DRAINAGE STUDY FOR

PACIFIC BEACH HOTEL

4545 MISSION BAY DRIVE, SAN DIEGO, CA, 92109

PTS
D-SHEET:

SAN DIEGO, CALIFORNIA

March 2026

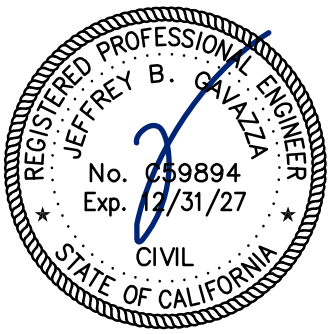
Prepared for:

Ketan T. Patel

(858) 550-4004

Ketan@palaciohotels.com

KPFF Job #2400816



Prepared By:
KPFF CONSULTING ENGINEERS
700 South Flower Street, Suite 2100
Los Angeles, CA 90017
(213) 418 – 0201

Table of Contents

List of Figures

List of Tables

I. Project Description

The Pacific beach Hotel site is located on the Northeast side of Mission Bay Drive, San Diego, CA, 92109, within the Pacific Beach Community Plan Area and the Balboa Avenue Station Area Specific Plan, see figure 1 below. The project consists of approximately 0.64 acres, located west of Interstate-5 and south of highway 274. The project proposes a single three-story hotel building with subterranean parking. This will require the demolition of the existing building, which is also a three-story hotel located at 4545 Mission Bay Drive. The project site is currently under a Multiple Use designation CC-3-8. See Figure 1 for Site Vicinity Map.

No surface waters are present on the project site or nearby, and site runoff is captured and discharged to the offsite curb and gutter, which eventually conveys the stormwater to a catch basin. Construction BMPs will be implemented throughout construction. The post-construction BMPs are proposed to be installed per the project Storm water Quality management Plan (SWQMP). As such, the project is not anticipated to require a separate CA Regional Water Quality Control Board approval.

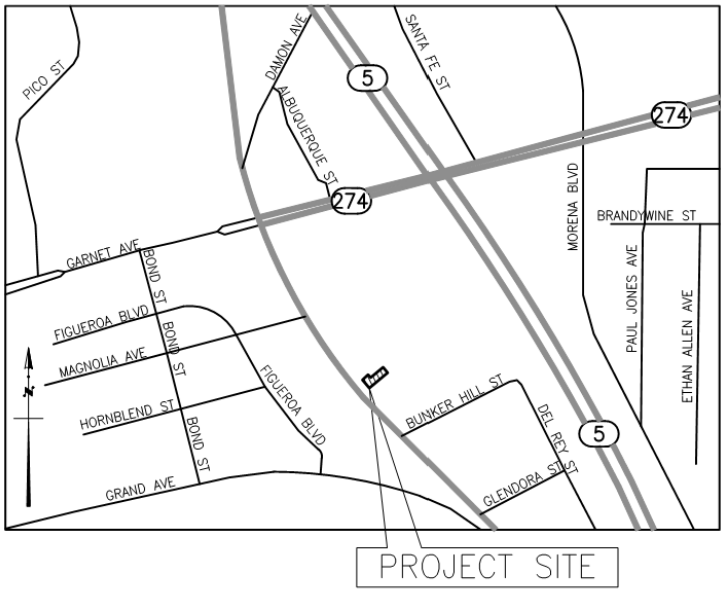


Figure 1: Site Vicinity Map

II. Existing Site Conditions

The entire site is analyzed as one drainage area. The existing development discharges stormwater over the existing sidewalk and sheet flows into the Mission Bay Drive gutter, which conveys surface runoff southwards into a storm drain catch basin. The existing site condition is 97% impervious.

III. Proposed Site Conditions

The proposed site will have two drainage management areas, corresponding to the entire project area of 27,730 square feet. Stormwater collected via area drains from the roof and lower floor's will be conveyed to on-site flow through planters via gravity. The treated water will then flow to an existing 24" concrete storm drain line located in the southwest corner of the property's frontage. The BMPs are sized to collect runoff from the entire site. The planter area and depth were selected to meet post-construction hydromodification and pollutant-removal requirements.

The proposed site condition will be approximately 93% impervious.

No surface water is present on the project site or nearby, and the site runoff is captured and discharged through the existing 24" concrete storm drain line, which eventually conveys the stormwater mission bay. As such, the project is not anticipated to require a separate CA Regional Water Quality Control Board approval under Federal Clean Water Act Section 401/404.

IV. Hydrology Analysis

The Rational Method was used to calculate the peak flow rate for the 10-year and 100-year storm events. The Rational Method calculates peak flow rate (Q) as a function of runoff coefficient (C), rainfall intensity (I), and drainage area (A):

$$Q = C * I * A$$

Table A-1: Runoff Coefficients for Rational Method in the Drainage Design Manual is used to compute the runoff coefficients for the development conditions given the site's imperviousness, soil type, and land use. The site's imperviousness was determined by calculating the impervious area in the existing and proposed conditions. The calculations for the existing and proposed runoff coefficients are shown in Appendix B. Per the Drainage Design Manual, all sites are assumed to be made up of Type D soil. The project's land use could be considered Commercial; however Industrial land use was assumed as a conservative approach to calculating the site's peak flow rate. The runoff coefficient for some of the basin areas was adjusted using a ratio of the actual percent impervious to the tabulated percent impervious. The adjusted runoff coefficients were not lowered below 0.35 including for entirely pervious areas.

Rainfall intensities were determined from Figure A-1: Intensity-Duration-Frequency Design Chart in the Drainage Design Manual. The design chart takes into consideration the time of concentration (Tc) and storm event frequency to calculate the rainfall intensity.

Drainage area was determined by inspecting the existing and proposed conditions and delineating areas according to grading and site features. The Existing Drainage Condition and Proposed Drainage Condition maps can be found in Appendix B and C.

The project increases the site's pervious area, resulting in a 2% decrease to the 100-year peak flow. In compliance with the City of San Diego hydromodification requirements, the proposed site will

incorporate flow-through planters with flow control device to meet the required low flow threshold of 0.1Q2. The hydrology results for existing and proposed conditions are detailed in Tables 1 and 2.

Existing Drainage Condition								
Drainage Area No.	Area (acres)	% Impervious	C	Tc	I10 Figure 3-1	I100 Figure 3-1	Q10 (cfs)	Q100 (cfs)
E-1	0.64	97	0.88	5	3.95	5.27	2.23	2.97
Total	**0.64**	**97**					**2.23**	**2.97**

Table 1: Existing Condition Hydrology Results for 10-Year and 100-Year Storm

Proposed Drainage Condition								
Drainage Area No.	Area (acres)	% Impervious	C	Tc	I10 Figure 3-1	I100 Figure 3-1	Q10 (cfs)	Q100 (cfs)
D-1	0.38	95	0.87	5	3.95	5.27	1.31	1.74
D-2	0.14	94	0.87	5	3.95	5.27	0.48	0.64
D-3	0.06	95	0.87	5	3.95	5.27	0.21	0.28
D-4	0.06	76	0.76	5	3.95	5.27	0.18	0.24
Total	**0.64**	**93**					**2.17**	**2.90**

Table 2: Proposed Condition Hydrology Results for 10-Year and 100-Year Storm

Appendix A – Drainage Area Maps

GENERAL DEMOLITION NOTES:

1. CONTRACTOR TO CLEAR PROJECT SITE AREA WITHIN THE CONFINES OF THE DEMOLITION LIMIT LINE. THE CONTRACTOR SHALL DEMOLISH AND REMOVE FROM THE SITE ALL EXISTING UTILITIES, STRUCTURES, PLANTERS, TREES, AND ALL OTHER SITE FEATURES, UNLESS OTHERWISE NOTED ON THE PLAN.
2. REMOVAL OF LANDSCAPING SHALL INCLUDE ROOTS AND ORGANIC MATERIALS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY AND ALL PERMITS AND SHALL PAY ALL FEES NECESSARY FOR ENCROACHMENT, GRADING, DEMOLITION AND DISPOSAL OF SAID MATERIALS AS REQUIRED BY PRIVATE, LOCAL AND STATE JURISDICTIONS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR A SITE INSPECTION TO FULLY ACKNOWLEDGE THE EXTENT OF THE DEMOLITION WORK.
5. THE CONTRACTOR SHALL VERIFY AND LOCATE ALL EXISTING ABOVE AND UNDERGROUND UTILITIES. LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND ARE SHOWN FOR GENERAL INFORMATION ONLY.
6. DAMAGE TO ANY EXISTING UTILITIES AND SERVICES TO REMAIN SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL REPAIR AND/OR REPLACE IN KIND.
7. EROSION CONTROL MEASURES SHALL BE IMPLEMENTED TO PREVENT DEBRIS AND UNSUITABLE MATERIALS FROM ENTERING STORM DRAINS, SANITARY SEWERS AND STREETS.
8. DUST CONTROL SHALL BE IMPLEMENTED DURING DEMOLITION.
9. DEMOLITION IS LIMITED TO WITHIN DEMOLITION LIMIT LINE UNLESS NOTED OTHERWISE.
10. THE CONTRACTOR SHALL VERIFY THE LOCATION AND QUANTITY OF EXISTING SURFACE STRUCTURES AND SHALL BE SOLELY RESPONSIBLE FOR ANY UNIDENTIFIED UTILITIES, IMPROVEMENTS, TREES, ETC. TO BE DEMOLISHED AND REMOVED WITHIN THE DEMOLITION LIMIT LINE, INCLUDING APPURTENANT FOUNDATIONS OR SUPPORTS.
11. DEMOLITION CALLOUTS IN THIS SECTION ARE REPRESENTATIVE OF WHAT IS TO BE DONE, NOT AN ITEMIZED ACCOUNTING FOR EACH PIPE, CATCH BASIN, MANHOLE, VAULT, ETC. THAT IS TO BE DEMOLISHED, REMOVED AND DISPOSED OF.
12. EXISTING UTILITY SERVICES TO BE ABANDONED MUST BE "KILLED" AT MAIN.

DEMOLITION NOTES:

DEMOLISH & REMOVE

1. EXISTING CURB
2. EXISTING CONCRETE PAVEMENT
3. EXISTING BUILDING (PER SEPARATE PERMIT)
4. EXISTING WALL
5. EXISTING WATER METER
6. EXISTING TREE
7. EXISTING TRASH ENCLOSURE
8. EXISTING CHAIN LINK FENCE
9. EXISTING DRIVEWAY
10. EXISTING RETAINING WALL
11. EXISTING SIGN (R32C)
12. EXISTING ASPHALT

PROTECT-IN-PLACE

1. EXISTING TRANSFORMER
2. EXISTING MEDIAN

LEGEND:

- LIMIT LINE OF DEMOLITION
- PROPERTY LINE
- SAWCUT AND LIMIT OF PAVEMENT
- UTILITY TRENCH

NOTE:
CONTRACTOR SHALL OBTAIN TRAFFIC CONTROL PERMIT PRIOR TO DEMOLITION WITHIN PUBLIC RIGHT OF WAY

NOTE:
CONTRACTOR SHALL COORDINATE WITH DEPARTMENT OF SUSTAINABILITY AND MOBILITY, CLAUDIA BRIZUELA AT CBRIZUELA@SANDIEGO.GOV 619-236-6578 AND MR. JOHN KAFULIDES AT JKFULIDES@SANDIEGO.GOV 619-236-7128 FIVE (5) DAYS PRIOR PARKING METER REMOVAL.

JEFF GAVAZZA R.C.E. NO. C59894 EXP. 12-31-25 DATE

PRIVATE CONTRACT

kpff
3131 Camino Del Rio North
Suite 1080
San Diego, CA 92108
O: 213.418.0201
F: 213.266.5294
www.kpff.com

WARNING
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DEMOLITION PLAN FOR:

PACIFIC BEACH HOTEL

BETWEEN GARNET AVENUE AND BUNKER HILL STREET
LOTS XX IN BLOCK X OF XXXX

The City of SAN DIEGO
FOR CITY APPROVAL

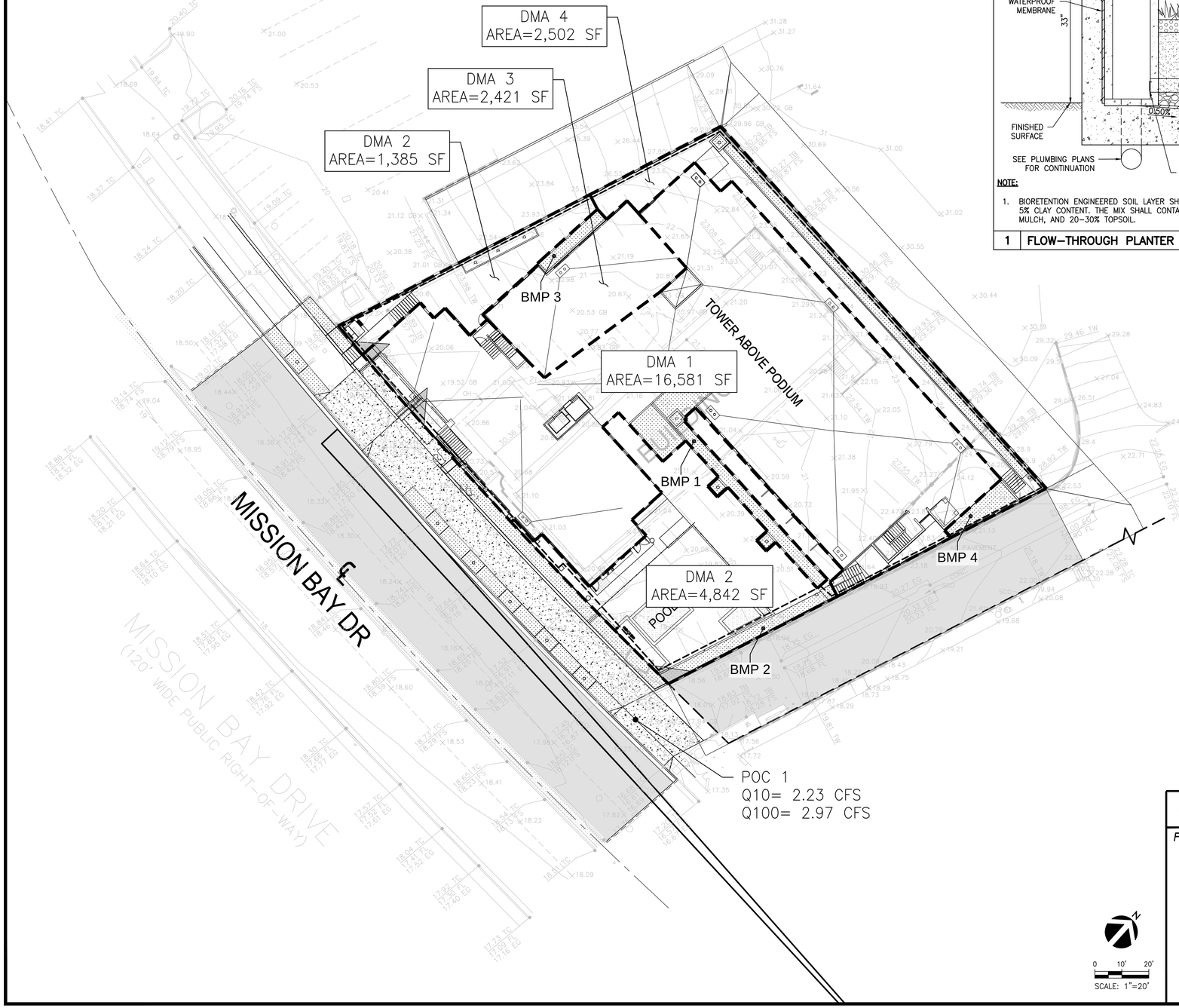
DEVELOPMENT SERVICES DEPARTMENT
SHEET 4 OF 12 SHEETS

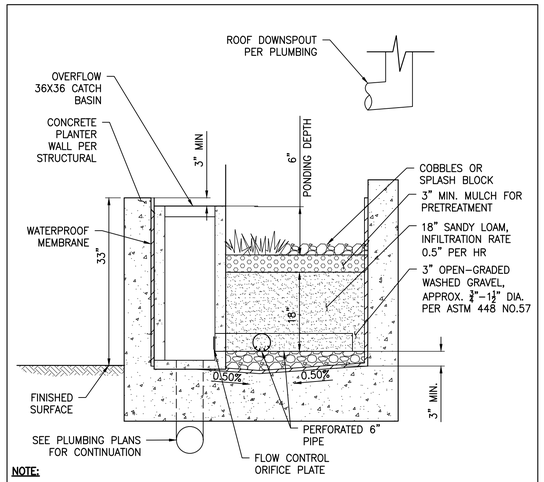
APPROVED: FOR CITY ENGINEER DATE

DESCRIPTION	BY	APPROVED	DATE
ORIGINAL	KPFF		
AS BUILTS			

CONTRACTOR DATE STARTED
INSPECTOR DATE COMPLETED

PMT NO. XXXXXX
PRJ NO XXXXXXX
XXXX-XXXX NAD83 COORDINATES
XXX-XXXX LAMBERT COORDINATES
DRAWING NO. C1.10
101271- 4 -D

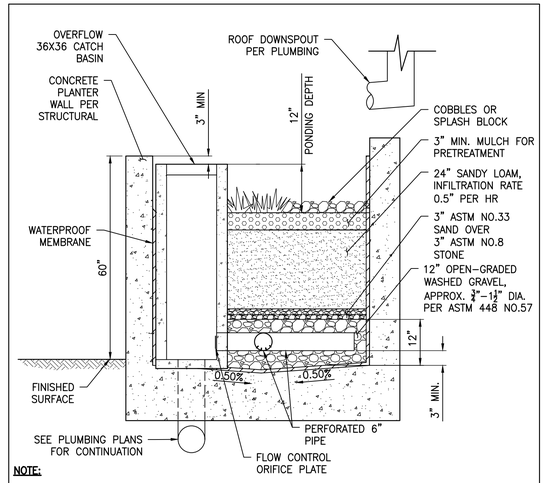




NOTE:

1. BIORETENTION ENGINEERED SOIL LAYER SHALL BE "SANDY LOAM" SOIL MIX WITH NO MORE THAN 5% CLAY CONTENT. THE MIX SHALL CONTAIN 50–60% SAND, 20–30% COMPOST OR HARDWOOD MULCH, AND 20–30% TOPSOIL.

1 FLOW–THROUGH PLANTER DETAIL BMP 1 N.T.S.



NOTE:

1. BIORETENTION ENGINEERED SOIL LAYER SHALL BE "SANDY LOAM" SOIL MIX WITH NO MORE THAN 5% CLAY CONTENT. THE MIX SHALL CONTAIN 50–60% SAND, 20–30% COMPOST OR HARDWOOD MULCH, AND 20–30% TOPSOIL.

1 FLOW–THROUGH PLANTER DETAIL BMP 2, 3, 4 N.T.S.

DMA SUMMARY TABLE

TABULAR SUMMARY OF DRAINAGE MANAGEMENT AREAS CAPTURED/INCLUDED IN LID

DMA #	AREA (ACRES)	IMPERVIOUS AREA (ACRES)	% IMP	HSG	AREA WEIGHTED RUNOFF COEFFICIENT	DCV (CF)	TREATED BY (BMP ID)	POLLUTANT CONTROL TYPE	DRAINS TO (POC ID)	ORIFICE SIZE (IN)
DMA–1	0.38	0.36	.95	D	0.87	625	1	BF–1 BIOFILTRATION	POC #1	0.5
DMA–2	0.14	0.13	.94	D	0.87	235	2	BF–1 BIOFILTRATION	POC #1	0.31
DMA–3	0.06	0.05	.95	D	0.87	91	3	BF–1 BIOFILTRATION	POC #1	0.19
DMA–4	0.06	0.04	.76	D	0.76	82	4	BF–1 BIOFILTRATION	POC #1	0.19

SUMMARY OF DMA INFORMATION

NO. OF DMAS	TOTAL DMA AREA (ACRES)	TOTAL IMP. AREA (ACRES)	% IMP		AREA WEIGHTED RUNOFF COEFFICIENT	TOTAL DCV (CF)	TOTAL AREA TREATED BY (BMP ID)		NO. OF POCS	––
4	0.64	0.58	.93		0.86	1,033	0.64		1	––

SOIL GROUP D:
GROUND WATER DEPTH > 20FT NO EXISTING NATURAL HYDROLOGIC FEATURES OR CCSYA.

PRIVATE CONTRACT

WARNING
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

LID PLAN FOR:

PACIFIC BEACH HOTEL

BETWEEN GARNET AVENUE AND BUNKER HILL STREET
LOTS XX IN BLOCK X OF XXXX

The City of SAN DIEGO

DEVELOPMENT SERVICES DEPARTMENT
SHEET 11 OF 12 SHEETS

PMT NO. XXXXXX

FOR CITY APPROVAL

APPROVED: _____ FOR CITY ENGINEER _____ DATE

PRJ NO XXXXXXX

DESCRIPTION	BY	APPROVED	DATE
ORIGINAL	KPFF		
AS BUILTS			

XXXX–XXXX
NAD83 COORDINATES

XXX–XXXX
LAMBERT COORDINATES

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

DRAWING NO. C1.80

101271- 11 -D

Appendix B – Hydrology Calculations

Equations Used	
1.	$C = 0.90 * (\%Impervious) + C_p * (1 - \%Impervious)$
2.	$T_c = \frac{1.8 * (1.1 - C) * sqrt(D)}{(s)^{\frac{1}{3}}}$
3.	$I = 7.44 * P_6 * D^{-0.645}$
4.	$Q = C * I * A$

Table 4: Equations Used in Hydrology Study

Definition of Variables	
C	Area- Weighted Runoff Coefficient, proportion of rainfall that runs off the surface
% Impervious	The percentage of project site area that is hardscape
P_6(in)	The adjusted 6-hour storm rainfall amount
D	In Equation 2 of Table 4, D is the watercourse distance in feet In Equation 3 of Table 4, D is the duration in minutes (use t_c);
s (%)	Slope along watercourse distance
T_c(min)	Time of concentration (minimum 5 minutes)
I (in/hr)	Average rainfall Intensity for a selected storm frequency
A (acres)	Drainage Area
Q (cfs)	Peak discharge in cubic feet per second

Table 5: Definition of Variables in Hydrology Study Equations

Existing Drainage Condition								
Drainage Area No.	Area (acres)	% Impervious	C	Tc	I10 Figure 3-1	I100 Figure 3-1	Q10 (cfs)	Q100 (cfs)
E-1	0.64	97	0.88	5	3.95	5.27	2.23	2.97
Total	**0.64**	**97**					**2.23**	**2.97**

Table 6: Hydrology Calculations for 10-Year and 100-Year Storm for Existing Conditions

Proposed Drainage Condition								
Drainage Area No.	Area (acres)	% Impervious	C	Tc	I10 Figure 3-1	I100 Figure 3-1	Q10 (cfs)	Q100 (cfs)
D-1	0.38	95	0.87	5	3.95	5.27	1.31	1.74
D-2	0.14	94	0.87	5	3.95	5.27	0.48	0.64
D-3	0.06	95	0.87	5	3.95	5.27	0.21	0.28
D-4	0.06	76	0.76	5	3.95	5.27	0.18	0.24
Total	**0.64**	**93**					**2.17**	**2.90**

Table 7: Hydrology Calculations for 10-Year and 100-Year Storm for Proposed Conditions

Runoff Coefficient Calculations

Existing Condition

E-1.

C = 0.9 (%Imp.) + Cp (1 - %Imp.) Cp = 0.35 (given soil type D)

C = 0.9 (0.93) + 0.35 (1 – 0.93) = 0.88

Proposed Condition

D-1.

C = 0.9 (%Imp.) + Cp (1 - %Imp.) Cp = 0.35 (given soil type D)

C = 0.9 (0.95) + 0.35 (1 – 0.95) = 0.87

D-2.

C = 0.9 (%Imp.) + Cp (1 - %Imp.) Cp = 0.35 (given soil type D)

C = 0.9 (0.94) + 0.35 (1 – 0.06) = 0.87

D-3.

C = 0.9 (%Imp.) + Cp (1 - %Imp.) Cp = 0.35 (given soil type D)

C = 0.9 (0.95) + 0.35 (1 – 0.95) = 0.87

D-4.

C = 0.9 (%Imp.) + Cp (1 - %Imp.) Cp = 0.35 (given soil type D)

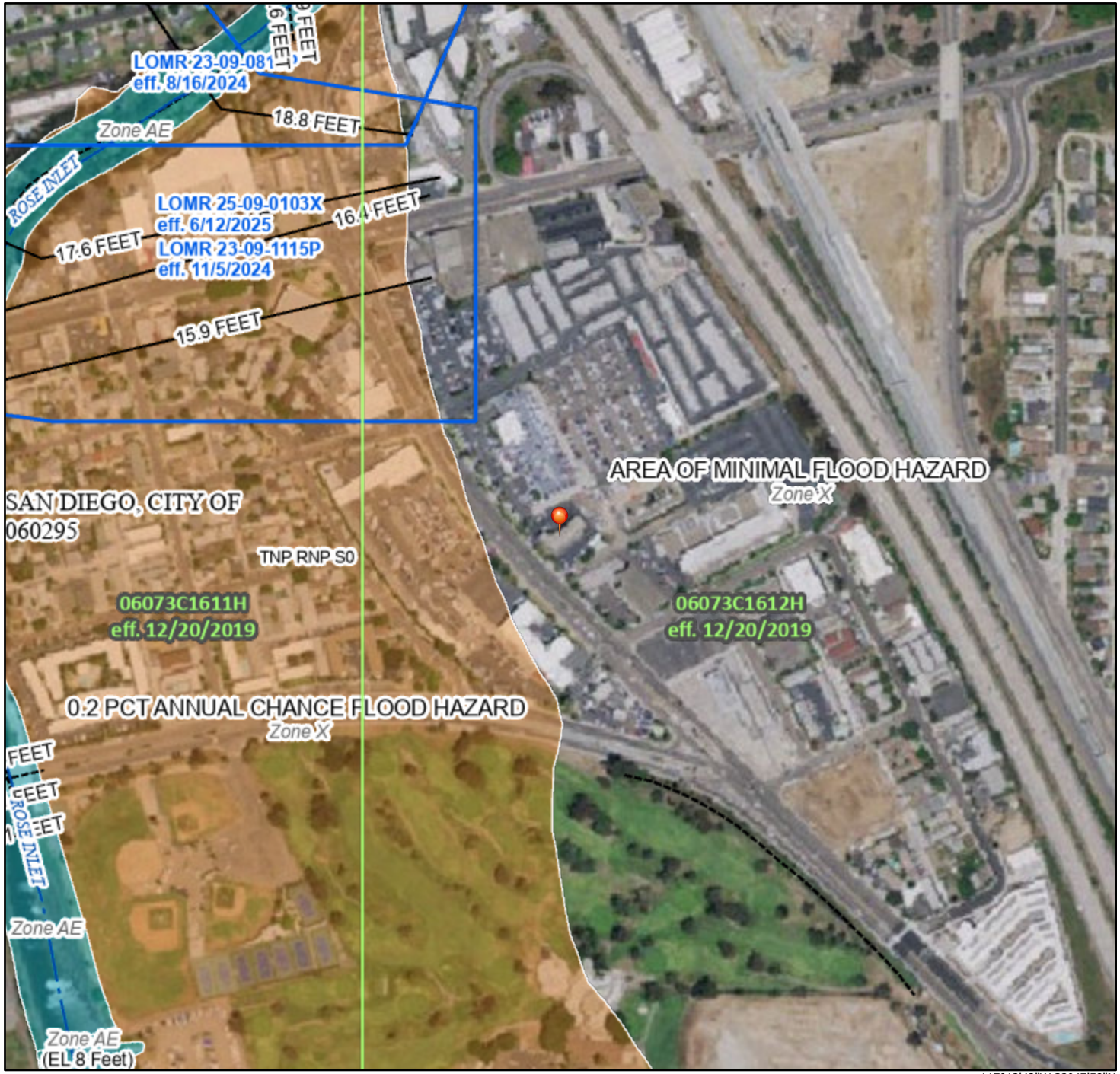
C = 0.9 (0.67) + 0.35 (1 – 0.67) = 0.76

Appendix C – FEMA Flood Map

National Flood Hazard Layer FIRMette

FEMA

117°13'20"W 32°48'29"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

117°12'42"W 32°47'58"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/22/2025 at 10:37 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.