FLOODPLAIN EVALUATION REPORT

Interstate 10 Corridor Project

San Bernardino and Los Angeles Counties

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STATE OF CALIFORNIA
Department of Transportation

Signature Page

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Chapter 1 Overview

This Floodplain Evaluation Report was prepared in support of the Interstate 10 (I-10) Corridor Project as described below. There are several locations along the project with potential floodplain impacts from longitudinal or transverse encroachments by the project. The purpose of this report is to evaluate locations where the project may impact a floodplain and make preliminary recommendations for mitigation and further study.

This report provides data and analysis in support of the Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for the proposed project prepared pursuant to the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). It has been prepared in accordance with the California Department of Transportation (Caltrans) Standard Environmental Reference (SER) for Floodplain Evaluation Reports. The SER applies to all transportation projects developed under the auspices of Caltrans and to all local agency highway or local streets and roads projects with funding or approvals by the Federal Highway Administration (FHWA). Caltrans is the CEQA and NEPA lead agency for the project.

In accordance with the guidance for compliance for floodplain studies as established in the Caltrans SER, this report addresses the following:

- Risk Assessment: Includes an overview of the regulatory floodplain within the project area.
- Impacts of the Project: Includes an assessment of direct impacts, impacts to natural floodplain values, support of incompatible floodplain development, and the potential for interruption or termination of the transportation facility in the event of flooding.
- Measures to Minimize Impacts: Recommends minimization measures to decrease potential impacts on the regulatory floodplain.

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Chapter 2 Project Description

Caltrans, in cooperation with the San Bernardino Associated Governments (SANBAG), proposes to add freeway lanes through all or a portion of the 33-mile stretch of I-10 from the Los Angeles/San Bernardino (LA/SB) county line to Ford Street in San Bernardino County. The project limits, including transition areas, extend from approximately 0.4 mile west of White Avenue in Pomona at Post Mile (PM) 44.9 to Live Oak Canyon Road in Yucaipa at PM 37.0. Figure 1 shows the project limits.

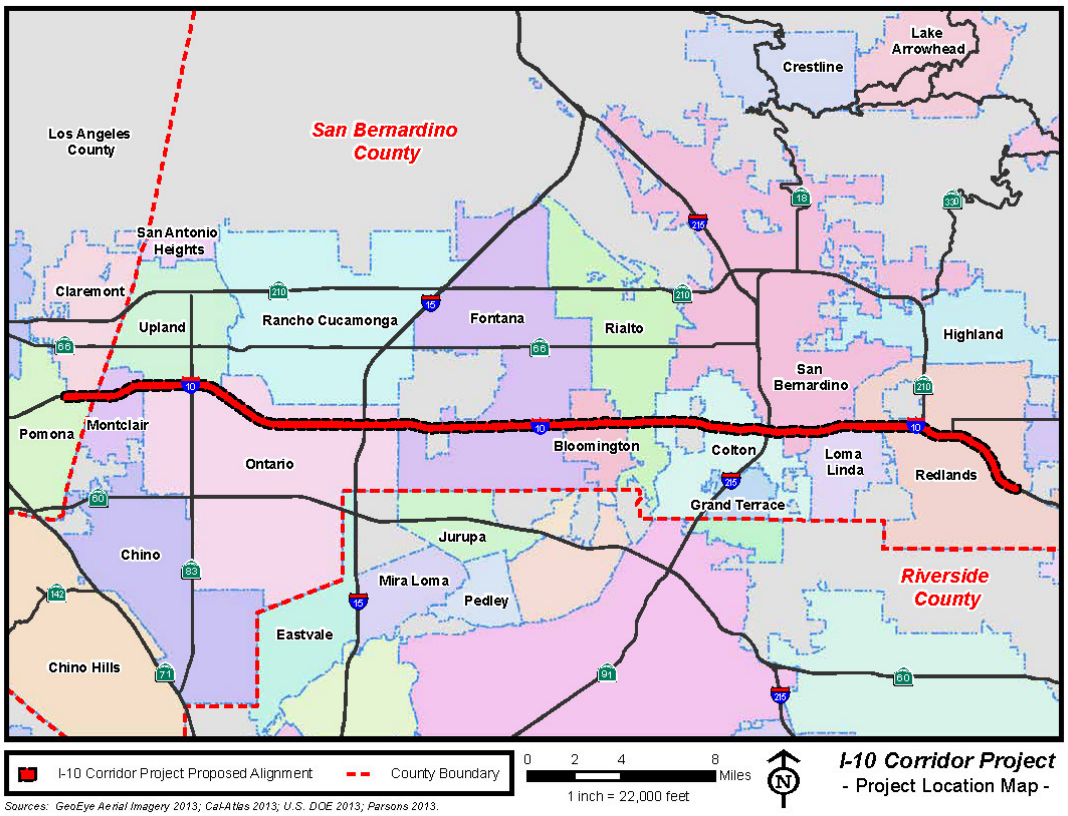

Figure 1 Project Location Map

2.1 Alternatives

2.1.1 Alternative 1: No Build

Alternative 1 (No Build) would maintain the existing lane configuration of I-10 within the project limits with no additional mainline lanes or associated improvements to be provided.

2.1.2 Alternative 2: One High-Occupancy Vehicle Lane in Each Direction

Alternative 2 (One High-Occupancy Vehicle Lane in Each Direction) would extend the existing high-occupancy vehicle (HOV) lane in each direction of I-10 from the current HOV terminus near Haven Avenue in Ontario to Ford Street in Redlands, a distance of approximately 25 miles.

2.1.3 Alternative 3: Two Express Lanes in Each Direction

Alternative 3 (Two Express Lanes in Each Direction) would provide two Express Lanes in each direction of I-10 from the LA/SB county line to California Street (near State Route [SR] 210) in Redlands and one Express Lane in each direction from California Street to Ford Street in Redlands, a total of 33 miles. The Express Lanes would be priced-managed lanes in which vehicles not meeting the minimum occupancy requirement would pay a toll. West of Haven Avenue, a single new lane would be constructed and combined with the existing HOV lane to provide two Express Lanes in each direction; east of Haven Avenue, all Express Lanes would be constructed by the project.

2.2 Purpose of Project

The purpose of the project is to improve traffic operations on I-10 in San Bernardino Counties to reduce congestion, increase throughput and enhance trip reliability for the planning design year of 2045.

The objectives of the project are to:

- Reduce volume-to-capacity (v/c) ratios along the corridor;
- Improve travel times within the corridor;
- Provide a facility that is compatible with transit and other modal options;
- Provide consistency with the Southern California Association of Governments (SCAG) Regional Transportation Plan (RTP);
- Provide a cost-effective project solution; and
- Minimize environmental impacts and right-of-way acquisition.

2.3 Need of Project

Deficiencies of I-10 within the project limits are summarized below:

- Substantial portions of the I-10 mainline general purpose (GP) lanes peak-period traffic demand currently exceeds capacity;
- Nearly all of the I-10 mainline GP lanes are projected to exceed capacity in future years; and
- The I-10 existing mainline HOV lanes operation is degraded during peak periods.

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Chapter 3 Floodplain Determination

Flood hazard areas were determined based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM). Field visits in February 2009 were conducted to evaluate the potential cause of flooding, flood zone properties, and accuracy of the FEMA maps. Other sources, such as topographic mapping and aerial photos, were utilized to determine drainage tributary areas and potential flooding risk.

There are 14 floodplain locations that have been identified and studied along the 33-mile-long project. The FIRM maps and photos are located in Appendices A and B, respectively.

3.1 Floodplain and Floodway Description

Floodplains are areas of land inundated by the river during the 100-year flood. Floodplains are a natural feature of rivers that may also occur in portions of a watershed on land depressions or wetlands. They are the mostly flat land adjacent to the river and are formed due to the actions of a river. Designated Floodway refers to the channel of the stream and that portion of the adjoining floodplain reasonably required to provide for the passage of a design flood. Developments are prohibited in the floodway. Figure 2 depicts both floodplain and floodway areas.

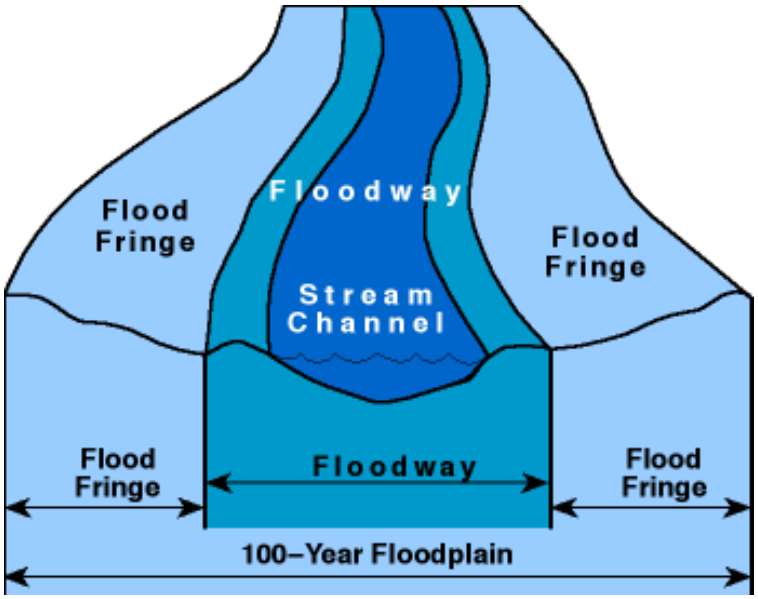

Figure 2 Typical Floodplain and Floodway Location with Respect to the Main Stream

Rivers erode their own banks and redeposit the eroded material downstream. Material is added to the floodplain during floods, a process called overbank deposition. Rivers are constantly trying to reach an equilibrium state where there is a balance of water and soil material. The material that underlies floodplains is a mixture of thick layers of sand and thin layers of mud. Undisturbed floodplains provide a natural buffer by: (a) reducing the number and severity of floods, (b) minimizing non-point source water pollution, (c) filtering stormwater, (d) providing habitat for plants and animals, and (e) creating aesthetic beauty and outdoor recreation benefits.

When the flow in the river overtops its banks, the overflow spreads over the floodplain, which slows the flow of the water. Reduced water velocity can help prevent severe erosion and flooding downstream. In addition, during high water events, some of the water is absorbed by the floodplain, reducing the extent of the flooding. The absorbed water can then be returned to the stream during times of low water.

Floodplains support plants and animals and may have forests and wetlands on or adjacent to them. These river edges provide habitat for insects, birds, reptiles, amphibians, and mammals. The vegetation filters contaminants in water that flow into the river. In addition, vegetated floodplains provide shade for the adjacent rivers and streams, increasing dissolved oxygen levels, and consequently improving habitat for aquatic plants and animals.

In general, a floodplain cannot be altered in any way until it has been shown that alteration will pass the base flood without significant damage to either the floodplain or surrounding areas. No bridge abutment or embankment shall encroach on a regulatory floodway.

It is anticipated that there would be some floodplain encroachment throughout the project corridor. Encroachment would vary at each location depending on the proposed improvement. This report discusses proposed improvements and floodplain mitigation, if any.

The proposed project will have to adhere to all federal, state, and local regulatory policies for floodplain management. Some of the basic guidelines are:

- To minimize impacts of highway agency actions that adversely affect base floodplains;

- To restore and preserve the natural and beneficial floodplain values that are adversely impacted by highway agency actions;
- To avoid support of incompatible floodplain development; and
- To be consistent with the intent of the Standards and Criteria of the National Flood Insurance Program.

3.2 FEMA Designations

FEMA designates Special Flood Hazard Areas according to zones. The base flood elevation (BFE) is the water surface elevation of the 1 percent annual chance of flood. The zones are described as:

Zone A – Corresponds to the 100-year floodplains that are determined in the Flood Insurance Study (FIS) by approximate methods. No BFEs or depths have been determined.

Zone AE – Corresponds to the areas of 100-year floodplains that are determined in the FIS by detailed methods. In most instances, BFEs have been derived from detailed hydraulic analyses and are shown within this zone.

Zone AH – Corresponds to the areas of 100-year shallow flooding with a constant water surface elevation. Flood depths are 1 to 3 feet (usually areas of ponding); BFEs are derived from detailed hydraulic analyses and are shown at selected intervals within this zone.

Zone AO – Corresponds to the areas of 100-year shallow flooding. Flood depths are 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities are also determined.

Zone AR – Depicts areas protected from flood hazards by flood control structures such as levees that are being restored.

Zone X (dotted) – Other flood areas. Areas of 0.2 percent annual chance flood; areas of 1 percent 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 percent annual chance flood.

Zone X – Areas determined to be outside the 0.2 percent annual chance floodplain.

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Chapter 4 Federal and State Regulations

4.1 FEMA

FEMA developed the National Flood Insurance Program (NFIP) to assist communities across the country with floodplain management. NFIP provides federally backed flood insurance to homeowners, renters, and business owners in participating communities. In addition to providing flood insurance and reducing flood damage through floodplain management regulations, the NFIP identifies and maps the nation's floodplains. Mapping flood hazards creates a broad-based awareness of the flood hazards and provides the data needed for floodplain management programs and to actuarially rate new construction for flood insurance.

Executive Order (EO) 11988 directs all federal agencies to refrain, to the extent practicable and feasible, all short-term and long-term adverse impacts associated with floodplain modification and to refrain from direct and indirect support of development within 100-year floodplains wherever a practicable alternative is available and to restore and preserve the natural and beneficial values served by floodplains. Projects that encroach upon 100-year floodplains must be supported with additional specific information. The U.S. Department of Transportation Order 5650.2, Floodplain Management and Protection, prescribes "policies and procedures for ensuring that proper consideration is given to the avoidance and mitigation of adverse floodplain impacts in agency actions, planning programs, and budget requests." The Order does not apply to areas with Zone C (areas of minimal flooding as shown on FEMA FIRMs).

A Floodplain Evaluation is required as described under the NFIP (23 *Code of Federal Regulations* [CFR] 650, Subpart A Section 650). Section 650.111 of the regulations calls for location hydraulic studies to be performed which includes detailed engineering design drawings. Hydraulic modeling would be required, along with a hydraulic report summarizing the results (to be submitted for review by the local agencies listed in the FIRMs). A Conditional Letter of Map Revision (CLOMR) and a Letter of Map Revision (LOMR) may be required by FEMA for work within a floodway or for work resulting in significant impacts to the 100-year floodplain.

4.2 U.S. Environmental Protection Agency

Under the Clean Water Act (CWA), the United States Environmental Protection Agency (EPA) was granted authority to implement pollution control programs, such as setting wastewater standards for industry and establishing a permit system for the

discharge of any pollutant into the waters of the United States. The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

4.3 Clean Water Act (33 U.S.C. § 1251 *et seq.)*

The purpose of the CWA is restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters through prevention and elimination of pollution. The CWA applies to discharges of pollutants into waters of the United States. California's State Water Resources Control Board (SWRCB) is the State agency with primary responsibility for implementation of State and federally established regulations relating to hydrology and water quality issues. Typically, all regulatory requirements are implemented by the SWRCB through the nine different Regional Water Quality Control Boards (RWQCBs) established throughout the state. The CWA operates on the principle that any discharge of pollutants into the nation's waters is prohibited unless specifically authorized by a permit; permit review is the CWA's primary regulatory tool.

Chapter 5 Permits and Approvals

The following permits may be required for water bodies impacted by the project.

5.1 Section 404 Permit

CWA Section 404 establishes a program to regulate the discharge of dredge and fill material into waters of the United States, including wetlands. The responsibility for administering and enforcing a Section 404 Permit is shared by the U.S. Army Corps of Engineers (USACE) and EPA. USACE administers the day-to-day program, including individual permit decisions and jurisdictional determinations; develops policy and guidance; and enforces Section 404 provisions.

5.2 Section 408 Permit

This permit is required if there are proposed modification to an existing USACE flood control project. The applicant must obtain permission from the Secretary of the Army by demonstrating that such proposed alteration or permanent use and occupation of the Federal flood control project is "not injurious to the public interest and will not impair the usefulness of such work."

Modification of a federal flood control project requires permission by USACE through a Title 33 U.S.C. Section 408 permit. Section 408 specifies the technical and risk analyses that must be submitted to USACE by any non-federal sponsor of a project that may adversely affect the capacity or structural integrity of a federal flood control facility. The types of information required include detailed structural information, hydraulic data (e.g., water surface profiles), and geotechnical evaluations (e.g., levee seepage and stability). A memorandum, Clarification Guidance on the Policy and Procedural Guidance for the Approval of Modifications and Alterations of Corps of Engineers Projects (USACE 2008), provides detailed information.

5.3 Section 401 Certification

A 401 Certification certifies that the Section 404 mitigation plan conforms to State water quality standards. The 401 Certification for this project would be administered by the Santa Ana River RWQCB.

5.4 National Pollutant Discharge Elimination System Permit

The CWA created the National Pollutant Discharge Elimination System (NPDES) permit program to regulate the discharge of any pollutant from a point source into

navigable waters by requiring those point sources to obtain a permit if their discharges go directly to surface waters. The NPDES permit documents that completed projects meet applicable water quality standards for drainage and runoff. An NPDES permit and Storm Water Pollution Prevention Plan (SWPPP) are required from SWRCB under the Federal CWA (Section 402). The project area is within the jurisdiction of the Los Angeles RWQCB and Santa Ana RWQCB.

By following the guidelines and regulations established by the NPDES permits, which include the Caltrans Statewide Permit (Order No. 2012-0011-DWQ, NPDES No. CAS000003), the Construction General Permit (CGP) (Order No. 2009-0009-DWQ, NPDES No. CAS000002), and compliance with waste discharge requirements (WDRs) for municipal separate storm sewer system (MS4) discharges (Order No. R4-2012-0175, NPDES No. CAS004001 for Los Angeles County and Order No. R8-2010-0036, NPDES No. CAS618036 for San Bernardino County) administered by the Los Angeles and Santa Ana RWQCBs, respectively.

5.5 NPDES Permit Requirements for Dewatering Discharges

Care is required for the removal of nuisance water from a construction site (known as dewatering) because of the high turbidity and other pollutants associated with this activity. The Los Angeles RWQCB's permit for discharges of groundwater from construction and project dewatering to surface waters is identified as No. R4-2013-0095 (NPDES No.CAG994004). The Santa Ana RWQCB's Dewatering Permit Order is identified as R8-2005-0041 (NPDES NO. CAG998001). These permits cover the General WDRs for Discharges to Surface Water which Pose an Insignificant *(De Minimis)* Threat to Water Quality from dewatering activities.

5.6 California Department of Fish and Wildlife Section 1602 Streambed Alteration Agreement

Section 1602 of the California Department of Fish and Wildlife (CDFW) Code requires a Streambed Alteration Agreement for any alteration to the bank or bed of a stream or lake or for any activity that substantially diverts or obstructs the natural flow of any river, stream, or lake. Further coordination with CDFW regarding potential project impacts is required, and a Section 1602 Streambed Alteration Agreement may be necessary for this project. As applicable, a Section 1602 Streambed Alteration Agreement would be obtained for the project prior to construction.

Chapter 6 Floodplain Locations

In accordance with FEMA FIRMs, the following water bodies have been designated as flood hazard areas of varying degrees with San Sevaine Channel and Santa Ana River mapped as a floodway and the others mapped as floodplains. FEMA maps, located in Appendix A, display areas within the project that may have impact to some of the higher flood hazard zones such as A and AE. The exhibits in Appendix C show the proposed improvements overlaid on the FIRM maps. As a requirement of the SER, Location Hydraulic Study and Summary Floodplain Encroachment forms can be found in Appendices D and E.

6.1 West Cucamonga Creek – FIRM No. 06071C8609H

The existing West Cucamonga Creek carries flows from the City of Ontario. The upstream end of the channel is located north of Church Street, from where it continues in a southerly direction to the infiltration basins north of SR 60. The basins outfall is Cucamonga Creek.

The proposed improvements include roadway widening, grading and retaining walls. The two existing culvert crossings under the I-10 would be protected in place.

A Zone AO flood hazard designation is shown adjacent to the westbound roadbed. The floodplain spreads to the N. Grove Avenue underpass where it joins the Zone A designation south of the freeway. It is determined that the proposed improvement would not significantly alter the floodplain.

There are no natural and beneficial uses for this floodplain except for drainage conveyance.

6.2 Cucamonga Creek – FIRM No. 06071C8628H

The Cucamonga Creek watershed is located in San Bernardino County and Riverside County and includes portions of the cities of Chino, Ontario, Rancho Cucamonga, and Upland. The upstream reach of the Cucamonga Creek Channel originates at the Cucamonga Debris Basin, from where it continues in a southeasterly direction having a confluence with a channel that brings flows from Thorpe Canyon Dam. From this confluence, the channel crosses SR 210, continuing for approximately 5 miles to the project area. The Deer Creek Channel is the largest tributary of Cucamonga Creek, where the confluence is located just south of the eastbound (right) I-10 bridge. From the confluence with the Deer Creek Channel, the Cucamonga Creek Channel

continues to the south under Ontario International Airport to the confluence with Lower Deer Creek, approximately 3.4 miles downstream. Downstream of this confluence, the channel continues south for approximately 3.8 miles where it discharges into Prado Basin.

The project proposes to widen the existing bridges over Cucamonga Creek/Deer Creek. The existing pier wall in the channel would be removed and replaced to support the proposed superstructure. According to the Preliminary Hydraulics Report for Cucamonga Creek Bridges, the proposed improvements have no hydraulic impact to the channel. It is determined that the proposed improvement would not alter the floodplain.

Adjacent to the I-10 crossing, the channel is designated as Zone A with the 100-year discharge contained in the channel.

There are no natural and beneficial uses for this floodplain except for drainage conveyance.

6.3 Lower Deer Creek – FIRM No. 06071C8629H

Lower Deer Creek is located mainly in the City of Ontario. The upstream reach begins at Turner Basins at the historical Deer Creek alignment. South of SR 60, the channel travels in a southwesterly direction. The open channel transitions to an underground system and back to an open channel several times before finally discharging to Cucamonga Creek near Schaefer Avenue.

The project proposes to widen the roadway to the north and south which would require extension of the existing 14’ x 5’ RCB within the designated floodplain.

FEMA designates the channel and culvert as a Zone A flood hazard, and it appears the flows are contained in the channel. It is determined that the proposed improvement would not significantly alter the floodplain.

There are no natural and beneficial uses for this floodplain except for drainage conveyance.

6.4 Cal Commerce Center Storm Drain – FIRM No. 06071C8629H

There is a strip of Zone AH floodplain just east of the Haven Avenue interchange along the westbound roadway. The flooding is primarily due to the inadequate

carrying capacity of the ditch that parallels I-10 and backwater effects by the culvert that conveys flows across the freeway.

The proposed improvement is to widen the roadway which would require some grading within the floodplain. The ditch would not be impacted but should be evaluated during the plans, specification, and estimate (PS&E) phase to accommodate the 100-year discharge.

There are no natural and beneficial uses for this floodplain except for drainage conveyance. It is determined that the proposed improvement would not significantly alter the floodplain.

6.5 East Etiwanda Creek – FIRM No. 06071C8634H

The channel north and south of the freeway is designated as flood hazard Zone A. Much of the historical flow has now been diverted to San Sevaine Channel north of Foothill Boulevard. The remaining East Etiwanda Creek flow comes from a smaller tributary from Foothill Boulevard to the I-10 crossing. A LOMR was issued effective September 20, 2013, to reflect the above improvements. The western culvert under I-10 appears to be nonfunctional, which would need to be confirmed by Caltrans or the San Bernardino County Flood Control District (SBCFCD).

Project improvements along the floodplain include roadway widening and grading of the embankments. Structural improvements include closure of the median gap between the eastbound and westbound bridges and widening the Etiwanda Avenue eastbound off-ramp bridge to the south. The bridge widening would require extension of the rectangular reinforced concrete channel cross section into the natural channel, along with possible modifications to the upstream transition structure.

The I-10 HOV Alternative and Express Lanes Alternative improvements would have some impact on the floodplain. Mitigation shall be assessed during the design phase and should include a new hydrology study for East Etiwanda Creek to determine the new 100-year peak flows and floodplain limits.

Beneficial uses for East Etiwanda Creek include groundwater recharge, industrial process supply, water contact recreation, non-contact water recreation, municipal and domestic water supply, wildlife habitat, and rare, threatened, or endangered species (Santa Ana RWQCB 2008).

It is determined that the proposed improvement would not significantly alter the floodplain.

6.6 San Sevaine Channel – FIRM No. 06071C8634J

San Sevaine Channel conveys storm runoff from the cities of Rancho Cucamonga and Fontana and unincorporated area of San Bernardino County. The channel discharges to the Santa Ana River in the city of Corona. The channels under I-10 consist of the San Sevaine Channel and I-10 Channel with the confluence occurring just downstream of the Etiwanda Avenue eastbound on-ramp. The proposed improvement would widen the mainline and Etiwanda Avenue eastbound on-ramp bridges over the channel. The bridge widening would not impact the two rectangular reinforced concrete channel cross sections, except for removal and replacement of the existing walls that separate them. The effective flow area and conveyance of the channel under the bridges will not change and therefore will not alter the floodplain.

The FIRM map indicates the channel is a designated floodway and flood hazard Zone AE, with the 100-year storm event contained in the channel. A preliminary revised FIRM map was issued February 1, 2014, to reflect current changes.

Intermittent beneficial uses for San Sevaine Channel include municipal and domestic water supply, groundwater recharge, non-contact water recreation, cold freshwater habitat, and wildlife habitat (Santa Ana RWQCB 2008).

6.7 I-10 Channel – FIRM No. 06071C8653H, 06071C8654H, and 06071C8658H

The I-10 Channel parallels I-10 on the north side. The high point of the channel is located approximately 300 feet east of Sierra Avenue and flows westerly, discharging into San Sevaine Channel. The channel conveys storm runoff from the cities of Rialto, Bloomington and Fontana and unincorporated areas of San Bernardino county. The concrete trapezoidal channel varies in width from 12 to 50 feet and in depth from 3 to 9 feet.

The City of Fontana's I-10 Channel Capacity Study Report (Boyle Engineering, 2003) determined the channel to be deficient to convey the 100-year peak discharges and recommends widening the channel. A portion of the channel has been improved recently as part of the Cherry Avenue interchange improvement project.

There are two Zone A flood hazard designations for the I-10 Channel. The first area is located at the Caltrans maintenance property (old rest area) between Beech Avenue

and Poplar Avenue. A field visit and topographic mapping indicate a sump area between the elevated section of I-10 and the I-10 Channel. Flows that overtop the channel would pond in the sump area.

The second floodplain area is located between Sierra Avenue and the upstream end of the channel. The source of flooding appears to be runoff from an area north of I-10 and the backwater effect of the I-10 Channel. The proposed improvement would encroach on the channel and floodplain. A portion of the existing channel would be replaced with a box or pipe system to accommodate realignment of the Sierra Avenue westbound on-ramp.

There are no natural and/or beneficial uses for the I-10 Channel and floodplain except for drainage conveyance. It is determined that the proposed improvement would not significantly alter the floodplain.

6.8 Colton Southwest Storm Drain– FIRM No. 06071C8679H

The area northwest of I-10 and the Burlington Northern Santa Fe (BNSF) Railroad is designated as Zone AH. The existing storm drain system under 5th Street (Pennsylvania Avenue) does not have the capacity to convey the 100-year storm event causing shallow flooding induced by backwater effect and concentrated street flow.

The FEMA floodplain delineation shows several single-family residences and businesses impacted by the floodplain.

The proposed I-10 improvements at the floodplain include roadway widening, retaining wall construction, and bridge widening.

There are no natural and/or beneficial uses for this floodplain. It is determined that the proposed improvement would not significantly alter the floodplain.

6.9 11th Street Storm Drain – FIRM No. 06071C8679H

The floodplain is located along the 11th Street alignment south of I-10. There is a double pipe culvert crossing I-10 that outlets into an open channel. The open channel is designated as a floodway and Zone AE floodplain.

The project's proposed improvement, which includes widening of the existing eastbound roadway and realignment of the 9th Street eastbound on-ramp, would encroach on the designated floodway and floodplain. However, it is expected that encroachment would be minimal and would not significantly alter the floodplain.

There are no natural and/or beneficial uses for this floodplain except for drainage conveyance.

6.10 Warm (Lytle) Creek – FIRM No. 06071C8683H (LOMR Effective November 15, 2010)

Warm Creek crosses I-10 just west of the Interstate 215 (I-215) interchange. Major tributaries, such as Lytle Creek and Cajon Creek, discharge to Warm Creek upstream of the project. Warm Creek confluences with the Santa Ana River approximately 0.25 mile downstream of I-10.

Warm Creek is designated as Zone AE flood hazard with BFE determination. A LOMR was published in November 2010 that revises the floodplain for Warm Creek and Lytle Creek. It also decreased the BFE from the previously published FIRM Map (August 28, 2008). Note that the FEMA map refers to Warm Creek as Lytle Creek at the I-10 crossing. The revised FIRM map shows some channel overflow upstream and downstream of the I-10 crossing; however, the 100-year event appears to be contained in the channel several miles upstream of I-10.

The project proposes to widen the existing bridge over Warm Creek to accommodate additional lanes. For the Express Lanes Alternative, pierwalls inside the channel would be extended by approximately 22 feet upstream and 20 feet downstream of I-10. Seismic retrofit would also require thickening of the pier walls. The Preliminary Hydraulic Report for Warm Creek Bridge indicates a slight increase in water surface elevation upstream and downstream of the I-10 crossing (Parsons September 2014).

This major river provides many beneficial uses for the area such as water suppliers that draw from Lytle Creek and hydroelectric generation (Santa Ana RWQCB 2008).

6.11 Santa Ana River – FIRM No. 06071C8683H

The Santa Ana River bridge crossing is located west of the I-10/I-215 interchange. The Santa Ana River headwater originates at the base of the San Bernardino Mountains east of Highland, and the 96–mile-long journey ends in the Pacific Ocean at Huntington Beach. The river accepts flows from other large tributaries, including runoff from several cities before crossing the project site. The Santa Ana River is a critical water resource for southern California, with many beneficial uses such as water consumption, natural habitat for many species, and a major flood control conveyance.

The project proposes to widen the I-10 bridges over the Santa Ana River to accommodate the additional lanes. For the Express Lanes Alternative, pier walls would have to be extended approximately 26 feet upstream of the westbound bridge and the eastbound bridge would be widened 15 feet upstream and 7 feet downstream. The "Preliminary Hydraulic Report for Santa Ana River Bridge" indicates a negligible increase in water surface elevation upstream and downstream of the I-10 crossing (Parsons September 2014). The proposed improvement will not significantly alter the floodplain and BFE.

The Santa Ana River is designated as a floodway and Zone AE with BFE determination. The 100-year discharge is contained in the channel.

Beneficial floodplain values for Santa Ana River, Reach 4, include groundwater recharge, water contact recreation, non-contact water recreation, warm freshwater and wildlife habitat (Santa Ana RWQCB 2008).

6.12 San Timoteo Creek – FIRM No. 06071C8684H

The existing channel carries flow from a tributary area within Riverside and San Bernardino counties southeast of the project. The total drainage area of San Timoteo Creek at the Santa Ana River outfall is approximately 126 square miles.

The creek begins at the confluence of Noble Creek and Little San Gorgonio Creek in the City of Beaumont. The channel meanders through San Timoteo Canyon and the cities of Redlands and Loma Linda. The creek outlets into the Santa Ana River approximately 10 miles northwest of the I-10 crossing.

Several streams discharge to San Timoteo Creek including Yucaipa Creek, the largest tributary.

The HOV Alternative and Express Lanes Alternative improvements include widening the existing mainline and Carnegie Drive westbound on-ramp bridge. The center pier of the mainline bridge would be lengthened to accommodate the additional lanes. The pier nose would be removed and replaced on the south side (upstream). The westbound on-ramp bridge widening would not impact the existing channel. The Preliminary Hydraulic Report for San Timoteo Bridge indicates a slight increase in water surface elevation upstream and downstream of the I-10 crossing (Parsons September 2014). The proposed improvement will not significantly alter the floodplain.

FEMA designates San Timoteo Creek as Zone A with 100-year flows contained in concrete rectangular channel.

Intermittent beneficial uses for San Timoteo Creek include groundwater recharge and wildlife habitat (Santa Ana RWQCB 2008).

6.13 Mission Zanja Channel – FIRM No. 06071C8703H

FEMA designates the Mission Zanja Channel as Zone A downstream of I-10 and Zone AO adjacent to the channel and I-10 with the 100-year storm event flow overtopping the channel upstream of the freeway as shown in the FIRM Map. The flooding area extends upstream of the West Redlands Bridge (where the channel approaches the I-10, turns west in a wide curve and runs parallel to the Interstate for approximately 1500') beyond Redlands Boulevard. The floodplain does not appear to encroach on the mainline roadbed, but the eastbound off-ramp embankment at Mountain View Avenue may be affected.

The HOV Alternative and Express Lanes Alternative improvements include widening the existing bridge by extending the abutments and adding pier walls at the top of channel. According to the Preliminary Hydraulics report for Mission Zanja Channel Bridge, hydraulic analysis indicate the bridge widening leads to a negligible change water surface elevation and would not alter the floodplain.

There are no natural and/or beneficial uses for this floodplain except for drainage conveyance.

6.14 The Zanja – FIRM No. 06071C8716H

The Zanja is a historical irrigation canal, which over several decades became a drainage conveyance. The Zanja's floodplain spreads throughout downtown Redlands and joins the Mission Zanja Channel east of California Street. The floodplain is bounded by the I-10 freeway embankments with a designation of Zone A along the main channel and Zone AO (depths of 1 to 2 feet) at the overbanks adjacent to I-10. The I-10 roadbed is elevated adjacent to the floodplain; therefore, flood inundation is concentrated along the toe of freeway embankment.

The HOV Alternative and Express Lanes Alternative improvements include widening the existing roadway. Embankment slopes may encroach on the Zone AO floodplain but would not significantly alter the floodplain area.

There are no natural and/or beneficial uses for this floodplain except for drainage conveyance. It is determined that the proposed improvement would not significantly alter the floodplain.

Chapter 7 Alternatives to Floodplain Encroachment

Because the proposed work is located on an existing highway, a new highway location alternative could not be evaluated. The proposed work would widen the existing freeway to accommodate the HOV Alternative and Express Lanes Alternative. The only variable to the impacts is the degree of encroachment. Disturbance to the floodplains shall be minimized where possible.

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Chapter 8 Risk Assessment

The I-10 Corridor Project would impact several water bodies and their floodplain at varying degrees, depending on the alternative. Table 1 summarizes the risks associated with encroaching and developing on a flood hazard area. The FEMA FIRM maps, photos, project improvements, Location Hydraulic Study Forms, and Summary Floodplain Encroachment Report found in the Appendix are supporting documents used to evaluate the risk.

Table 1 Summary of Floodplain Encroachments

Flooding Source	Q_{100} year (cfs) at I-10 Crossing	Type of Encroach-ment	Effects on Natural Beneficial Values	Effects on Incompatible Development	Risk		
					Alt. 1	Alt. 2	Alt. 3
West Cucamonga Creek	4,500[1] 3,134[7]	Transverse	None	None	None	Low	Low
Cucamonga Creek/Deer Creek	16,500[1] 23,500[7]	Transverse	None	None	None	Low	Low
Lower Deer Creek	Unknown	Transverse	None	None	None	Low	Low
Cal Commerce Center Storm Drain	1,284[7]	Transverse	None	None	None	Low	Low
East Etiwanda Creek	1,260[2]	Longitudinal and Transverse	Temporary	None	None	Low	Low
San Sevaine Channel	16,918[5] Upstream 20,360[5] Downstream	Transverse	Temporary	None	None	Low	Low
I-10 Channel	542 to 6,819[4]	Longitudinal	None	None	None	Low	Low
Colton Southwest Storm Drain	1,000[1]	Longitudinal and Transverse	None	None	None	Low	Low
11th Street Storm Drain	490[1]	Transverse	None	None	None	Low	Low
Warm Creek	39,800[6] 67,000[7]	Longitudinal and Transverse	None	None	None	Low	Low

Table 1 Summary of Floodplain Encroachments

Flooding Source	Q_{100} year (cfs) at I-10 Crossing	Type of Encroach-ment	Effects on Natural Beneficial Values	Effects on Incompatible Development	Risk		
					Alt. 1	Alt. 2	Alt. 3
Santa Ana River	70,000[3]	Transverse	Temporary	None	None	Low	Low
San Timoteo Creek	17,200[1] 19,500[7]	Transverse	Temporary	None	None	Low	Low
Mission Zanja	5,100[1] 7,576[7]	Transverse	None	None	None	Low	Low
The Zanja	3,924[7]	Longitudinal and Transverse	None	None	None	Low	Low

[1] FIS
[2] LOMR September 20, 2013. Case No. 13-09-0673P
[3] Seven Oaks Dam Study
[4] I-10 Capacity Study, Boyle Engineering
[5] San Sevaine Channel Study, SBCFCD
[6] LOMR November 2010
[7] Provided by the SBCFCD

Chapter 9 Beneficial Floodplain Values

As described earlier, beneficial uses have been identified for the receiving water bodies along the project corridor. Although there are no permanent impacts to the beneficial uses associated with the proposed improvements, downstream effects are temporary. Table 2 identifies the receiving water bodies for the project, along with the beneficial uses designated by the Santa Ana RWQCB and the Los Angeles RWQCB.

The beneficial uses identified for the receiving water bodies within the project corridor are as follows:

- Municipal and Domestic Supply – Waters are used for community, military, municipal, or individual water supply systems. These uses may include, but are not limited to, drinking water supply.
- Agricultural Supply – Includes uses for farming, ranching, or horticulture including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.
- Wildlife Habitat –Waters that support wildlife habitats including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife and prey species used by water fowl and other wildlife.
- Groundwater Recharge – Used for natural or artificial recharge of groundwater including, but not limited to, future extraction and maintaining water quality.
- Rare, Threatened, or Endangered Species – Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered.
- Warm Freshwater Habitat – Maintenance of warm water ecosystems.
- Water Contact Recreation – Recreational activities involving body contact with water.
- Non-Contact Water Recreation – Recreational activities involving proximity to water, but generally no body contact or ingestion of water.
- Industrial – Industrial service supply.
- Process Water – Industrial process supply.
- Cold Freshwater Habitat – Waters that support cold water ecosystems.

Table 2 Beneficial Uses for Receiving Water Bodies

RWQCB	Inland Surface Stream	MUN	AGR	GWR	IND	PROC	REC1	REC2	WARM	COLD	WILD	RARE
Los Angeles	San Jose Creek Reach 2 (Temple Avenue to Thompson Wash)	•		I					I		•	
Santa Ana	Etiwanda Wash (East Etiwanda Creek)	•		•		•	•	•		•	•	•
	Day Creek (Day Creek Channel)	•		•		•	•	•		•	•	
	Deer Creek Channel (Deer)	I		I			I	I		I	I	
	San Sevaine Channel (San Sevaine)	I		I			I	I		I	I	
	Santa Ana River, Reach 4	+		•			•*	•	•		•	
	San Timoteo Creek (Reach 1A – Santa Ana River Confluence to Barton Road)	+	I**				I*	I	I		I	
	San Timoteo Creek (Reach 1B – Barton Road to Gage at San Timoteo Canyon)	+	I**	I			I*	I	I		I	
	Cucamonga Creek Reach 1 (Confluence with Mill Creek to 23rd Street in Upland)	+			•		•*	•	•		•	
	San Antonio Creek	•	•	•	•	•	•	•		•	•	

• Present or Potential Beneficial Use

I Intermittent Beneficial Use

+ Excepted from Municipal and Domestic Supply

* Access prohibited in some portions by San Bernardino County Flood Control District

** Intermittent Beneficial Use

Beneficial Use Definitions: MUN (Municipal and Domestic Supply); AGR (Agricultural Supply); IND (Industrial Service Supply); PROC (Industrial Process Supply); GWR (Groundwater Recharge); REC1 (Water Contact Recreation); REC2 (Non-Contact Water Recreation); WARM (Warm Freshwater Habitat); LWRM (Limited Warm Freshwater Habitat); COLD (Cold Freshwater Habitat); WILD (Wildlife Habitat); RARE (Rare, Threatened, or Endangered Species).

Chapter 10 Probable Incompatible Floodplain Development

The proposed project improvements would not significantly alter any of the aforementioned regulatory floodplain and floodway areas. The proposed project is consistent with existing watershed and floodplain management programs set forth by Local, State and Federal agencies.

Every effort would be made such that the project remains compatible with the NFIP set forth by FEMA.

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Chapter 11 Potential for Interruption or Termination of a Transportation Facility in the Event of Flooding

The entire road surface would be above the 100-year floodplain. The project would not substantially alter water surface elevations of the 100-year flood; therefore, it would not affect the potential for interruption or termination of a transportation facility in the event of flooding.

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Chapter 12 Measures to Minimize Impacts

The proposed project would be designed to minimize impacts, where possible, by limiting the grading and structural encroachments at designated floodplain and floodways areas. The following measures would be incorporated into the design and construction phases to minimize potential floodplain impact:

1. Provide positive drainage during construction and refrain from filling designated floodplains.
2. Implement recommended BMPs as identified in the Storm Water Data Report (Parsons 2014).
3. Include erosion control and water quality protection during in-river construction and post-construction as identified in the Storm Water Data Report (Parsons 2014).
4. Contractor to develop a contingency plan for unforeseen discovery of underground contaminants in the Stormwater Pollution Prevention Plan (SWPPP).
5. Limit construction activities between October and May to those actions that can adequately withstand high flows and entrainment of construction materials. The Contractor to prepare a Rain Event Action Plan (REAP) and discuss high flows mitigation.
6. Provide adequate conveyance capacity at bridge crossings to ensure no net increase in velocity. A hydraulic analysis shall be completed to assess existing and post hydraulic conditions.

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Chapter 13 Future Consideration

To comply with FHWA Sec 650.115 Design Standards Guidelines, design of highways must consider:

1. The design selected for an encroachment shall be supported by analyses of design alternatives with consideration given to capital cost and risk, risk analysis, or assessment.

2. The design flood for encroachments by through lanes of Interstate highways shall not be less than the flow with a 2 percent chance of being exceeded in any given year. No minimum design flood is specified for Interstate highway ramps and frontage roads or for other highways.

3. Freeboard shall be provided, where practicable, to protect bridge structures from debris- and scour-related failure.

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Chapter 14 References

1. FEMA, 2014. Flood Insurance Rate Maps (various), www.fema.org

2. FEMA, August 2008. Flood Insurance Study for San Bernardino County.

3. Stellar Blue Team, October 20, 2006. Lytle Creek Watershed Management Plan,

4. Boyle Engineering for City of Fontana, November 2003. I-10 Channel Capacity Report.

5. San Bernardino Flood Control Flood Control District, October 2011. Flood Control System Number Index and General File Codes

6. Parsons, Preliminary Hydraulics Report for:

    - West Cucamonga Creek, July 2014
    - Cucamonga Creek, July 2014
    - East Etiwanda Creek, July 2014
    - San Sevaine Channel, September 2014
    - Warm Creek, September 2014
    - Santa Ana River, November 2008
    - San Timoteo Creek, September 2014
    - Mission Zanja Channel, September 2014
    - The Zanja, August 2009

7. Santa Ana Regional Water Quality Control Board, February 2008. The Water Quality Control Plan (Basin Plan) for the Santa Ana River Basin.

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Appendix A FEMA FIRM Maps

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.

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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 NAD 83, GRS80 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.

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

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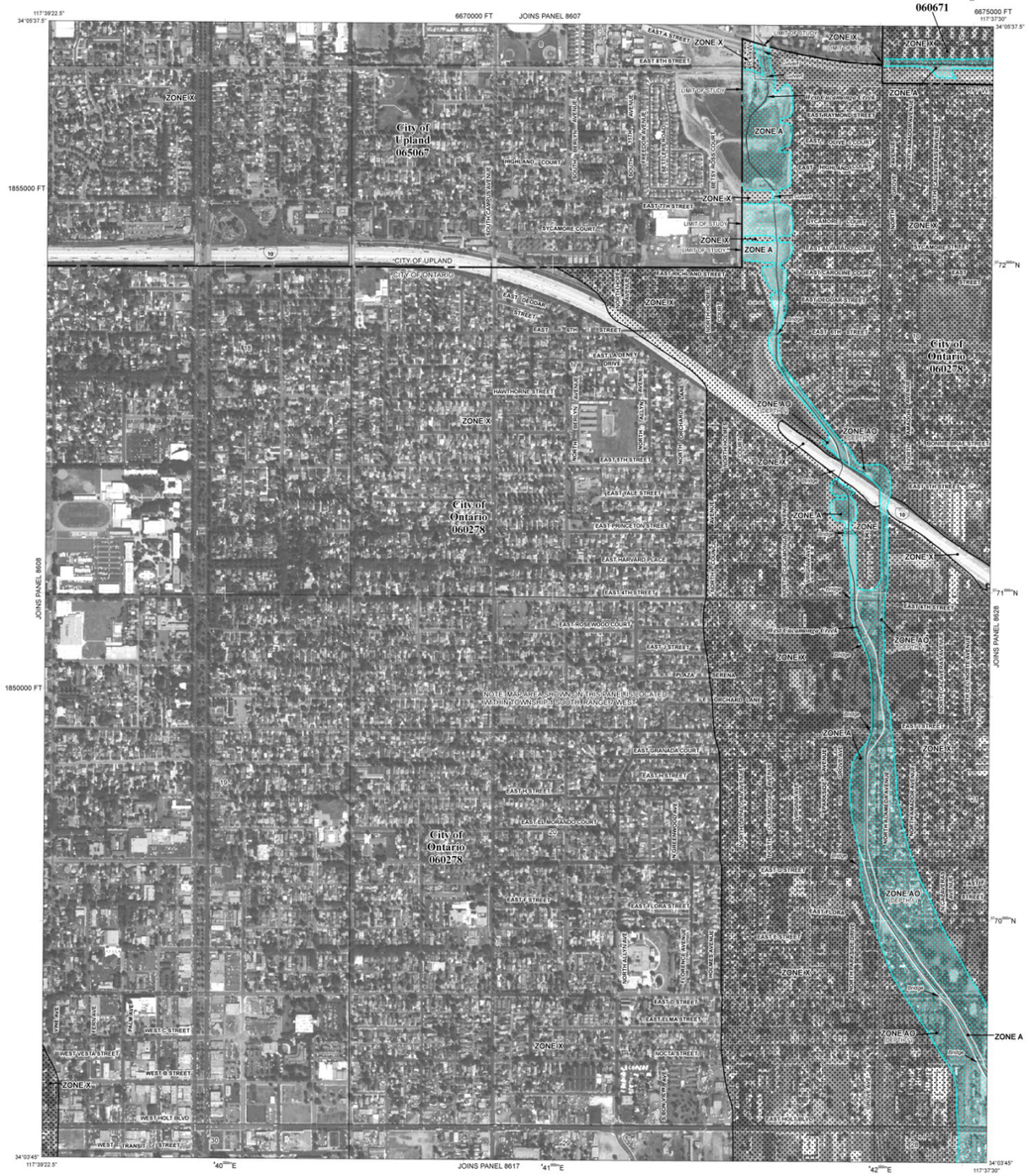
WEST CUCAMONGA CREEK



LEGEND

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

The 1% annual 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	Area to be protected from 1% annual chance flood 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	Base Flood Elevation line and value; elevation in feet*
(EL 987)	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
(B)- - - - -(B)	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
3776000 FT N	1000-meter Universal Transverse Mercator grid values, zone 11N
600000 FT	5000-foot grid ticks: California State Plane coordinate system, zone V (FIPSZONE 0405), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
●M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
March 18, 1996

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
August 28, 2008 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

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 0 500 1000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 8609H

FIRM
FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA
AND INCORPORATED AREAS
PANEL 8609 OF 9400
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
ONTARIO, CITY OF	060278	8609	H
RANCHO CUCAMONGA, CITY OF	060671	8609	H
UPLAND, CITY OF	065067	8609	H

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
06071C8609H

MAP REVISED
AUGUST 28, 2008

Federal Emergency Management Agency

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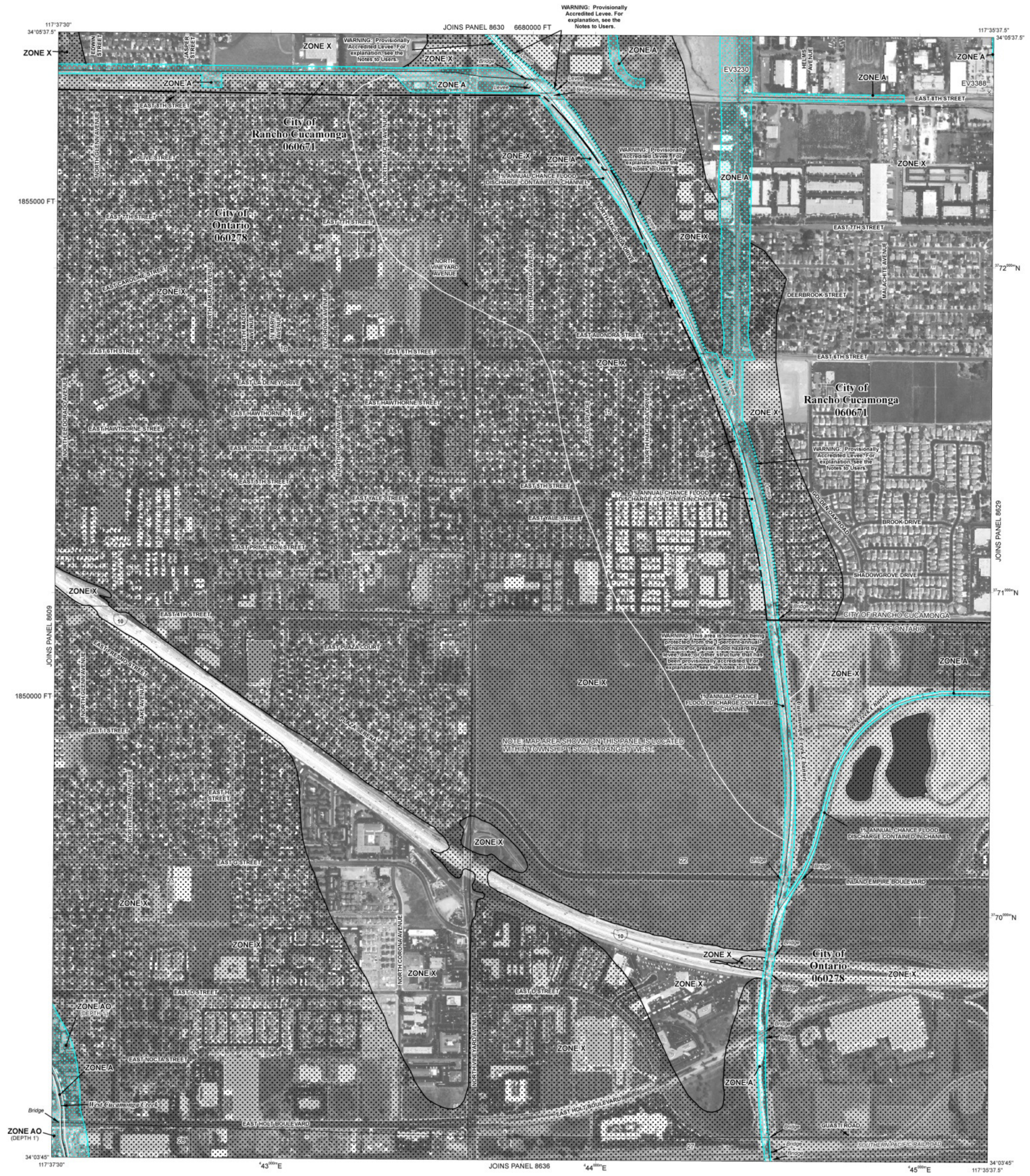
WARNING: This map contains levees, dikes, or other structures that have been provisionally accredited and mapped as providing protection from the 1-percent–annual-chance flood. To maintain accreditation, the levee owner or community is required to submit documentation necessary to comply with 44 CFR Section 65.10 by August 8, 2009. Because of the risk of overtopping or failure of the structure, communities should take proper precautions to protect lives and minimize damages in these areas, such as issuing an evacuation plan and encouraging property owners to purchase flood insurance.

CUCAMONGA CREEK



LEGEND

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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	Area to be protected from 1% annual chance flood 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 ~~~ Base Flood Elevation line and value; elevation in feet*

(EL 987) 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

87°07'45", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

$^{24}76^{000m}$N 1000-meter Universal Transverse Mercator grid values, zone 11N

600000 FT 5000-foot grid ticks: California State Plane coordinate system, zone V (FIPSZONE 0405), Lambert Conformal Conic projection

DX5510 × Bench mark (see explanation in Notes to Users section of this FIRM panel)

● M1.5 River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
March 18, 1996

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
August 28, 2008 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

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 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 8628H

FIRM
FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 8628 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ONTARIO, CITY OF	060278	8628	H
RANCHO CUCAMONGA, CITY OF	060671	8628	H

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
06071C8628H

MAP REVISED
AUGUST 28, 2008

Federal Emergency Management Agency
~~~

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 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 tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables 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 NAD 83, GRS80 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 derived from digital orthophotography collected by the U.S. Department of Agriculture Farm Service Agency. This imagery was flown in 2005 and was produced with a 1-meter ground sample distance.

This map may reflect 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 confirm 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.

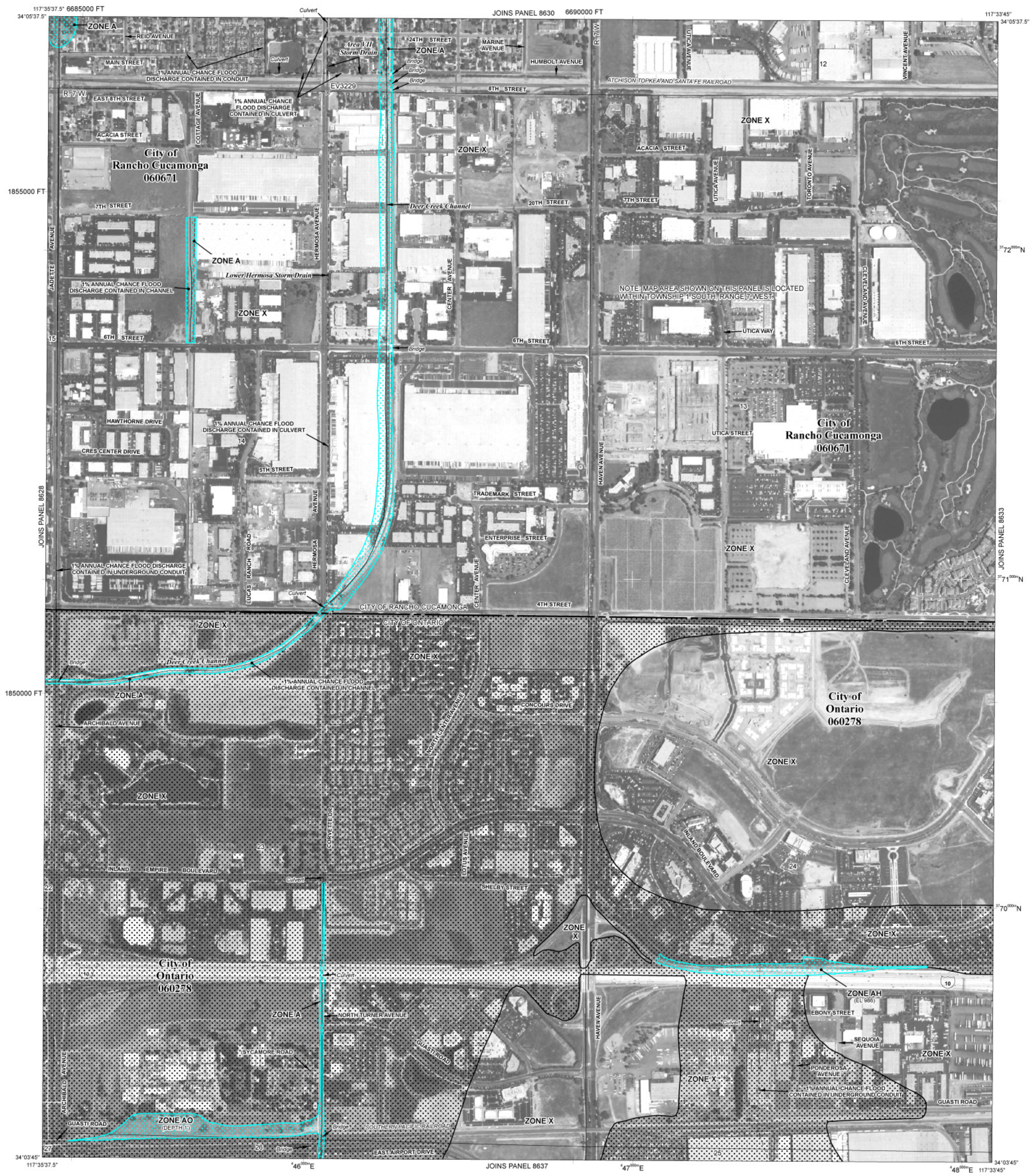
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

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.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.

LOWER DEER CREEK CHANNEL



LEGEND

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

The 1% annual 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.
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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 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	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
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
²⁴76⁰⁰⁰ᵐN	1000-meter Universal Transverse Mercator grid values, zone 11N
600000 FT	5000-foot grid ticks: California State Plane coordinate system, zone V (FIPSZONE 0405), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
●M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
March 18, 1996

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
August 28, 2008 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

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 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 8629H

FIRM

FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 8629 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

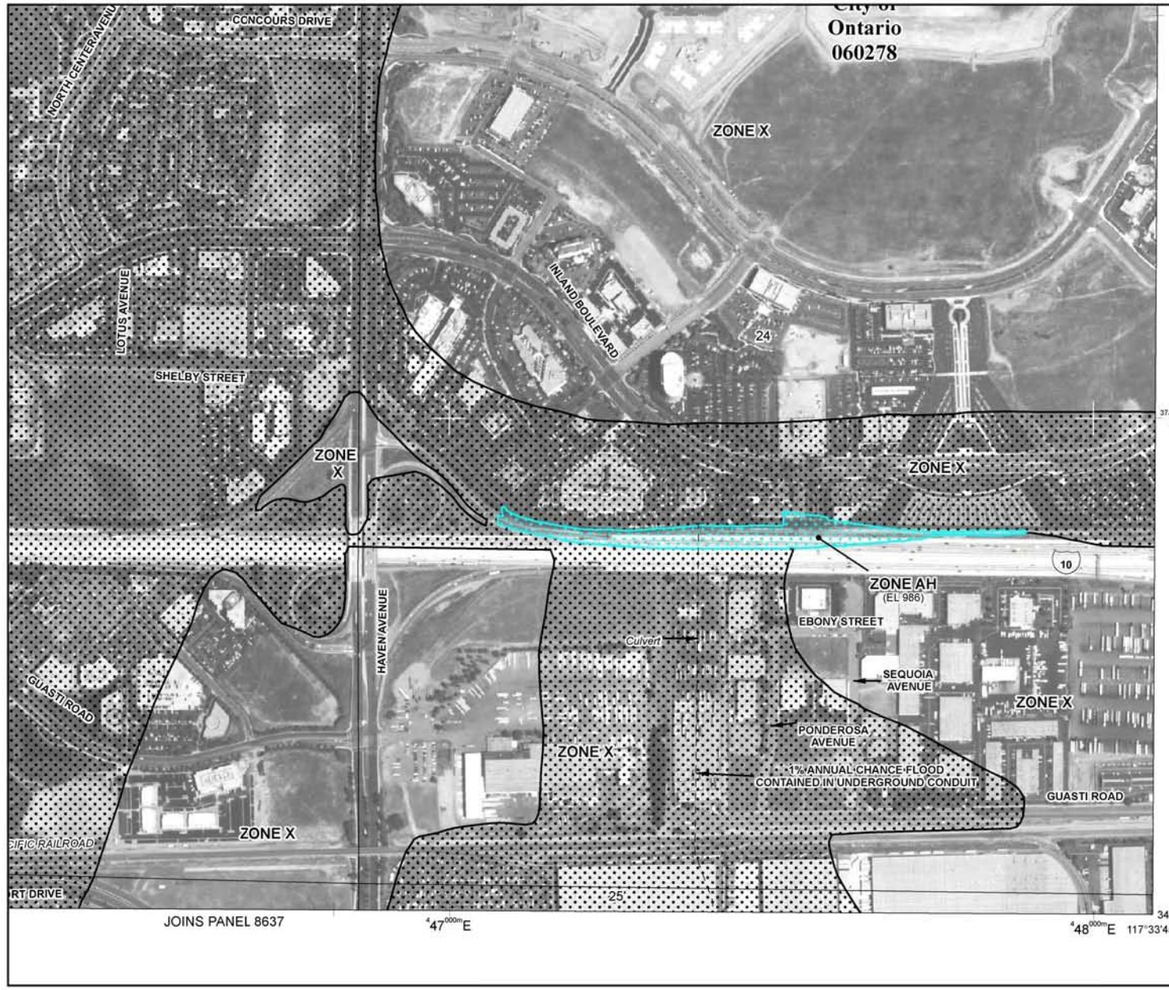
COMMUNITY	NUMBER	PANEL	SUFFIX
ONTARIO, CITY OF	060278	8629	H
RANCHO CUCAMONGA, CITY OF	060671	8629	H

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
06071C8629H

MAP REVISED
AUGUST 28, 2008

Federal Emergency Management Agency



onal Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

50 0 500 1000 FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 8629H

FIRM

FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 8629 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ONTARIO, CITY OF	060278	8629	H
RANCHO CUCAMONGA, CITY OF	060671	8629	H

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
06071C8629H

MAP REVISED
AUGUST 28, 2008

Federal Emergency Management Agency

CAL COMMERCE CENTER SD

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Legend

1% annual chance (100-Year) Floodplain

1% annual chance (100-Year) Floodway

0.2% annual chance (500-Year) Floodplain

MAP SCALE 1" = 500'

250 0 500 FEET

150 0 150 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 8634H

FIRM

FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 8634 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SAN BERNARDINO COUNTY	060270	8634	H
FONTANA, CITY OF	060274	8634	H
ONTARIO, CITY OF	060278	8634	H
RANCHO CUCAMONGA, CITY OF	060671	8634	H

REVISED TO REFLECT LOMR EFFECTIVE: September 20, 2013

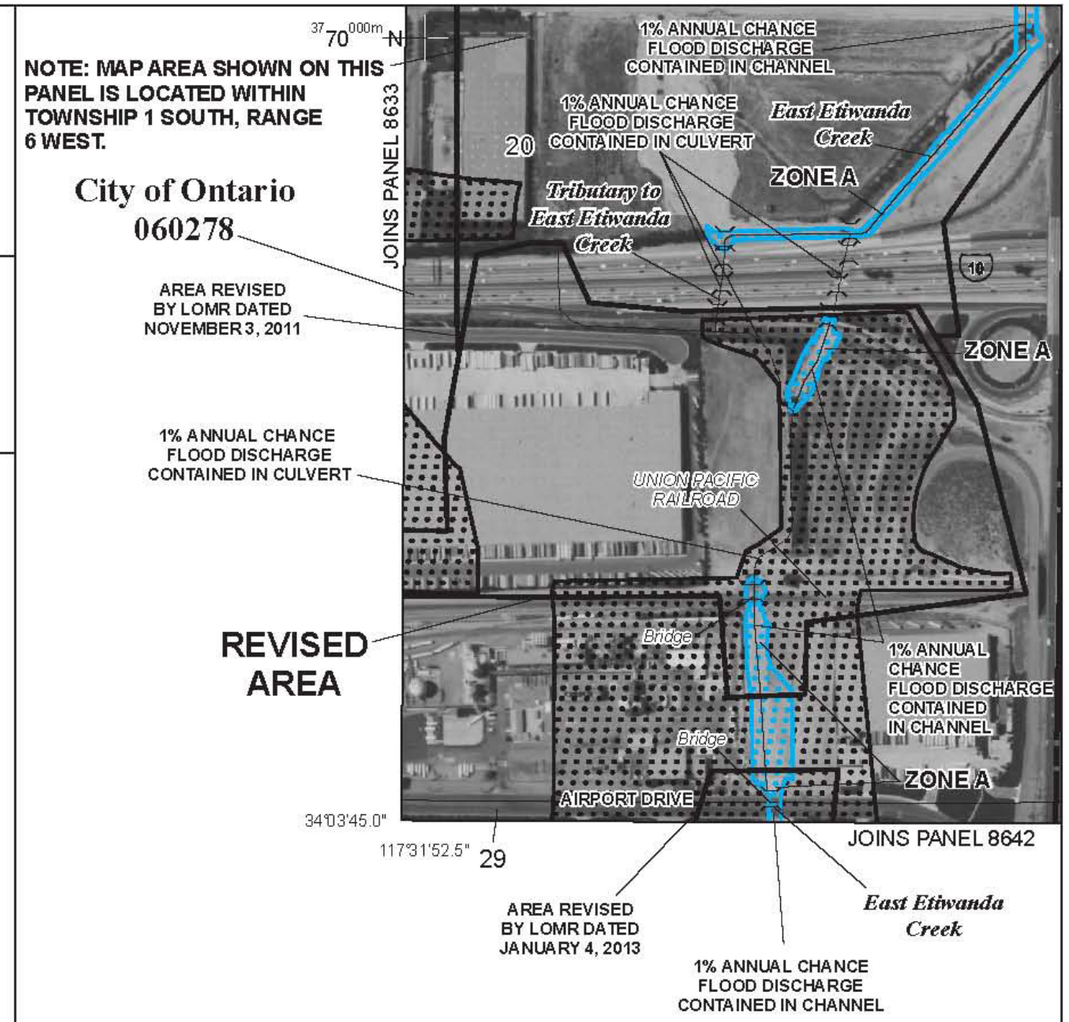
Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER 06071C8634H

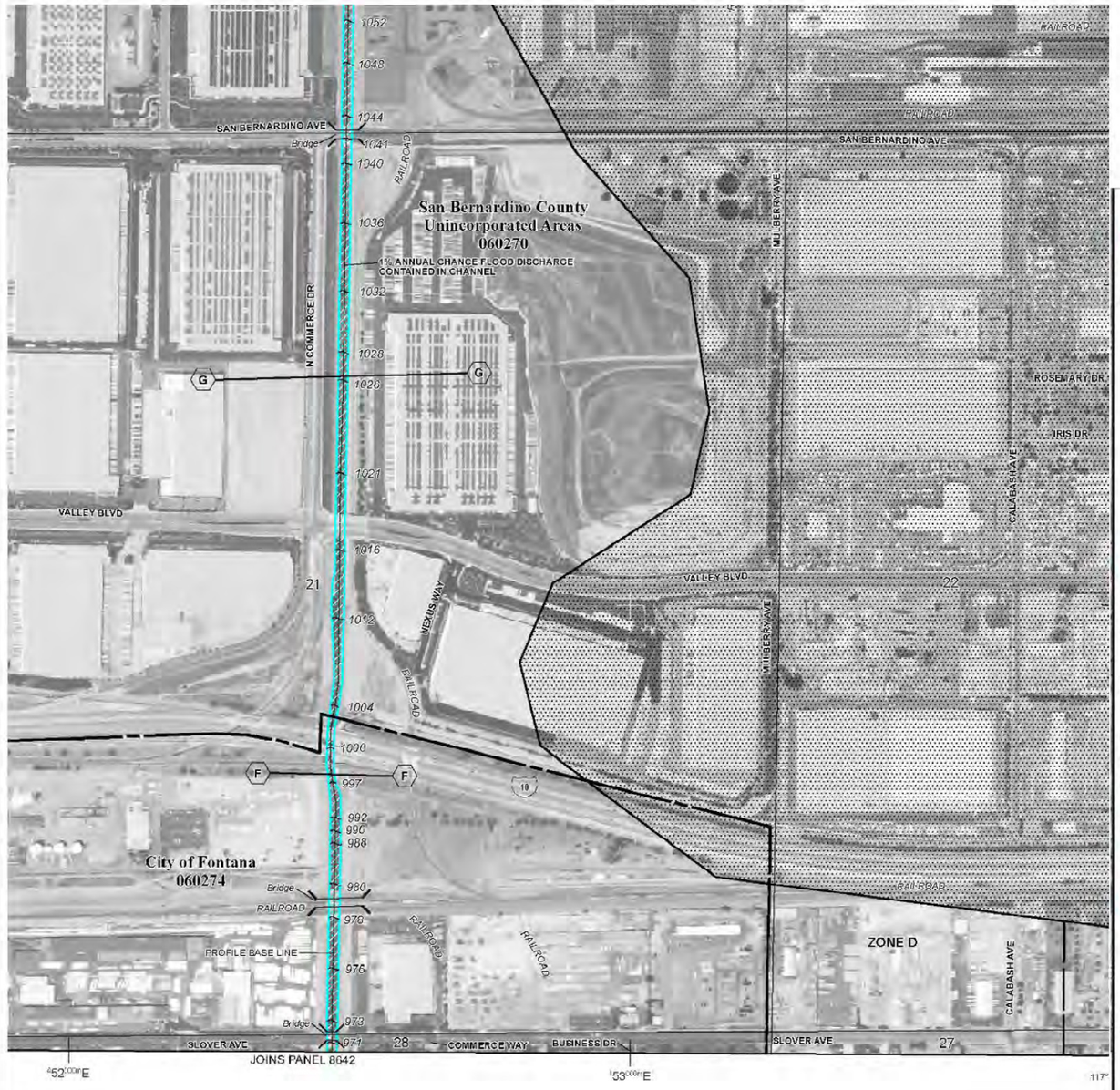
MAP REVISED AUGUST 28, 2008

Federal Emergency Management Agency

NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 1 SOUTH, RANGE 6 WEST.



EAST ETIWANDA CREEK



LEGEND

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

The 1% annual 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.
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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	Base Flood Elevation line and value; elevation in feet*
(EL. 987)	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
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4276000mN	1000-meter Universal Transverse Mercator grid values, zone 11N
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)

MAP SCALE 1" = 500'

250 0 500 1000 FEET

50 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 8634J

FIRM

FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 8634 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FONTANA, CITY OF	060274	8634	J
ONTARIO, CITY OF	060278	8634	J
RANCHO CUCAMONGA, CITY OF	060671	8634	J
SAN BERNARDINO COUNTY	060270	8634	J

PRELIMINARY

FEB 01 2013

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
06071C8634J

MAP REVISED

Federal Emergency Management Agency

SAN SEVAINE CHANNEL

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

tional Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

50 0 500 1000 FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 8653H

FIRM

FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 8653 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FONTANA, CITY OF	060274	8653	H
SAN BERNARDINO COUNTY	060270	8653	H

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MAP NUMBER
06071C8653H

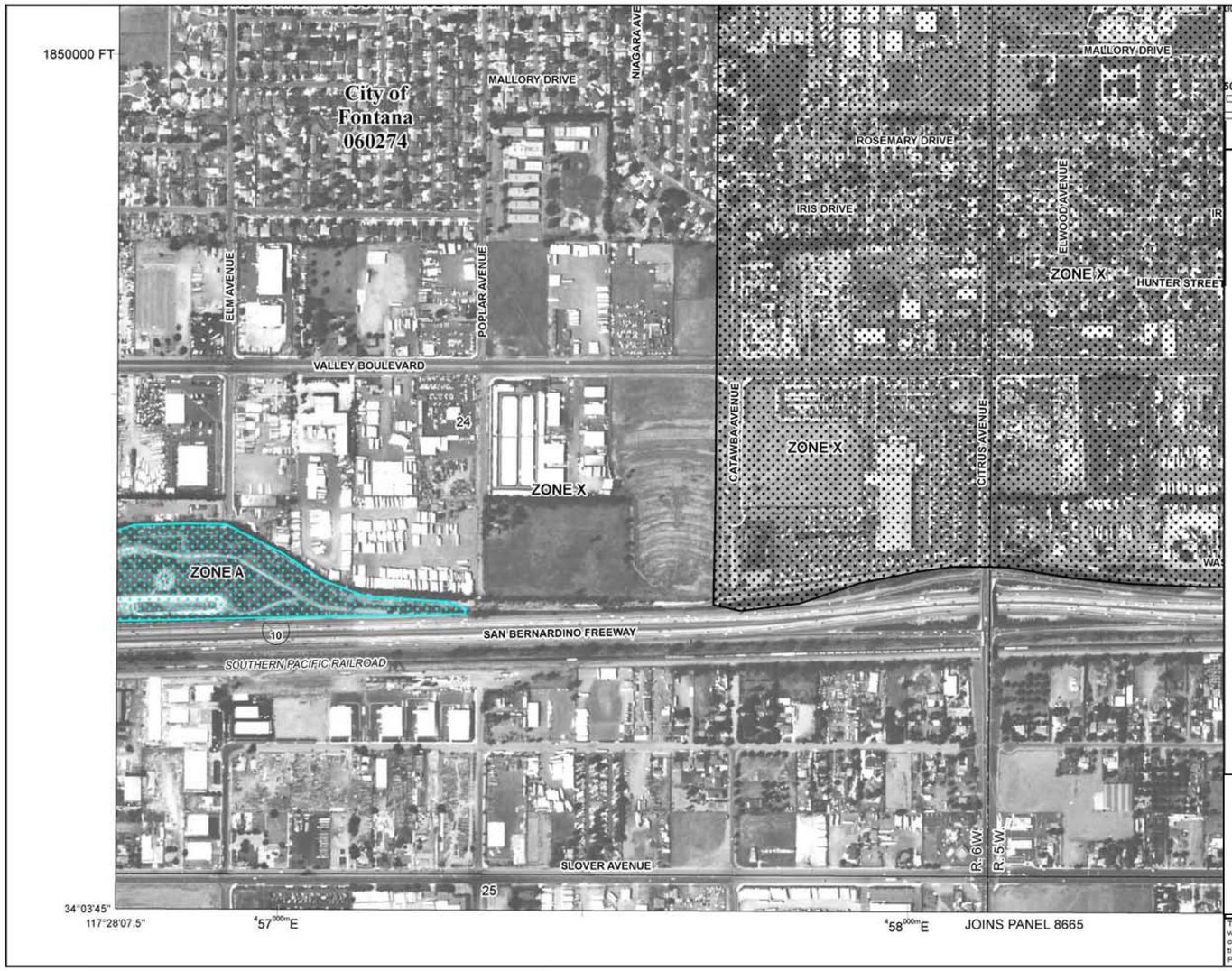
MAP REVISED
AUGUST 28, 2008

Federal Emergency Management Agency

I-10 CHANNEL

1 OF 3

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



tional Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

50 0 500 1000 FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 8654H

FIRM

FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA

AND INCORPORATED AREAS

PANEL 8654 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FONTANA, CITY OF	060274	8654	H
SAN BERNARDINO COUNTY	060270	8654	H

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
06071C8654H

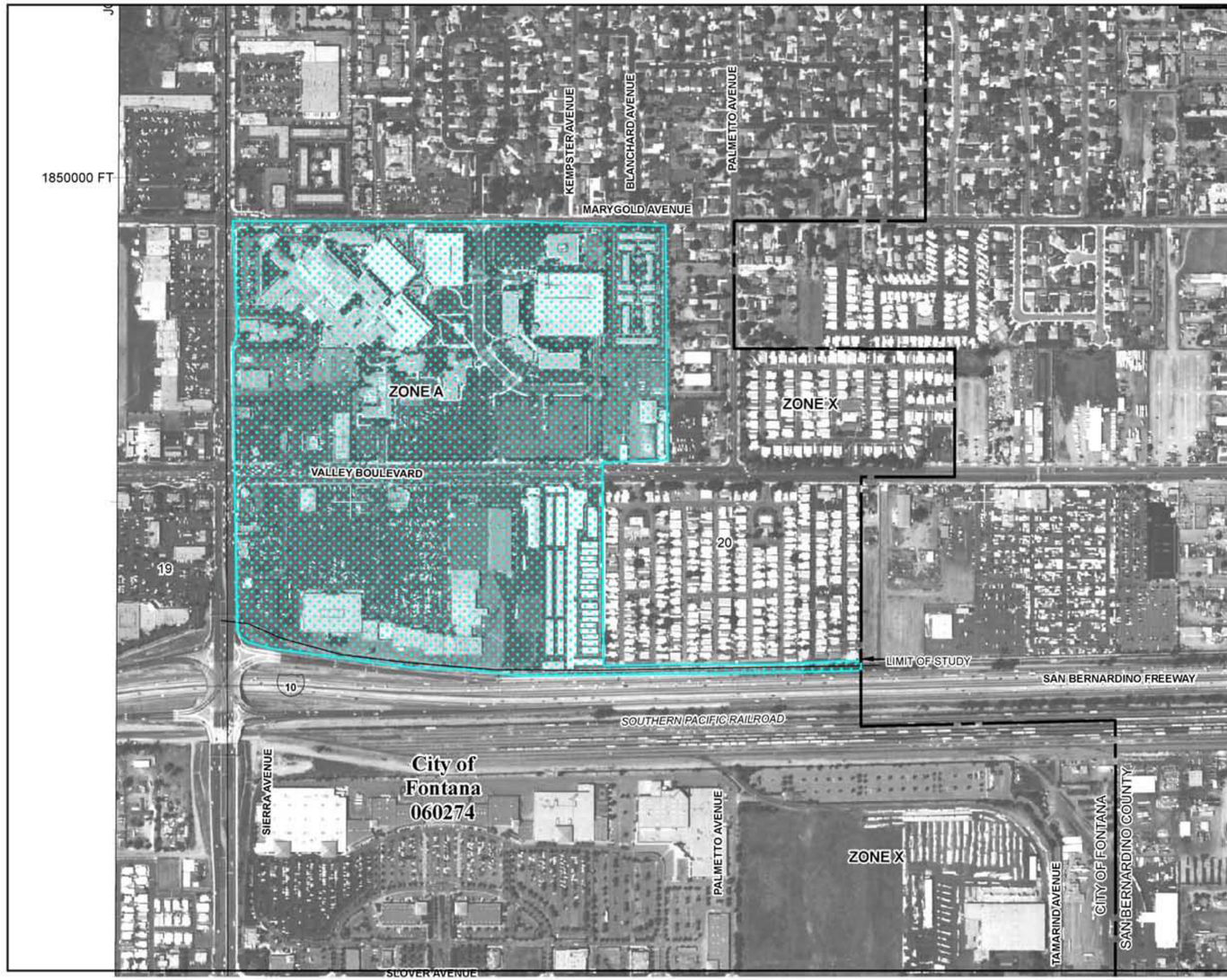
MAP REVISED
AUGUST 28, 2008

Federal Emergency Management Agency

I-10 CHANNEL

2 OF 3

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



onal Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

50 0 500 1000 FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 8658H

FIRM

FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA

AND INCORPORATED AREAS

PANEL 8658 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
FONTANA, CITY OF	060274	8658	H
SAN BERNARDINO COUNTY	060270	8658	H

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
06071C8658H

MAP REVISED
AUGUST 28, 2008

Federal Emergency Management Agency

I-10 CHANNEL

3 OF 3

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Colton Southwest Strom Drain and 11th Street Storm Drain

or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

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 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. 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, MD 20910-3282

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 derived from digital orthophotography collected by the U.S. Department of Agriculture Farm Service Agency. This imagery was flown in 2005 and was produced with a 1-meter ground sample 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.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.

WARM CREEK

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) 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	Area to be protected from 1% annual chance flood 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 Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

A — A	Cross section line
23 - - - - 23	Transect line
87°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4372000mN	1000-meter Universal Transverse Mercator grid ticks, zone 11
6000000 M	5000-foot grid ticks: Alabama State Plane coordinate system, east zone (FIPSZONE 0101), Transverse Mercator
⊠X5510	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
May 26, 2010
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 8683H

FIRM
FLOOD INSURANCE RATE MAP
SAN BERNARDINO COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 8683 OF 9400
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COLTON, CITY OF	060273	8683	H
SAN BERNARDINO, CITY OF	060281	8683	H

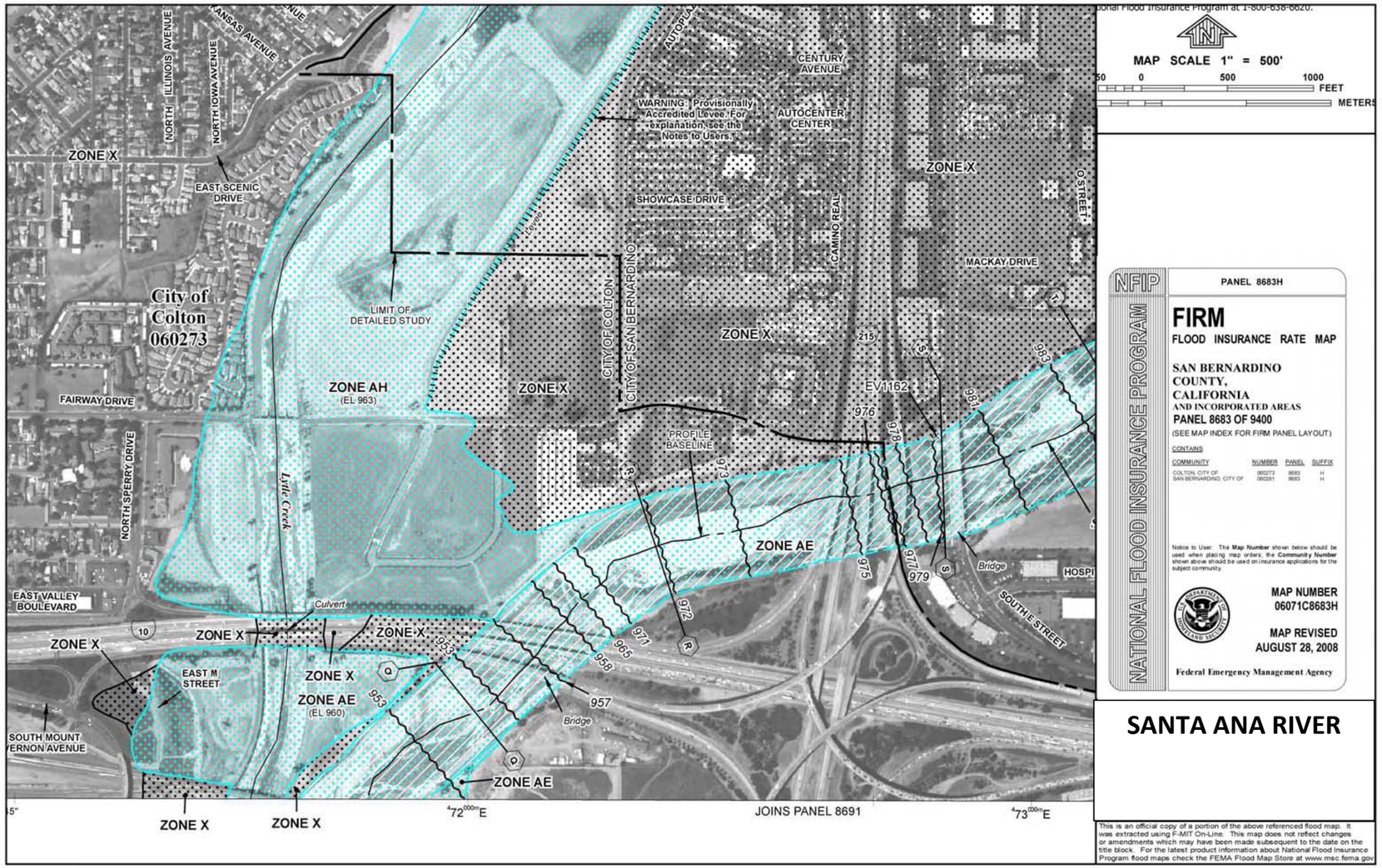
REVISED TO
REFLECT LOMR
EFFECTIVE: November 15, 2010

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
06071C8683H

MAP REVISED
AUGUST 28, 2008

Federal Emergency Management Agency



ional Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

50 0 500 1000 FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 8683H

FIRM

FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA

AND INCORPORATED AREAS

PANEL 8683 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
COLTON, CITY OF	060273	8683	H
SAN BERNARDINO, CITY OF	060281	8683	H

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.

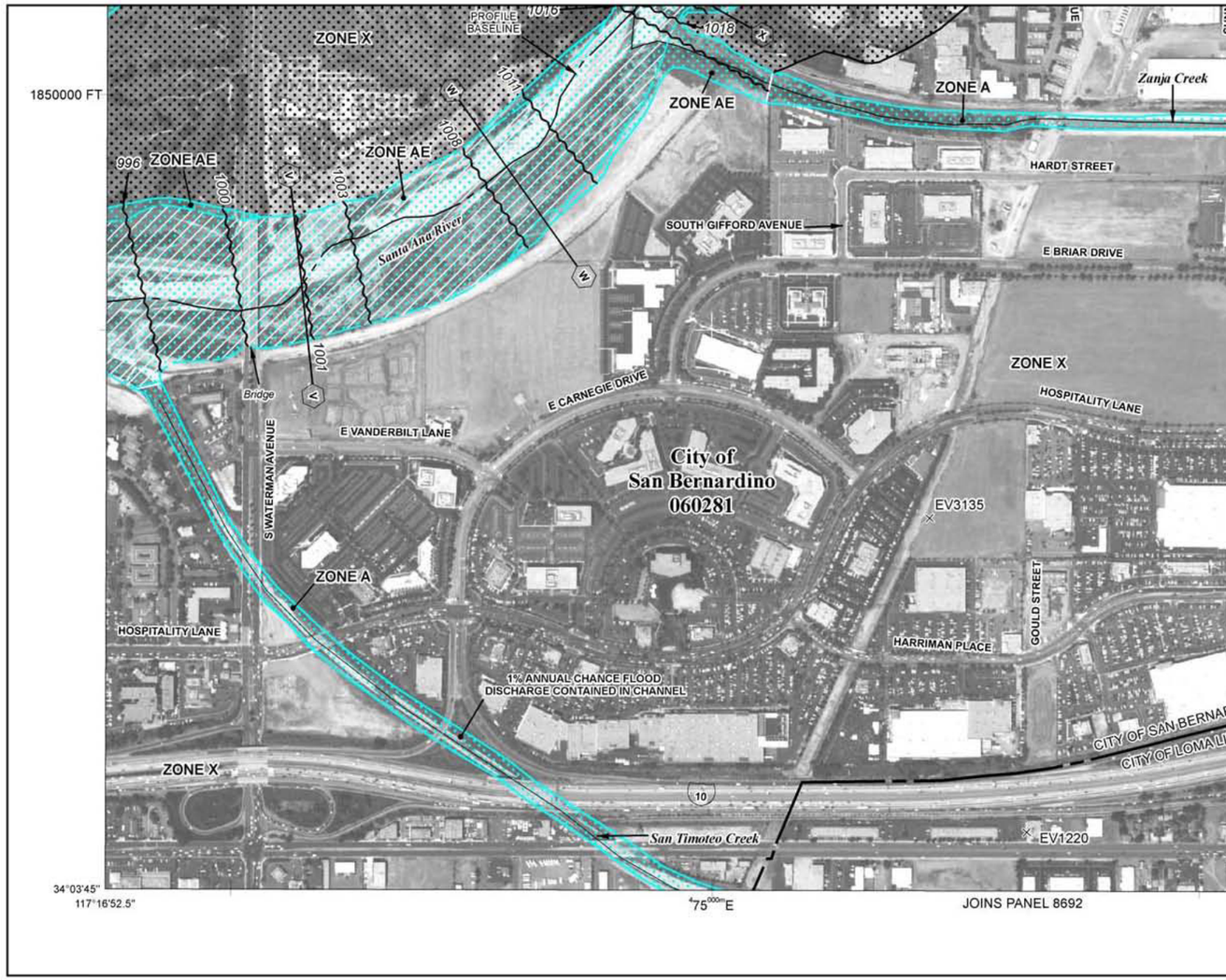
MAP NUMBER 06071C8683H

MAP REVISED AUGUST 28, 2008

Federal Emergency Management Agency

SANTA ANA RIVER

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



MAP SCALE 1" = 500'

50 0 500 1000 FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 8684H

FIRM

FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA

AND INCORPORATED AREAS

PANEL 8684 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
LOMA LINDA, CITY OF	950042	8684	H
SAN BERNARDINO, CITY OF	060281	8684	H

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.

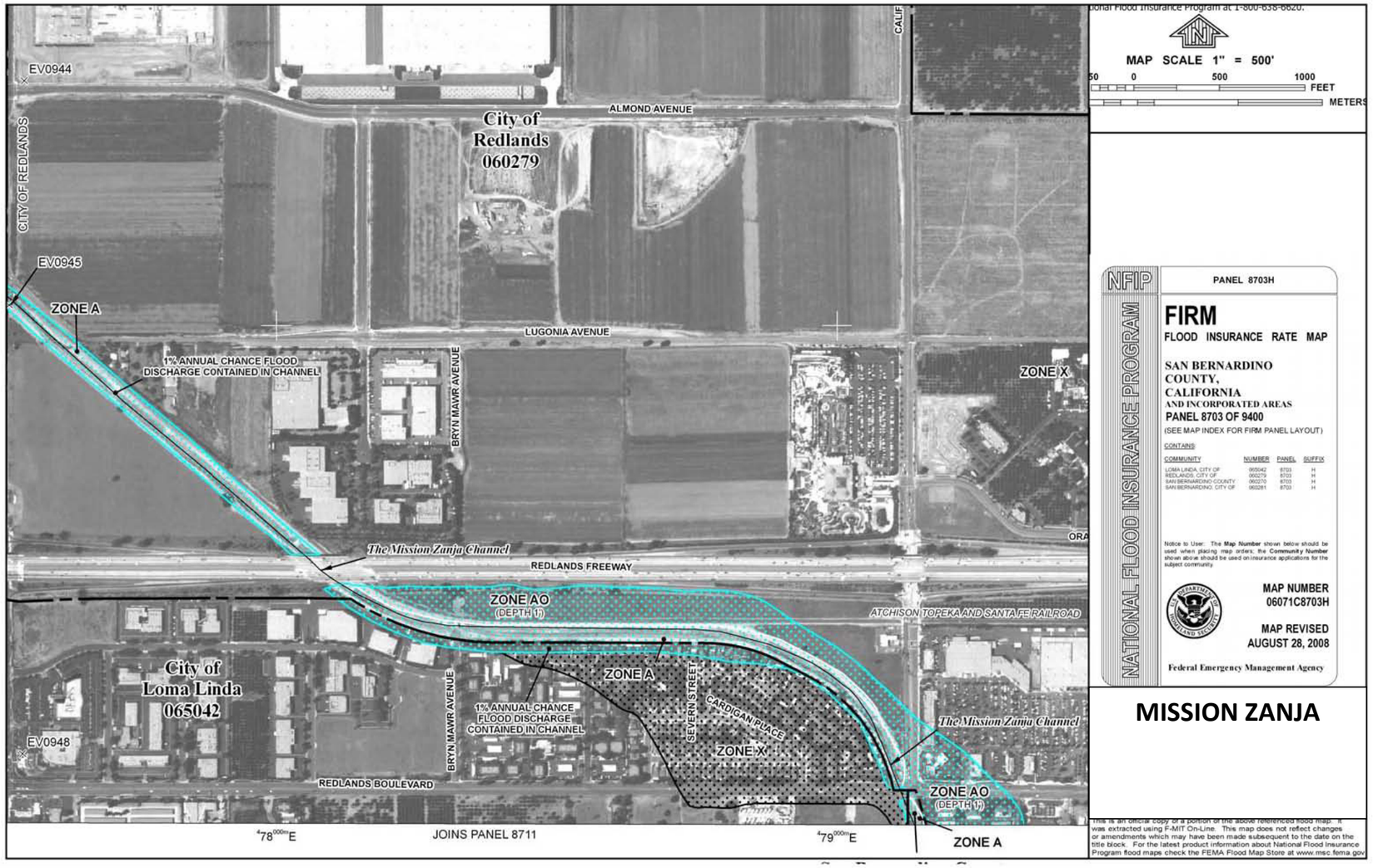
MAP NUMBER
06071C8684H

MAP REVISED
AUGUST 28, 2008

Federal Emergency Management Agency

SAN TIMOTEO CREEK

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



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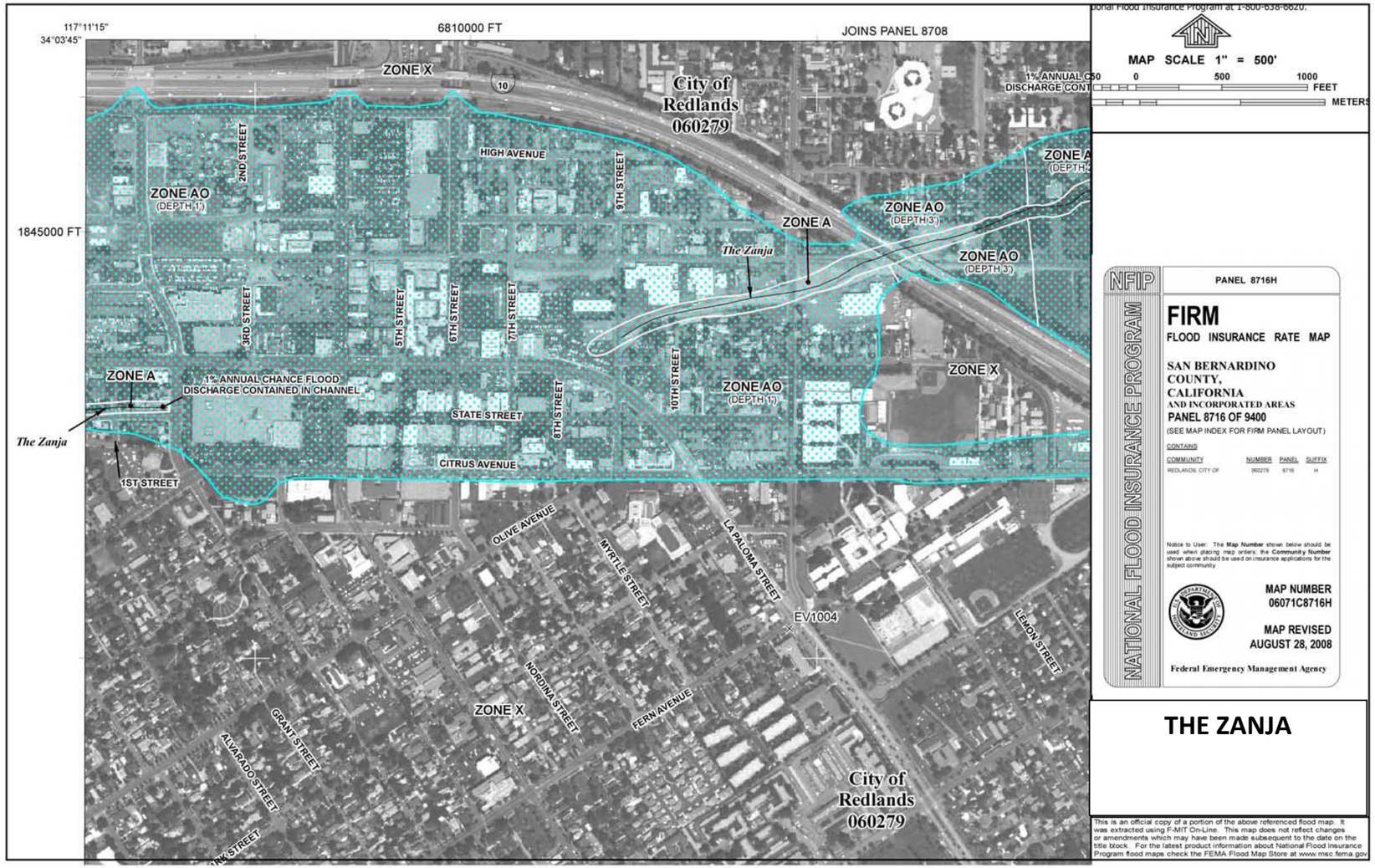
117°11'15"
34°03'45"
6810000 FT
JOINS PANEL 8708
1845000 FT
ZONE X
City of Redlands 060279
HIGH AVENUE
2ND STREET
3RD STREET
5TH STREET
6TH STREET
7TH STREET
8TH STREET
9TH STREET
10TH STREET
ZONE AO (DEPTH 1')
ZONE A
ZONE AO (DEPTH 3')
The Zanja
1% ANNUAL CHANCE FLOOD DISCHARGE CONTAINED IN CHANNEL
STATE STREET
CITRUS AVENUE
1ST STREET
OLIVE AVENUE
MYRTLE STREET
LA PALOMA STREET
EV1004
LEMON STREET
NORDINA STREET
FERN AVENUE
GRANT STREET
ALVARADO STREET
City of Redlands 060279
MAP SCALE 1" = 500'
0 500 1000 FEET
METERS
NFIP
NATIONAL FLOOD INSURANCE PROGRAM
PANEL 8716H
FIRM
FLOOD INSURANCE RATE MAP
SAN BERNARDINO COUNTY, CALIFORNIA
AND INCORPORATED AREAS
PANEL 8716 OF 9400
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS
COMMUNITY NUMBER PANEL SUFFIX
REDLANDS, CITY OF 060279 8716 H
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 06071C8716H
MAP REVISED AUGUST 28, 2008
Federal Emergency Management Agency
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

THE ZANJA