Acres)	Estimated Project Contribution (Percent)
Loma Alta (904.10)	6277.3	16.4	0.3%
El Salto (904.21)	7455.4	10.3	0.1%

The proposed project area comprises less than 0.3% of the area encompassed by the Loma Alta and El Salto HSAs.

2.2 Flood Zones

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps identify flood zones and areas that are susceptible to 100-year and 500-year floods. The proposed project site crosses Loma Alta Creek approximately 600 feet south of the College Boulevard/Oceanside Boulevard intersection. The extent of the proposed project that falls within the 100-year and 500-year floodplains for Loma Alta Creek is shown on Figure 3.

2.3 Groundwater

A groundwater basin is defined as a hydrogeologic unit containing one large aquifer as well as several connected and interrelated aquifers. The proposed project is located within two smaller watersheds that do not have a groundwater basin identified in the California Department of Water Resources Bulletin 118. Groundwater has been identified in the alluvial floodplain deposits of the two watersheds. The two watershed basins, Loma Alta and El Salto, consist of an outcropping of the Santiago Formation with alluvial deposits that run through the center stream valley (Kennedy 2007). Temporary monitoring wells for leaking underground storage tank cleanup sites were located adjacent to the project site (SWRCB 2018). The depth to groundwater was measured at 12 to 19 feet below ground surface (bgs) at the southern end of the project area and 7 to 10 feet bgs near College and Oceanside Boulevards. Boring logs from these monitoring wells and well completion reports from the California Department of Water Resources for a couple of wells 2.5 miles east of the proposed project area suggest that the underlying material for the area is composed of a mix of sand, silty sand, sandy silt, and sandy clay up to at least 70 feet bgs, with underlying degraded granite. Runoff from the proposed project area would percolate into the alluvial material, flow west, and discharge to the ocean.

2.4 Beneficial Uses for Surface Water and Groundwater

Per the Water Quality Control Plan for the San Diego Basin (9), beneficial uses are defined as the uses of water necessary for the survival or well-being of man, plants, and wildlife. These uses of water serve to promote the tangible and intangible economic, social, and environmental goals of mankind. Once beneficial uses are designated, appropriate water quality objectives can be established and programs that maintain or enhance water quality can be implemented to ensure the protection of beneficial uses.

The designation of beneficial uses must satisfy all of the applicable requirements of the California Water Code, Division 7, and the federal Clean Water Act. California Water Code, Division 7, is also known as the Porter-Cologne Water Quality Control Act. The act establishes a comprehensive program for the protection of beneficial uses of the waters of the state. California Water Code Section 13050(f) describes the beneficial uses of surface and ground waters that may be designated by the State Water Resources Control Board or Regional Water Quality Control Board for protection as follows:

> Beneficial uses of the waters of the state that may be protected against quality degradation include, but are not necessarily limited to, domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.

To comply with the California Water Code and the federal Clean Water Act, surface and ground waters within the project-related basins have been assigned the following beneficial uses in the Water Quality Control Plan for the San Diego Basin (9) as shown in Tables 4 and 5.

Table 3
Surface Water Beneficial Uses

Surface Water Body	Hydrologic Unit Basin Number	Beneficial Use											
		MUN	*AGR*	*IND*	*PROC*	*REC1*	*REC2*	*BIOL*	*EST*	*WARM*	*WILD*	*RARE*	*MAR*
Loma Alta Creek	4.10	+				○	●			●	●		
Loma Alta Slough	4.10					●	●		●		●	●	●
Buena Vista Creek	4.22	+	●	●		●	●			●	●		
Buena Vista Creek	4.21	+	●	●		●	●			●	●	●	
Buena Vista Lagoon	4.21					●	●	●	○	●	●	●	●

● Existing beneficial uses.
○ Potential beneficial uses.
+ Excepted from MUN (see text).

Table 4
Groundwater Beneficial Uses

Groundwater Body	Hydrologic Unit Basin Number	Beneficial Use					
		MUN	*AGR*	*IND*	*PROC*	*FRSH*	*GWR*
Loma Alta	4.10	+		●			
El Salto	4.21	●	●	○			
Vista	4.22	●	●	●			

● Existing beneficial uses.
○ Potential beneficial uses.
+ Excepted from MUN (see text).

Definitions of the beneficial uses mentioned in Tables 4 and 5 are as follows:

Municipal and Domestic Supply (MUN) – Includes uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.

Agricultural Supply (AGR) – Includes uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

Industrial Service Supply (IND) – Includes uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.

Industrial Process Supply (PROC) – Includes uses of water for industrial activities that depend primarily on water quality.

Contact Water Recreation (REC-1) – Includes uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and SCUBA diving, surfing, white water activities, fishing, or use of natural hot springs.

Non-contact Water Recreation (REC-2) – Includes the uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

Preservation of Biological Habitats of Special Significance (BIOL) – Includes uses of water that support designated areas or habitats, such as established refuges, parks, sanctuaries, ecological reserves, or Areas of Special Biological Significance (ASBS), where the preservation or enhancement of natural resources requires special protection.

Estuarine Habitat (EST) – Includes uses of water that support estuarine ecosystems including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds).

Warm Freshwater Habitat (WARM) – Includes uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish or wildlife, including invertebrates.

Wildlife Habitat (WILD) – Includes uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g. mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

Rare, Threatened, or Endangered Species (RARE) – Includes uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant of animal species established under state of federal law as rare, threatened or endangered.

Marine Habitat (MAR) – Includes uses of water that support marine ecosystems including, but not limited to, preservation or enhancement of marine habitats, vegetation such as kelp, fish, shellfish, or wildlife (e.g., marine mammals, shorebirds).

2.5 303(d) Listed Water Bodies

Run-on and runoff from the proposed project will discharge to Loma Alta Creek and Buena Vista Creek. Both creeks are listed as impaired water bodies according to the 2010 Integrated Report (Clean Water Act Section 303(d) List/305(b) Report) published by the State Water Resources Control Board (SWRCB 2011). The Buena Vista Lagoon, downstream from the proposed project's discharge points, is also listed as an impaired water body.

To comply with the federal Clean Water Act, water quality objectives must be met to maintain listed 303(d) primary pollutants at target levels. Table 6 shows the listed 303(d) pollutants for the three water bodies.

Table 5
PDP 303(d) Water Bodies – 2010 303(d) List of Water Quality Segments

Hydrologic Area	Receiving Water Body	Listed 303(d) Pollutants	Distance from Site (Miles)
Carlsbad Hydrologic Unit (904.00)	Loma Alta Creek	Selenium Toxicity	< 1.0
Carlsbad Hydrologic Unit (904.00)	Buena Vista Creek	Sediment Toxicity Selenium	<1.0
Carlsbad Hydrologic Unit (904.00)	Buena Vista Lagoon	Indicator Bacteria Nutrients Sedimentation/Siltation	2.5

PDP = Priority Development Project.

3 PROJECT HYDROLOGY ANALYSIS

The proposed project's impacts to local hydrology were analyzed following the MRM methodology outlined in the SDCHM (County of San Diego 2003). The analysis was designed to assess peak flow running onto, and from, the proposed project area. As the proposed project area discharges directly into storm drains, a comprehensive analysis identifying all contributing areas to each storm drain was undertaken to delineate the proposed project's hydrologic basin. Final development of the relationship between rainfall depth and peak flow was conducted using the following data in geographic information system (GIS) form: topography, soils, land cover, and existing stormwater infrastructure (i.e., pipes and concrete-lined channels). A comprehensive overview of the methodology used for conducting the hydrology analysis is provided in Appendix B. A general discussion of the hydrology analysis methodology, model inputs, and results is provided below.

3.1 Methodology

The SDCHM's MRM is a hydrologic surface flow model that uses the Rational Method (RM) model to estimate peak discharge at the confluence of two or more basins (County of San Diego 2003). The RM uses mathematical functions to produce a peak discharge rate from a given area for a specific rainfall event. In its simplest form, the RM is represented as:

$$Q = CAI$$

Where: Q = Peak discharge (cubic feet per second (cfs))
C = Runoff coefficient (unitless – based on land use and hydrologic soil group)
A = Area (acres)
I = Rainfall intensity (inches per hour)

Development of the individual components for this model requires model areas and subareas, flow path lengths and types (including channel roughness coefficient), slopes, soil and land use covers, and rainfall depths. An overlay of soil hydrologic properties with land cover types was conducted in GIS in order to develop weighted runoff coefficients for each drainage basin delineated in the study (as established in Table 3-1, Runoff Coefficients for Urban Areas (County of San Diego 2003, page 3-6).

3.2 Model Input

3.2.1 Topography

The general topography of the proposed project area as defined on the U.S. Geological Survey's 7.5-Minute Quadrangles is provided on Figure 4. Typical of the northern-coastal San Diego

County region, the proposed project area consists of low ridges and drainages cutting through marine sedimentary rock. The proposed project sections range in elevation from 220 to 316 feet above mean sea level in the El Salto HSA, and from 228 to 408 feet above mean sea level in the Loma Alta HSA.

For model development, a 3-meter-resolution Digital Elevation Model (DEM) was downloaded from the National Oceanic and Atmospheric Administration's Data Access Viewer (NOAA 2002/2003). Regions contributing runoff to the proposed project discharge points were first delineated using the Automated Geospatial Watershed Assessment (AGWA) tool in GIS. Using AGWA, depressions (sinks) within the DEM were filled, flow direction and accumulation were established, and basin boundaries were identified based on proposed project discharge points.

3.2.2 Existing Hydrologic Soil Groups and Land Use

Soil properties influence the rainfall–runoff relationship based on their varying rate of infiltration. Soils are classified by the Natural Resources Conservation Service into four hydrologic soil groups based on the soil's runoff potential. The four hydrologic soil groups are A, B, C, and D. Soil Group A generally has the smallest runoff potential and Soil Group D has the highest. A GIS-based soils analysis was performed to determine the distribution of soil groups within the basins contributing runoff to the proposed project area, as shown in Table 7 and on Figure 5. Soil Group D is the predominant soil group in all of the basins analyzed in this Technical Report.

Table 6
Hydrologic Soil Groups – Existing Conditions

Basin	Soil Group			
	A	*B*	*C*	*D*
1	2%	0%	0%	98%
2	5%	0%	0%	95%
3	12%	0%	0%	88%
4	2%	16%	2%	79%
5	0%	0%	7%	93%
6	0%	0%	0%	100%

The existing land use for the proposed project study area was defined using the March 2016 GIS shapefile provided by the San Diego Association of Governments (SANDAG) (Figure 6). The entire proposed project area is currently defined as Road Right of Way, which will not change in post-project conditions. As the analysis of the proposed project's hydrologic impacts depends on a higher-resolution comparison of land use changes (than what is provided in the SANDAG land

use shapefile), land use within the proposed project boundary was reclassified as either impervious (asphalt, concrete) or pervious (bare soil, landscaping) using preliminary engineering plans provided by NV5 and current aerial photography. Post-project soils were all classified under soil hydrologic group D as a conservative estimate of proposed project impacts.[1]

3.2.3 Precipitation

The preliminary hydrologic analysis for the proposed project was conducted following the SDCHM's MRM for the 2-year, the 10-year, and the 100-year return frequency rainfall events. The rainfall isopluvial values for the 6-hour (P_6) and 24-hour (P_{24}) rainfall events with the above return frequencies were obtained from the SDCHM, and are provided in Table 3.

Table 7
Rainfall Events Used in Hydrologic Analysis

Annual Return Frequency	Rainfall Depth (Inches)		P_6/P_{24}
	6-Hour (P_6)	*24-Hour (P_{24})*	
2-Year	1.4	2.2	63%
10-Year	2.0	3.5	57%
100-Year	3.1	5.4	57%

Per the SDCHM, P_6 for the selected storm event should be between 45% and 65% of P_{24}. This criterion was met as the P_6 for all three return frequencies falls within the specified range. The P_6 and P_{24} isopluvial maps and the Intensity–Duration Design Chart are presented in Appendix A.

3.2.4 Model Area

Analysis of proposed project hydrology was split into two different regions: the Loma Alta HSA and the El Salto HSA. The portion of the proposed project within the Loma Alta HSA crosses Loma Alta creek approximately 600 feet south of the intersection of College Boulevard and Oceanside Boulevard. All stormwater generated within the proposed project area in the Loma Alta HSA discharges either through storm drains or through the natural channel immediately downstream from where College Boulevard crosses Loma Alta Creek (the Crossing). There are four distinct discharge points immediately downstream of the Crossing. The hydrologic analysis of proposed project impacts in the Loma Alta HSA was divided into the four basins contributing stormwater runoff to these four discharge points (Figure 7a). Basins 1, 3, and 4 encompass sections of the proposed project. Basin 2 was included in the hydrology study as part of a preliminary cumulative impact analysis.

[1] Construction and site design BMPs will be implemented to maintain the existing permeability of the soils. Assuming compacted soils in this analysis provides a conservative comparison between existing and proposed conditions.

The portion of the proposed project within the El Salto HSA is split into two basins with different discharge points (Figure 7b). Sections of the proposed project between Thunder Drive and the low point between Marvin Street and Rosella Avenue discharge to a drainage network that follows a natural depression west along the northern boundary of MiraCosta College. Surface flows generated in the remaining proposed project area south of this point are collected by the storm drain network that parallels College Boulevard and discharges into Buena Vista Creek south of State Route 78.

Basin boundaries delineated using AGWA in GIS were verified against the City of Oceanside's storm drain data and Google Earth imagery to produce the final boundaries for the six proposed project basins, comprising a total of 1,606 acres. The six basins were further subdivided into 38 subareas to capture variability in dominant land use or in surface flow travel times (e.g., at junctions where discharge from two larger areas converge). The total area of the proposed project footprint is contained within 12 of the 38 subareas delineated for this analysis, comprising 26.7 acres (6.5%) of the total 405 acres for the 12 subareas.

With the final subareas identified, the remaining model parameters were developed, including flow path types/lengths/slopes/roughness coefficients, runoff coefficients (C), and rainfall intensity (I). Where surface flow entered storm drains, information provided in the City of Oceanside's storm drain shapefile was used for defining flow path lengths/slopes/roughness coefficients. Detailed methodology and model input is provided in Appendix B.

3.3 Model Results

Peak runoff was calculated from each basin for the 2-year, 10-year, and 100-year storm events. Existing and proposed site conditions are provided in Figures 8a–8f. Peak discharge results for existing and proposed conditions are presented in Tables 8 and 9.

Table 8
MRM Inputs and Peak Discharge (Basins) for Existing Conditions

Basin	T_c	Rainfall Intensity (in/hr)			∑(CA)	Runoff Coefficient (cfs)		
		2-Year	*10-Year*	*100-Year*		*2-Year*	*10-Year*	*100-Year*
1	23.7	1.4	1.9	3.0	254.0	343.4	490.6	760.4
2	24.3	1.3	1.9	2.9	223.9	298.1	425.8	660.0
3	45.5	0.9	1.3	2.0	332.5	295.3	421.9	653.9
4	14.2	1.9	2.7	4.2	63.7	120.0	171.4	265.7
5	9.3	2.5	3.5	5.5	67.3	165.9	236.9	367.3
6	12.2	2.1	3.0	4.6	137.0	283.8	405.4	628.3

MRM = Modified Rational Method; T_c = time of concentration; in/hr = inches per hour; ∑(CA) = weighted runoff coefficient; cfs = cubic feet per second.

The overall increase to impervious surfaces within the proposed project area is 1.63 acres. This additional impervious area is distributed between the 12 subareas the proposed project falls within.

Of the 12 subareas, the only subareas with measured increases in runoff coefficients as a result of the proposed project are subareas 104 (from 79 to 80) and 130 (from 70 to 71). The increased runoff coefficient in both subareas results in an overall 0.18% increase in peak discharge from Basin 1 for all three events (2-, 10-, and 100-year), while there is no modeled change in peak discharge for the other five basins.

Table 9
MRM Inputs and Peak Discharge (Basins) for Proposed Conditions

Basin	T_c	Rainfall Intensity (in/hr)			∑(CA)	Runoff Coefficient (cfs)		
		2-Year	*10-Year*	*100-Year*		*2-Year*	*10-Year*	*100-Year*
1	23.7	1.4	1.9	3.0	***254.4***	***344.0***	***491.5***	***761.8***
2	24.3	1.3	1.9	2.9	223.9	298.1	425.8	660.0
3	45.5	0.9	1.3	2.0	332.5	295.3	421.9	653.9
4	14.2	1.9	2.7	4.2	63.7	120.0	171.4	265.7
5	9.3	2.5	3.5	5.5	67.3	165.9	236.9	367.3
6	12.2	2.1	3.0	4.6	137.0	283.8	405.4	628.3

MRM = Modified Rational Method; T_c = time of concentration; in/hr = inches per hour; ∑(CA) = weighted runoff coefficient; cfs = cubic feet per second.

4 PRELIMINARY STORMWATER MITIGATION PLAN

The City of Oceanside requires that all development projects submit a Stormwater Quality Management Plan (SWQMP) which identifies project measures for reducing/treating stormwater. The level of details required in each SWQMP vary depending on whether the project classifies as a priority development project (PDP) or a standard development project (SDP). All projects are required to implement source control and site design best management practices (BMPs), but only PDPs are required to implement pollution control BMPs that require additional sizing calculations (e.g. design capture volume per drainage management area). As identified in the 2015 technical memorandum produced by Tory R. Walker Engineering (Walker 2015), the proposed project is incorporating Green Streets design techniques in order to divert runoff into permeable landscaped sections along College Boulevard. Per the City of Oceanside's BMP Design Manual (2016), the implementation of Green Streets design for retrofitting or redevelopment of roads exempts the proposed project from designation as a PDP and hydromodification management, and is characterized as a SDP. As an SDP, this project is only required to demonstrate that source control and site design BMPs are implemented where applicable and feasible. A preliminary SWQMP has been developed based on the preliminary design (Section 3 of the project EIR) and is provided as an attachment to this technical study (Appendix C); a final SWQMP will be required to be completed and signed by the project engineer with the completion of the project's final design.

The remainder of this section summarizes potential project impacts to water quality, and proposed project components that serve to minimize the identified impacts. The analysis of potential impacts is composed of an assessment of anticipated pollutants generated by the proposed project, focusing on those that may impact identified beneficial uses or exacerbate existing impaired water bodies (Section 2.5, Beneficial Uses for Surface Water and Groundwater, and Section 2.6, 303(d) Listed Water Bodies). In addition, the analysis takes into account project-specific source control and site design best management practices (BMPs) that serve to reduce pollutants generated within the proposed project area.

4.1 Characterization of Project Runoff

Runoff generated from the proposed project area is anticipated to have water quality issues typical of highly urbanized watersheds (e.g., trash, nutrients from fertilizers and animal waste, petroleum hydrocarbons, pesticides; see Table 10). Potential project impacts related to the construction activity will be addressed through a stormwater pollution prevention program (SWPPP) as required under the state's General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (National Pollutant Discharge Elimination System Order No. 2009-0009-DWQ; SWRCB 2013). Pollutants and recommended stormwater/erosion control measures provided in this Technical Report address only those related to the completed project.

Table 10
Anticipated Pollutants

Priority Project Categories	General Pollutant Categories								
	Sediments	*Nutrients*	*Heavy Metals*	*Organic Compounds*	*Trash & Debris*	*Oxygen Demanding Substances*	*Oil & Grease*	*Bacteria & Viruses*	*Pesticides*
Detached Residential Development	X	X			X	X	X	X	X
Attached Residential Development	X	X			X	P[a]	P[b]	P	X
Commercial Development >One Acre	P[a]	P[a]	X	P[b]	X	P[c]	X	P[d]	P[c]
Heavy Industry	X		X	X	X	X	X		
Automotive Repair Shops			X	P[c,e]	X		X		
Restaurants					X	X	X	X	P[a]
Hillside Development >5000 square feet	X	X			X	X	X		X
Parking Lots	P[a]	P[a]	X		X	P[a]	X		P[a]
Retail Gasoline Outlets (RGO)			X	X	X	X	X		
Streets, Highways & Freeways[f]	X	P[a]	X	P[e]	X	P[c]	X	X	P[a]

Source: City of Oceanside 2016.
Notes: X = anticipated; P = potential.
[a] A potential pollutant if landscaping exists on site.
[b] A potential pollutant if the project includes uncovered parking areas.
[c] Including solvents.
[d] A potential pollutant if land use involves food or animal waste products.
[e] Including petroleum hydrocarbons.
f The proposed project falls under this category.

All pollutants identified in Table 10 are considered either potential or anticipated for the proposed project. Sediments, heavy metals, trash/debris, oil and grease, and bacteria/viruses are considered anticipated water quality pollutants; many of these are generated off site but can be carried onto the site through tracking (sediment) or stormwater run-on (animal waste and trash). The other anticipated pollutants, heavy metals and oil and grease, will be generated by vehicles (leaks, deteriorating brake pads, emissions) within the proposed project area and along the roadways, which all drain to the same stormwater conveyance system shared by the proposed project area. The potential pollutants, including nutrients, organic compounds, oxygen demanding substances, and pesticides, are related to landscaping activities that are proposed as part of the proposed project.

4.2 Project Design Considerations

Existing beneficial uses for the waters within and downstream of the proposed project area include those for recreation and provision of aquatic habitat (see Section 2.5), while downstream water bodies have been identified as already impaired for selenium and toxicity (Loma Alta Creek and Buena Vista Creek) and sedimentation (Buena Vista Lagoon) (see Section 2.6). To minimize the generation of pollutants from the site, which could impact the identified beneficial uses or compound existing impairments, specific source-control and site-design BMPs will be incorporated into the proposed project. Recommended source-control and site-design BMPs are provided in the SWQMP (Appendix C), as well as in Table 11.

Table 11
Recommended Project Best Management Practices

Type of BMP	Design Concept/ BMP ID	Description Applicable to the Proposed Project
Source-Control BMPs	Good Housekeeping	Recurring site inspections will be established to identify potential maintenance needs (e.g., inspection of storm drains inlet for potential obstruction). As part of the site maintenance, storm drain signs and stencils will be inspected regularly. Maintaining the integrity of the signs can prevent illegal waste dumping at storm drain inlets. Additionally, sidewalks will be swept regularly to prevent the accumulation of litter and debris.
	Landscape/Outdoor Pesticide	The final landscape plan will be designed to minimize irrigation (by using drought-tolerant plants), to minimize irrigation runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides (e.g., by using pest-resistant plants). Use of pesticides containing selenium will be avoided.
LID Measures	Native Trees/Shrubs	Native vegetation will be incorporated across the proposed project site to reduce the hydrograph volume by increasing local evapotranspiration and can also reduce the peak hydrograph through rainfall interception.
	Minimization of Impervious Footprint	Site design will efficiently use impermeable surfaces in order to maximize total permeable surface area, and will increase space between impermeable structures where possible. Parkways and vegetated medians will be incorporated into the proposed project design.
	Construction Considerations	Soil compaction will be minimized (e.g., through the use of large treads, mow and roll grading), and the site will be graded to promote sheet flow/preclude concentrated flows and mimic existing topography. A combination of matting and seeding may also be implemented to maintain soil attributes (e.g., size class, porosity, infiltration rates, and mineral content) and preserve existing biota; this would further reduce the anticipated impacts of the proposed project on the site's soil hydrologic properties assumed in this Technical Report.
	Maintain Natural Drainage Pathways and Hydrologic Features	Where feasible, topographic depressions will be maintained to promote infiltration (i.e., passive rainwater harvesting in the parkways/medians). Existing drainage paths will be maintained where feasible and applicable to help maintain the time of concentration and infiltration rates of runoff.

BMP = best management practice; LID = low-impact development.

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5 PROJECT IMPACTS

This section presents the potential impacts associated with the proposed project, as referenced by the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.). Where feasible, application of various construction and post-development techniques, BMPs, and other operational practices would ensure that potential impacts would be less than significant.

5.1 CEQA Guidelines Significance Criteria

Based on the CEQA Guidelines, Section 15382, a "significant effect on the environment" includes any substantial, or potentially substantial, impact on all environmental resources by a project. This section lists significance criteria related to hydrology and water quality impact analysis from the CEQA Guidelines, Appendix G. A project's impacts on hydrology and water quality would be considered significant if the project would:

1. Violate any water quality standards or waste discharge requirements.
2. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.
4. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.
5. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
6. Otherwise substantially degrade water quality.
7. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
8. Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
9. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
10. Increase the risk of inundation by seiche, tsunami, or mudflow.

5.2 Impacts Analysis

For the purpose of discussion of the following proposed project impacts, it is assumed that the BMPs listed in Section 4.2, Project Design Considerations, would be made a condition of project approval. Therefore, these design considerations are considered elements of the proposed project rather than mitigation measures.

1. Would the project violate any water quality standards or waste discharge requirements?

Based on the characterization of water quality impairments (Section 2.6), potential project-related pollutant sources (Section 4.1), and the implementation of stormwater BMPs identified in Section 4.2 and in the SWQMP (Appendix C), the proposed project's impact on water quality standards and waste discharge requirements would be less than significant. In addition, the proposed improvement of the stormwater conveyance system between Olive Avenue and Loma Alta Creek should result in reduced flooding south of Loma Alta Creek along College Boulevard, thus reducing the potential for capturing additional pollutants (e.g., trash, sediment) and carrying them into Loma Alta Creek. Lastly, potential construction-related water quality impacts of the proposed project would be eliminated or substantially reduced by the requirements of the statewide General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (SWRCB 2013), which the applicant is required to comply with prior to construction.

2. Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

The proposed project involves importing water for project construction activities (dust control). Infiltration characteristics within the proposed project area would not change as a result of the proposed project; therefore, whatever exchange currently exists between surface water and groundwater within the proposed project site would be maintained. Impacts to groundwater resources and recharge as a result of the proposed project would be less than significant.

3. Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

The proposed project does not include alteration of the existing drainage pattern. The proposed project does include drainage infrastructure improvements that were identified in the City of Oceanside's Master Plan of Drainage (2013); the proposed storm drain upgrade would result in improved conveyance of water through the watersheds. This new system should reduce the potential for surface flows to concentrate outside of the established stormwater conveyance system, thereby reducing the potential to induce local scouring/erosion and increase downstream pollutant loading. Impacts to the existing drainage pattern and potential for erosion/siltation would be less than significant.

4. Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

The proposed project would not result in a significant increase in peak discharge for the 2-, 10-, and 100-year 6-hour rainfall events. The only measurable increase in discharge identified in this Technical Report was a 0.18% increase in peak discharge from Basin 1 for all three events, with measured increases ranging between 0.6 cfs (2-year) and 1.4 cfs (100-year). In addition, the proposed improvement to the stormwater conveyance system within the proposed project area would reduce the potential for on-site flooding on College Boulevard between Olive Avenue and Loma Alta Creek. The proposed project's impact to surface flows and on- and off-site flooding would be less than significant.

5. Would the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

The two modifications to the existing hydrology of the proposed project area consist of the 0.18% modeled increase in discharge from Basin 1 and the drainage improvement between Olive Avenue and Loma Alta Creek. The minor increase in discharge from Basin 1 is considered less than significant. Furthermore, the addition of the drainage improvement would increase the capacity of the existing stormwater conveyance system and should result in reduced on-site flooding and transport of pollutants to downstream waters. Therefore, project impacts related to stormwater conveyance would be less than significant.

6. Would the project otherwise substantially degrade water quality?

Other than those addressed by the proposed project's SWPPP and SWQMP (see Section 4.2 and Appendix C), there are no elements of the proposed project that would substantially degrade water quality; therefore, impacts would be less than significant.

7. Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

The proposed project does not involve housing. There would be no impact with regard to this issue.

8. Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?

The proposed project does not require additional work/infrastructure within Loma Alta Creek, and is not within the 100-year floodplain (which is contained beneath the bridge over Loma Alta Creek). The 500-year floodplain identified on Figure 3 adjacent to Loma Alta Creek does cross into sections of College Boulevard just south of Oceanside Boulevard, but the proposed project itself does not include structures in this area that will impede flows. Proposed project impacts to the existing 100-year floodplain would be less than significant.

9. Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

The proposed project site does not include any existing housing and no permanent housing is proposed. In addition, the proposed project does not put people/structures at any greater risk as a result of flooding, including flooding as a result of levee or dam failure. Potential project impacts from exposing people or structures to significant loss, injury, or death involving flooding would be less than significant.

10. Would the project increase the risk of inundation by seiche, tsunami, or mudflow?

The proposed project site is not located in a flood zone prone to seiches or tsunamis. There would be no impact associated with seiche, tsunami, or mudflows.

6 CONCLUSION

Based on this Technical Report, the proposed project would have minimal impacts on hydrology and water quality within and downstream from the proposed project site. The primary findings of this study are summarized as follows:

- The proposed project would have a less than significant impact on the peak discharge from Basin 1 for the 2-, 10-, and 100-year 6-hour rainfall events (0.18% increase for all events), and would have no impact on the other five basins contributing flow to, and receiving flow from, the project area.
- With the incorporation of a construction SWPPP, source-control BMPs, and site-design measures, the proposed project would not have a substantial impact with regard to water quality.
- Improvements to the storm drain conveyance system within the proposed project area will reduce on-site flooding and transport of pollutants to downstream waters.

The proposed project will incorporate construction, source-control, and site-design BMPs that would reduce potential impacts to the area's hydrology and water quality resources to less than significant. Because these BMPs are components of the proposed project itself, they are not considered additional mitigation measures.

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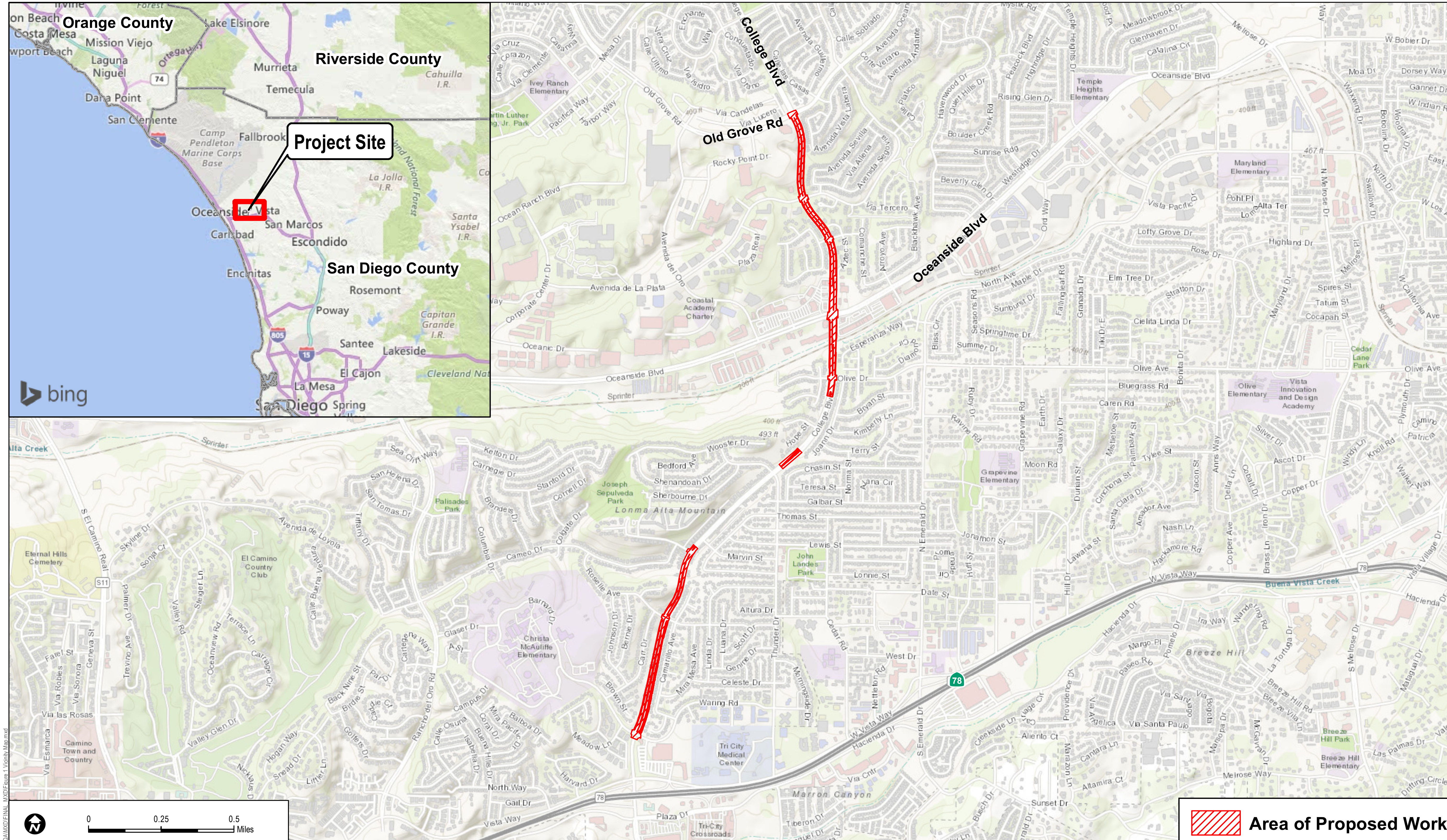

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SOURCE: Bing Maps, Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

FIGURE 1

Vicinity Map

Preliminary Hydrology Study for the Proposed College Boulevard Improvement Corridor

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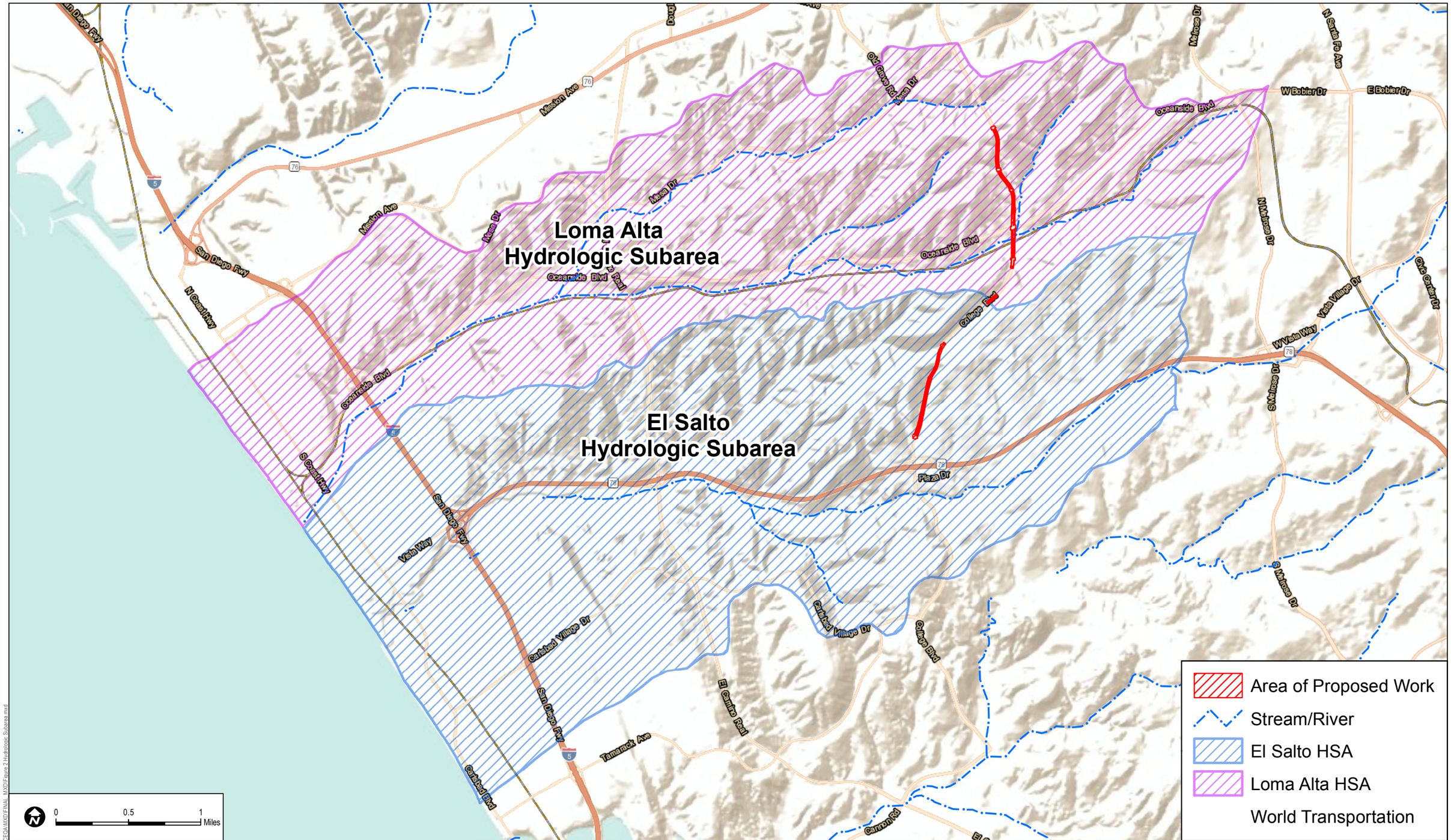

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SOURCE: California Interagency Watershed Mapping Committee: California Department of Water Resources (DWR), USGS NHD, Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

FIGURE 2

Hydrologic Subarea

Preliminary Hydrology Study for the Proposed College Boulevard Improvement Corridor

Z:\Hydro\Projects\College Blvd CEQA\MXD\FINAL MXD\Figure 2 Hydrologic Subarea.mxd

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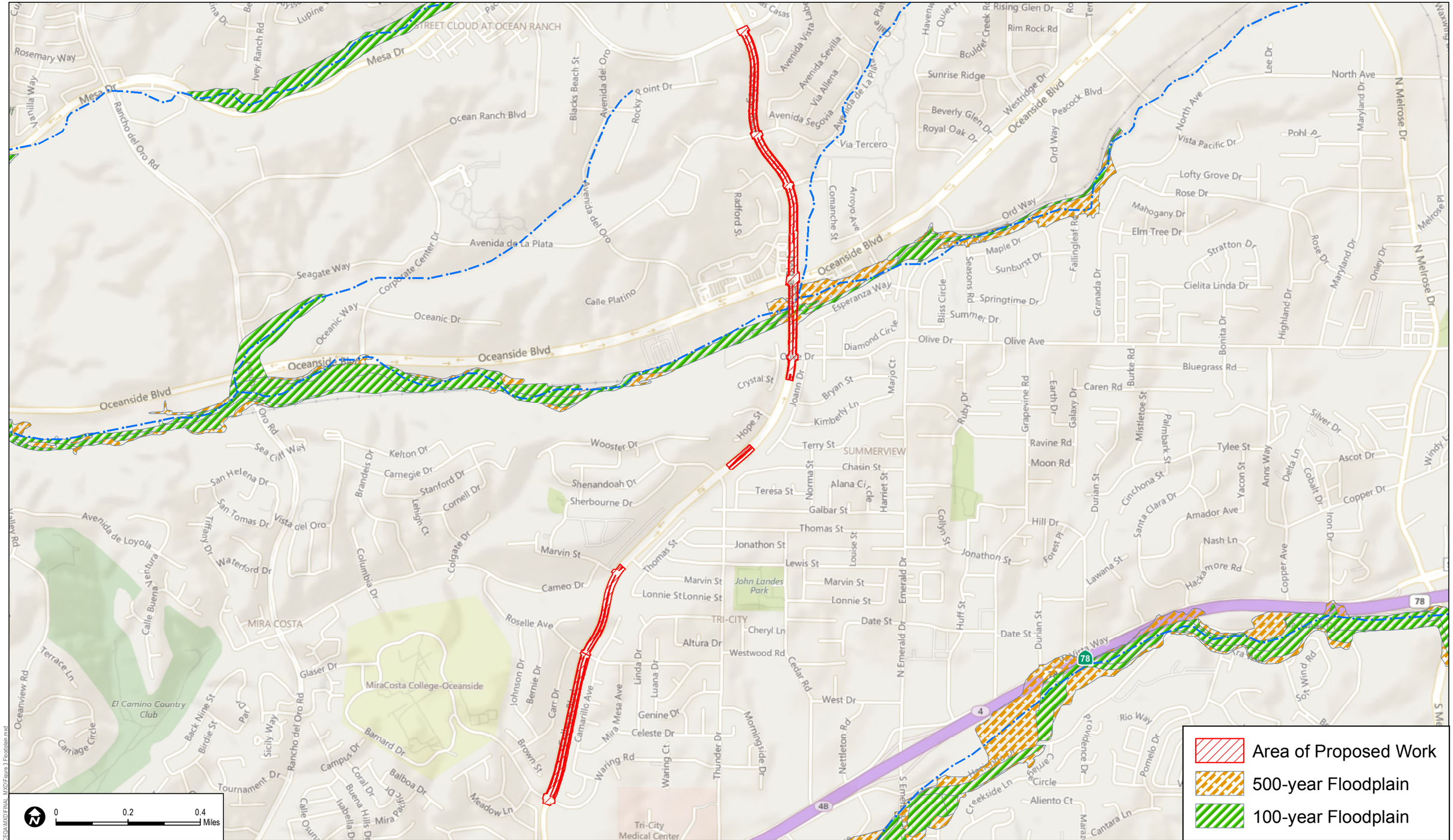

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SOURCE: Bing Maps, Esri, USGS, NOAA

FIGURE 3

Floodplains

Preliminary Hydrology Study for the Proposed College Boulevard Improvement Corridor

Z:\Hydro\Projects\College Blvd CEQA\MXD\FINAL MXD\Figure 3 Floodplain.mxd

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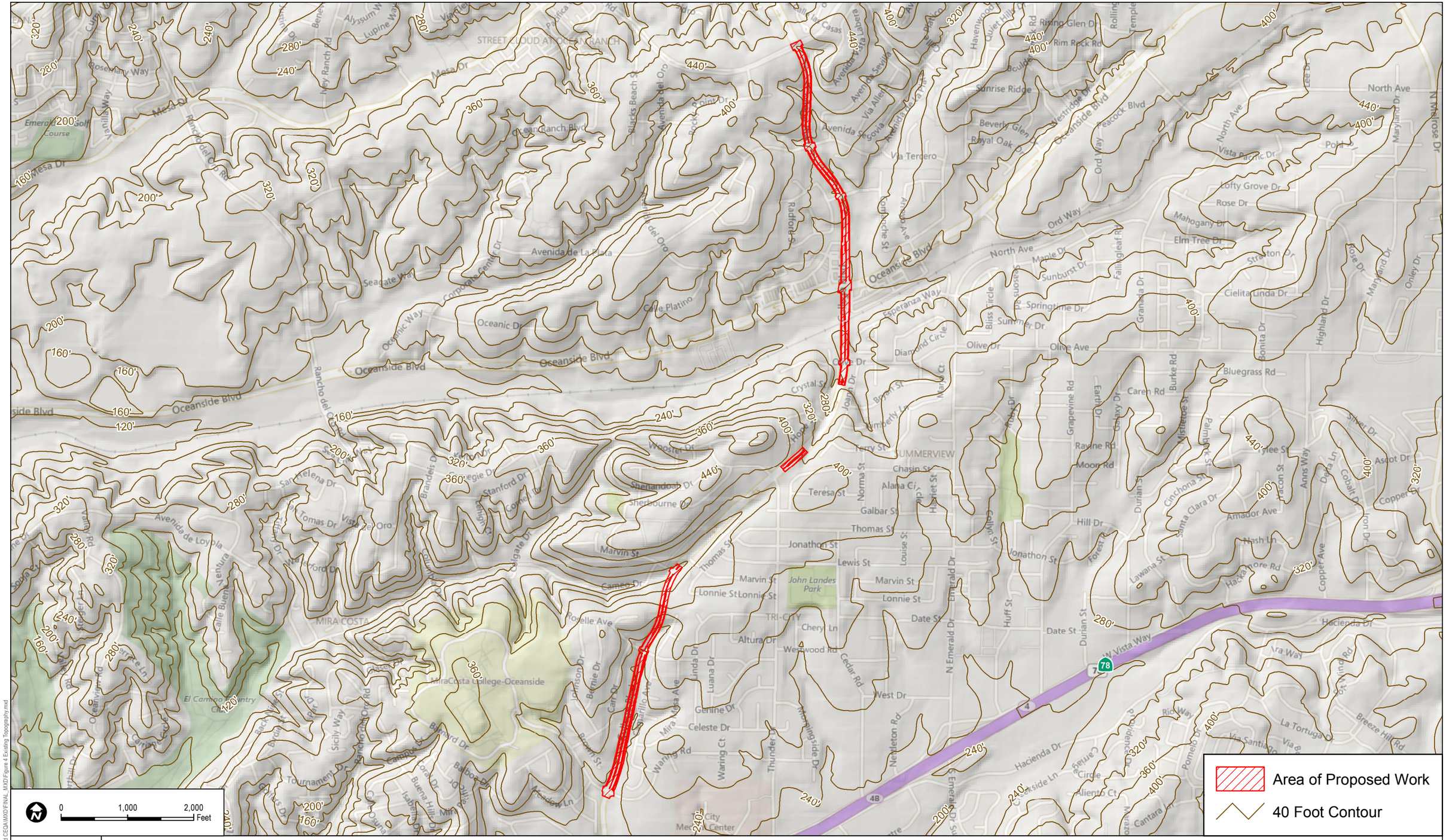

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MAP SOURCE: Bing Maps, SANGIS

ELEVATION SOURCE: USGS San Luis Rey Quadrangle; California - San Diego Co.; 7.5 Minute Series (Topographic)

FIGURE 4

Existing Topography

Preliminary Hydrology Study for the Proposed College Boulevard Improvement Corridor

Z:\Hydro\Projects\College Blvd.CEQA\MXD\FINAL_MXD\Figure 4 Existing Topography.mxd

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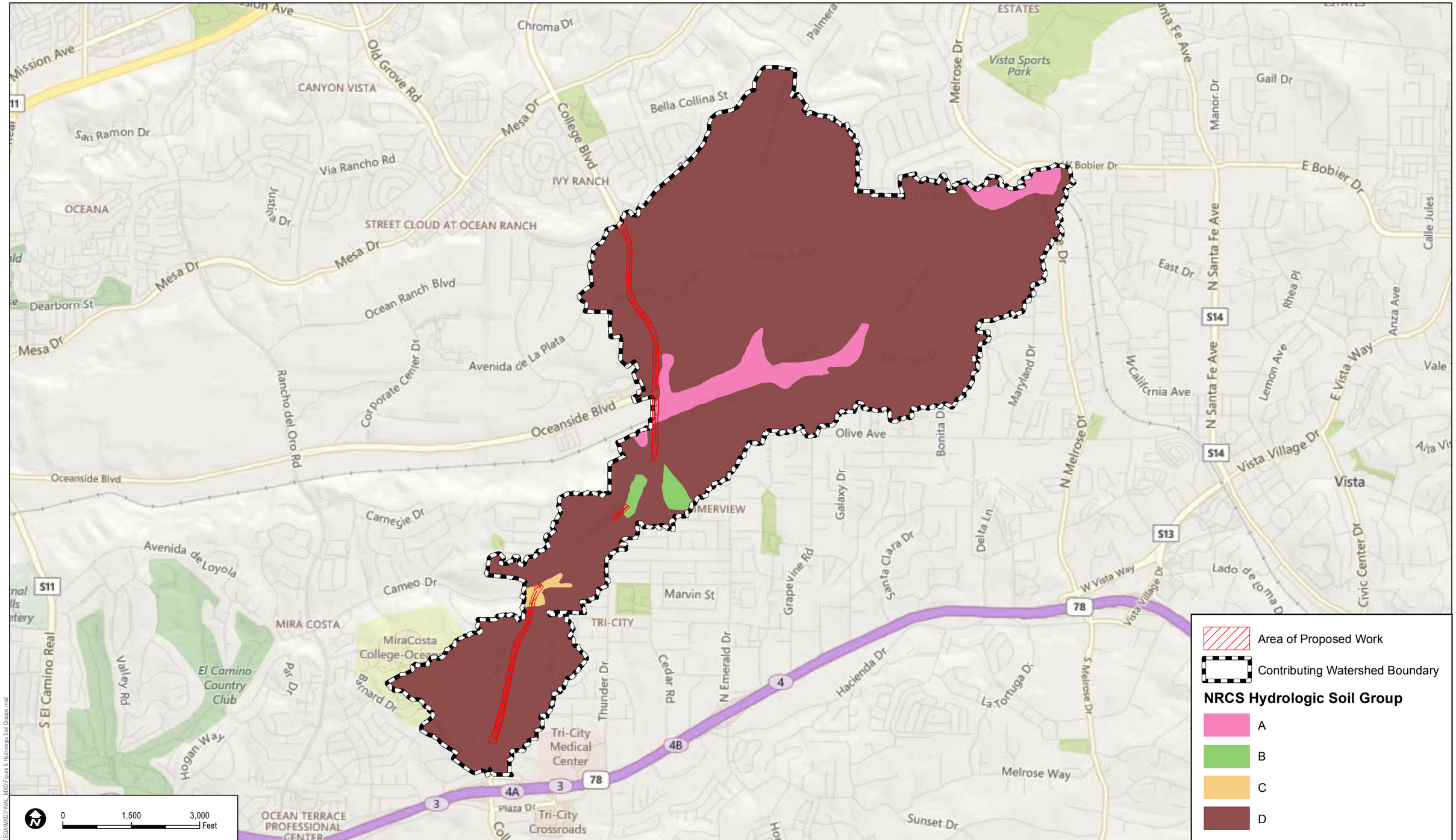

Z:\Hydro\Projects\College Blvd CEQA\MXD\FINAL_MXD\Figure 5 Hydrologic Soil Groups.mxd

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SOURCE: Bing Maps 2018, SANGIS, USDA 2007

FIGURE 5

Hydrologic Soil Groups

Preliminary Hydrology Study for the Proposed College Bulevard Improvement Corridor

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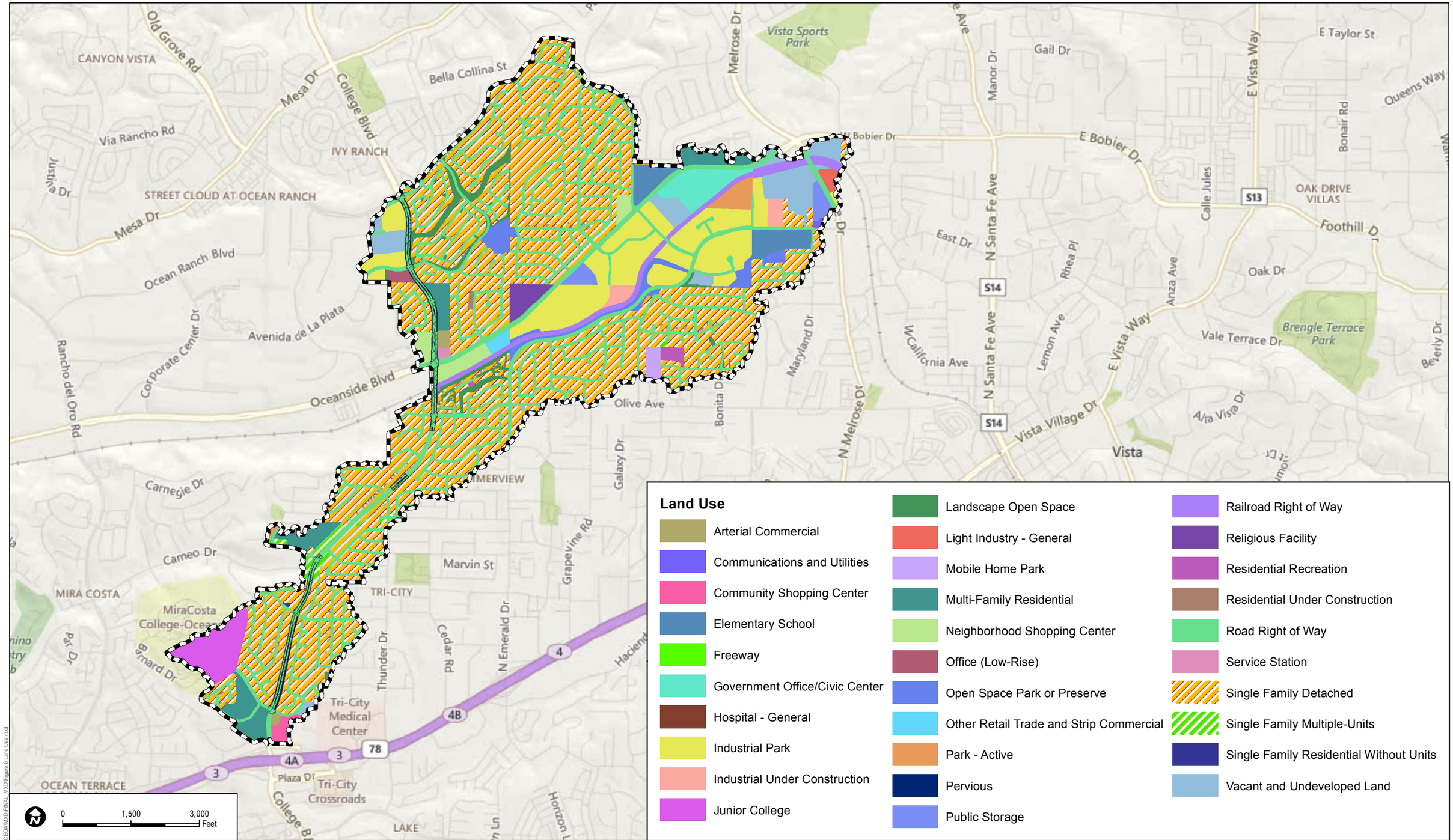

SOURCE: Bing Maps 2018, SANGIS 2018

FIGURE 6

Land Use

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Preliminary Hydrology Study for the Proposed College Bulevard Improvement Corridor

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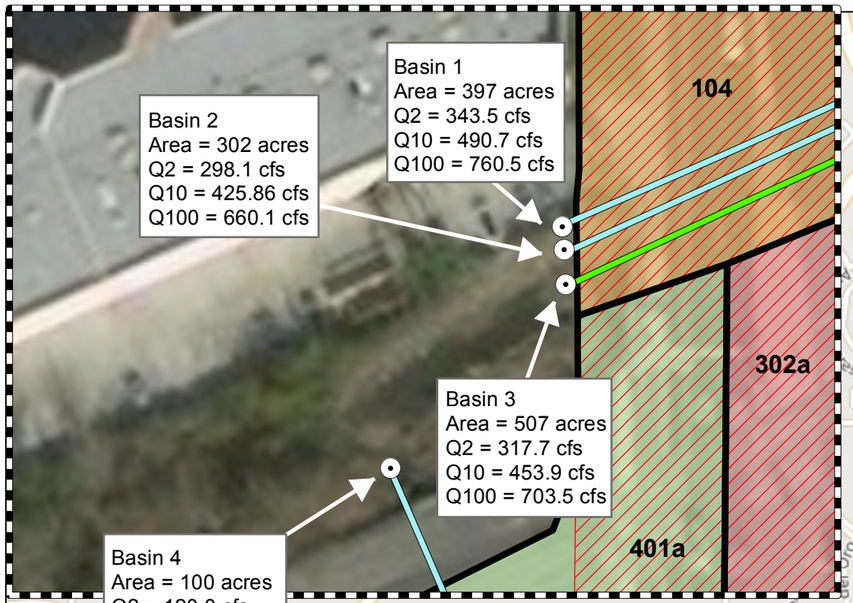

Flow Paths

- Sheetflow
- Gutter
- Drain
- Concrete Channel
- Natural Channel
- Basin Junctions

Basin ID/Subarea ID

- Basin 1 / 101
- Basin 2 / 200b
- Basin 3 / 330
- Area of Proposed Work
- Basin 4 / 401

Peak discharge in cubic feet per second (cfs) per the Modified Rational Method for the following return periods:
Q2 = 2-year
Q10 = 10-year
Q10= 100-year

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SOURCE: Source: SANGIS, ESRI World Imagery 2018, Bing Maps 2018, USGS NHD Dataset

FIGURE 7a

Existing Hydrology - Loma Alta HSA

Preliminary Hydrology Study for the Proposed College Boulevard Improvement Corridor

Z:\Hydro\Projects\College Blvd CEQA\MXD\FINAL_MXD\Figure 7a Existing Hydrology Loma Alta HSA.mxd

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Section in Loma Alta HSA
(see Figure 7a)

Basin 5
Area = 100 acres
Q2 = 166 cfs
Q10 = 237 cfs
Q100 = 367 cfs

Basin 6
Area = 201 acres
Q2 = 284 cfs
Q10 = 405 cfs
Q100 = 628 cfs

600
501
610
600
610
601
602

Flow Paths

- Sheetflow
- Gutter
- Drain
- Basin Junctions

Basin ID/Subarea ID

- Basin 5 / 500
- Basin 6 / 610
- Area of Proposed Work

Peak discharge in cubic feet per second (cfs) per the Modified Rational Method for the following return periods:
Q2 = 2-year
Q10 = 10-year
Q10= 100-year

0 500 1,000 Feet

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SOURCE: Source: SANGIS 2018, ESRI World Imagery 2018, Bing Maps 2018, USGS NHD Dataset

FIGURE 7b
Existing Hydrology - El Salto HSA

Preliminary Hydrology Study for the Proposed College Boulevard Improvement Corridor

Z:\Hydro\Projects\College Blvd.CEQA\MXD\FINAL_MXD\Figure 7b Existing Hydrology El Salto HSA.mxd

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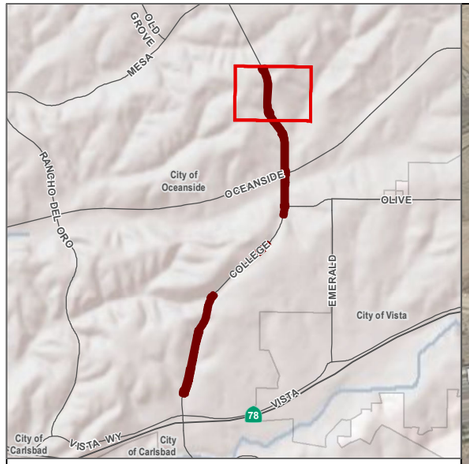

Area of Proposed Work

Project Footprint

Impervious to Pervious

Pervious to Impervious

Areas of No Change

Pervious - No Change

Impervious - No Change

0 100 200 Feet

SOURCE: Source: Bing Maps 2018, USGS NHD Dataset

FIGURE 8a

Project Components

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Preliminary Hydrology Study for the Proposed College Bulevard Improvement Corridor

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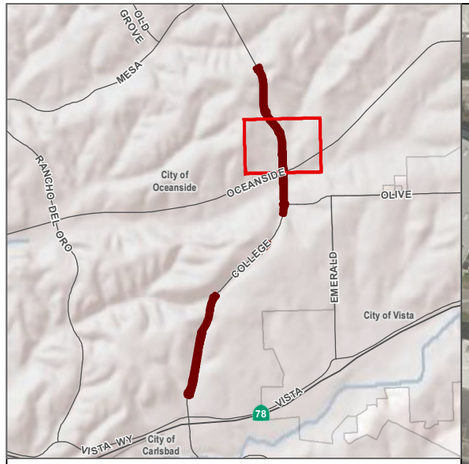

Area of Proposed Work

Project Footprint

Impervious to Pervious

Pervious to Impervious

Areas of No Change

Pervious - No Change

Impervious - No Change

0 100 200 Feet

SOURCE: Source: Bing Maps 2018, USGS NHD Dataset

FIGURE 8b

Project Components

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Preliminary Hydrology Study for the Proposed College Bulevard Improvement Corridor

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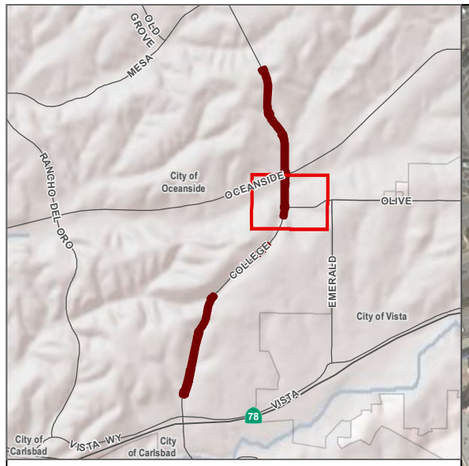

Area of Proposed Work

Project Footprint

Impervious to Pervious

Pervious to Impervious

Areas of No Change

Pervious - No Change

Impervious - No Change

N 0 100 200 Feet

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SOURCE: Source: Bing Maps 2018, USGS NHD Dataset

FIGURE 8c

Project Components

Preliminary Hydrology Study for the Proposed College Bulevard Improvement Corridor

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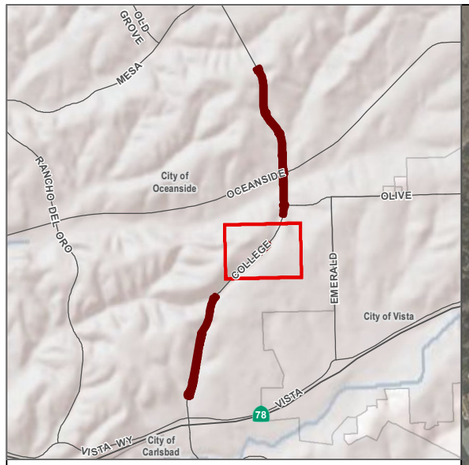

Area of Proposed Work

Project Footprint

Impervious to Pervious

Pervious to Impervious

Areas of No Change

Pervious - No Change

Impervious - No Change

0 100 200 Feet

SOURCE: Source: Bing Maps 2018, USGS NHD Dataset

FIGURE 8d

Project Components

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Preliminary Hydrology Study for the Proposed College Bulevard Improvement Corridor

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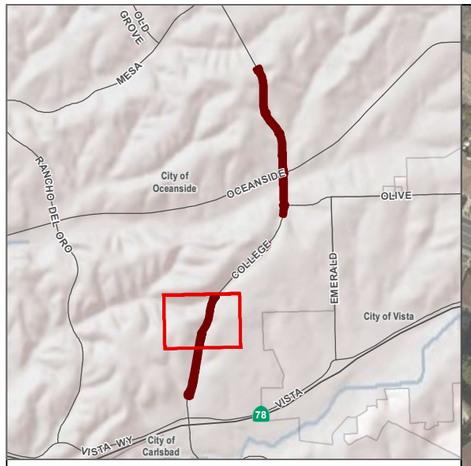

Area of Proposed Work

Project Footprint

Impervious to Pervious

Pervious to Impervious

Areas of No Change

Pervious - No Change

Impervious - No Change

N 0 100 200 Feet

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SOURCE: Source: Bing Maps 2018, USGS NHD Dataset

FIGURE 8e

Project Components

Preliminary Hydrology Study for the Proposed College Bulevard Improvement Corridor

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Area of Proposed Work

Project Footprint

Impervious to Pervious

Pervious to Impervious

Areas of No Change

Pervious - No Change

Impervious - No Change

N 0 100 200 Feet

SOURCE: Source: Bing Maps 2018, USGS NHD Dataset

FIGURE 8f

Project Components

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Preliminary Hydrology Study for the Proposed College Bulevard Improvement Corridor

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APPENDIX A

San Diego County Hydrology Manual Parameters

County of San Diego Hydrology Manual

Rainfall Isopluvials

2 Year Rainfall Event - 6 Hours

Isopluvial (inches)

Orange County

Riverside County

Imperial County

Pacific Ocean

Mexico

OCEANSIDE
VISTA
CARLSBAD
ESCONDIDO
ENCINITAS
SOLANA BEACH
DEL MAR
POWAY
S.D. COUNTY
SANTEE
SAN DIEGO
EL CAJON
LA MESA
LEMON GROVE
CORONADO
CHULA VISTA
IMPERIAL BEACH
SD

117°30' 117°15' 117°00' 116°45' 116°30' 116°15'
33°30' 33°15' 33°00' 32°45' 32°30'

N W E S

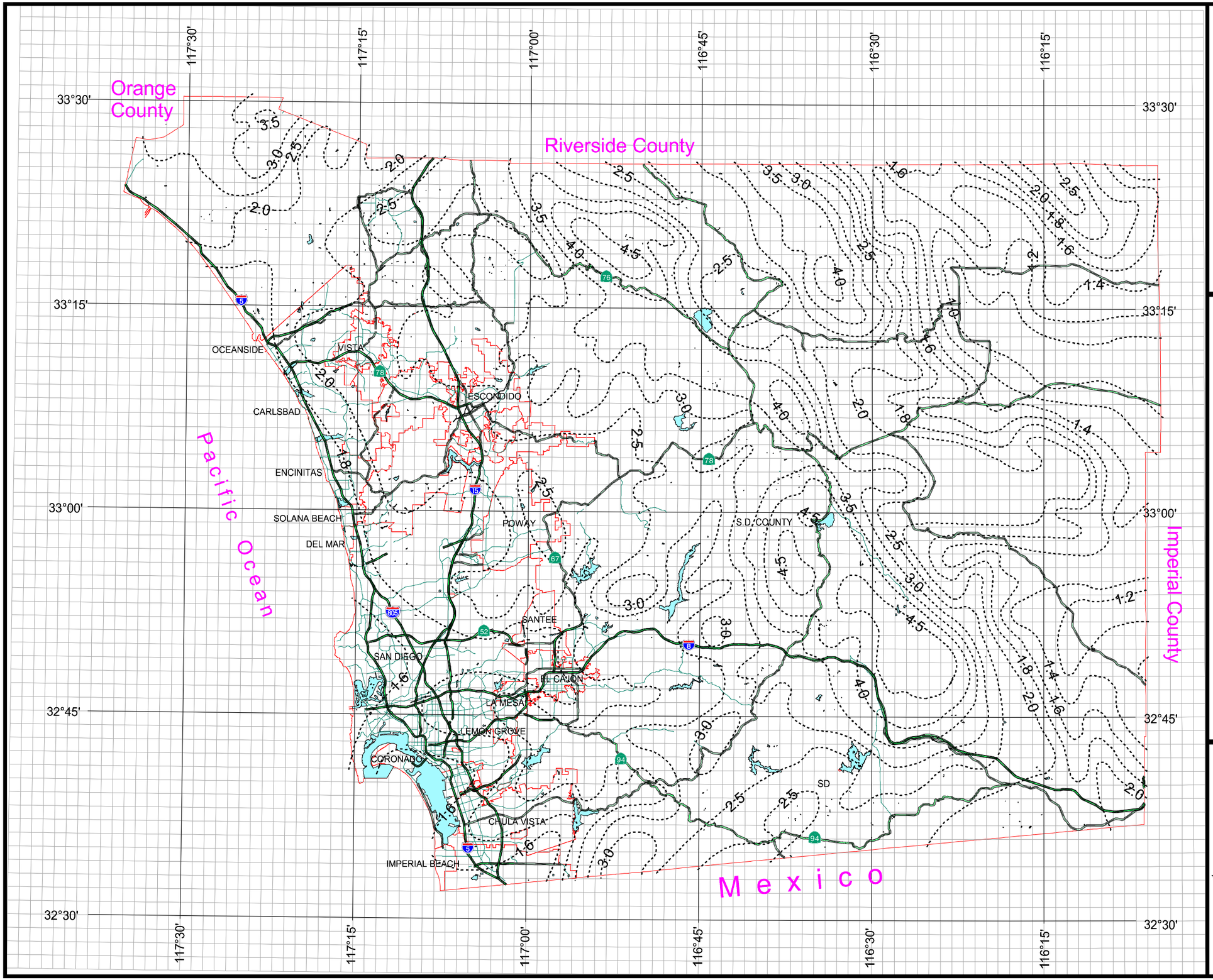
3 0 3 Miles

County of San Diego Hydrology Manual

Rainfall Isopluvials

2 Year Rainfall Event - 24 Hours

Isopluvial (inches)



DPW GIS
Department of Public Works
Geographic Information Services

SanGIS
We Have San Diego Covered!

N
W E
S

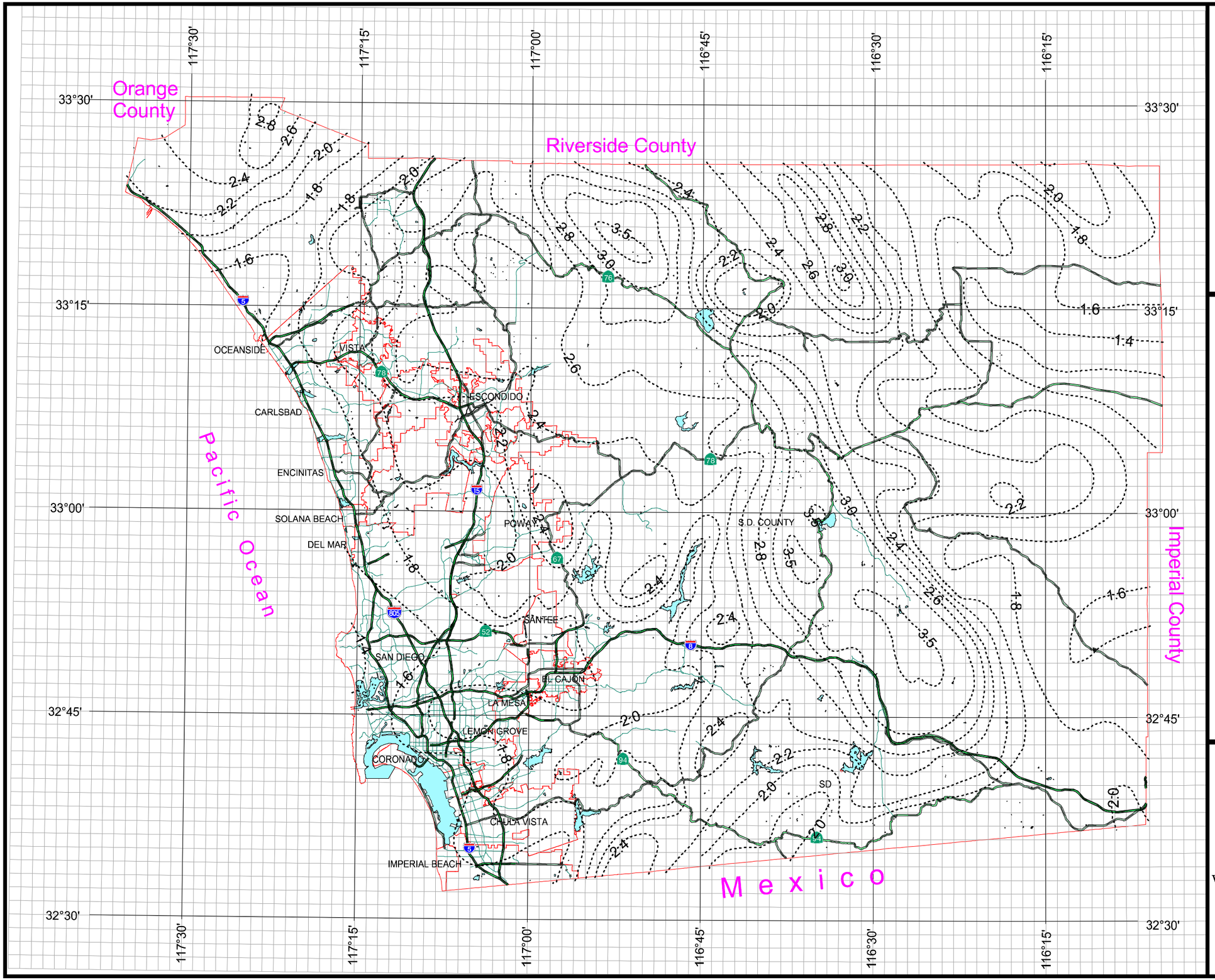
3 0 3 Miles

County of San Diego Hydrology Manual

Rainfall Isopluvials

10 Year Rainfall Event - 6 Hours

Isopluvial (inches)



DPW GIS
Department of Public Works
Geographic Information Services

SanGIS
We Have San Diego Covered!

N
W E
S

3 0 3 Miles

County of San Diego Hydrology Manual

Rainfall Isopluvials

10 Year Rainfall Event - 24 Hours

Isopluvial (inches)

Orange County

Riverside County

Pacific Ocean

Imperial County

Mexico

OCEANSIDE
VISTA
CARLSBAD
ESCONDIDO
ENCINITAS
SOLANA BEACH
DEL MAR
POWAY
S.D. COUNTY
SANTEE
SAN DIEGO
EL CAJON
LA MESA
LEMON GROVE
CORONADO
SD
CHULA VISTA
IMPERIAL BEACH

117°30' 117°15' 117°00' 116°45' 116°30' 116°15'
33°30' 33°15' 33°00' 32°45' 32°30'

DPW GIS
Department of Public Works
Geographic Information Services

SanGIS
We Have San Diego Covered!

N W E S

3 0 3 Miles

County of San Diego Hydrology Manual

Rainfall Isopluvials

100 Year Rainfall Event - 6 Hours

Isopluvial (inches)

Orange County

Riverside County

Pacific Ocean

Imperial County

Mexico

OCEANSIDE
VISTA
CARLSBAD
ESCONDIDO
ENCINITAS
SOLANA BEACH
DEL MAR
POWAY
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SANTEE
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117°30' 117°15' 117°00' 116°45' 116°30' 116°15'
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N W E S

3 0 3 Miles

County of San Diego Hydrology Manual

Rainfall Isopluvials

100 Year Rainfall Event - 24 Hours

Isopluvial (inches)

Orange County

Riverside County

Imperial County

Pacific Ocean

Mexico

OCEANSIDE
VISTA
CARLSBAD
ESCONDIDO
ENCINITAS
SOLANA BEACH
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33°30' 33°15' 33°00' 32°45' 32°30'

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N W E S

3 0 3 Miles

APPENDIX B

Hydrology Analysis Methodology and Results

METHODOLOGY

Hydrologic analysis of the College Boulevard widening project (Project) was performed to calculate run-on discharging onto the proposed project and runoff generated from the proposed project for the 2-year, 10-year and 100-year 6-hour storm events using the modified rational method (RMR) as defined in San Diego County's Hydrology Manual (SDCHM), June 2003. The RMR calculates peak flow rate for a given watershed (basin) as the product of the basin's area, its runoff coefficient (based on land cover and soil hydrologic properties), and rainfall intensity. Methodology and inputs for calculating the peak flow rates from the Project watersheds for both existing and proposed conditions analyses are provided in this Appendix. Project components and the overall hydrologic setting are provided in Sections 2 and 3 of the Storm Water Quality and Hydrology Technical Report (Technical Report).

Calculation Procedure

The following steps were performed as a part of the hydrologic analysis to calculate peak run-on and runoff:

1. **Delineation of Project Drainage Basins**

Analysis of Project hydrology was split into two different regions: the Loma Alta HSA and the El Salto HSA. The portion of the Project within the Loma Alta HSA crosses Loma Alta creek approximately 600 feet south of the intersection of College Boulevard and Oceanside Boulevard. All storm water generated within the proposed Project area in the Loma Alta HSA discharges either through storm drains or the natural channel immediately downstream from where College Boulevard crosses Loma Alta Creek (Crossing). There are four distinct discharge points immediately downstream the Crossing. The hydrologic analysis of Project impacts in the Loma Alta HSA was divided into the four basins contributing storm water runoff to these four discharge points (Figure 7a of the Technical Report). Basins 1, 3 and 4 encompass sections of the proposed Project. Basin 2 was included in the hydrology study as part of a preliminary cumulative impact analysis to Loma Alta Creek downstream from the College Boulevard bridge.

The portion of the Project within the El Salto HSA is split into two basins with different discharge points (Figure 7b of the Technical Report). Sections of the proposed Project between Thunder Drive and the low point between Marvin Street and Rosella Avenue discharge to a drainage network that follows a natural depression west along the northern boundary of MiraCosta College. Surface flows generated in the remaining Project area south of this point are collected by the storm drain network that parallels College Boulevard and discharges into Buena Vista Creek south of State Road 78.

Basin boundaries were delineated using Spatial Analyst tools in ArcGIS with the Project DEM (see Section 3.2.1 of the Technical Report). Watershed boundaries were then updated to account

for the storm drain conveyance system as defined in the City of Oceanside's storm drain dataset, and through verification on the ground and through review of aerial imagery (2016 Google Earth imagery). A total of 6 basins were developed for the final analysis of the Project area. Basins were further subdivided into *subareas* to capture variability in land use or in surface flow travel times (i.e. at junctions where discharge from two larger areas converged). Subareas were designated identification numbers to differentiate between area discharging directly to the longest flow path and adjacent subareas providing additional flow at a junction to the longest flow path. For example, subareas containing the longest flow path in Basin 1 were numbered 100, 101, 102, 103, and 104, while the contributing subareas were numbered 110, 120, and 130 (see Figure 7a of the Technical Report).

2. **Runoff Coefficients**

Runoff coefficients were obtained from Table 3-1 (Runoff Coefficients for Urban Areas) on page 3-6 of the SDCHM based on the land use type and soil infiltration properties. Existing land covers (SANDAG, 2016) and soil types (NRCS, 2016) were used for development of weighted runoff coefficient numbers in each subarea excluding the sections of College Boulevard comprising the Project area. The entire Project area is currently defined as Road Right of Way in the SANDAG dataset (i.e. impervious surface not taking into account sidewalk/median landscaping). As the analysis of the Project's hydrologic impacts depends on a more detailed comparison of land use changes within the Project area than what is provided in the SANDAG dataset, land use within the proposed Project boundary was re-classified as either impervious (asphalt, concrete) or pervious (bare soil, landscaping). These classifications were based off aerial imagery and preliminary engineering plans provided by NV5 for both existing and proposed conditions (see Figures 8a-8f in the Technical Report). All proposed-condition soils within the Project area was classified as D soils (lowest permeability) as a conservative assumption that Project soils would lose permeability during the construction phase[1].

3. **Time of Concentration**

Time of concentration (T_C) for urban watersheds was calculated along the longest flow paths in each subarea. Flow paths were separated to differentiate overland flow, street/gutter flow, channel flow (if present), and storm drain flow. T_C was calculated for each different flow path, and the summation of each was used to create a final T_C for each subarea (e.g. $T_{C\ 1}$). Each basins final T_C is a summation of the upstream subarea T_Cs, where:

$$Tc_{total} = Tc_1 + Tc_2 + Tc_3$$

Major junctions that captured drainage from two distinct subareas required use of the SDCHM's Junction Analysis (SDCHM – Section 3.4.2) in order to determine which T_C to use in the analysis. Junctions identified in this study are identified in Figures 7a and 7b of the Technical Report.

[1] Although proposed parkways and vegetated medians should maintain higher infiltration rates than those of typical D soils, this modeling effort is conservative in design and likely over-estimates Project impacts to peak discharge.

Length of overland flow was estimated using Table 3-2 from the SDCHM, which assigns maximum overland flow lengths for different land covers across different slopes. The following equation was used to calculate T_C for overland flow:

$$T_C = \frac{1.8\ (1.1\text{-}C)\ D^{1/2}}{S^{1/3}}$$

Where:

T_C = Time of concentration (min)

D = Length of flow (ft)

S = Slope (%)

C = Runoff Coefficient (dimensionless)

It was assumed in this analysis that this overland flow length did not include additional sheet flow lengths for both the existing and proposed conditions (i.e. flow transitioned immediately into street/gutter flow). The length of street/gutter flow was estimated from end of overland flow to closest downstream storm drain inlet. Gutter flow velocities were calculated using Figure 3-6 (Gutter and Roadway Discharge – Velocity Chart) of the SDCHM which utilizes street slope and contributing watershed area. The final T_C for gutter flow was calculated using flow path length and gutter flow velocity.

Flow velocity through natural channels was estimated using Figure 3-7 (Manning's Equation Nomograph) in the SDCHM, which is based on a relationship between channel slope and channel roughness. All natural channels in the analysis were assigned a roughness coefficient of 0.07 based on the areal images showing vegetated channels and assuming backwater/ponding at urban control structures (e.g. culverts and check dams). The final T_C for natural channel flow was calculated using flow path length and flow velocity.

Lastly, flow velocity through pipes was calculated using Manning's equation:

$$V = \frac{1.49\ (S^{1/2})((A/WP)^{1/3})}{n}$$

Where:

V = Velocity (ft/sec)

S = Slope (ft/ft)

A = Conduit Area (ft^2)

WP = Wetted Perimeter (ft)

n = Roughness Coefficient (dimensionless)

All storm drain conduits in the analysis were assigned a roughness coefficient of 0.013 (typical roughness coefficient used for concrete conduits). The final T_C for pipe flow was calculated using flow path length and flow velocity. Although undersized storm drain conduits have been identified in previous studies (City of Oceanside, 2003), as well in this study, this analysis assumes unrestricted flow[2].

4. Rainfall Intensity

Lastly, rainfall intensity, defined as the rainfall in inches per hour (in/hr) for the duration of the T*c* for a selected storm event, was calculated for each subarea using the rainfall isopluvial maps and following the equation provided in section 3.1.3 of the SDCHM. Per the SDCHM, rainfall for the 6-hour event (P_6) for the selected storm events (in this study the 2-year, 10-year, and 100-year) should be between 45% and 65% of the 24-hour event (P_{24}) total. This criterion was met as the P_6 for all three return frequencies falls within the specified range. Having met this criteria, rainfall intensity for each subarea was calculated as:

$$I = \frac{7.44\ (P_6)(D^{-0.645})}{}$$

Where:

I = rainfall intensity (in/hr)

P_6 = rainfall depth for a 6-hour event (in)

D = Respective subarea T*c* (min)

5. Peak Flow

Peak flow from each basin (and subarea within each basin) was then calculated using the parameters defined above. The following equation represents the rational method equation:

$$Q = \sum CA*I$$

Where:

Q = Peak rate of flow in cubic feet per second (cfs)

$\sum CA$ = The sum of each subarea's product of the weighted runoff coefficient (C) and area (A – in acres).

[2] Peak discharge in subarea 101 modeled in this study was 145 cfs for the 2-year event, which is 1 cfs larger than the maximum capacity of the storm drain immediately downstream from the natural channel (Avenida de Suenos), but does not serve as a constriction to downstream flow in the final analysis.

I = Average rainfall intensity in inch per hour (inch/hour) based on the final T*c* derived for each Basin

Tables A-1a and A-1b show the basin characteristics developed for calculation of peak discharge, including: basins area, flow path lengths/slopes, runoff coefficients, time of concentration, and rainfall intensity. Peak discharge calculated at the final downstream point in each basin is included in Table A-1b.

Table A-1a
Subarea Characteristics: Existing Conditions

Basin	Subarea[a]	Area (ac)	Project Area (ac)	Runoff Coefficient C	CA	Longest Flow Path (ft)[b]	Min and Max Slope (ft/ft)[c]	T_C (min)[b]
Loma Alta HAS								
1	100	116.6	0.0	0.64	74.6	**3,913**	0.01 - 0.02	**16.1**
	101	36.9	0.0	0.61	22.5	**1,592**	0.01 - 0.02	**4.2**
	110	58.6	0.0	0.61	35.7	*3,149*	0.02 - 0.03	*13.2*
	102	54.8	0.0	0.60	32.9	**2,268**	0.02	**1.7**
	120	63.4	4.2	0.66	41.9	*3,017*	0.02 - 0.07	*12.3*
	103	21.8	0.0	0.65	14.2	**1,726**	0.01	**1.2**
	130	38.8	6.6	0.70	27.1	*2,696*	0.03 - 0.07	*9.5*
	104	6.4	1.7	0.79	5.0	**490**	0.01	**0.5**
Basin 1 Value/Range		**397.3**	12.5	0.60 - 0.79	**254.0**	**9,988**	0.01 - 0.07	**23.7**
2[d]	200	32.4	0.0	0.78	25.3	*3,661*	0.01 - 0.02	*17.6*
	200a	11.1	0.0	0.78	8.6	**419**	0.03	**0.3**
	210	49.8	0.0	0.69	34.4	**2,828**	0.02 - 0.14	**10.9**
	200b	29.9	0.0	0.78	23.3	**1,223**	0.02	**1.3**
	230	37.2	0.0	0.66	24.5	*2,279*	0.02 - 0.07	*9.9*
	201	67.2	0.0	0.73	49.0	**2,281**	<0.01 - 0.03	**5.3**
	220	36.3	0.0	0.87	31.6	*3,763*	<0.01 - 0.02	*13.0*
	202	10.8	0.0	0.78	8.4	**1,071**	0.01	**4.5**
	240	22.7	0.0	0.64	14.5	*1,866*	0.04 - 0.15	*9.4*
	202a	5.5	0.0	0.78	4.3	**1,488**	0.01	**2.0**
Basin 2 Value/Range		**302.7**	0.0	0.64 - 0.87	**223.9**	9,309	<0.01 - 0.15	**24.3**
3	300	133.9	0.0	0.67	89.7	**5407.9**	0.01 - 0.13	**22.9**
	310	84.5	0.0	0.72	60.8	*3930.1*	0.01 - 0.06	*15.1*
	301	50.3	0.0	0.65	32.7	**1354.0**	0.02	**1.4**
	320	90.2	0.0	0.63	56.8	*3678.2*	0.01 - 0.06	*14.0*

Table A-1a
Subarea Characteristics: Existing Conditions

Basin	Subarea[a]	Area (ac)	Project Area (ac)	Runoff Coefficient C	CA	Longest Flow Path (ft)[b]	Min and Max Slope (ft/ft)[c]	T_C (min)[b]
	301a	83.4	0.0	0.65	54.2	**2244.2**	0.01 - 0.07	**9.3**
	302	60.1	0.0	0.60	36.0	**2417.7**	0.01	**10.6**
	330	4.1	0.8	0.54	2.2	*622.9*	0.01 - 0.07	*7.0*
	302a	0.1	0.0	0.60	0.1	**258.0**	0.01	**1.3**
Basin 3 Value/Range		**506.5**	0.8	0.54 - 0.72	**332.5**	**11681.7**	0.01 - 0.13	**45.5**
4	400	22.9	0.8	0.63	14.5	*2,475*	0.04 - 0.24	*9.3*
	410	47.2	0.7	0.63	29.7	**2,918**	0.01 - 0.04	**13.88**
	401	2.5	0.4	0.64	1.6	**279**	0.05	**0.14**
	420	21.9	0.6	0.67	14.6	*2,726*	0.02 - 0.06	*10.35*
	401a	5.1	0.7	0.64	3.2	**142**	0.01	**0.14**
Basin 4 Value/Range		**99.5**	3.0	0.63 - 0.67	**63.7**	**3,339**	0.01 - 0.024	**14.16**
El Salto HAS								
5	500	42.4	0.0	0.67	28.4	*4,106*	0.02 - 0.04	*14.37*
	510	31.7	0.0	0.65	20.6	**1,682**	0.01 - 0.06	**8.49**
	501	26.2	1.8	0.70	18.3	**341**	0.01	**0.85**
Basin 5 Value/Range		**100.2**	1.8	0.65 - 0.70	**67.3**	**2,023**	0.01 - 0.06	**9.34**
6	600	69.39	4.7	0.65	45.1	**3,107**	0.03 - 0.06	**9.42**
	601	75.6	3.3	0.66	49.9	**959**	0.03	**0.93**
	610	33.18	0.0	0.79	26.2	*3,056*	0.03 - 0.04	*9.63*
	602	22.3	0.5	0.71	15.8	**761**	<0.01	**1.89**
Basin6 Value/Range		**200.5**	8.5	0.65 - 0.79	**137.0**	**4,827**	<0.01 - 0.06	**12.24**

a - Order of subareas is not numberical but from furthest upstream subarea to furthest downstream subarea in the analysis (see Figure 7a in Technical Report)

b - Longest flow paths for each subarea may include summation of sheet flow, gutter flow, channel and pipe flows (see Figures 7a and 7b in Technical Report for clear identification of flow paths). Final longest flow path and cumulative Tc calculations for the entire Basin is a summation of the flow paths/Tc in the subareas selected per the SDCHM Junction Analysis (bold values)

c - Slope values represent the range of slopes identified in each subarea (i.e. the lowest and highest gradients identified for the overland flow, gutter flow, channel flow, and pipe flow).

d - Despite none of the Project falling within Basin 2, it is included in the analysis as part of a cumulative analysis of potential impacts to downstream discharge.

Table A-1b
Calculation of Rainfall Intensity and Peak Discharge (Basins) – Existing Conditions

Basin	Tc	I (2-Year)	I (10-Year)	I (100-Year)	∑CA	Q (2-Year)	Q (10-Year)	Q (100-Year)
1	23.7	1.4	1.9	3.0	254.0	343.4	490.6	760.4
2	24.3	1.3	1.9	2.9	223.9	298.1	425.8	660.0
3	45.5	0.9	1.3	2.0	332.5	295.3	421.9	653.9
4	14.2	1.9	2.7	4.2	63.7	120.0	171.4	265.7
5	9.3	2.5	3.5	5.5	67.3	165.9	236.9	367.3
6	12.2	2.1	3.0	4.6	137.0	283.8	405.4	628.3

6. Proposed Conditions Analysis

Total area of the Project footprint included in the analysis is 26.7 acres, and was split between permeable (parkway, landscaped median) and impermeable (road, sidewalk) surfaces for developing each subareas weighted runoff coefficient number. The Project is contained within 12 of the 38 subareas delineated for this analysis, which make up a total of 405 acres (the Project comprises 6.5% of the subareas it occupies). The additional 1.63 acres of impervious surfaces are distributed between the 12 subareas, but only impacted the runoff coefficients for subareas 104 (from 79 to 80) and 130 (from 70 to 71). This resulted in a 0.18% increase in peak discharge from Basin 1 for all 3 events, while there is no modeled change in peak discharge for the other 5 basins. Results for the proposed conditions analysis are provided in Table A-2 (differences calculated in Basin 1 are in **bold**).

Table A-2
Calculation of Rainfall Intensity and Peak Discharge (Basins) – Proposed Conditions

Basin	Tc	I (2-Year)	I (10-Year)	I (100-Year)	∑CA	Q (2-Year)	Q (10-Year)	Q (100-Year)
1	23.7	1.4	1.9	3.0	***254.4***	***344.0***	***491.5***	***761.8***
2	24.3	1.3	1.9	2.9	223.9	298.1	425.8	660.0
3	45.5	0.9	1.3	2.0	332.5	295.3	421.9	653.9
4	14.2	1.9	2.7	4.2	63.7	120.0	171.4	265.7
5	9.3	2.5	3.5	5.5	67.3	165.9	236.9	367.3
6	12.2	2.1	3.0	4.6	137.0	283.8	405.4	628.3

APPENDIX C

Stormwater Quality Management Plan

(INSERT PERMIT APPLICATION NUMBERS)

CITY OF OCEANSIDE
ENGINEERING DIVISION

STANDARD DEVELOPMENT PROJECT

***PRELIMINARY* STORM WATER QUALITY MANAGEMENT PLAN**

FOR

College Blvd Widening City of Oceanside

ENGINEER OF WORK

Wet Signature, Wet Date, Stamp

For Project Engineer to sign upon completion of final design.

Prepared for:

The City of Oceanside
300 North Coast Highway
Oceanside, California 92054

Prepared by:

Project Engineer
Address
City State Zip Code
Phone Number

How to Use This Template

This template, assembled by GHD on behalf of the City of Oceanside, is for the development of Storm Water Quality Management Plans (SWQMPs) for Standard Development Projects (SDPs) located in Oceanside. It is based on requirements set forth in the Regional Water Quality Control Board's National Pollutant Discharge Elimination System MS4 Permit that covers the San Diego Region (Order No. R9-2013-0001).

All references within the template refer to the City of Oceanside BMP Design Manual, February 2016 (Manual). Use of this template in conjunction with the Manual is intended to help a project applicant, in coordination with City of Oceanside storm water staff, develop a SWQMP for a development project (public or private) that complies with City of Oceanside and MS4 Permit requirements.

Template Date: February 16, 2016

Assembled By:

Quick Reference Guide

Item	Project Information
Project Name	College Boulevard Widening, Oceanside, CA
Application Number(s)	TBD
Project Address	College Blvd between Old Grove Road (north) and Vista Way (south)
Total Parcel Area	66,211 sq. ft.
Project Description	Project description should touch briefly on all of the following elements: • Project size • Existing site use and cover • Proposed site use and cover
Proposed Disturbed Area	26.7 acres or 1,163,052 sq. ft.
Created or Replaced Impervious Area	TBD sq. ft.
Project Hydrologic Unit Watershed	☐ Santa Maria ☐ San Luis Rey ☒ Carlsbad

Table of Contents

CERTIFICATION PAGE

Project Name: College Boulevard Widening, Oceanside, CA
Permit Application Number: [Insert Permit Application Number]

I hereby declare that I am the Engineer in Responsible Charge of design of storm water BMPs for this project, and that I have exercised responsible charge over the design of the project as defined in Section 6703 of the Business and Professions Code, and that the design is consistent with the requirements of the BMP Design Manual, which is based on the requirements of San Diego Regional Water Quality Control Board Order No. R9-2013-0001 (MS4 Permit).

I have read and understand that the City has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the BMP Design Manual. I certify that this SWQMP has been completed to the best of my ability and accurately reflects the project being proposed and the applicable source control and site design BMPs proposed to minimize the potentially negative impacts of this project's land development activities on water quality. I understand and acknowledge that the plan check review of this SWQMP by City staff is confined to a review and does not relieve me, as the Engineer in Responsible Charge of design of storm water BMPs for this project, of my responsibilities for project design.

As Engineer of Work, I agree to indemnify, defend, and hold harmless the City of Oceanside, its officers, agents, and employees from any and all liability, claims, damages, or injuries to any person or property which might arise from the negligent acts, errors, or omissions of the Engineer of Work, my employees, agents or consultants.

To be signed by project engineer with completion of final design and development of BMP Exhibit(s)

_____

Engineer of Work's Signature, PE Number & Expiration Date

[Insert Engineers Name]_____

Print Name

[Insert Company Name]_____

Company

[Insert Date]_____

Date

Engineer's Seal:

SUBMITTAL RECORD

Use this Table to keep a record of submittals of this SWQMP. Each time the SWQMP is re-submitted, provide the date and status of the project. In last column indicate changes that have been made or indicate if response to plancheck comments is included. When applicable, insert response to plancheck comments behind this page.

Submittal Number	Date	Project Status	Changes
1	[MM/DD/YY]	☒ Preliminary Design/ Planning/ CEQA ☐ Final Design	Initial Submittal
2	[MM/DD/YY]	☐ Preliminary Design/ Planning/ CEQA ☐ Final Design	Click here to enter text.
3	[MM/DD/YY]	☐ Preliminary Design/ Planning/ CEQA ☐ Final Design	Click here to enter text.
4	[MM/DD/YY]	☐ Preliminary Design/ Planning/ CEQA ☐ Final Design	Click here to enter text.

Placeholder – **Project Vicinity Map**

Applicability of Permanent, Post-Construction Storm Water BMP Requirements (Storm Water Intake Form for all Development Permit Applications)	Form I-1

Project Identification

Project Name: College Boulevard Widening, Oceanside, CA

Permit Application Number: TBD | Date: [MM/DD/YY]

Determination of Requirements

The purpose of this form is to identify permanent, post-construction requirements that apply to the project. This form serves as a short summary of applicable requirements, in some cases referencing separate forms that will serve as the backup for the determination of requirements.

Answer each step below, starting with Step 1 and progressing through each step until reaching "Stop".
Refer to the manual sections and/or separate forms referenced in each step below.

Step	Answer	Progression
Step 1: Is the project a "development project"? See Section 1.3 of the manual for guidance.	☒ Yes	Go to Step 2.
	☐ No	Stop. Permanent BMP requirements do not apply. No SWQMP will be required. Provide discussion below.

Discussion / justification if the project is not a "development project" (e.g., the project includes *only* interior remodels within an existing building):

Step 2: Is the project a Standard Project, PDP, or exception to PDP definitions? To answer this item, see Section 1.4 of the manual *in its entirety* for guidance, AND complete Form I-2, Project Type Determination.	☐ Standard Project	Stop. Standard Project requirements apply, including Standard Project SWQMP.
	☐ PDP	PDP requirements apply, including PDP SWQMP. Go to Step 3.
	☒ Exception to PDP definitions	Stop. Standard Project requirements apply. Provide discussion and list any additional requirements below. Prepare Standard Project SWQMP.

Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable:

Under Section 1.4.3 of the Oceanside BMP Design Manual (2016), the retrofitting/redevelopment of paved alleys, streets, or roads that implement USEPA Green Streets guidance are exempt from being defined as a PDP. The proposed activities along Oceanside Boulevard meet this exemption.

Form I-1 Page 2 of 2		
Step	**Answer**	**Progression**
Step 3. Is the project subject to earlier PDP requirements due to a prior lawful approval? See Section 1.10 of the manual for guidance.	☐ Yes	Consult the [City Engineer] to determine requirements. Provide discussion and identify requirements below. Go to Step 4.
	☒ No	BMP Design Manual PDP requirements apply. Go to Step 4.
Discussion / justification of prior lawful approval, and identify requirements (*not required if prior lawful approval does not apply*): **See Response to Step 2 above.**		
Step 4. Do hydromodification control requirements apply? See Section 1.6 of the manual for guidance.	☐ Yes	PDP structural BMPs required for pollutant control (Chapter 5) and hydromodification control (Chapter 6). Go to Step 5.
	☒ No	Stop. PDP structural BMPs required for pollutant control (Chapter 5) only. Provide brief discussion of exemption to hydromodification control below.
Discussion / justification if hydromodification control requirements do not apply: **See Response to Step 2 above.**		
Step 5. Does protection of critical coarse sediment yield areas apply? See Section 6.2 of the manual for guidance.	☐ Yes	Management measures required for protection of critical coarse sediment yield areas (Chapter 6.2). Stop.
	☒ No	Management measures not required for protection of critical coarse sediment yield areas. Provide brief discussion below. Stop.
Discussion / justification if protection of critical coarse sediment yield areas does not apply: See Response to Step 2 above.		

Project Type Determination Checklist			Form I-2
Project Information			
Project Name: College Boulevard Widening, Oceanside, CA			
Permit Application Number: Click here to enter text.			
Project Type Determination: Standard Project or PDP			
The project is (select one): ☐ New Development ☐ Redevelopment ☒ Exempt (skip)			
The total proposed newly created or replaced impervious area is: Area ft² (x) acres			
Is the project in any of the following categories, (a) through (f)?			
Yes ☐	No ☐	(a)	New development projects that create 10,000 square feet or more of impervious surfaces (collectively over the entire project site). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.
Yes ☐	No ☐	(b)	Redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site on an existing site of 10,000 square feet or more of impervious surfaces). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.
Yes ☐	No ☐	(c)	New and redevelopment projects that create 5,000 square feet or more of impervious surface (collectively over the entire project site), and support one or more of the following uses: (i) Restaurants. This category is defined as a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption SIC code 5812). (ii) Hillside development projects. This category includes development on any natural slope that is twenty-five percent or greater. (iii) Parking lots. This category is defined as a land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce. (iv) Streets, roads, highways, freeways, and driveways. This category is defined as any paved impervious surface used for the transportation of automobiles, trucks, motorcycles, and other vehicles.

Yes ☐	No ☐	(d)	New or redevelopment projects that create or replace 2,500 square feet or more of impervious surface (collectively over the entire project site), and discharging directly to an Environmentally Sensitive Area (ESA). "Discharging directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the ESA, or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands). Note: ESAs are areas that include but are not limited to all Clean Water Act Section 303(d) impaired water bodies; areas designated as Areas of Special Biological Significance by the State Water Board and SDRWQCB; State Water Quality Protected Areas; water bodies designated with the RARE beneficial use by the State Water Board and SDRWQCB; and any other equivalent environmentally sensitive areas which have been identified by the Copermittees. See manual Section 1.4.2 for additional guidance.
Yes ☐	No ☐	(e)	New development projects that support one or more of the following uses: (i) Automotive repair shops. This category is defined as a facility that is categorized in any one of the following SIC codes: 5013, 5014, 5541, 7532-7534, or 7536-7539. (ii) Retail gasoline outlets. This category includes retail gasoline outlets that meet the following criteria: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic of 100 or more vehicles per day.
Yes ☐	No ☐	(f)	New or redevelopment projects that result in the disturbance of one or more acres of land and are expected to generate pollutants post construction. *Note: See manual Section 1.4.2 for additional guidance.*

Does the project meet the definition of one or more of the PDP categories (a) through (f) listed above?

☐ No – the project is not a PDP (Standard Project).

☐ Yes – the project is a PDP.

The following is for redevelopment PDPs only:

The area of existing (pre-project) impervious area at the project site is: ft² (A)
The total proposed newly created or replaced impervious area is: ft² (B)
Percent impervious surface created or replaced (A/B)*100: Percent %
The percent impervious surface created or replaced is (select one based on the above calculation):

☐ less than or equal to fifty percent (50%) – only new impervious areas are considered PDP

OR

☐ greater than fifty percent (50%) – the entire project site is a PDP

Site Information Checklist For Standard Projects	Form I-3A (Standard Projects)
Project Summary Information	
Project Name	College Boulevard Widening, Oceanside, CA
Project Address	College Blvd between Old Grove Road (north) and Vista Way (south)

Assessor's Parcel Number(s)	16151116; 16151234; 16151235; 16156107; 16156108; 16156109; 16156110; 16156111; 16156112; 16156113; 16156114; 16156115; 16156116; 16157302; 16157303; 16157304; 16157305; 16157306; 16157307; 16157308; 16157309; 16157310; 16157312; 16157313; 16157314; 16157358; 16157360; 16157362; 16158301; 16158302; 16158303; 16158304; 16158305; 16158306; 16158307; 16158308; 16158309; 16158310; 16158311; 16158312; 16158313; 16158314; 16158315; 16158316; 16158317; 16158318; 16158319; 16158320; 16158349; 16158350; 16162258; 16162259; 16162268; 16162269; 16224042; 16224043; 16224044; 16224047; 16224048; 16224105; 16224108; 16224109; 16224110; 16224118; 16224141; 16225108; 16225109; 16225110; 16225111; 16225112; 16225117; 16225118; 16225119; 16225120; 16225121; 16225122; 16225123; 16225124; 16225125; 16225126; 16225127; 16225128; 16225129; 16225130; 16225131; 16225132; 16225133; 16225134; 16225135; 16225201; 16225202; 16225203; 16225204; 16225205; 16225206; 16225207; 16225208; 16225209; 16225210; 16225211; 16225212; 16225213; 16225214; 16225215; 16225216; 16225217; 16225218; 16225301; 16225302; 16225303; 16225401; 16226016; 16226017; 16226018; 16226019; 16226020; 16226021; 16226022; 16226023; 16226024; 16226025; 16226026; 16226029; 16226030; 16226031; 16226032; 16226033; 16226034; 16226035; 16226036; 16226039; 16226059; 16228105; 16231001; 16231002; 16231003; 16231004; 16231005; 16231006; 16231007; 16231008; 16231009; 16231010; 16234110; 16234111; 16234112; 16234113; 16234114; 16234115; 16234116; 16234117; 16234118; 16234119; 16234120; 16234121; 16234122; 16234501; 16234502; 16234503; 16234504; 16234505; 16234506; 16234507; 16234508; 16234509; 16234510; 16234511; 16238101; 16238102; 16238103; 16238104; 16238105; 16238201; 16238202; 16238203; 16238204; 16238205; 16238206; 16238207; 16238208; 16238209; 16239001; 16239002; 16239020; 16239021; 16239022; 16239023; 16239024; 16239025; 16239026; 16239027; 16239028; 16239029; 16239030; 16241101; 16241102; 16241103; 16241104; 16241105; 16241106; 16241107; 16241301; 16241302; 16241303; 16241304; 16241305; 16241306; 16241307; 16241308; 16241309; 16250112; 16250113; 16253007; 16253008; 16253009; 16253010; 16253011; 16253012; 16253013; 16253014; 16253025; 16253119; 16253120; 16253121;

	16253122; 16253123; 16253124; 16253125; 16253126; 16253127; 16253128; 16253129; 16253135; 16511210; 16550209; 16550210; 16550211; 16550212; 16550213; 16550216; 16550217; 16550218; 16550219; 16601040; 16601041; 16653105; 16653106; 16653107; 16653108; 16653109; 16653110; 16653111; 16653401; 16653402; 16653403; 16654001; 16654002; 16654003; 16654004; 16654005; 16654006; 16654007; 16654008; 16654009; 16654010; 16654011; 16654012; 16654046; 16654047; 16654048; 16654049; 16654050; 16654051; 16654052; 16654053; 16654054; 16654055; 16654056; 16654057; 16654073; 16654101; 16654102; 16654103; 16654104; 16654105; 16654106; 16654107; 16654108; 16654109; 16654110; 16654111; 16654112; 16654113; 16654114; 16654115; 16659315; 16659316; 16659317; 16659318; 16659319; 16659320; 16659321; 16659322; 16659323; 16659324; 16659325; 16659326; 16659327; 16659328; 16659329; 16659330; 16659331; 16659332; 16659333; 16659334; 16659335; 16659336; 16659337; 16659402; 16659403; 16659404; 16659405; 16659406; 16659407; 16659408; 16659409; 16659410; 16659411; 16659412; 16659413; 16659414; 16659415; 16659416; 16659501; 16659502; 16659503; 16659504; 16659505; 16659506; 16659507; 16659508; 16659509; 16659510; 16659511; 16659512; 16659513; 16659514; 16659515; 16659516; 16660009; 16660010; 16660011; 16660012; 16660013; 16660018; 16660019; 16660020; 16660021; 16660022; 16660023; 16660024; 16660025; 16660026; 16661401; 16661402; 16661403; 16661404; 16661405; 16661406; 16661407; 16661408; 16664101; 16664102; 16664103; 16664201; 16664202; 16664203; 16664204; 16664205; 16664206; 16664207; 16664208; 16664209; 16664210; 16664211; 16664401; 16664402; 16664403; 16664404; 16664405; 16664406; 16664407; 16664408; 16664409; 16664410; 16666101; 16666102; 16666103; 16666104; 16666105; 16666106; 16666107; 16666108; 16666109; 16666110; 16666111; 16666112; 16666113; 16666301; 16666302; 16666303; 16666304; 16666305; 16666306; 16666307; 16666308; 16666309; 16666310; 16666311; 16666312; 16670311; 16670312; 16670313; 16670314; 16673004; 76018542
Permit Application Number	TBD

Project Watershed (Hydrologic Unit)	Select One: ☐ Santa Margarita 902 ☐ San Luis Rey 903 ☒ Carlsbad 904
Parcel Area (total area of Assessor's Parcel(s) associated with the project)	75.5 Acres (3,287,518 Square Feet)
Area to be disturbed by the project (Project Area)	26.7 Acres (1,163,052 Square Feet)
Project Proposed Impervious Area (subset of Project Area)	4.8 Acres (209,088 Square Feet)
Project Proposed Pervious Area (subset of Project Area)	21.9 Acres (953,964 Square Feet)
Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Parcel Area.	

Hydrologic Unit	Hydrologic Area	Hydrologic Sub-Area
Santa Margarita 902.00	☐ Ysidora 902.10	☐ Lower Ysidora 902.11
San Luis Rey 903.00	☐ Lower San Luis 903.10	☐ Mission 903.11
		☐ Bonsall 903.12
Carlsbad 904.00	☒ Loma Alta 904.10	Not Applicable
	☒ Buena Vista Creek 904.20	☐ El Salto 904.21
		☐ Vista 904.22
	☐ Agua Hedionda 4.30	☐ Los Monos 904.31

Description of Existing Site Condition and Drainage Patterns

Current Status of the Site (select all that apply)

☒ Existing development

☐ Previously graded but not built out

☐ Agricultural or other non-impervious use

☐ Vacant, undeveloped/natural

Description / Additional Information

Existing Land Cover Includes (select all that apply)

☒ Vegetative Cover

☐ Non-Vegetated Pervious Areas

☒ Impervious Areas

Description / Additional Information

Underlying Soil belongs to Hydrologic Soil Group (select all that apply):

☒ NRCS Type A

☐ NRCS Type B

☐ NRCS Type C

☒ NRCS Type D

Existing Natural Hydrologic Features (select all that apply)

☒ Watercourses

☐ Seeps

☐ Springs

☐ Wetlands

☐ None

Description / Additional Information

Description of Existing Site Drainage [How is storm water runoff conveyed from the site? At a minimum, this description should answer (1) whether existing drainage conveyance is natural or urban; (2) describe existing constructed storm water conveyance systems, if applicable; and (3) is runoff from offsite conveyed through the site? If so, describe.]:

This is a road improvement project which will be utilizing the existing stormwater conveyance system (gutter flow, storm drains) which discharge to two different water bodies, Loma Alta Creek and Buena Vista Creek. The existing stormwater conveyance system has been identified as undersized at a number of locations within the project area – a component of the project will be to replace a 78-foot long segment of an existing 36-inch diameter cured-in place pipe (CIPP) between Olive Drive and Loma Alta and adjacent to the southbound travel lanes with a 42-inch CIPP

Description of Proposed Site Development and Drainage Patterns

Project Description / Proposed Land Use and/or Activities:

College Boulevard is proposed to be widened from a 4-lane to a 6-lane major arterial from Olive Drive to Old Grove Road, which would be consistent with the City of Oceanside's Circulation Element Year 2030 classification of College Boulevard. In addition to widening College Boulevard from four to six lanes between Olive Drive and Old Grove Road, the proposed project would include curb/gutter improvements and relocation of utilities as needed to accommodate the widened roadway segment, as well as installation of retaining walls, and relocation of bike lanes, lighting, and sidewalks in various locations along College Boulevard between Waring Road/Barnard Drive and Marcella Street and between Olive Drive and Old Grove Road.

List proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features):

Construction of the project would involve demolition, clearing and excavation, grading, trenching, paving and roadway construction.

List proposed pervious features of the project (e.g., landscape areas).

Low maintenance vegetation would be installed in medians located immediately north and south of the NCTD Sprinter railroad crossing, north of Oceanside Boulevard, north and south of Aztec Street, south of Avenida De La Plaza, and between Avenida De La Plaza and Old Grove Road.

Landscape medians installed north and south of the NCTD Sprinter tracks would be widest (approximately 20-feet and 19-feet wide south and north of the tracks, respectively) adjacent to the tracks and would both taper accommodate two left turn pockets. South of the tracks, the 150-foot long landscape median would taper to a width of approximately 9-feet and would then transition to an entirely hardscape median (similar to existing conditions). The hardscape median would continue to taper until reaching its narrowest width of approximately 4 feet near the College Boulevard/Olive Drive intersection. North of the tracks, the approximately 19-foot wide landscape median would taper to a width of approximately 4-feet south of the tracks to accommodate two left turn pockets. The approximately 120-foot long landscape median would then transition to entirely hardscape (similar to existing conditions) and would display a consistent 4-foot width until reaching the College Boulevard/Oceanside Boulevard intersection.

Approximately 375 feet north of the College Boulevard/Oceanside Boulevard, the 4-foot wide hardscape median would transition to a landscape median that would display an ultimate width of approximately 18 feet. The 225-foot long landscape median would quickly taper from 18 feet to 4 feet in width to accommodate a southbound left turn pocket. Due to the proposed widening and lengthening of the existing median to accommodate landscaping, the existing northbound left turn pocket accommodating northbound College Boulevard access to the Rancho Del Oro plaza (i.e., access to the driveway north of Café de Thai and Sushi) would be removed. The southbound left turn pocket and southbound College Boulevard access to the CVS shopping center east of College Boulevard would be maintained. Also, the existing approximately 420-foot long landscape median located north of the southbound left turn pocket and south of Aztec Street would be reduced in length by approximately 266 feet by the Proposed Project.

The existing approximately 525-foot long landscape median located north of Aztec Street and south of Avenida de la Plata would be reduced in length by approximately 264 feet by the Proposed Project. The width of the 14 foot wide median would largely be maintained and similar to existing conditions; the median would taper on the approach to Aztec Street to the south and Avenida de la Plata to the north.

Lastly, the existing landscape median located north of Avenida de la Plata and south of Old Grove Road would be lengthened slightly (i.e., approximately 920 feet long to approximately 940 feet long). The width of the 14-foot wide median would largely be maintained and similar to existing conditions; the median would taper on the approach to Avenida de la Plata to the south and Old Grove Road to the north.

Does the project include grading and changes to site topography?

☒ Yes

☐ No

Description / Additional Information

Minor grading along existing roadway (for expansion), but minimal and will mimic exiting topography.

Does the project include changes to site drainage (e.g., installation of new storm water conveyance systems)?

☒ Yes

☐ No

Description / Additional Information

A component of the project will be to replace a 78-foot long segment of an existing 36-inch diameter cured-in place pipe (CIPP) between Olive Drive and Loma Alta and adjacent to the southbound travel lanes with a 42-inch CIPP

Identify whether any of the following features, activities, and/or pollutant source areas will be present (select all that apply)

- ☒ Onsite storm drain inlets
- ☐ Interior floor drains and elevator shaft sump pumps
- ☐ Interior parking garages
- ☐ Need for future indoor & structural pest control
- ☒ Landscape/outdoor pesticide use
- ☐ Pools, spas, ponds, decorative fountains, and other water features
- ☐ Food service
- ☐ Refuse areas
- ☐ Industrial processes
- ☐ Outdoor storage of equipment or materials
- ☐ Vehicle and equipment cleaning
- ☐ Vehicle/equipment repair and maintenance
- ☐ Fuel dispensing areas
- ☐ Loading docks
- ☐ Fire sprinkler test water
- ☐ Miscellaneous drain or wash water
- ☒ Plazas, sidewalks, and parking lots

Source Control BMP Checklist for All Development Projects (Standard Projects and PDPs)	Form I-4

Project Identification

Project Name College Boulevard Widening

Permit Application Number TBD

Source Control BMPs

All development projects must implement source control BMPs SC-1 through SC-6 where applicable and feasible. See Chapter 4 and Appendix E of the manual for information to implement source control BMPs shown in this checklist.

Answer each category below pursuant to the following.

- "Yes" means the project will implement the source control BMP as described in Chapter 4 and/or Appendix E of the manual. Discussion / justification is not required.
- "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided.
- "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project has no outdoor materials storage areas). Discussion / justification may be provided.

Source Control Requirement	Implemented?		
SC-1 Prevention of Illicit Discharges into the MS4	☒ Yes	☐ No	☐ N/A
Discussion / justification if SC-1 not implemented:			
SC-2 Storm Drain Stenciling or Signage	☒ Yes	☐ No	☐ N/A
Discussion / justification if SC-2 not implemented:			
SC-3 Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☒ N/A
Discussion / justification if SC-3 not implemented: The proposed project does not include a material storage area.			

Form I-4 Page 2 of 3			
Source Control Requirement	**Implemented?**		
SC-4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☒ N/A
Discussion / justification if SC-4 not implemented: The proposed project does not include the storage of materials outdoors. Construction related material storage will be managed through the project's SWPPP.			
SC-5 Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☒ N/A
Discussion / justification if SC-5 not implemented: The proposed project does not include trash storage areas.			

Form I-4 Page 3 of 3			
SC-6 Additional BMPs Based on Potential Sources of Runoff Pollutants (must answer for each source listed below)	**Implemented?**		
Onsite storm drain inlets	☒ Yes	☐ No	☐ N/A
Interior floor drains and elevator shaft sump pumps	☐ Yes	☐ No	☒ N/A
Interior parking garages	☐ Yes	☐ No	☒ N/A
Need for future indoor & structural pest control	☐ Yes	☐ No	☒ N/A
Landscape/outdoor pesticide use	☒ Yes	☐ No	☐ N/A
Pools, spas, ponds, decorative fountains, and other water features	☐ Yes	☐ No	☒ N/A
Food service	☐ Yes	☐ No	☒ N/A
Refuse area	☐ Yes	☐ No	☒ N/A
Industrial processes	☐ Yes	☐ No	☒ N/A
Outdoor storage of equipment or materials	☐ Yes	☐ No	☒ N/A
Vehicle and equipment cleaning	☐ Yes	☐ No	☒ N/A
Vehicle/equipment repair and maintenance	☐ Yes	☐ No	☒ N/A
Fuel dispensing areas	☐ Yes	☐ No	☒ N/A
Loading docks	☐ Yes	☐ No	☒ N/A
Fire sprinkler test water	☐ Yes	☐ No	☒ N/A
Miscellaneous drain or wash water	☐ Yes	☐ No	☐ N/A
Plazas, sidewalks, and parking lots	☒ Yes	☐ No	☐ N/A
Discussion / justification if SC-6 not implemented. Clearly identify which sources of runoff pollutants are discussed. Justification must be provided for all "No" answers shown above.			

Site Design BMP Checklist for All Development Projects (Standard Projects and PDPs)	Form I-5

Project Identification

Project Name College Boulevard Widening, Oceanside, CA

Permit Application Number TBD

Site Design BMPs

All development projects must implement site design BMPs SD-1 through SD-8 where applicable and feasible. See Chapter 4 and Appendix E of the manual for information to implement site design BMPs shown in this checklist.

Answer each category below pursuant to the following.

- "Yes" means the project will implement the site design BMP as described in Chapter 4 and/or Appendix E of the manual. Discussion / justification is not required.
- "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided.
- "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project site has no existing natural areas to conserve). Discussion / justification may be provided.

Site Design Requirement	Applied?		
SD-1 Maintain Natural Drainage Pathways and Hydrologic Features	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-1 not implemented:			
SD-2 Conserve Natural Areas, Soils, and Vegetation	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-2 not implemented:			
SD-3 Minimize Impervious Area	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-3 not implemented:			
SD-4 Minimize Soil Compaction	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-4 not implemented:			

Form I-5 Page 2 of 2			
Site Design Requirement	**Applied?**		
SD-5 Impervious Area Dispersion	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-5 not implemented:			
SD-6 Runoff Collection	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-6 not implemented:			
SD-7 Landscaping with Native or Drought Tolerant Species	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-7 not implemented:			
SD-8 Harvesting and Using Precipitation	☐ Yes	☐ No	☒ N/A
Discussion / justification if SD-8 not implemented: No structures are associated with the project that would be suitable for implementing a rainwater harvesting program.			

ATTACHMENTS

This is the cover sheet for the Attachments.

Indicate which Items are Included:

Attachment Sequence	Contents	Checklist
Attachment 1	BMP Exhibit (Required) See BMP Exhibit Checklist.	☐Included A BMP Exhibit is not included in this Preliminary SWQMP, but should be provided with submission of final project design. Preliminary project designs are provided in Figure 3-2 of the project EIR. Analysis of pre/post project area hydrology is provided in the EIR's Stormwater Quality and Hydrology Technical Report which also includes figures depicting changes in pervious/impervious surfaces between existing and proposed conditions.
Attachment 2	Soil Type Exhibit	☐Included Please refer to Figure 5 of the project's Stormwater Quality and Hydrology Technical Report (appendix to project's EIR)
Attachment 3	Federal Emergency Management Agency (FEMA) Map	☐Included Please refer to Figure 3 of the project's Stormwater Quality and Hydrology Technical Report (appendix to project's EIR)
Attachment 4	Copy of Storm Water Quality Assessment Form	☒Included Blank form attached and to be completed upon submittal of the project application.

Use this checklist to ensure the required information has been included on the BMP Exhibit:

The BMP Exhibit must identify:

☐Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
☐Existing topography and impervious areas
☐Existing and proposed site drainage network and connections to drainage offsite
☐Proposed grading
☐Proposed impervious features
☐Proposed design features and surface treatments used to minimize imperviousness
☐Drainage management area (DMA) boundaries, DMA ID numbers, and DMA areas (square footage or acreage), and DMA type (i.e., drains to BMP, self-retaining, or self-mitigating)
☐Potential pollutant source areas and corresponding required source controls (see Chapter 4, Appendix E.1, and Form I-3B)

Please provide the Exhibit in 24”x36” format with map pocket, wet stamp, and date.

Placeholder – **BMP Exhibit**

Replace placeholder with required Exhibit.

PRELIMINARY SWQMP – See Figures 3-2 of the project EIR and the Stormwater Quality and Hydrology Technical Report for preliminary designs and analysis of hydrologic impacts.

Placeholder – **Soil Type Exhibit**

Replace placeholder with required Exhibit.

PRELIMINARY SWQMP - See Figure 5 of the project's Stormwater Quality and Hydrology Technical Report (appendix to project's EIR)

Placeholder – **FEMA Map**

Replace placeholder with required Map.

PRELIMINARY SWQMP - See Figure 3 of the project's Stormwater Quality and Hydrology Technical Report (appendix to project's EIR)

Placeholder – **Storm Water Assessment Form**

Replace placeholder with required Form.

PRELIMINARY SWQMP – Blank assessment form attached – to be filled and submitted with project application.

City of Oceanside – Engineering Division – Clean Water Program

STORM WATER QUALITY ASSESSMENT FOR PLANNING, ENGINEERING, AND BUILDING PERMIT APPLICATIONS

All applications for Planning, Engineering, or Building Division permits are required to complete this assessment form and include it as part of the initial permit application submittal. Staff will review the permit application content to determine the applicability of State and City storm water requirements. Please note a storm water assessment cannot be provided without a complete permit application package.

Section 1 – Project Information	
Applicant Name:	Phone Number:
Project Name:	Email Address (Optional):
Project Site Address:	Street Intersection:
Assessor Parcel Number(s):	Total Parcel Area (acres or square feet):
Project Description:	Proposed Project Impervious Area (acres or square feet):

Section 2 – Identify Project Type	
☐	New Development Project – go to Section 3
☐	Redevelopment Project go to Section 3
☐	None of the above – Skip Section 3 and go to Section 4

Section 3 – Identify Applicable Priority Development Project Categories	
☐	**New Development Project** – A project that creates 10,000 square feet or more of impervious surfaces (collectively over the entire project site). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.
☐	**Redevelopment Project** – A project that creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the entire project site on an existing site of 10,000 square feet or more of impervious surfaces). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.
☐	**Restaurants** – Category is defined as a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC code 5812); where new or redevelopment projects that create and/or replace 5,000 square feet or more impervious surface (collectively over the entire project site).
☐	**Hillside Development** – Category includes development on any natural slope that is twenty-five percent or greater; where new or redevelopment projects that create and/or replace 5,000 square feet or more impervious surface (collectively over the entire project site).
☐	**Parking Lots** – Category is defined as a land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce; where new or redevelopment projects that create and/or replace 5,000 square feet or more impervious surface (collectively over the entire project site).
☐	**Streets, Roads, Highways, Freeways, and Driveways** – Category is defined as any paved impervious surface used for the transportation of automobiles, trucks, motorcycles, and other vehicles; where new or redevelopment projects that create and/or replace 5,000 square feet or more impervious surface (collectively over the entire project site).
☐	**Water Quality Environmentally Sensitive Area** – New or redevelopment projects that create and/or replace 2,500 square feet or more of impervious surface (collectively over the entire project site), and discharging directly to a Water Quality Environmentally Sensitive Area (WQESA). "Discharging directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the WQESA, or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands).
☐	**Automotive Repair Shop** – Category is defined as a facility that is categorized in any one of the following Standard Industrial Classification (SIC) codes: 5013, 5014, 5541, 7532-7534, or 7536-7539, where new or redevelopment projects that create and/or replace 5,000 square feet or more impervious surface (collectively over the entire project site).
☐	**Retail Gasoline Outlet (RGOs)** – Category includes RGOs that meet the following criteria (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day; where new or redevelopment projects that create and/or replace 5,000 square feet or more impervious surface (collectively over the entire project site).
☐	**Development Projects greater than one acre** – New or redevelopment projects that result in the disturbance of one or more acres of land and are expected to generate pollutants post construction.
☐	**None of the Above**

STORM WATER QUALITY ASSESSMENT FOR PLANNING, ENGINEERING, AND BUILDING PERMIT APPLICATIONS

Section 4 – Identify Permit Application Type	
☐	**Discretionary Permit Application**: Specific Plan (S), General Plan Amendment (GPA), Zone Amendment (ZA), Tentative Map (T), Tentative Parcel Map (P), Development Plan (D), Conditional Use Permit (CUP), Variance (V), Regular Coastal Permit (RC), Historic Permit (H), Reclamation Plan, Planned Development Permit, Planned Unit Development Permit, Planning Commission Approval of Plans, Site Plan Review, Tentative Map Amendments to Conditions of Approval or Time Extension, Variance.
☐	**Administrative Permit Application**: Administrative Clearing Permit, Lot Line Adjustment, Final Map Modification, Grading Plan (including modification or renewal), Improvement Plan (including modification), Landscape Plan, Building Permit, Construction Right-of-Way Permit, Encroachment Permit, Excavation Permit, On-site Wastewater System Permit, Underground Tank Permit, Well Permit, or etc.

Section 5 – Applicant Certification	
Name of Responsible Party:	Phone Number:
Email Address (optional)	FAX Number (optional):
I understand and acknowledge the City of Oceanside has adopted minimum requirements, as mandated by the San Diego Regional Water Quality Control Board – Order No. R9-2013-0001, as amended by Order Nos. R9-2015-0001 and R9-2015-0100 (NPDES NO. CAS0109266) for mitigating impacts associated with urban runoff, including storm water from construction and land development activities. I certify this assessment has been accurately completed to the best of my knowledge and is consistent with the proposed project. I acknowledge that non-compliance with the City Best Management Practice (BMP) Design Manual, Grading Ordinance, and Erosion Control Ordinance may result in enforcement action by the City, the California State Water Resources Control Board, and/or the San Diego Regional Water Quality Control Board. Enforcement action may include stop work orders, notice of violation, fines, or other actions.	
Applicant Signature:	Date:

STORM WATER QUALITY ASSESSMENT FOR PLANNING, ENGINEERING, AND BUILDING PERMIT APPLICATIONS

Completion Guidance

Please note – the Applicant is requested to complete this form and submit as part of the project application. For assistance, please contact Development Services at (760) 435-4373.

Section 1 – Project Information

1. Applicant Name – provide name of Individual completing form, i.e. Owner or Owner Representative
2. Phone Number – provide phone number of Individual completing form, i.e. Owner or Owner Representative
3. Project Name – provide project name (consistent with project application) i.e. Jones Residence, Example Commercial Development, and etc
4. Email Address (Optional) – provide email address if you want to receive a digital copy of the project Storm Water Determination
5. Project Site Address – provide a physical address for the proposed project
6. Street Intersection – provide nearest intersecting streets
7. Assessor Parcel Number(s) – provide Assessor Parcel Number(s); refer to title documents or contact City Staff for assistance
8. Total Parcel Area (acres or square feet) – provide the parcel area; refer to title documents
9. Project Description – provide a brief project description (e.g. single-family dwelling, retail business, repair shop, and etc)
10. Approximate Proposed Project Impervious Area (acres or square feet) – provide the approximate total area of all impervious surfaces (includes roofs, sidewalk, patios, driveways, and etc)

Section 2 – Identify Project Type

1. New Development – check box if proposed project is a new development (i.e. the parcel is undeveloped and there are no existing paved surfaces or structures on the site) – if project is a new development go to Section 3.
2. Redevelopment – check box if proposed project includes the redevelopment of an existing site (i.e. replacement, rehabilitation, or reconfiguring of existing structures or paved surfaces) – if project is a "redevelopment" go to Section 3
3. None of the above – check box if proposed project is not a new development or a redevelopment; skip Section 3 and go to Section 4

Section 3 – Identify Applicable Priority Development Project Categories

1. Review each category and check the appropriate boxes that apply to your project.
2. General identification of Automotive Repair Shop SIC (Standard Industrial Classifications) as follows:
   - 5013 – Motor vehicle supplies and new parts
   - 5014 – Tires and tubes
   - 5541 – Gasoline service stations
   - 7532 – Top and body repair, and paint shops
   - 7533 – Auto exhaust system repair shops
   - 7534 – Tire retreading and repair shops
   - 7536 – Automotive glass replacement shops
   - 7537 – Automotive transmission repair shops
   - 7538 – General automotive repair shops
   - 7539 – Automotive repair shops-not elsewhere classified
3. Contact Storm Water Development Review Staff at (760) 435-5164 for assistance in determining applicability of Water Quality Environmentally Sensitive Area (WQESA) category
4. If no categories apply, check "None of the above"

Section 4 – Identify Permit Application Type

1. Identify the applicable permit application type. In general, Discretionary permits applications require a public hearing, whereas Administrative permits may be approved by Staff. Suggest obtaining assistance at the City Development Services Counter Staff and from City Planning Staff. Guidance may be obtained by telephone at (760) 435-4373.

Section 5 – Applicant Certification

1. Name of Responsible Party – provide name of Owner
2 Phone Number – provide phone number of Owner
3. Email Address (Optional) – provide email address if you want to receive a digital copy of the project Storm Water Determination
4. FAX Number (Optional) – provide FAX number if you want to receive a digital copy of the project Storm Water Determination
5. Applicant Signature – provide signature of Individual completing form, i.e. Owner or Owner Representative
6. Date – provide date current date

[Insert other supporting documentation here]