LOCATION HYDRAULIC STUDY (LHS) AND SUMMARY FLOODPLAIN ENROACHMENT REPORT (SFER)

RECHE CANYON ROAD TO HUNTS LANE EXTENSION PROJECT

FEDERAL AID PROJECT NO. FERPL16 5065(028)

Submitted to:
CALIFORNIA DEPARTMENT OF TRANSPORTATION, DISTRICT 8
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Prepared for:
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This report has been prepared by or under the direction of the following registered civil engineer who attests to the technical information contained herein. The registered civil engineer has also judged the qualifications of any employees that have provided data and calculations upon which the recommendations, conclusions, and decisions are based.

Ceazar V. Aguilar, PE 41679

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ATTACHMENT B: SUMMARY FLOODPLAIN ENCROACHMENT REPORT

I. PROJECT DESCRIPTION & INTRODUCTION

Aguilar Consulting Inc. has prepared the Location Hydraulic Study (LHS) and Summary Floodplain Encroachment Report (SFER) in support of the proposed Reche Canyon Road to Hunts Lane Extension Project (No. FERPL16 5065(028)), in the City of Colton.

The Reche Canyon Road to Hunts Lane Extension Project is located in the City of Colton along Reche Canyon Road from approximately the southern access gate of Montecito Memorial Park to the intersection of Washington Street and Hunts Lane. An approximately 0.3-mile (1,750-foot) section of Reche Canyon Road will be constructed within an existing dedicated right-of-way (ROW) and areas immediately adjacent to the existing ROW. Pedestrian and streetscape improvements will take place entirely in the existing public ROW; however, grading activities associated with the Project are required beyond the ROW.

Reche Canyon Road provides regional access between the City of Moreno Valley in Riverside County to the south and cities within the San Bernardino Valley in San Bernardino County as well as local access for residents in the City of Colton (see Figure 1 and 2). Reche Canyon Road is oriented in a north-south direction and is currently a two-lane roadway with an 88-foot ROW. Reche Canyon Road currently experiences high traffic volumes during peak hours, particularly from regional commuters. The Project would add additional capacity along Reche Canyon Road and provide a direct connection to areas within the San Bernardino Valley via Hunts Lane. The Project is necessary for maintaining the integrity of the roadway and for the safety of residents that utilize the roadway.

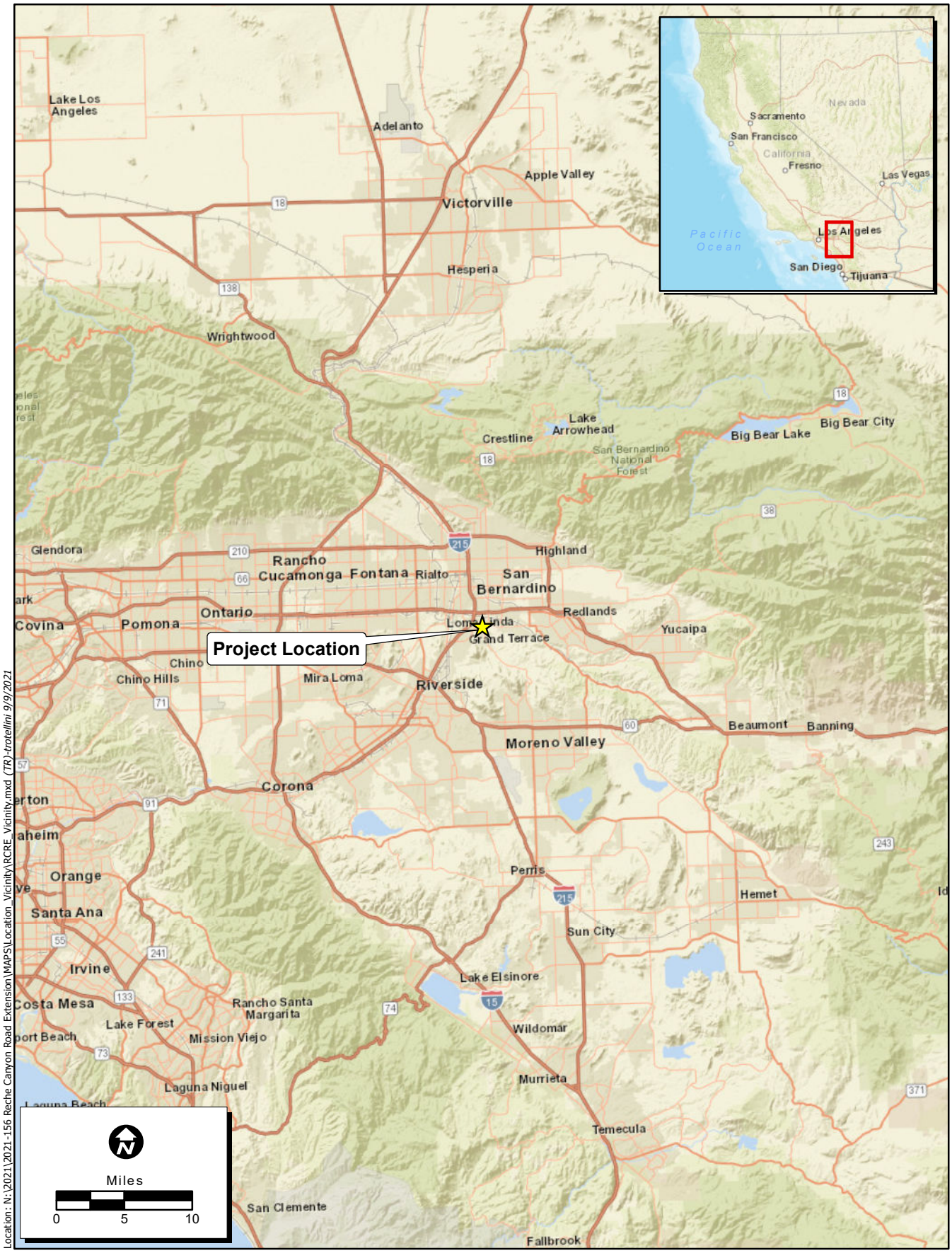
The Project includes the construction of a new four-lane segment of Reche Canyon Road that would provide a direct connection to Hunts Lane. Elements of the infrastructure to be improved include sidewalks, curb and gutter, paving, curb extensions, median reconstruction, intersection lighting, storm water facilities, bike lanes, crosswalks, and landscaping.

II. FLOODPLAIN ENCROACHMENT

The FEMA definition of **encroachment** states that "construction, placement of fill, or similar alteration of topography in the floodplain that reduces the area available to convey floodways." The Federal Highway Administration (FHWA) defines it as "an action within the limits of the base floodplain". From review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Number 06071C8691J, dated effective September 2, 2016, it is indicated that the proposed Reche Canyon Road Extension is mapped Zone "X", unshaded, (see Exhibit B), which means that it is an area that has be determined to be outside the 0.2% annual chance floodplain. Therefore, the proposed **does not encroach** into any defined 1% Annual Chance Special Flood Hazard Areas Floodplains or Floodways.

III. REFERENCES

1. Federal Emergency Management Agency (FEMA) Map Services



Location: N:\2021\2021-156 Reche Canyon Road Extension\MAPS\Location_Vicinity\RCRE_Vicinity.mxd (TR)-trotellini 9/9/2021

Map Date: 9/9/2021

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Figure 1. Project Vicinity

Reche Canyon Road Extension

Location: N:\2021\2021-156 Reche Canyon Road Extension\MAPS\Location_Vicinity\RCRE_Location.mxd (TR)-trotellini 9/10/2021

Map Date: 9/9/2021

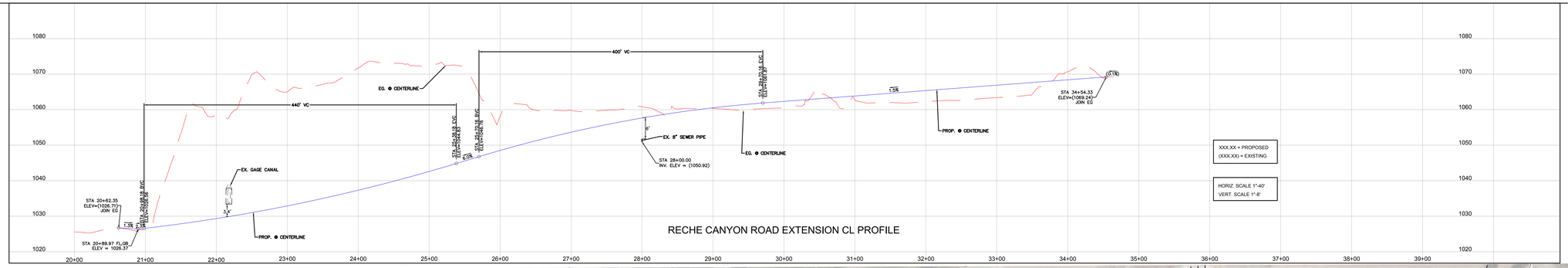
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community Photo Source: NAIP

Figure 2. Project Location

Reche Canyon Road Extension

EXHIBITS

EXHIBIT “A”: PROPOSED ROADWAY GAD



HUNTS LN

RECHE CANYON RD EXTENSION

RECHE CANYON RD

WASHINGTON ST

GAGE CHANNEL

EX. RAISED MEDIAN

EX. GAGE TRANSMISSION PIPELINE

RECONSTRUCT MEDIAN NOSE

PROP. CATCH BASIN AND LOCAL DEPRESSION

PROPOSED SIGNAL IMPROVEMENTS

GRADING LIMIT

CONSTRUCT ISLAND PASSAGEWAY

JOIN EX. C/G

RELOCATE POWER POLE

Wont be needed; small area of tributary flows, unless instructed by City

North

SCALE 1"=40'

TYPICAL SECTION

Legend

- CENTER LINE
- RIGHT OF WAY
- PROPOSED CURB AND GUTTER
- PROPOSED RETAINING WALL
- EXISTING CURB AND GUTTER
- PROPOSED STRIPING
- PROPOSED PAVEMENT MARKING
- PROPOSED SIGNAL EQUIPMENT
- PROPOSED PCC SIDEWALK
- PROPOSED AC PAVEMENT
- SIGNALIZED INTERSECTION

KOA PLANNING | ENGINEERING | CONSTRUCTION MANAGEMENT

City of Colton, Department of Public Works

Reche Canyon Extension To hunts Lane Project
Conceptual Design Alternative 2

EXHIBIT "B": FEDERAL INSURANCE RATE MAP NO. 06071C8691J

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11 North. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242** or visit its website at http://www.ngs.noaa.gov/.

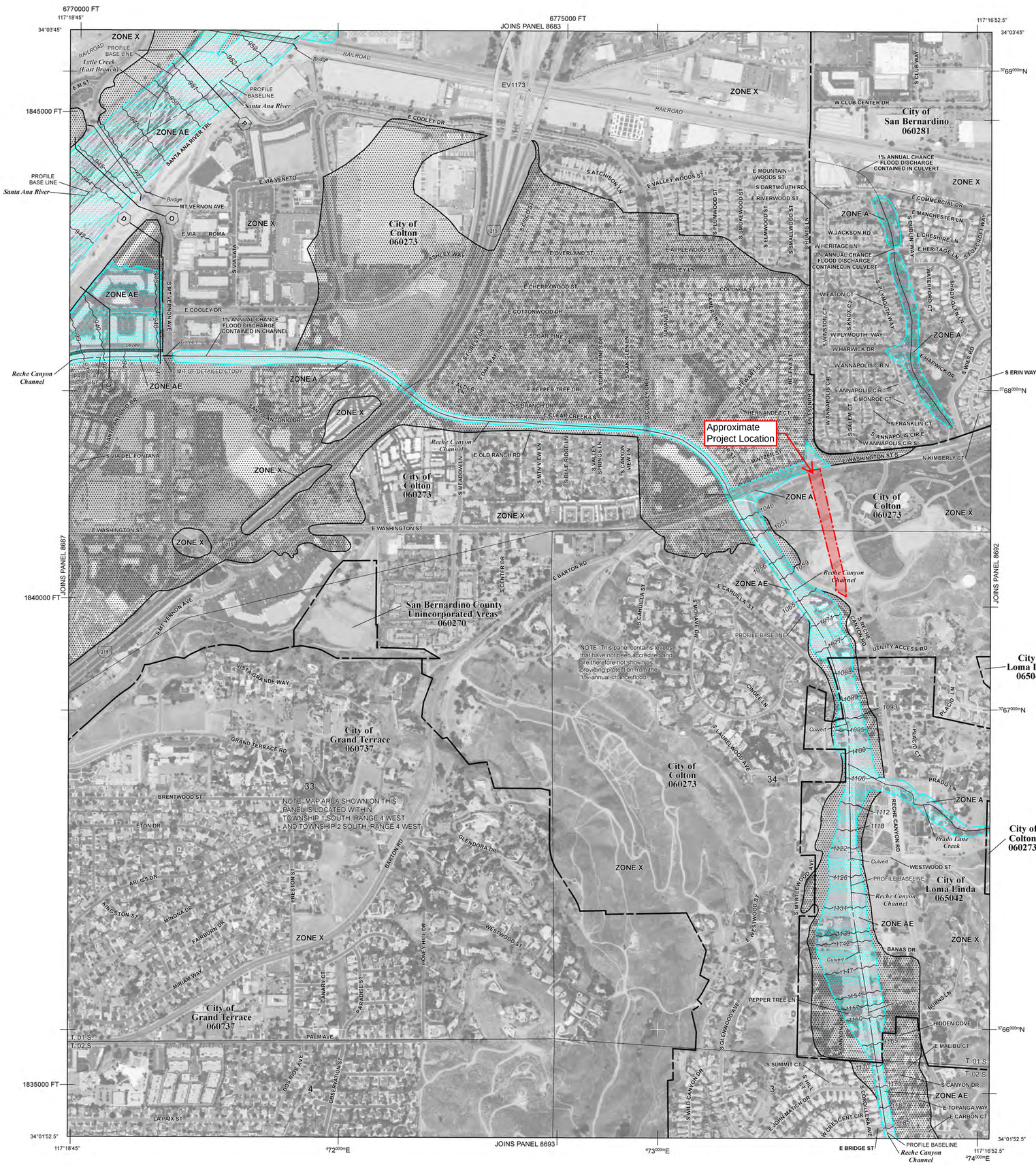
Base map information shown on this FIRM was provided in digital format by the San Bernardino County ISD.GIS Department, United States Geological Survey, the Bureau of Land Management, the United States Department of Agriculture, and the National Geodetic Survey. The imagery was flown by U.S. Department of Agriculture Farm Sevice Agency in 2012 and was produced with a 1-meter ground sampling distance.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 513 (EL 987) — Base Flood Elevation line and value; elevation in feet* / Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4275000mE — 1000-meter Universal Transverse Mercator grid values, zone 11
- 6000000 FT — 5000-foot grid ticks: California State Plane coordinate system, Zone V (FIPSZONE = 405), Lambert projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
August 28, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 2, 2016 – to change Base Flood Elevations, to add Base Flood Elevations, to change Special Flood Hazard Areas, to add Special Flood Hazard Areas, to change zone designations, to incorporate previously issued Letters of Map Revision, and to reflect updated topographic information.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 250 500 750 1,000 FEET
150 0 150 300 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 8691J

FIRM

FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 8691 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COLTON, CITY OF	060273	8691	J
GRAND TERRACE, CITY OF	060737	8691	J
LOMA LINDA, CITY OF	065042	8691	J
SAN BERNARDINO COUNTY	060270	8691	J
SAN BERNARDINO, CITY OF	060281	8691	J

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 06071C8691J

MAP REVISED SEPTEMBER 2, 2016

Federal Emergency Management Agency

ATTACHMENTS

ATTACHMENT A: LOCATION HYDRAULIC STUDY FORM

LOCATION HYDRAULIC STUDY FORM*

Dist. 8 Co. San Bernardino Rte. N/A P.M. N/A
Project No.: FERPL16 5065(028)
Bridge No.: N/A
Limits: From Reche Canyon Road to Hunts Lane in the City of Colton

Floodplain Description:

From review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Number 06071C8691J, dated effective September 2, 2016, it is indicated that the proposed Reche Canyon Road Extension is mapped Zone "X", unshaded, (see Exhibit B), which means that it is an area that has be determined to be outside the 0.2% annual chance floodplain. Therefore, the proposed does not encroach into any defined 1% Annual Chance Special Flood Hazard Areas Floodplains or Floodways.

1. Description of Proposal (include any physical barriers i.e. concrete barriers, soundwalls, etc. and design elements to minimize floodplain impacts):

The Project includes the construction of a new four-lane segment of Reche Canyon Road that would provide a direct connection to Hunts Lane. Elements of the infrastructure to be improved include sidewalks, curb and gutter, paving, curb extensions, median reconstruction, intersection lighting, storm water facilities, bike lanes, crosswalks, and landscaping.

2. ADT: Current 18,649 Projected 22,663

3. Hydraulic Data: Base Flood Q_{100}= N/A CFS
WSE_{100}: Downstream Encroachment = N/A
Upstream Encroachment = N/A

The flood of record, if greater than Q_{100}:
Q= N/A CFS WSE= N/A
Overtopping flood Q= N/A CFS WSE= N/A
Are NFIP maps and studies available? YES X FIRM No. 06071C8691J (see Exhibit "B")
NO

4. Is the highway location alternative within a regulatory floodway?
YES NO X

5. Attach map with flood limits outlined showing all buildings or other improvements within the base floodplain.

Potential Q_{100} backwater damages:

A.	Residences?	NO X	YES
B.	Other Bldgs?	NO X	YES
C.	Crops?	NO X	YES
D.	Natural and beneficial	NO X	YES
E.	Floodplain values?	NO X	YES

6. Type of Traffic:

A. Emergency supply or evacuation route?	NO X	YES
B. Emergency vehicle access?	NO	YES X
C. Practicable detour available?	NO	YES X

D. School bus or mail route? NO___X___YES _____

7. Estimated duration of traffic interruption for 100-year event hours:___N/A___

8. Estimated value of Q_{100} flood damages (if any)

A.	Roadway	$_____N/A___
B	Property	$_____N/A___
	Total	$_____N/A___

9. Assessment of Level of Risk Low___X_____
Moderate_____
High_____

For High Risk projects, during design phase, additional Design Study Risk Analysis
May be necessary to determine design alternative.

Signature – Consulting Hydraulics Engineer_____Date: 6/30/23
(Item numbers 3,4,5,7,9) Ceazar Aguilar, P.E.,
Aguilar Consulting, Inc

Is there any longitudinal encroachment, significant encroachment, or any support of incompatible Floodplain development? NO___X_____YES_____

If yes, provide evaluation and discussion of practicability of alternatives in accordance with 23 CFR 650.113

Information developed to comply with the Federal requirement for the Location Hydraulic Study shall be retained in the project files.

Signature – City Project Engineer_____Date_____
(Item numbers 1,2,6,8)

* Same as Figure 804.7A Technical Information for Location Hydraulic Study located in Chapter 804 of the Highway Design Manual

ATTACHMENT B: SUMMARY FLOODPLAIN ENCROACHMENT REPORT

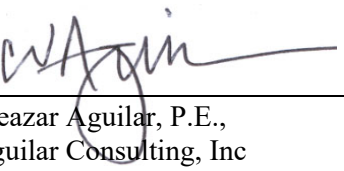
SUMMARY FLOODPLAIN ENCROACHMENT REPORT*

Dist. 8 Co. San Bernardino Rte. N/A P.M. N/A
Project No.: FERPL16 5065(028)
Bridge No.: N/A
Limits: From Reche Canyon Road to Hunts Lane in the City of Colton

From review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Number 06071C8691J, dated effective September 2, 2016, it is indicated that the proposed Reche Canyon Road Extension is mapped Zone "X", unshaded, (see Exhibit B), which means that it is an area that has be determined to be outside the 0.2% annual chance floodplain. Therefore, the proposed does not encroach into any defined 1% Annual Chance Special Flood Hazard Areas Floodplains or Floodways.

		No	Yes
1.	Is the proposed action a longitudinal encroachment of the base floodplain?	x	
2.	Are the risks associated with the implementation of the proposed action significant?	x	
3.	Will the proposed action support probable incompatible floodplain development?	x	
4.	Are there any significant impacts on natural and beneficial floodplain values?	x	
5.	Routine construction procedures are required to minimize impacts on the floodplain. Are there any special mitigation measures necessary to minimize impacts or restore and preserve natural and beneficial floodplain values? If yes, explain.	x	
6.	Does the proposed action constitute a significant floodplain encroachment as defined in 23 CFR, Section 650.105(q).	x	
7.	Are Location Hydraulic Studies that document the above answers on file? If not explain.		x

PREPARED BY:

Signature – Consulting Hydraulics Engineer  Date: 06/30/23

Ceazar Aguilar, P.E.,
Aguilar Consulting, Inc

* Same as Figure 804.7B Floodplain Evaluation Report Summary located in Chapter 804 of the Highway Design Manual