

FLOODPLAIN EVALUATION REPORT

West Valley
Connector Project



cta

San Bernardino County
Transportation Authority



OmniTrans

Connecting Our Community.

February 2019
(Updated January 2020)



Revision Log

Date	Description
February 2019	Original report prepared
January 2020	Project schedule update

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LIST OF ACRONYMS

ADA	Americans with Disabilities Act
BFE	base flood elevation
BMPs	Best Management Practices
BRT	Bus-Rapid Transit
CEQA	California Environmental Quality Act
CDFW	California Department of Fish & Wildlife
CFG	California Fish and Game
CFR	<i>Code of Federal Regulations</i>
CLOMR	Conditional Letter of Map Revision
CNG	compressed natural gas
CWA	Clean Water Act
EO	Executive Order
EPA	United States Environmental Protection Agency
EVVMF	East Valley Vehicle Maintenance Facility
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
FTA	Federal Transit Administration
LOMR	Letter of Map Revision
MOU	Memorandum of Understanding
mph	miles per hour
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program



NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
REAP	Rain Event Action Plan
ROW	right-of-way
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SBCFCD	San Bernardino County Flood Control District
sbX	San Bernardino Valley Express
SCAG	Southern California Association of Governments
SCS	Sustainable Communities Strategy
SR	State Route
SWPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TSP	transit signal priority
USACE	United States Army Corps of Engineers
WDRs	Waste Discharge Requirements
WVC	West Valley Connector
WVVMF	West Valley Vehicle Maintenance Facility

EXECUTIVE SUMMARY

This Floodplain Evaluation Report was prepared in support of the West Valley Connector Bus Rapid Transit (BRT) Project. The project has a 35-mile-long alignment that utilizes public right-of-way (ROW) and existing streets to connect the cities of Pomona, Montclair, Ontario, Rancho Cucamonga, and Fontana in the counties of Los Angeles and San Bernardino, California. Within the project area, the project alignment crosses five flood channels that are under the jurisdiction of the San Bernardino County Flood Control District (SBCFCD). At these five locations, a potential transverse or longitudinal floodplain encroachment may exist. 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 Assessment (EA)/ Environmental Impact Report (EIR) for the proposed project prepared pursuant to the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

In accordance with the guidance of compliance for floodplain studies as established by CEQA, 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.

1.0 INTRODUCTION

The San Bernardino County Transportation Authority (SBCTA), in cooperation with the cities of Pomona, Montclair, Ontario, Rancho Cucamonga, and Fontana, proposes construction of the West Valley Connector (WVC) Project, a 35-mile-long Bus Rapid Transit (BRT) project that will decrease travel times and improve the existing public transit system within the corridor.

In January 2017, SBCTA entered into a cooperative agreement with Omnitrans designating SBCTA as the lead agency for the proposed WVC Project. SBCTA intends to construct the WVC, which will then be operated by Omnitrans. SBCTA has the authority to allocate Federal Transit Administration (FTA) funds; however, it does not have the ability to receive funds directly from FTA. Omnitrans is the direct FTA grantee for the San Bernardino Valley. As a result, SBCTA and Omnitrans have developed a successful direct recipient/subrecipient working relationship to deliver projects with FTA funds. The current relationship allows the delivery of FTA-funded projects that meet FTA requirements without duplicating staff, assuring the best use of limited public funds available. Omnitrans and SBCTA executed Memorandum of Understanding (MOU) 15-1001289 in October 2015, setting forth the roles and responsibilities of the recipient/subrecipient relationship.

The project is subject to State and federal environmental review requirements because it involves the use of federal funds from FTA. An Environmental Impact Report (EIR)/Environmental Assessment (EA) has been prepared for the proposed project in compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). SBCTA is the CEQA lead agency, and FTA is the NEPA lead agency. This Floodplain Evaluation Report has been prepared as part of the technical analysis required to support the EIR/EA.

1.1 Project Location and Setting

The proposed project is located primarily along Holt Avenue/Boulevard and Foothill Boulevard, which would connect the cities of Pomona, Montclair, Ontario, Rancho Cucamonga, and Fontana in the counties of Los Angeles and San Bernardino, California. The project limits extend from Main Street in the City of Pomona on the west side to Sierra Avenue in the City of Fontana on the east side and Church Street in the City of Rancho Cucamonga on the north side to Ontario International Airport on the south side (see Figures 1-1 and 1-2). The proposed project area is primarily urban, and generalized land uses include low-, medium-, and medium-high-density residential, commercial, industrial, open space and recreation, transportation and utilities, agriculture, vacant, public facilities, airport, educational facilities, and offices.

1.2 Purpose and Need

The purpose of the proposed project is to improve corridor mobility and transit efficiency in the western San Bernardino Valley from the City of Pomona, in Los Angeles County, to the City of Fontana, in San Bernardino County, with an enhanced, state-of-the-art BRT system (i.e., the system that includes off-board fare vending, all-door boarding, transit signal priority [TSP], optimized operating plans, and stations that consist of a branded shelter/canopy, security cameras, benches, lighting, and variable message signs).

The proposed project would address the growing traffic congestion and travel demands of the nearly one million people that would be added to Los Angeles and San Bernardino County by 2040 per Southern California Association of Government's (SCAG) 2016 Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS) growth forecast. Improved rapid transit along the project corridor would help Omnitrans/SBCTA achieve its long-range goals to cost effectively enhance lifeline mobility and accessibility, improve transit operations, increase ridership, support economic growth and redevelopment, conserve nonrenewable resources, and improve corridor safety.

Recognizing the importance of the WVC transit corridor, SBCTA is proposing a project that is designed to achieve the following objectives:

- Improve transit service by better accommodating high existing bus ridership.
- Improve ridership by providing a viable and competitive transit alternative to the automobile.
- Improve efficiency of transit service delivery while lowering Omnitrans' operating costs per rider.
- Support local and regional planning goals to organize development along transit corridors and around transit stations.

The project purpose and objectives stated above would respond to the following needs:

- Current and future population and employment conditions establish a need for higher-quality transit service.
- Current and future transportation conditions establish a need for an improved transit system.
- Transit-related opportunities exist in the project area.

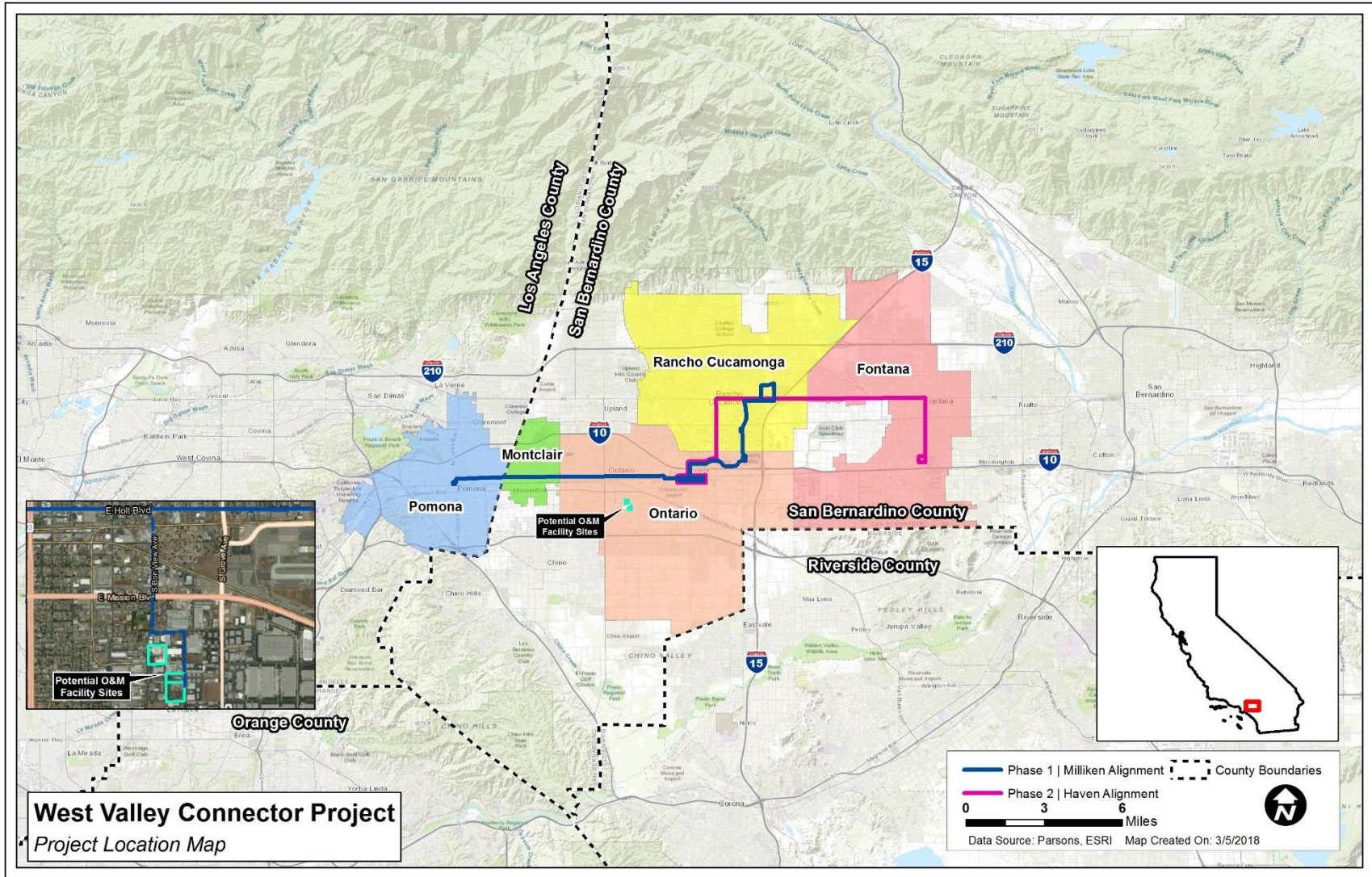


Figure 1-1: Project Location Map

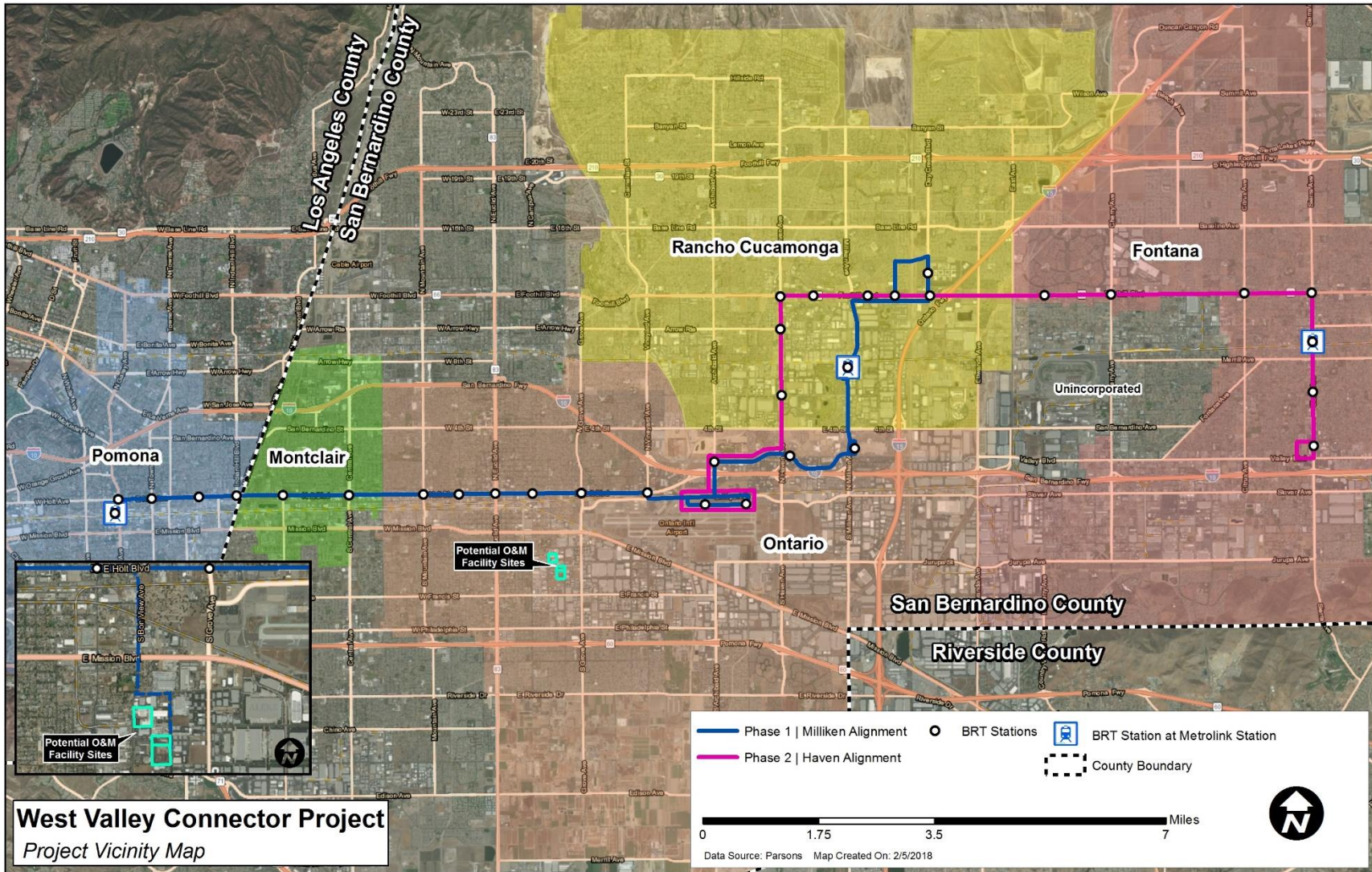


Figure 1-2: Project Vicinity Map

2.0 PROJECT DESCRIPTION

2.1 Proposed Project

The WVC Project is a 35-mile-long BRT corridor project located primarily along Holt Avenue/Boulevard and Foothill Boulevard that would connect the cities of Pomona, Montclair, Ontario, Rancho Cucamonga, and Fontana in the counties of Los Angeles and San Bernardino, California. The project proposes limited stops, providing speed and quality improvements to the public transit system within the corridor. The project includes BRT stations at up to 33 locations/major intersections and associated improvements, premium transit service, TSP and queue jump lanes, dedicated lanes, and integration with other bus routes.

The project alignment consists of two phases. Phase I of the project would construct the “Milliken Alignment,” from the Pomona Regional Transit Center (downtown Pomona Metrolink Station) to Victoria Gardens in Rancho Cucamonga. Phase II of the project would construct the “Haven Alignment,” from Ontario International Airport to Kaiser Permanente Medical Center in Fontana. The Phase I/Milliken Alignment would begin construction in 2020 and is proposed to have 10-minute peak and 15-minute off-peak headways. Phase II is intended to be constructed immediately following completion of Phase I, depending on the availability of funding.

Phase I/Milliken Alignment

Phase I of the project would construct the Milliken Alignment from the eastern city boundary limit of Pomona to Victoria Gardens in Rancho Cucamonga. In Pomona, the alignment starts from the Pomona Regional Transit Center station, travels along Holt Avenue and into Montclair.

In Montclair, the alignment runs on Holt Boulevard between Mills Avenue and Benson Avenue and into Ontario.

In Ontario, the alignment continues on Holt Boulevard, starting from Benson Avenue, and then continues to Vineyard Avenue and into Ontario International Airport (loop through Terminal Way). From the airport, it heads north on Archibald Avenue to Inland Empire Boulevard and turns right to go east on Inland Empire Boulevard.

On Inland Empire Boulevard, the alignment goes straight into Ontario Mills (loop through Mills Circle) and then heads north on Milliken Avenue into Rancho Cucamonga.

In Rancho Cucamonga, the alignment makes a loop into the Rancho Cucamonga Metrolink Station off Milliken Avenue and then continues up Milliken Avenue and turns east onto Foothill Boulevard.

The alignment continues east on Foothill Boulevard, turns north onto Day Creek Boulevard, and then terminates with a layover at Victoria Gardens at Main Street. From Victoria Gardens, the bus line begins a return route by continuing north on Day Creek Boulevard, turns west onto Church Street, turns south onto Rochester Avenue, and then turns west back onto Foothill Boulevard.

Phase II/Haven Alignment

Phase II of the project would construct the Haven Alignment, from Ontario International Airport to Kaiser Permanente Medical Center in Fontana. In Ontario, the alignment makes a loop through Terminal Way at Ontario International Airport. From the airport, it heads north on Archibald Avenue to Inland Empire Boulevard and turns right and travels east on Inland Empire Boulevard.

From Inland Empire Boulevard, the alignment turns left to go north up Haven Avenue into Rancho Cucamonga, then turns right to go east onto Foothill Boulevard and into Fontana.

In Fontana, the alignment continues east on Foothill Boulevard until turning south onto Sierra Avenue. The alignment follows Sierra Avenue, including a stop at the Fontana Metrolink Station, and then continues until turning west onto Marygold Avenue, where the bus line would begin a turn-around movement by heading south onto Juniper Avenue, east onto Valley Boulevard, and north back onto Sierra Avenue to Kaiser Permanente Medical Center before heading northward for the return trip.

2.2 Project Alternatives

Many alternatives were considered during the project development phase of the project. A No Build Alternative and two build alternatives (Alternatives A and B) are being analyzed in the EIR/EA.

2.2.1 No Build Alternative

The No Build Alternative proposes no improvements to the existing local bus services. Under the No Build Alternative, the existing local bus service on Routes 61 and 66 would maintain current service of 15-minute headways (total of four buses per hour in each direction).

2.2.2 Build Alternatives

Figure 2-1 presents the map of both build alternatives. All design features of both build alternatives are the same, as described in more details in Section 2.3, with the exception of the following:

Alternative A – Full BRT with no Dedicated Bus-only Lanes

Alternative A would include the 35-mile-long BRT corridor, which is comprised of the Phase I/ Milliken Alignment, Phase II/ Haven Alignment, and 60 side-running stations at up to 33 locations/major intersections. The BRT buses will operate entirely in the mixed-flow lanes. The right-of-way (ROW) limits and travel lane width vary in other segments of the corridor. Implementation of Build Alternative A will not require permanent or temporary ROW acquisition.

Alternative B – Full BRT with 3.5 miles of Dedicated Bus-only Lanes in Ontario

Alternative B would include the full 35-mile-long BRT corridor, which is comprised of the Phase I/Milliken Alignment, Phase II/Haven Alignment, 3.5 miles of dedicated bus-only lanes, and five center-running stations and 50 side-running stations at up to 33 locations/major intersections. The dedicated lanes segment would include two mixed-flow lanes and one transit lane in each direction and five center-running stations. To accommodate the dedicated lanes, roadway widening and additional utilities, such as electrical and fiber-optic lines, would require permanent and temporary ROW acquisition. In addition, some areas of the project corridor would require reconfiguration, relocation, or extension of adjacent driveways, curbs, medians, sidewalks, parking lots, and local bus stops.

2.3 Design Features of Build Alternatives

2.3.1 Bus Rapid Transit Stations

BRT stations at 33 locations/major intersections and associated improvements are proposed to be located approximately 0.5 to 1 mile apart to facilitate higher operating speeds by reducing dwell time (see Figures 1-2 and 2-1 for station locations). Table 2-1 lists the BRT stations to be constructed as part of Phase I/Milliken Alignment. Note that under Alternative A, all 21 stations will be side-running stations. Under Alternative B, five center platform stations are proposed as follows:

- Holt Boulevard/Mountain Avenue
- Holt Boulevard/San Antonio Avenue
- Holt Boulevard/Euclid Avenue
- Holt Boulevard/Campus Avenue
- Holt Boulevard/Grove Avenue

As part of Phase II/Haven Alignment, an additional 12 side-running stations will be constructed for both build alternatives as list in Table 2-2.

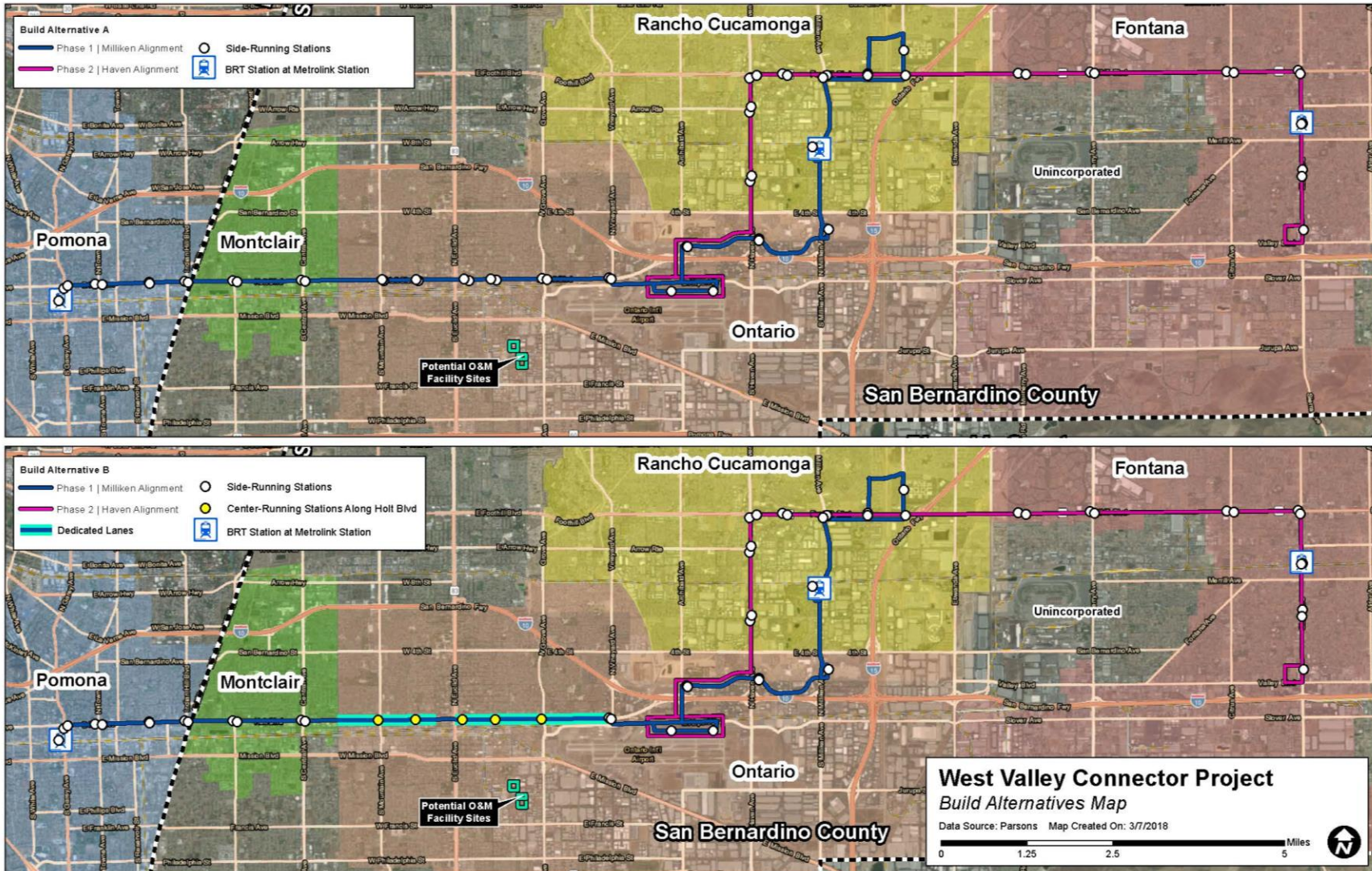


Figure 2-1: Build Alternatives Map

Table 2-1: Stations along Phase I/Milliken Alignment

City	Stations
Pomona	<ul style="list-style-type: none"> • Pomona Regional Transit Center Station • Holt Avenue/Garey Avenue • Holt Avenue/Towne Avenue • Holt Avenue/Clark Avenue • Holt Avenue/Indian Hill Boulevard
Montclair	<ul style="list-style-type: none"> • Holt Boulevard/Ramona Avenue • Holt Boulevard/Central Avenue
Ontario	<ul style="list-style-type: none"> • Holt Boulevard/Mountain Avenue* • Holt Boulevard/San Antonio Avenue* • Holt Boulevard/Euclid Avenue* • Holt Boulevard/Campus Avenue* • Holt Boulevard/Grove Avenue* • Holt Boulevard/Vineyard Avenue • Ontario International Airport • Inland Empire Boulevard/Archibald Way • Inland Empire Boulevard/Porsche Way • Ontario Mills
Rancho Cucamonga	<ul style="list-style-type: none"> • Rancho Cucamonga Metrolink Station • Foothill Boulevard/Milliken Avenue • Foothill Boulevard/Rochester Avenue • Victoria Gardens between North and South Main Street
Note: * denotes the center-running stations to be constructed under Alternative B.	

Source: Parsons, 2017

Table 2-2: Additional Stations to be Constructed as Part of Phase II/Haven Alignment

City	Stations
Rancho Cucamonga	<ul style="list-style-type: none"> • Haven Avenue/6th Street • Haven Avenue/Arrow Route • Haven Avenue/Foothill Boulevard • Foothill Boulevard/Spruce Avenue • Foothill Boulevard/Day Creek Boulevard
Fontana	<ul style="list-style-type: none"> • Foothill Boulevard/Mulberry Avenue • Foothill Boulevard/Cherry Avenue • Foothill Boulevard/Citrus Avenue • Foothill Boulevard/Sierra Avenue • Fontana Metrolink Station • Sierra Avenue/Randall Avenue • Sierra Avenue/Kaiser Permanente

Source: Parsons, 2017

Side-Running Stations

Side-running stations would typically be located on the far side of an intersection to facilitate transit priority and to avoid a stopped bus from blocking those turning right from the corridor. Where curb cuts for driveways and other conditions do not provide enough space along the curbside for both the San Bernardino Valley Express (sbX) and the local bus on the far side of the intersection, the local buses would be located on the near side of the intersection.

In the side-running condition, stations may include new or improved shelters with passenger amenities, or only an sbX-branded pylon with signature light. Proposed shelters would be approximately 18 feet in length and a width that would fit a 10-foot-wide-minimum sidewalk. Passenger amenities at the side platform stations would include benches, bicycle racks, trash receptacles, variable message signs, security cameras, and lighting integrated with the shelter. There would be no fare collection equipment on the sidewalks or shelters when the available ROW is less than 10 feet, and the passengers may pay the fee on the bus. Side-running stations would also include various amenities.

For all stations in Rancho Cucamonga, only an sbX-branded pylon with signature light is proposed. Should shelters be implemented in the future, coordination between the City of Rancho Cucamonga and SBCTA would be required to environmentally clear the shelters at a later time.

Center Platform Stations

As indicated in Section 2.3.1, five center-running platform stations are proposed to be constructed as part of the Phase I/Milliken Alignment (in Ontario) under Alternative B.

The center-running platform stations would be in the center of the street ROW on a raised platform with an end-block crossing. Access would be provided by crosswalks at intersections and Americans with Disabilities Act (ADA)-compliant ramps to the station platforms. Center-running platforms would be placed as close to the intersection as possible while still maintaining left-turn pockets, where required.

In the optimum center-running platform configuration, the platform would accommodate a canopy with its seating area, passenger amenities, fare equipment, and a ramp to comply with relevant accessibility requirements and provide clearance in front of ticket vending machines. Stations would include amenities that can be assembled and laid out to suit the functionality of the station and fit with the surrounding land uses.

2.3.2 sbX Bus Operations

The proposed project would require 18 buses during the Phase I operation and increase to 27 buses for the Phase I and Phase II operation to serve the designed headways and have sufficient spare vehicles.

Under Alternative A, sbX buses would operate entirely in mixed-flow lanes along the proposed 35 miles of the Phase I and Phase II alignments. For Alternative B, sbX buses would operate in mixed-flow lanes similar to Alternative A, except where dedicated bus-only lanes (3.5 miles) are proposed along Holt Boulevard, between Benson Avenue and Vine Avenue and between Euclid Avenue and Vineyard Avenue, in Ontario.

Roadway sections where the sbX would operate in mixed-flow lanes would generally be kept as existing conditions, although some modifications, such as relocated curb and gutter, may be necessary near the stations to provide sufficient room for bus stopping and loading. Reconstruction of curb and gutters would only be required for the segment where dedicated bus-only lanes are proposed. Vehicular lanes where the sbX buses would operate in dedicated bus-only lanes would feature concrete roadways, painted or striped to visually separate the exclusive lanes from mixed-flow lanes. Transition areas from mixed-flow to exclusive lanes would be provided at each end of an exclusive lane location. Such transitions would be clearly marked to separate bus movements from other vehicular traffic. Reinforced concrete bus pad in the pavement would be placed at all station locations for the sbX buses.

sbX buses would operate from 6:00 a.m. to 8:00 p.m. with peak headways for 4 hours and off-peak headways for 10 hours per day for a total span of service of 14 hours per day, Monday through Friday. From the Pomona Metrolink Transit Center station to Inland Empire Boulevard, the sbX buses would operate on 10-minute peak headways and 15-minute off-peak headways. Additional service hours, including weekend service, may be added if additional operating funds become available in the future.

2.3.3 Operations and Maintenance

Fleet Composition

The proposed project's fleet would be comprised of 60-foot-long articulated compressed natural gas (CNG) propulsion buses. sbX buses would hold approximately 96 passengers at maximum capacity with up to 8 bicycles on board. Today, the average local bus operating speeds are only 12 to 15 miles per hour (mph), and they are getting slower as corridor congestion worsens. In calculating run times, it was assumed that the average dwell time at stations would be 30 seconds (peak service), and average overall speed would be 20 mph.

Maintenance Requirements and Associated Facilities

Omnitrans operates and maintains its existing bus fleets from two major Operations and Maintenance (O&M) facilities: East Valley Vehicle Maintenance Facility (EVVMF), located at 1700 W. 5th Street in the City of San Bernardino and West Valley Vehicle Maintenance Facility (WVVMF), located at 4748 E. Arrow Highway in the City of Montclair. EVVMF is a Level III facility capable of full maintenance of buses and WVVMF is a Level II facility suitable for light maintenance. Neither facility has sufficient capacity to accommodate the

additional maintenance and storage requirements of the bus fleet associated with the proposed WVC Project.

The purpose of the new O&M facility is to provide operations and maintenance support to the existing full-service EVVMF. The new facility would be designed and constructed to provide Level I service maintenance with a capacity to be upgraded to provide Level II service maintenance. Heavy repair functions and administrative functions would remain exclusively with the EVVMF in San Bernardino.

Facility Components

Conceptually, the new O&M facility would be built on an approximate 5-acre site. The Level I facility would include a parking area, bus washing area, fueling area, and a personnel and storage building. As needs arise, the facility could be upgraded to provide Level II service, which will include the addition of a maintenance shop and a larger administrative building. Landscaping and irrigation would be provided to enhance the comfort of employees and the appearance of the facility, and to help screen maintenance facilities and operations from offsite viewpoints within the community. Figure 2-2 shows the conceptual site plan of the Level II facility.

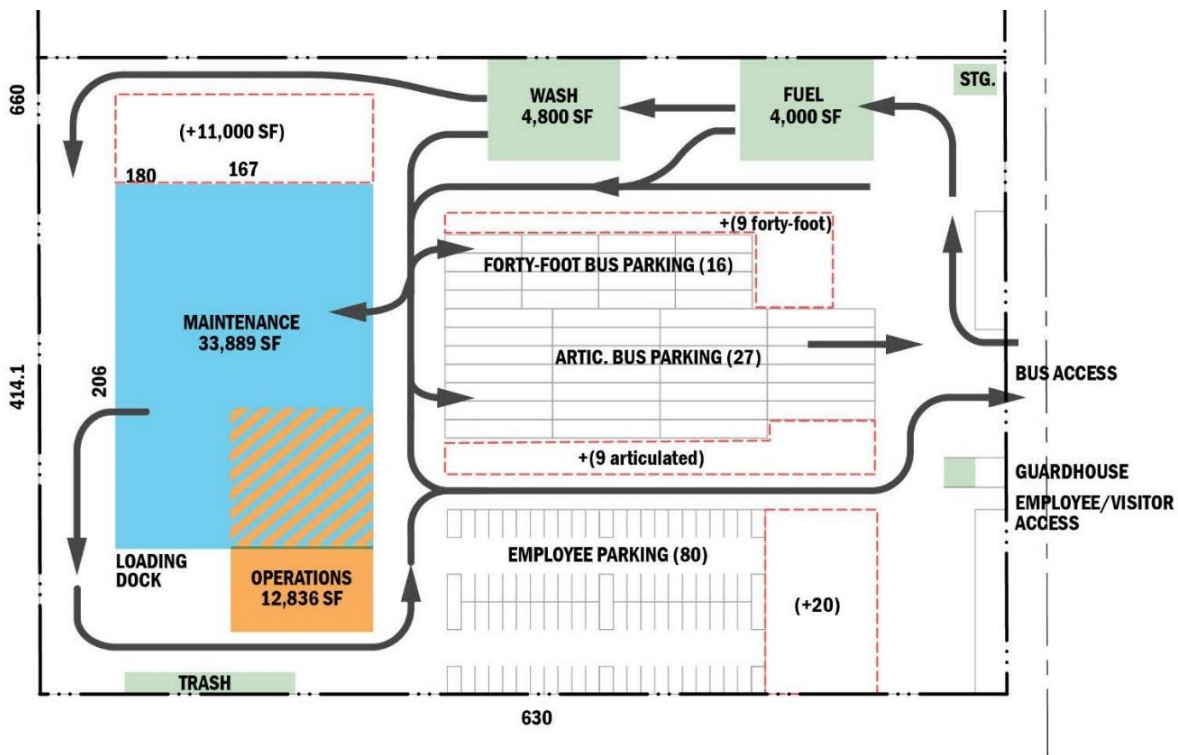


Figure 2-2: O&M Facility Conceptual Site Plan

Depending on the service level to be performed, approximately 50-100 staff would be using this facility including bus operators and O&M staff.

Potential Sites

Three sites are being considered for the placement of the new O&M facility (see Figure 2-3). All are owned by the City of Ontario and are located in the industrial zoned area, slightly more than a mile from the proposed BRT corridor alignment on Holt Boulevard:

- Site 1: 1516 S. Cucamonga Avenue, Ontario (APN 1050-131-03-0000 and APN 1050-131-02-0000). The current use of this property is public works storage yard. If selected, the O&M facility will be built at the bottom portion of the parcel encompassing an area of approximately 6.0 acres.
- Site 2: 1440 S. Cucamonga Avenue, Ontario (APN 1050-141-07-0000). The current use of this property is compressed natural gas fueling station. If selected, the O&M facility will utilize the entire parcel encompassing an area of approximately 4.8 acres.

Site 3: 1333 S. Bon View Avenue, Ontario (APN 1049-421-01-0000 and APN 1049-421-02-0000). The current use of this property is municipal utility and customer service center. If selected, the O&M facility will be built at the bottom portion of the parcel encompassing an area of approximately 6.6 acres.

Buses coming to and from the new facility could use nearby access roads that directly connect to the BRT corridor such as South Campus Avenue, South Bon View Avenue, and South Grove Avenue.

The O&M facility will be constructed during the same period as the Phase I/Milliken Alignment and would be open for operation at the same time as the Phase I alignment. Construction duration is estimated at 12 months.

2.4 Implementation Schedule

Implementation of the proposed project is planned over the next 5 years and would entail many activities, including:

- Completion of the environmental compliance phase (March 2020)
- Completion of Preliminary Engineering (March 2020)
- Completion of Final Design (May 2021) and begin construction in early 2022.
- Completion of O&M facility (December 2023)
- Completion of Construction of Phase I/Milliken Alignment and testing (December 2023)
- System operation (begin revenue operation in December 2023)
- Construction of Phase II/Haven Alignment is scheduled to occur after completion of the Phase I/Milliken Alignment pending funding availability

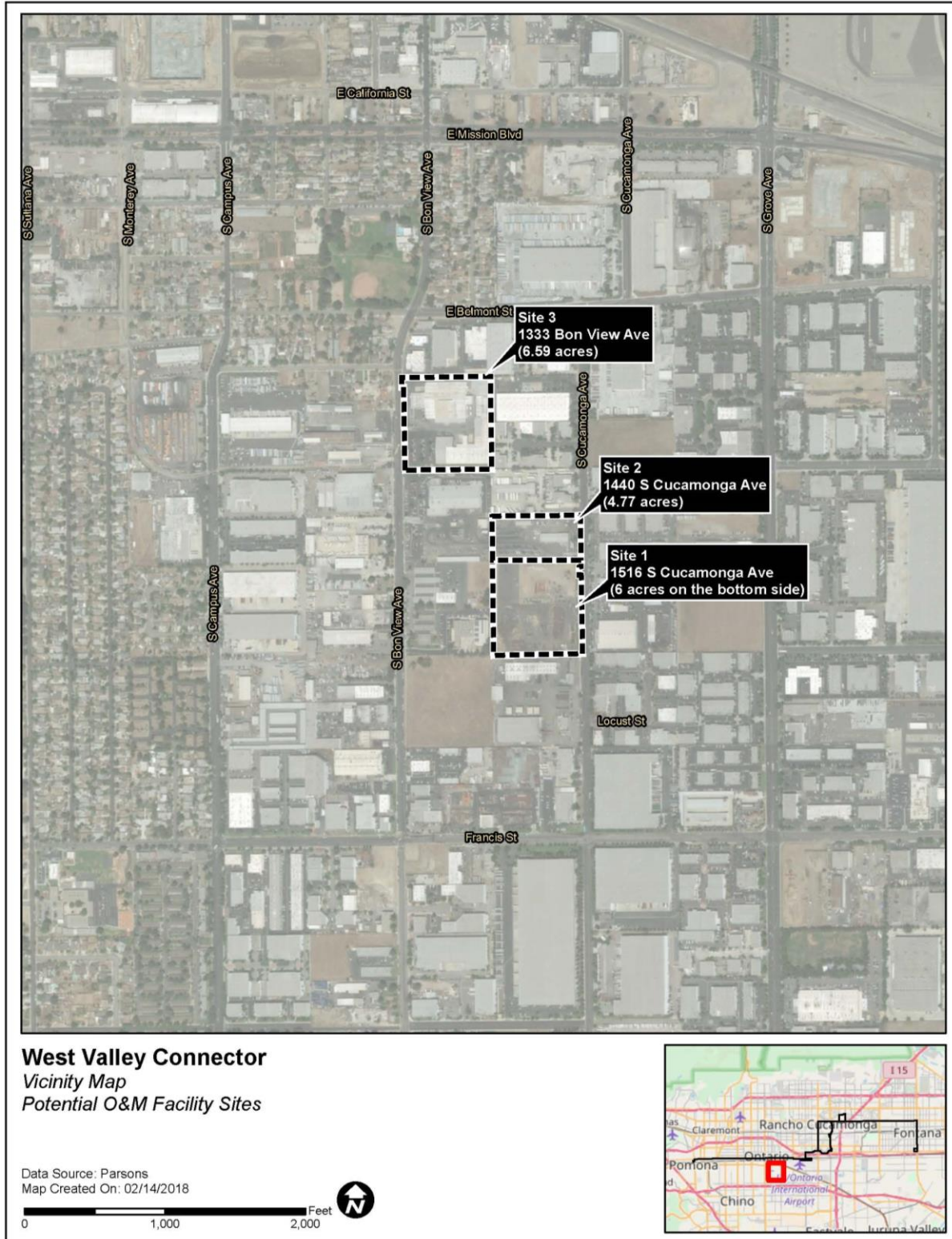


Figure 2-3: Potential Operations and Maintenance Facility Sites

3.0 FLOODPLAIN DETERMINATION

Flood hazard areas were determined based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM). Sources, including topographic mapping, aerial photos, City of Ontario’s Master Plan of Drainage and West Cucamonga Channel Hydrology and Hydraulic Report for Letter of Map Revision (LOMR), were utilized to determine drainage tributary areas and potential flooding risk.

Although five flood channels have been identified within the project area, only one floodplain location will be studied within the project area. More information on the floodplain locations identified within the study area is provided in Chapter 6. The FIRM maps are located in Appendix A.

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 providing for the passage of a design flood. Developments are prohibited in the floodway. Figure 3-1 depicts floodplain and floodway areas.

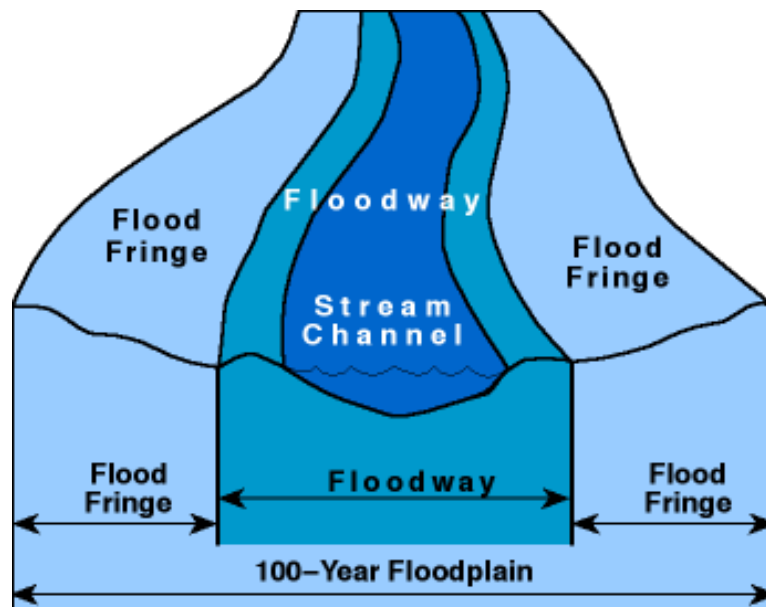


Figure 3-1: Typical Floodplain and Floodway Location with Respect to the Main Stream

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 reducing the number and severity of floods, minimizing nonpoint source water pollution, filtering stormwater, providing habitat for plants and animals, and 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.

Because encroachments are activities or construction within the floodway, including fill, new construction, substantial improvements, and other development, there would be no floodway encroachment within the project area except for the West Cucamonga Channel's floodway at a single point located east of North Grove Avenue along Holt Boulevard (see Appendix B).

The proposed project would 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 (NFIP).

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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4.0 FEDERAL AND STATE REGULATIONS

4.1 National Flood Insurance Program

The Federal Emergency Management Agency (FEMA) developed the National Flood Insurance Program (NFIP) to assist communities across the country with floodplain management. The 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 an 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 Clean Water Act (33 U.S.C. § 1251 *et seq.*)

The purpose of the Clean Water Act (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. 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 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 California. 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.

5.0 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 401 Certification

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

5.3 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 by SWRCB under the Federal CWA (Section 402).

The project area is within the jurisdiction of the Santa Ana RWQCB. The areawide Permit (Order No. R8-2010-0036, NPDES No. CAS 618036) is administered by the Santa Ana RWQCB. This permit sets out guidelines and regulates waste discharge requirements (WDRs) for the discharge of stormwater from areas of San Bernardino County. The principal permittee of this permit is SBCFCD, and there are 17 other co-permittees, including City of Ontario.

5.4 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 Santa Ana RWQCB's Dewatering Permit Order is identified as R8-2009-0003 (NPDES NO. CAG998001). This permit covers the General WDRs for Discharges to Surface Water which Pose an Insignificant (*De Minimis*) Threat to Water Quality from dewatering activities.

5.5 California Department of Fish and Wildlife Section 1602 Lake & Streambed Alteration Agreement

Section 1602 of the California Fish and Game (CFG) 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 the California Department of Fish and Wildlife (CDFW) regarding potential project impacts is required, and a Section 1602 Lake & 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.

6.0 FLOODPLAIN LOCATIONS

There are five existing channels located along the 35-mile-long corridor alignment (see Figure 6-1), including:

- San Antonio Channel (within City of Montclair)
- West Cucamonga Channel (within City of Ontario)
- Cucamonga Channel combines with Deer Creek Channel (within City of Ontario)
- Day Creek Channel (within City of Rancho Cucamonga)
- Etiwanda Creek Channel (within City of Rancho Cucamonga)

Based on the FEMA's FIRM, the project corridor is only encroached in the West Cucamonga Channel's designated flood hazard area. The exhibit in Appendix B shows the proposed improvements adjacent to channel. As a requirement of the CEQA, Location Hydraulic Study and Summary Floodplain Encroachment forms have been prepared for the project (Appendices C and D).

The remaining water bodies within the project limits that are not affected by project improvements because the improvements at these locations do not include widening operations and/or are only minor, such as restriping efforts. FIRM maps for each of these locations can be found in Appendix A.

6.1 West Cucamonga Channel – FIRM Nos. 06071C8609J and 06071C8628J

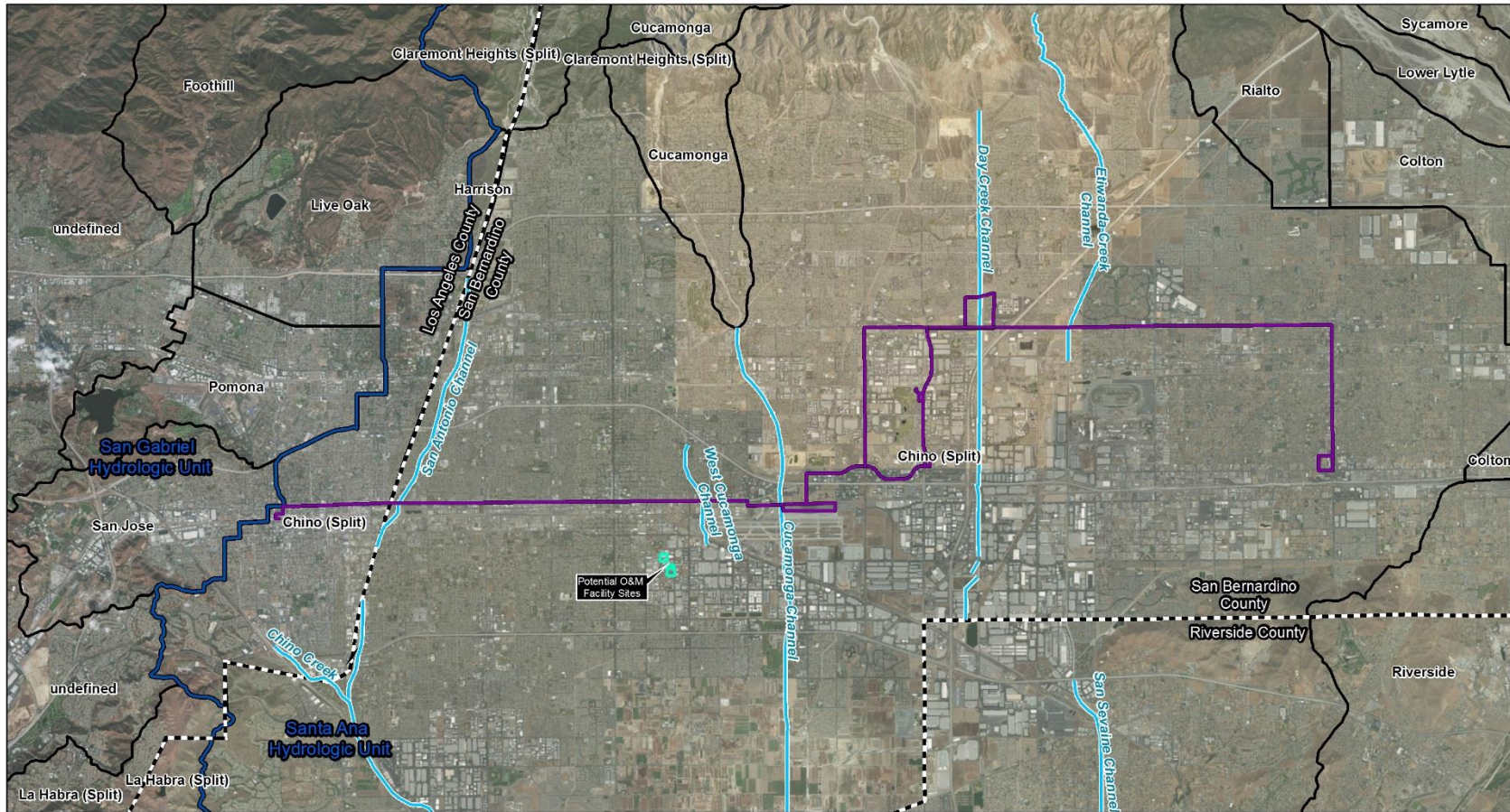
The existing West Cucamonga Channel carries flows from Ontario. The upstream end of the channel is located north of 16th Street, from where it continues in a southerly direction through 8th Street Basins, Princeton Basin, and eventually to the Ely infiltration basin system north of State Route (SR) 60. The Ely basin system outfall is Cucamonga Creek.

The proposed improvements include roadway widening, grading, and culverts. There is only one location of floodplain encroachment where the existing culvert crosses under Holt Boulevard. This culvert would be extended to accommodate the proposed roadway widening (see Appendix B).

A Zone X (dotted) flood area designation is shown encompassing the entire project area. As shown in the FIRM map, West Cucamonga Channel has a 1 percent annual chance flood capacity within the project area. Floodplain encroachment at West Cucamonga Channel would occur where the existing culvert crosses under Holt Boulevard. This culvert would be extended to accommodate the proposed roadway widening. The proposed work would not substantially alter the floodplain because the culvert crossing would only be extended by approximately 30 feet total (15 feet on each side). Furthermore, the 100-year flood event would still be contained in the channel under the proposed conditions. No detailed study is

required to determine the BFR because encroachments by the proposed project are not greater than 50 lots or 5 acres.

No natural or beneficial uses for this floodplain have been identified in the Santa Ana RWQCB's Basin Plan for the Santa Ana River Basin; therefore, West Cucamonga Channel's only use is for drainage conveyance.



West Valley Connector Corridor

Hydrologic Map

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 Data Source: Calwater, 2018
 Map Created On: 5/1/2018

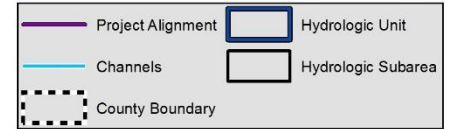
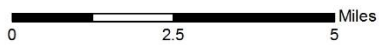


Figure 6-1: Regional Hydrology and Surface Water Body Map

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7.0 ALTERNATIVES TO FLOODPLAIN ENCROACHMENT

Because the proposed work is located on an existing roadway, a new roadway alignment is not a feasible alternative to floodplain encroachment. The only variable to the impacts is the degree of encroachment. Therefore, during the design and construction stages, disturbance to the floodplain shall be minimized where possible.

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8.0 RISK ASSESSMENT

Geometrically, the WVC Project would encroach the West Cucamonga Channel and its floodplain at a single point east of North Grove Avenue along Holt Boulevard; however, it is not anticipated that there would be any impact to the West Cucamonga Channel and its floodplain because these culvert crossings would be extended to accommodate the roadway widening. Furthermore, the 100-year flood event would still be contained in the channel under the proposed conditions. Table 8-1 summarizes the risks associated with encroaching and developing on a flood hazard area. The FEMA FIRM maps, proposed project work, Location Hydraulic Study Forms, and Summary Floodplain Encroachment Report found in the appendices are supporting documents used to evaluate the risk.

Table 8-1: Risk Assessment Summary

Flooding Source	Q _{100 year} (cfs) along Holt Boulevard Corridor	Type of Encroachment	Effects on Natural Beneficial Values	Effects on Incompatible Development	Risk	
					No Build	Build
West Cucamonga Channel	2,244 ¹	Transverse	None	None	None	Low
Notes: cfs – cubic feet per second ¹ West Cucamonga Channel Hydrology and Hydraulic Report for LOMR.						

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9.0 BENEFICIAL FLOODPLAIN VALUES

As described earlier, no beneficial uses except for drainage conveyance have been identified for the receiving water body within the project area.

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10.0 PROBABLE INCOMPATIBLE FLOODPLAIN DEVELOPMENT

The proposed project would not alter 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 during the design and construction phases, including the measures outlined in Chapter 12, would be made such that the project remains compatible with the NFIP set forth by FEMA.

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11.0 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 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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12.0 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 best management practices (BMPs) as identified in the Storm Water Data Report.
3. Include erosion control and water quality protection during in-river construction and post-construction as identified in the Storm Water Data Report.
4. Develop a contingency plan for unforeseen discovery of underground contaminants in the 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 shall 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 more detailed hydraulic analysis shall be completed to assess existing and post-hydraulic conditions.

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13.0 FUTURE CONSIDERATIONS

To comply with Federal Highway Administration (FHWA) Section 650.115 Design Standards Guidelines, design of roadways 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. Freeboard shall be provided, where practicable, to protect bridge structures from debris- and scour-related failure.

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14.0 REFERENCES

1. FEMA. 2015. Flood Insurance Rate Maps (various), www.fema.org.
2. San Bernardino County Flood Control District. October 2011. Flood Control System Number Index and General File Codes.
3. Previous Studies:
 - AECOM USA Inc. Project Study Report. October 2010.
 - Hunsaker and Associates Irvine, Inc. City of Ontario's Master Plan of Drainage. March 2012.
 - HDR Engineering, Inc. West Cucamonga Creek Channel Hydrology and Hydraulic Report for LOMR. July 2011.
4. 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



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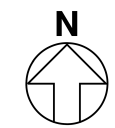
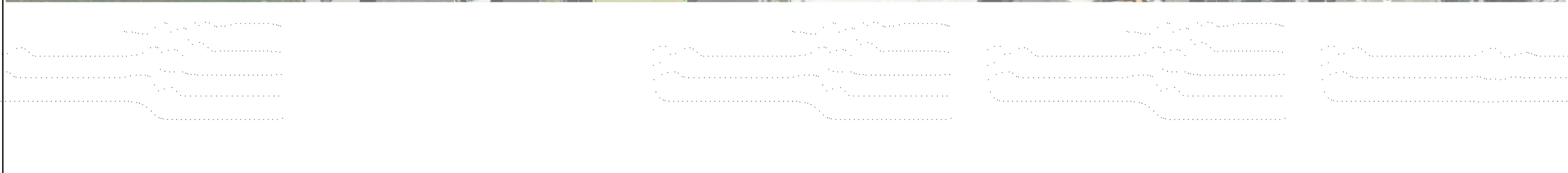
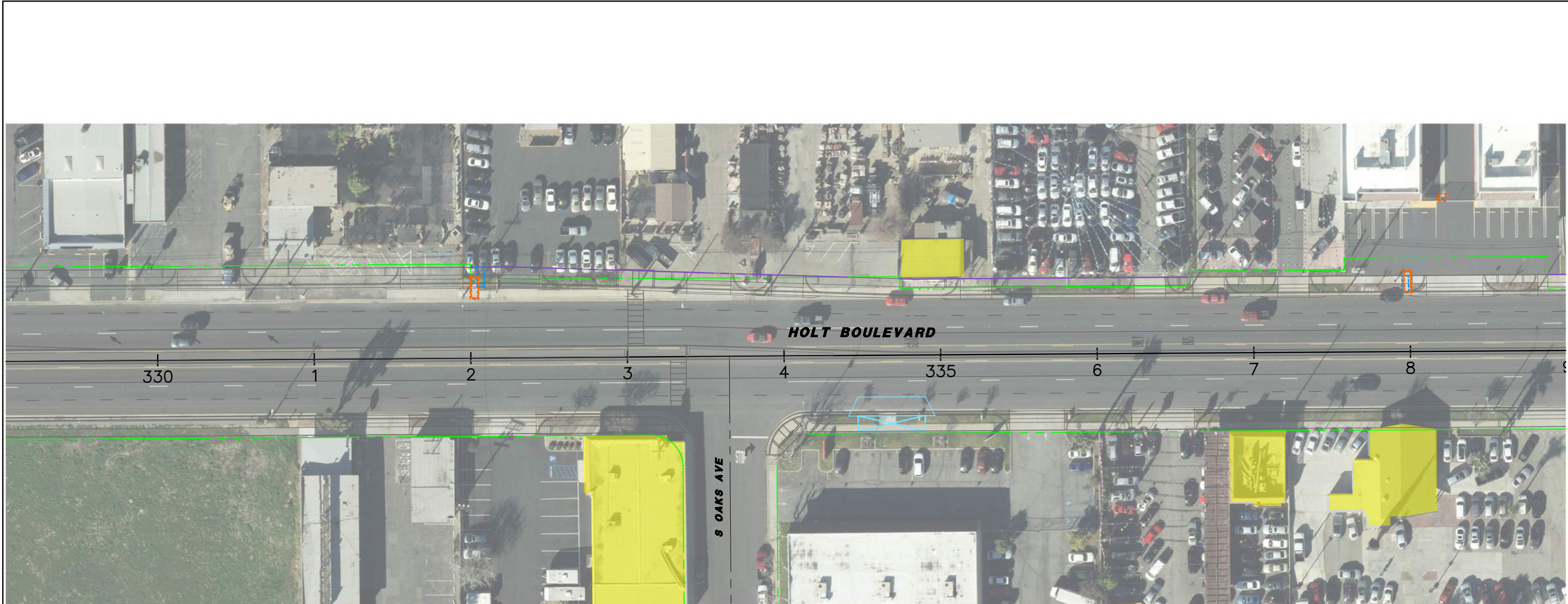
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WEST VALLEY CONNECTOR CORRIDOR
PARSONS

**DRAFT PRELIMINARY
DRAINAGE PLANS**

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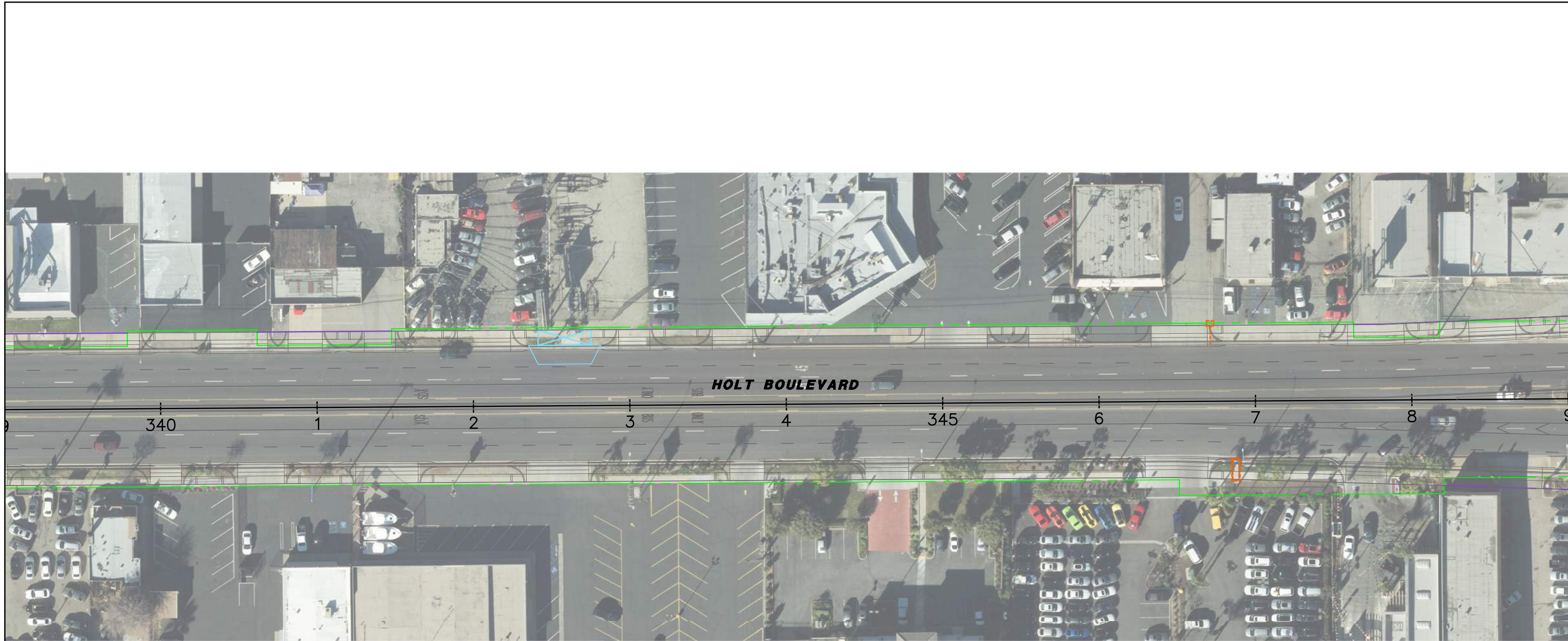
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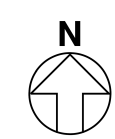
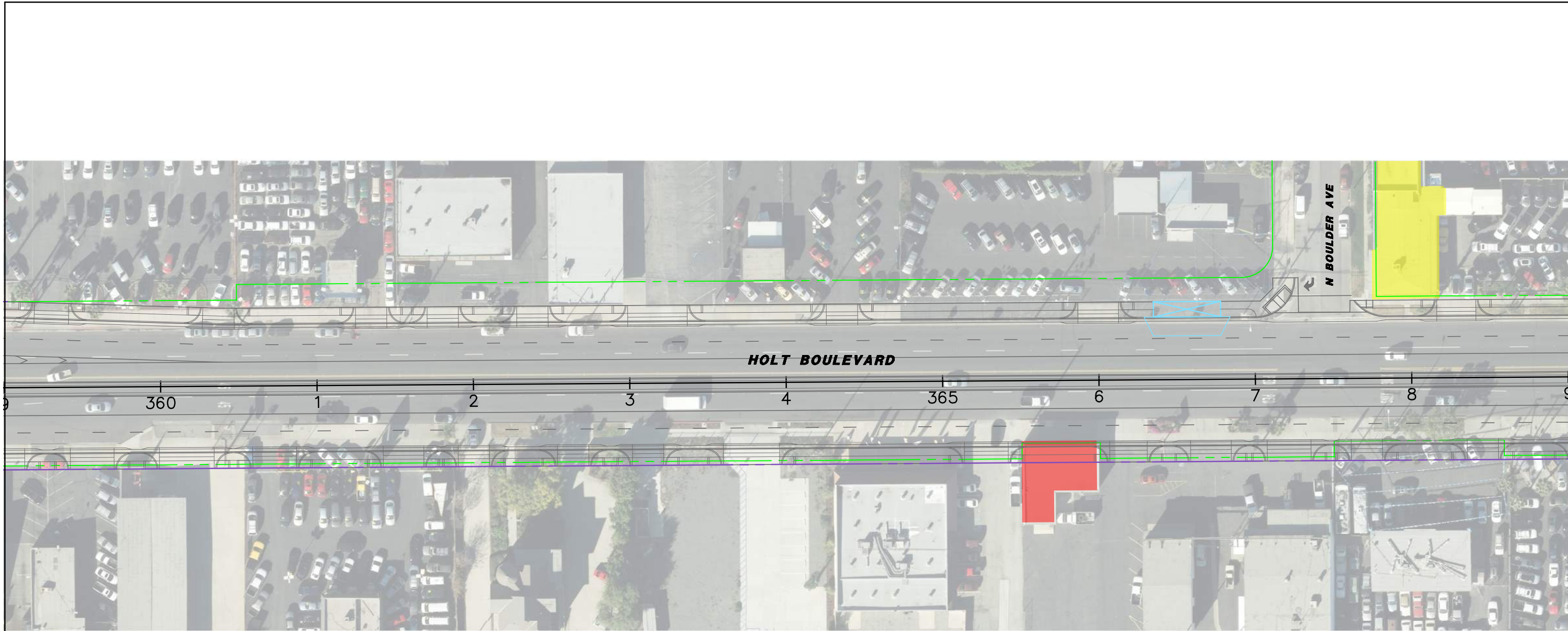
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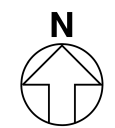
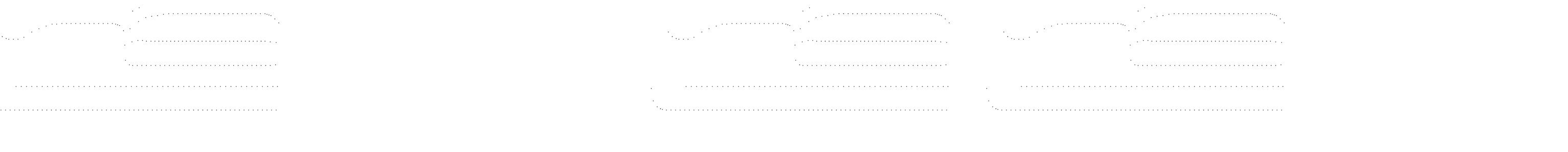
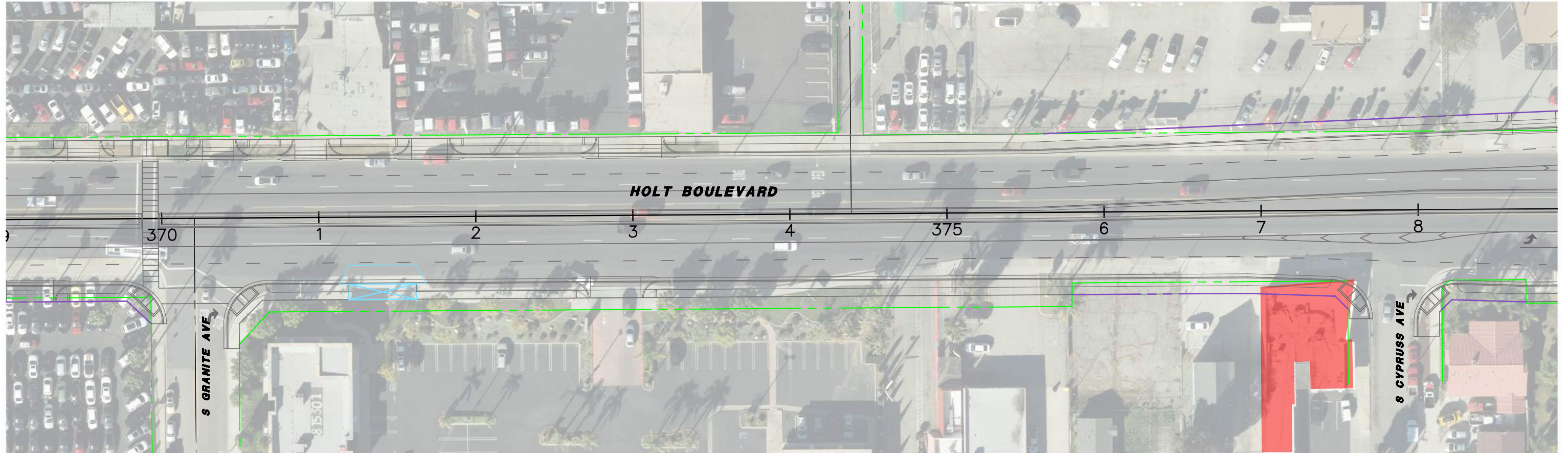
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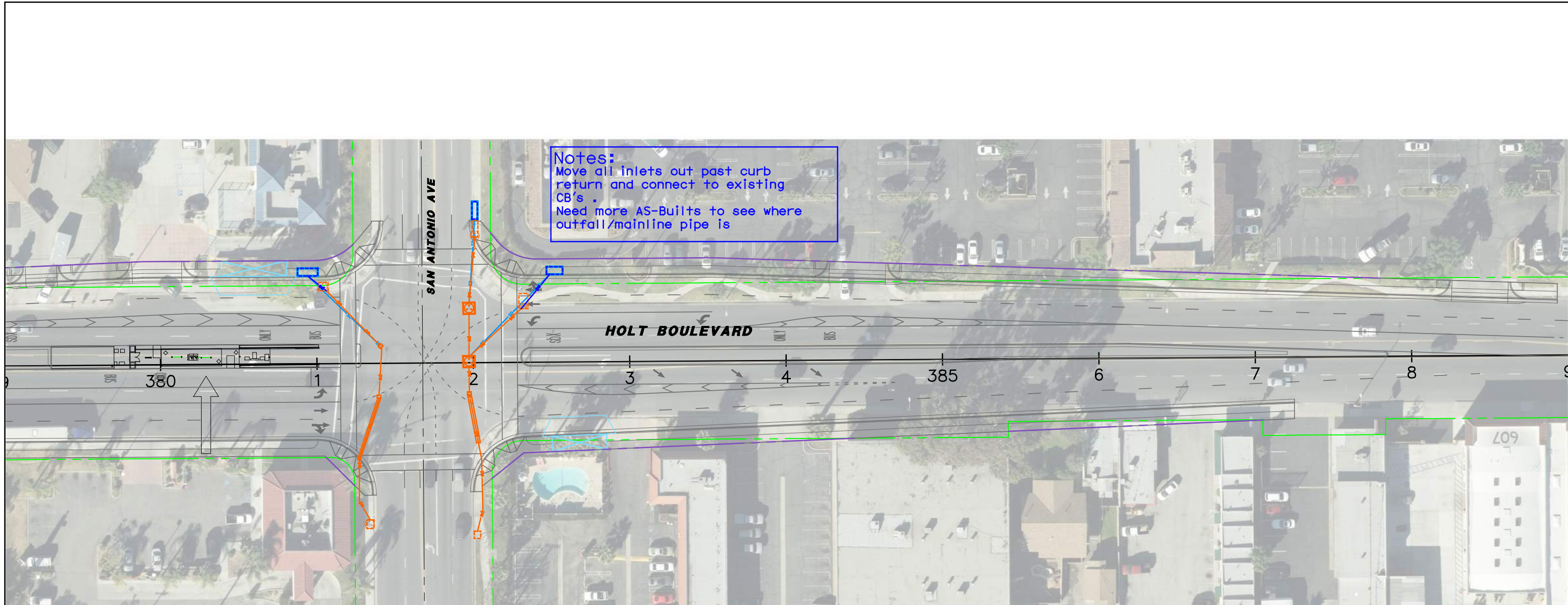
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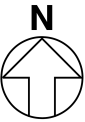
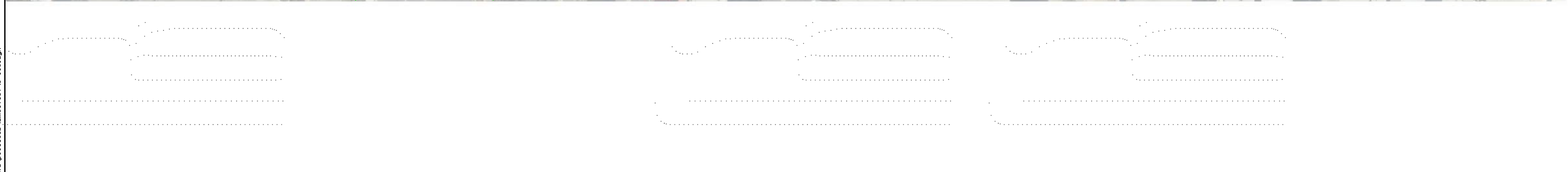
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Notes:
 Move all inlets out past curb
 return and connect to existing
 CB's .
 Need more AS-Builts to see where
 outfall/mainline pipe is



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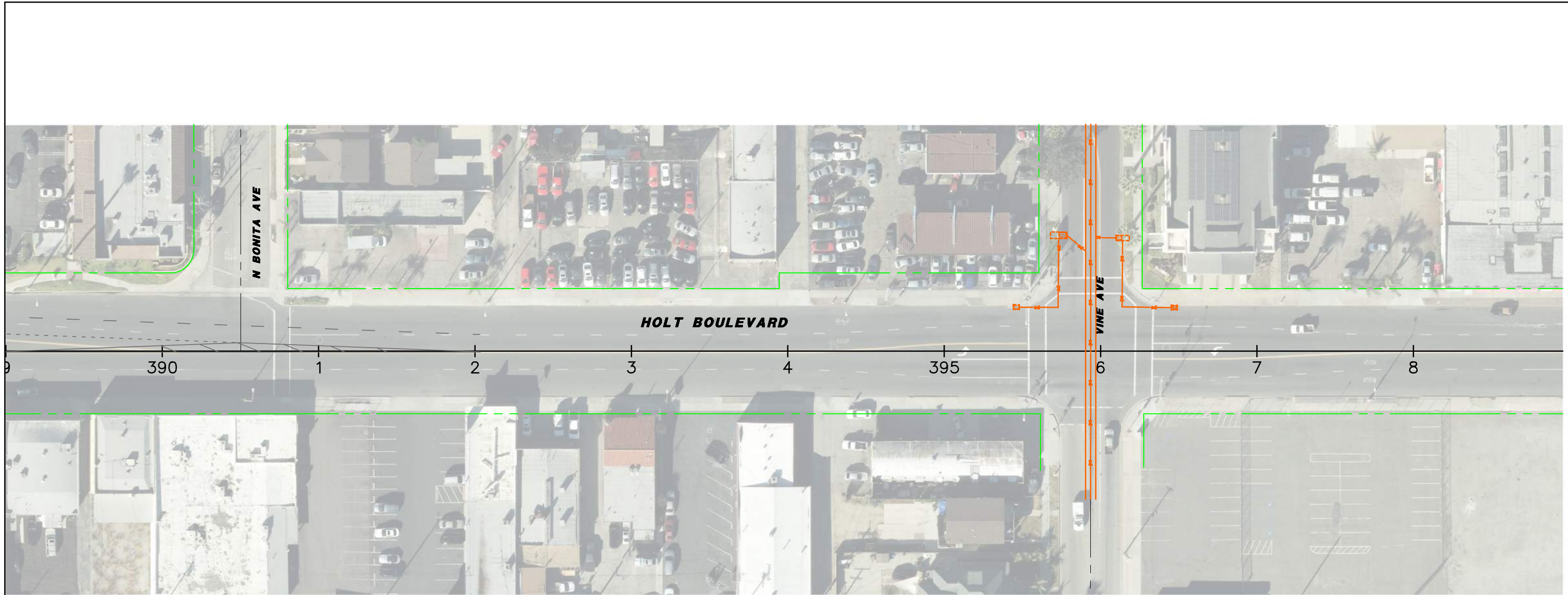
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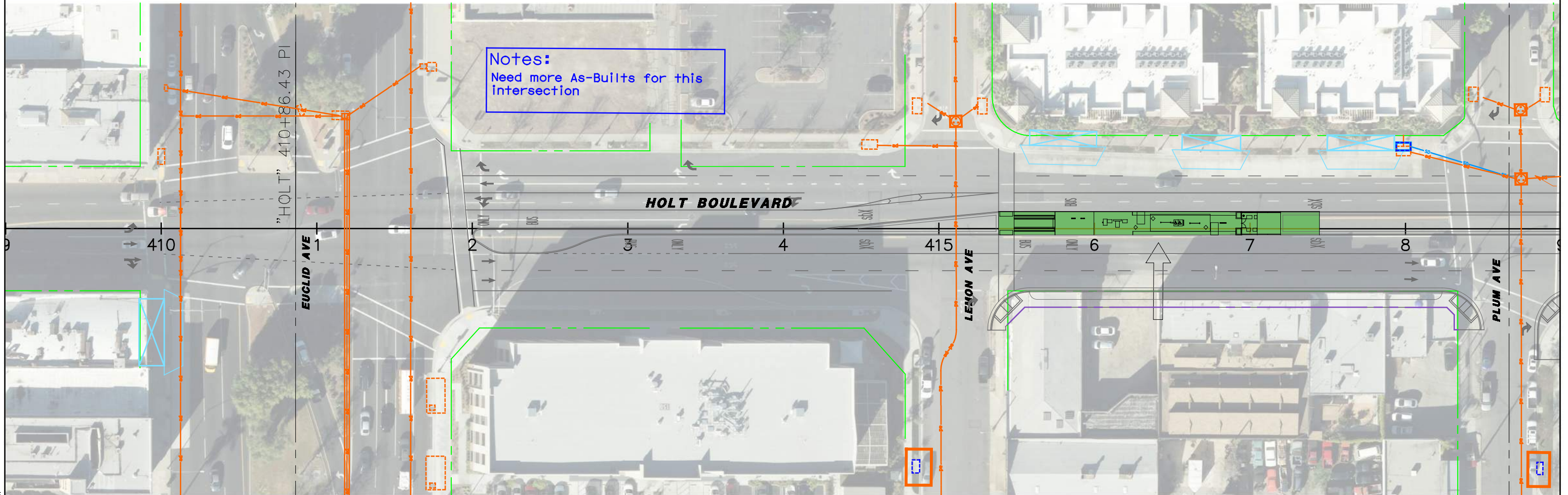


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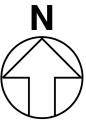
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Notes:
Need more As-Builts for this Intersection



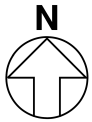
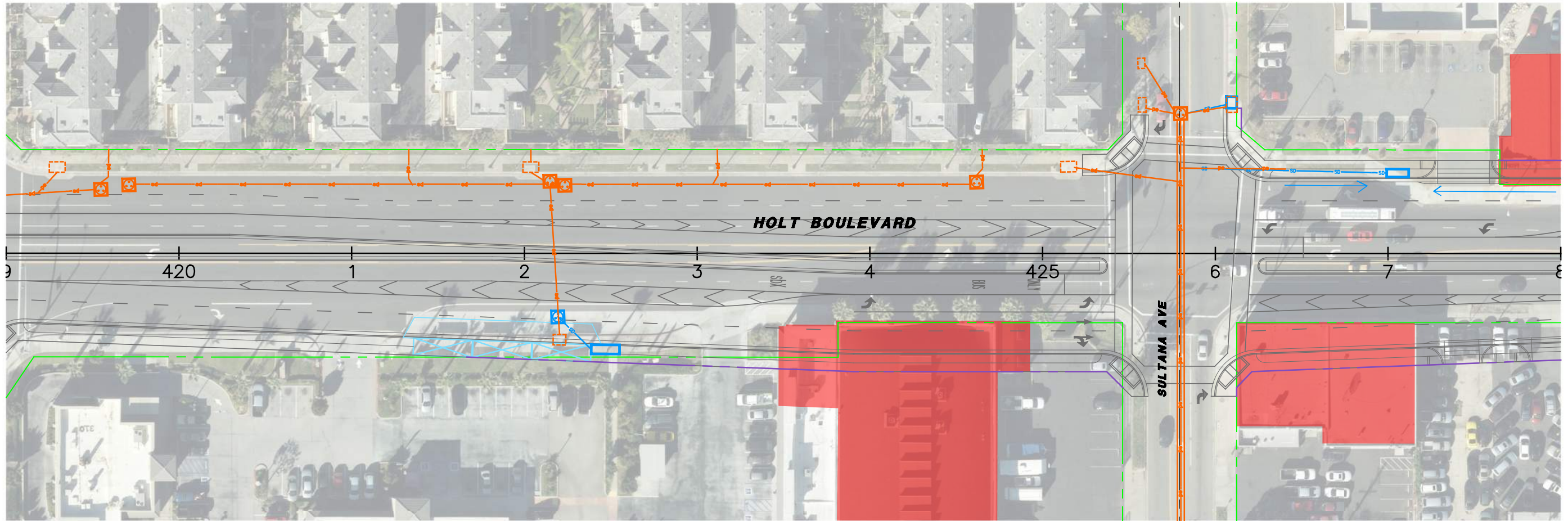
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DRAFT PRELIMINARY DRAINAGE PLANS

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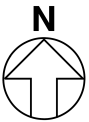
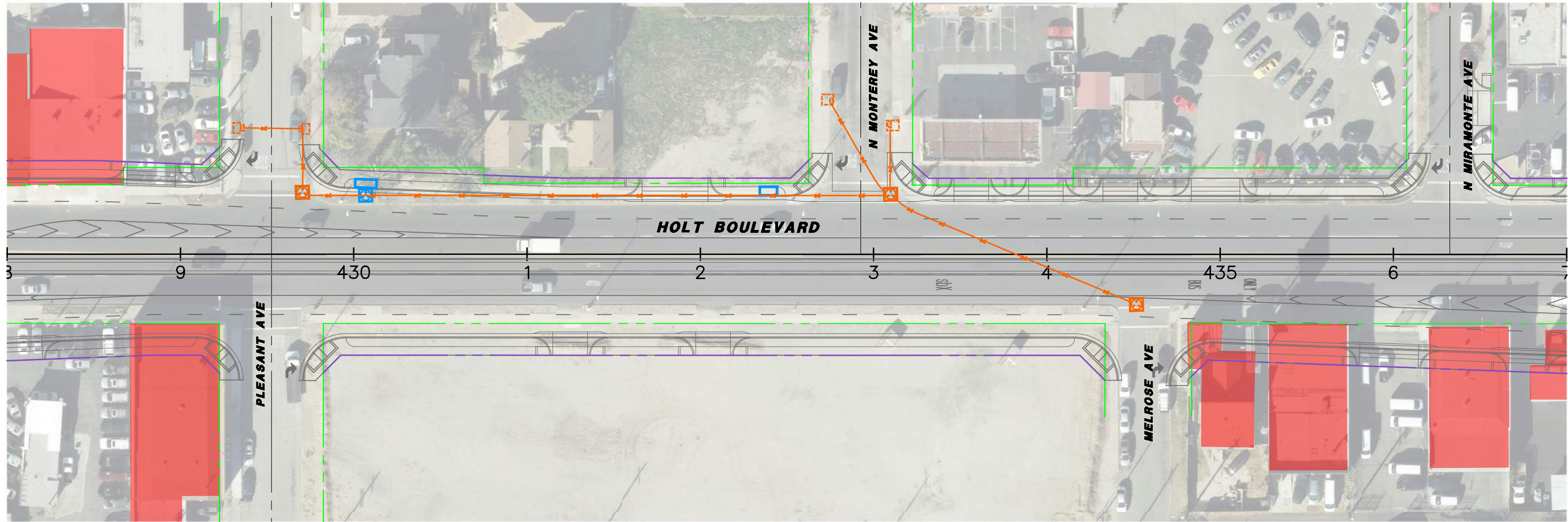
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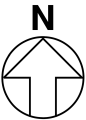
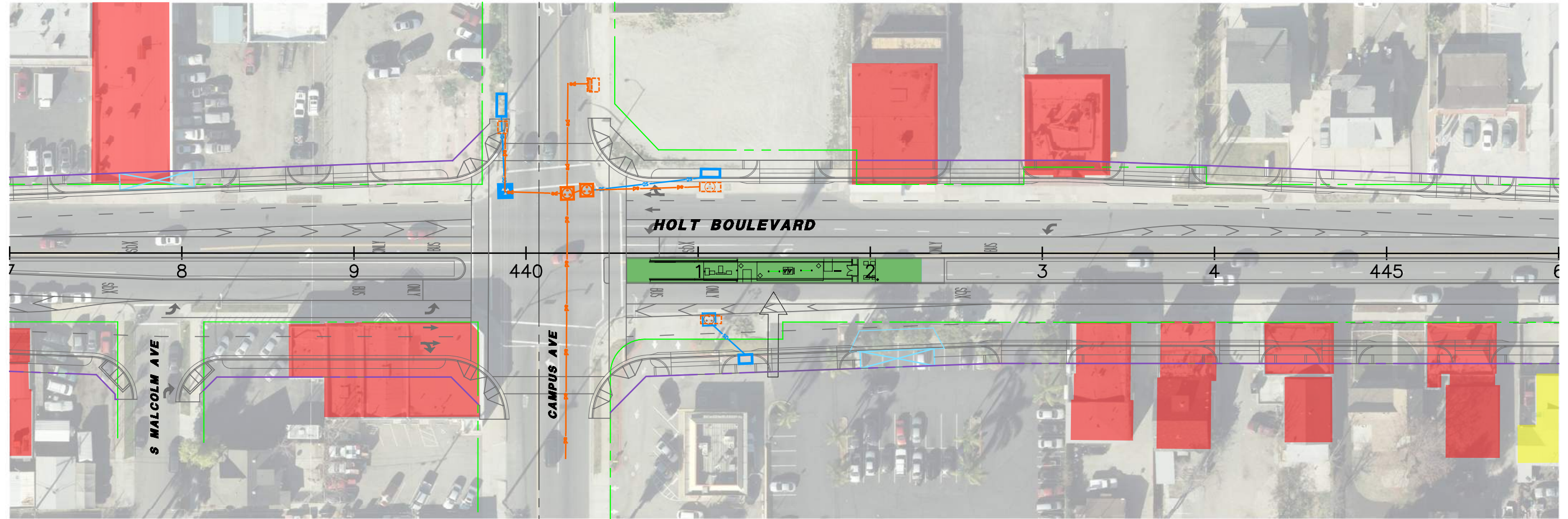
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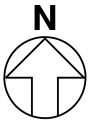
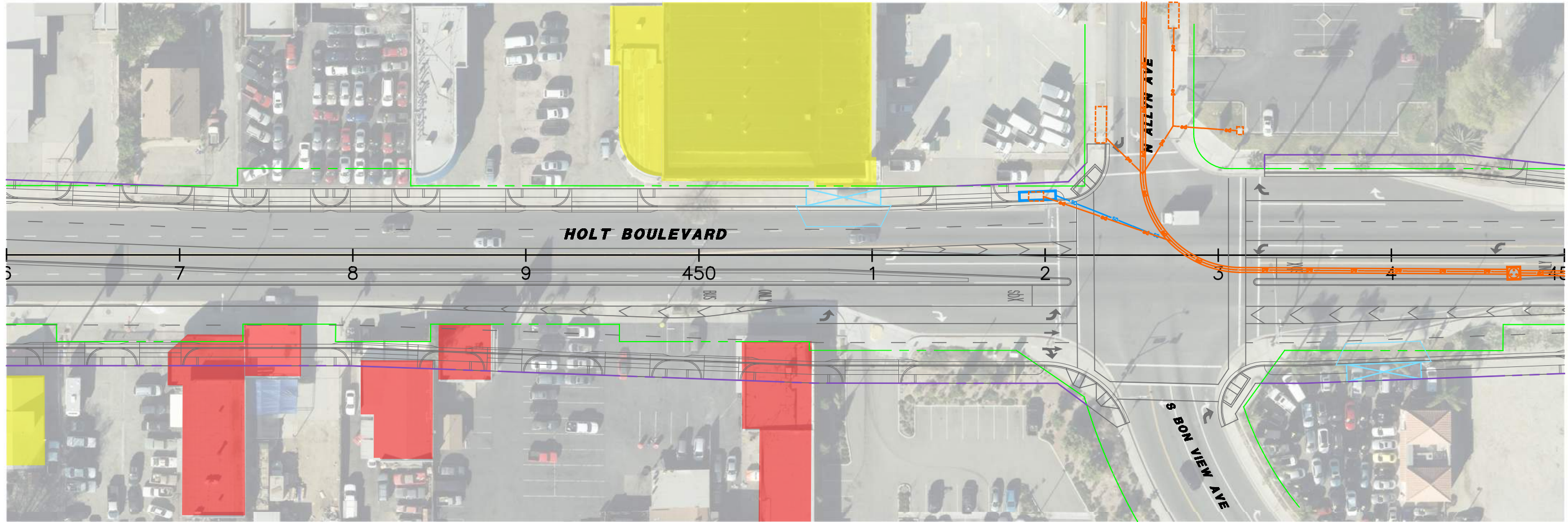
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WEST VALLEY CONNECTOR CORRIDOR
PARSONS

**DRAFT PRELIMINARY
 DRAINAGE PLANS**

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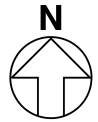
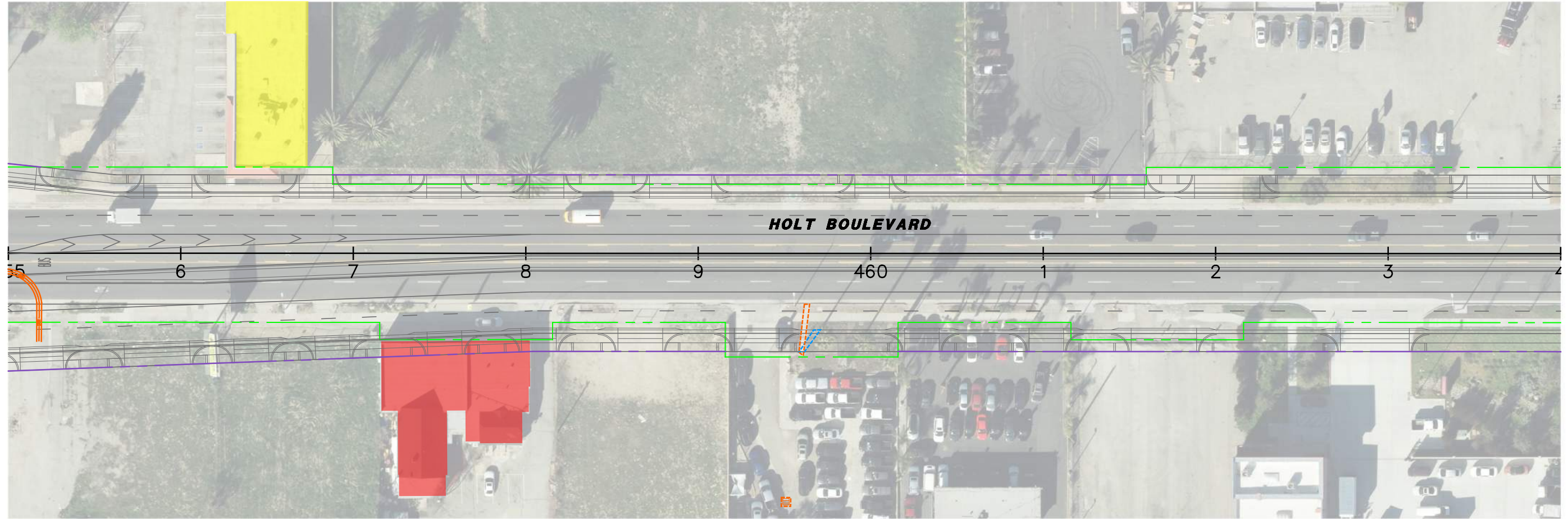
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WEST VALLEY CONNECTOR CORRIDOR
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DRAFT PRELIMINARY DRAINAGE PLANS

SCALE	NTS
SHEET #	C-015



LEGEND	
	EXISTING STORM DRAIN, ≤30"
	EXISTING STORM DRAIN, >30"
	EXISTING INLET
	EXISTING MANHOLE
	PROPOSED STORM DRAIN, ≤30"
	PROPOSED STORM DRAIN, >30"
	PROPOSED INLET
	PROPOSED MANHOLE

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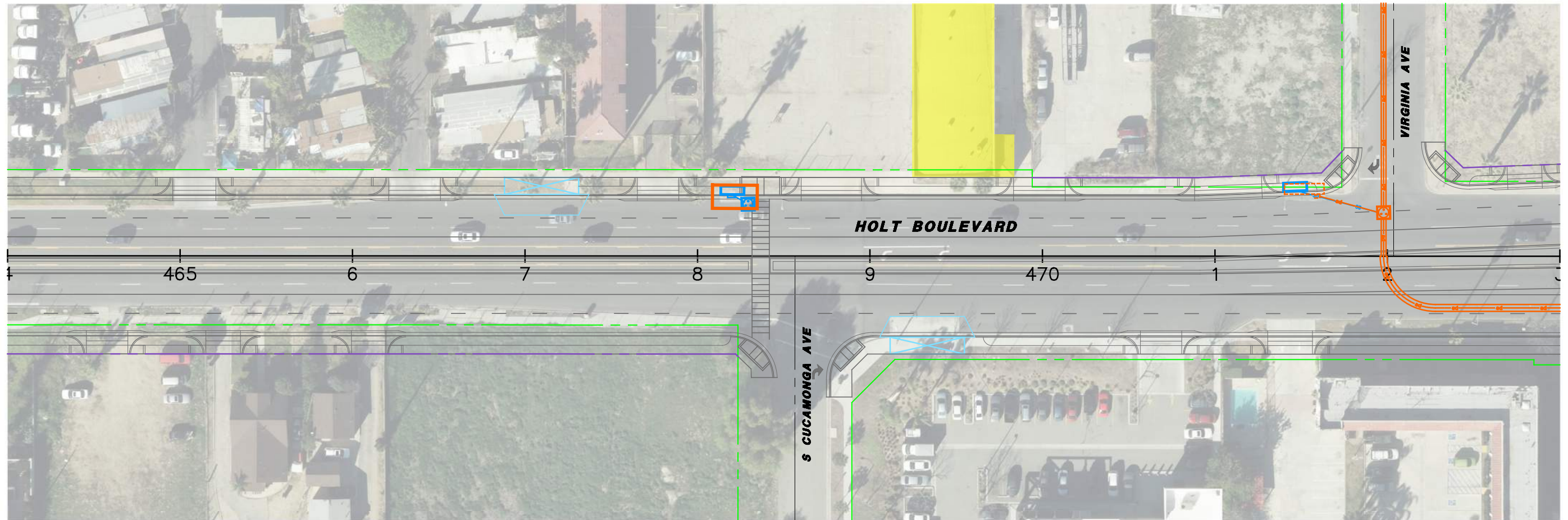


WEST VALLEY CONNECTOR CORRIDOR
PARSONS

DRAFT PRELIMINARY DRAINAGE PLANS

SCALE	NTS
SHEET #	C-016

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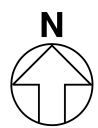
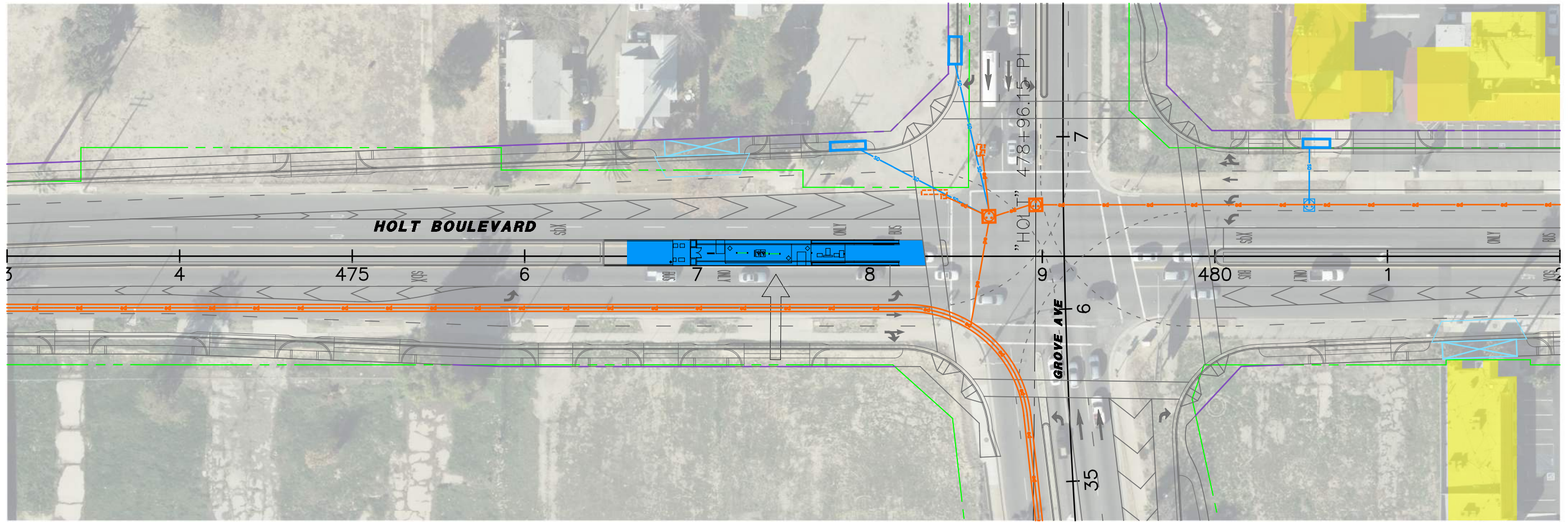
LEGEND	
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	EXISTING INLET
	EXISTING MANHOLE
	PROPOSED STORM DRAIN, ≤30"
	PROPOSED STORM DRAIN, >30"
	PROPOSED INLET
	PROPOSED MANHOLE



WEST VALLEY CONNECTOR CORRIDOR
PARSONS

**DRAFT PRELIMINARY
 DRAINAGE PLANS**

SCALE NTS
 SHEET # C-017



LEGEND	
	EXISTING STORM DRAIN, ≤30"
	EXISTING STORM DRAIN, >30"
	EXISTING INLET
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	PROPOSED INLET
	PROPOSED MANHOLE

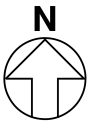
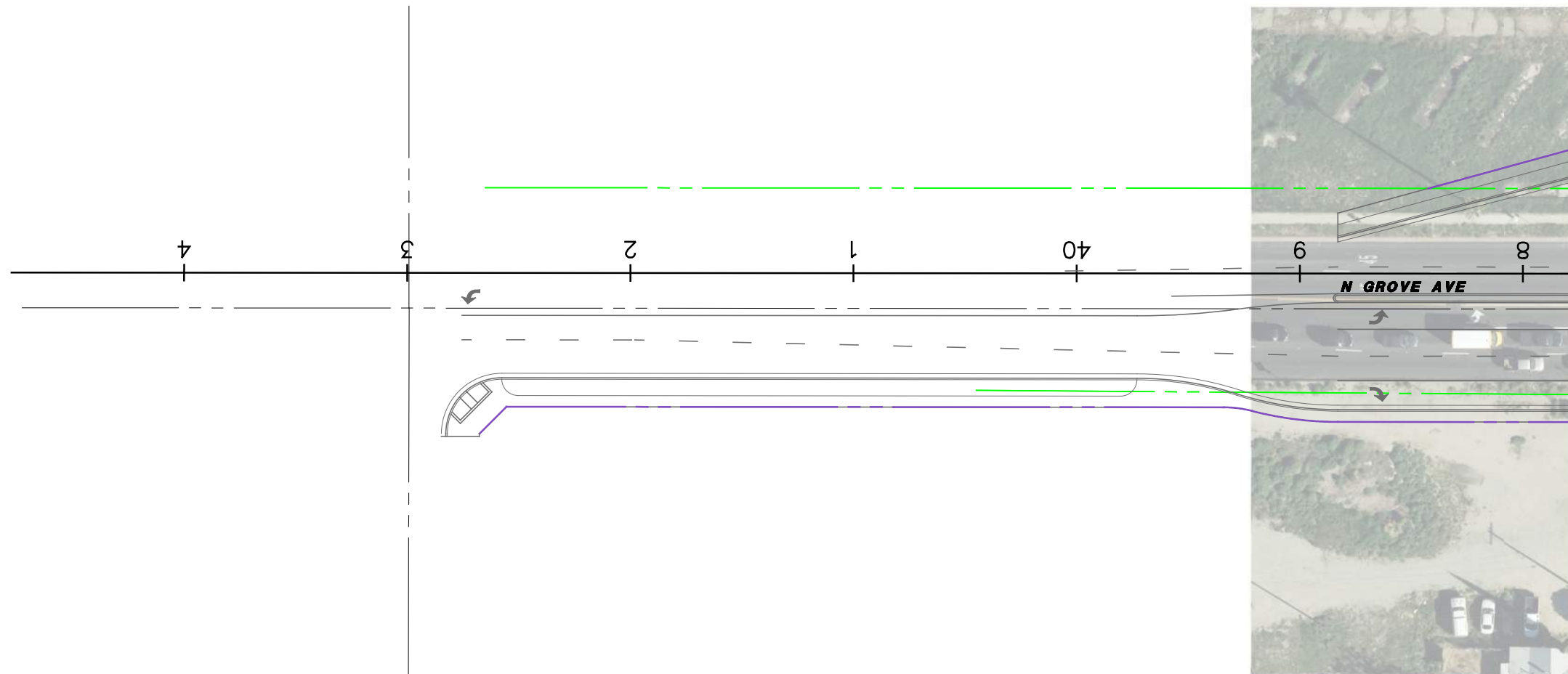
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WEST VALLEY CONNECTOR CORRIDOR
PARSONS

DRAFT PRELIMINARY DRAINAGE PLANS

SCALE NTS
 SHEET # C-018



LEGEND	
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	EXISTING INLET
	EXISTING MANHOLE
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	PROPOSED STORM DRAIN, >30"
	PROPOSED INLET
	PROPOSED MANHOLE

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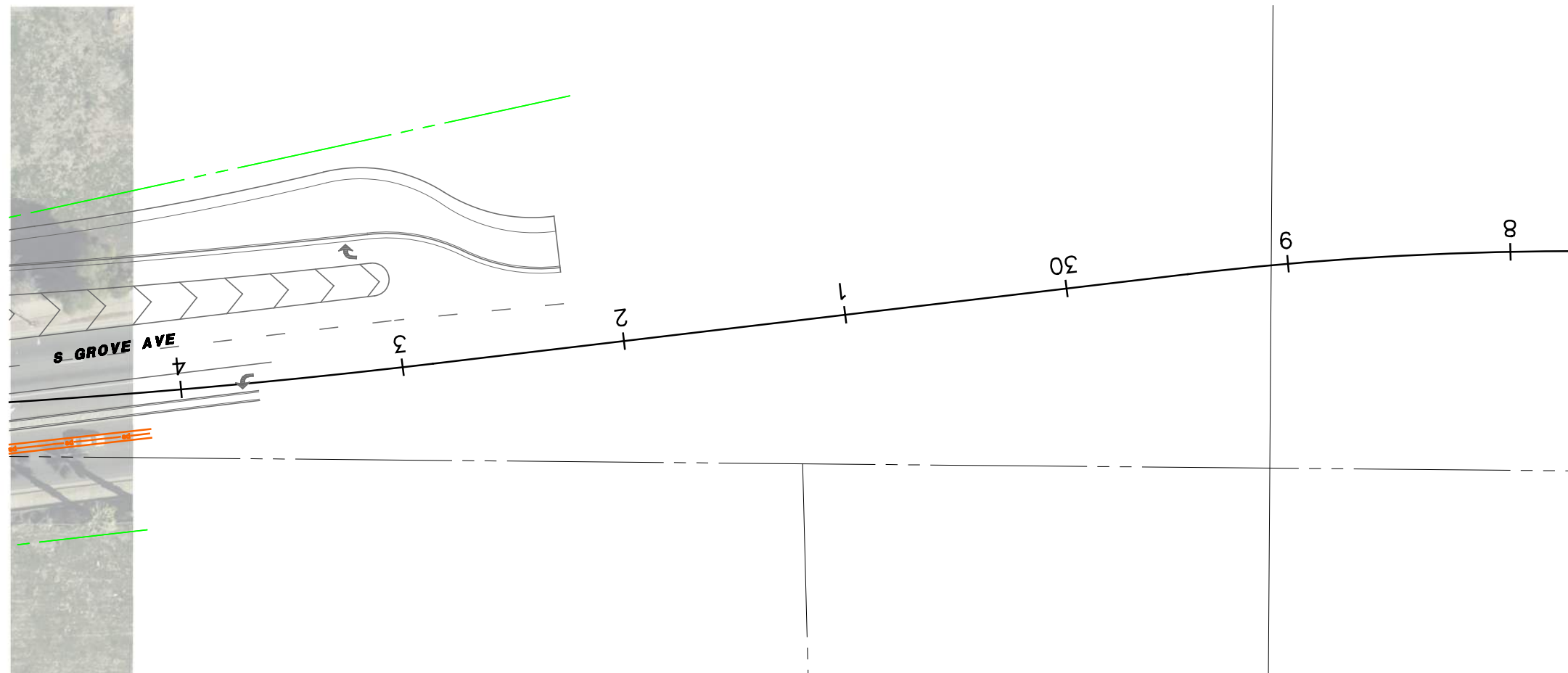


WEST VALLEY CONNECTOR CORRIDOR
PARSONS

**DRAFT PRELIMINARY
DRAINAGE PLANS**

SCALE	NTS
SHEET #	C-019

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LEGEND	
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	EXISTING INLET
	EXISTING MANHOLE
	PROPOSED STORM DRAIN, $\leq 30''$
	PROPOSED STORM DRAIN, >30''
	PROPOSED INLET
	PROPOSED MANHOLE

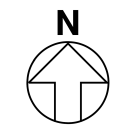
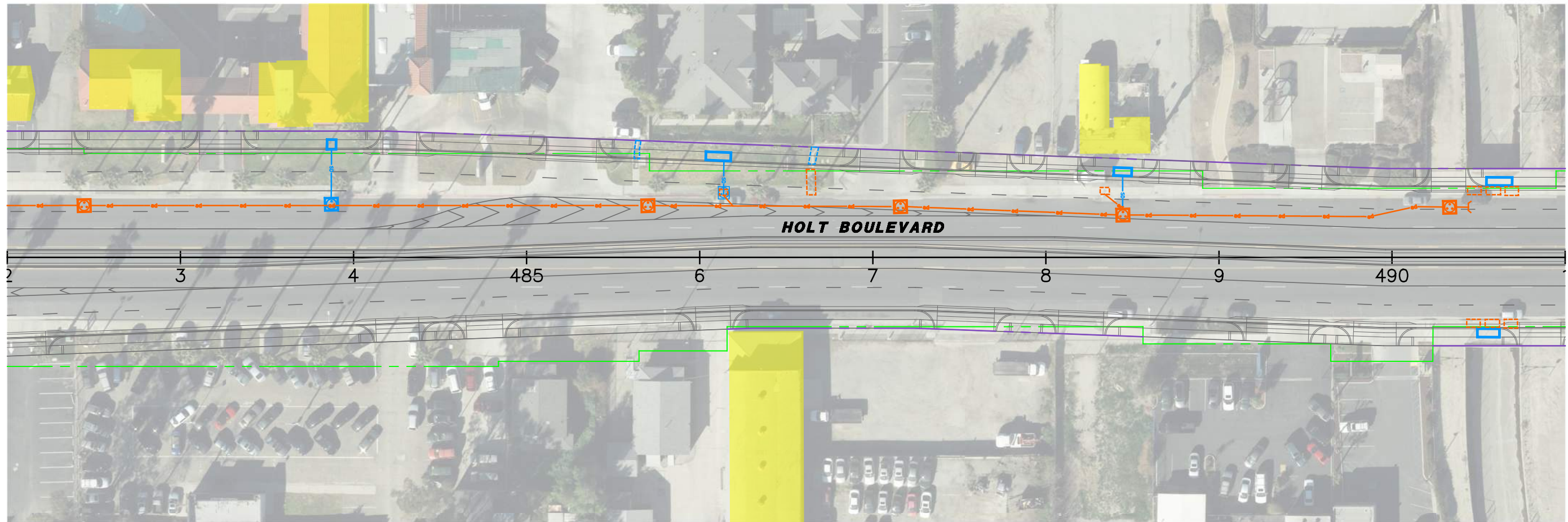


WEST VALLEY CONNECTOR CORRIDOR
PARSONS

**DRAFT PRELIMINARY
 DRAINAGE PLANS**

SCALE NTS
 SHEET # C-020

8/25/2016 4:30:42 PM c:\pwworking\california\p00863b\dms81831\c-021.dgn



LEGEND	
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	EXISTING STORM DRAIN, >30"
	EXISTING INLET
	EXISTING MANHOLE
	PROPOSED STORM DRAIN, ≤30"
	PROPOSED STORM DRAIN, >30"
	PROPOSED INLET
	PROPOSED MANHOLE

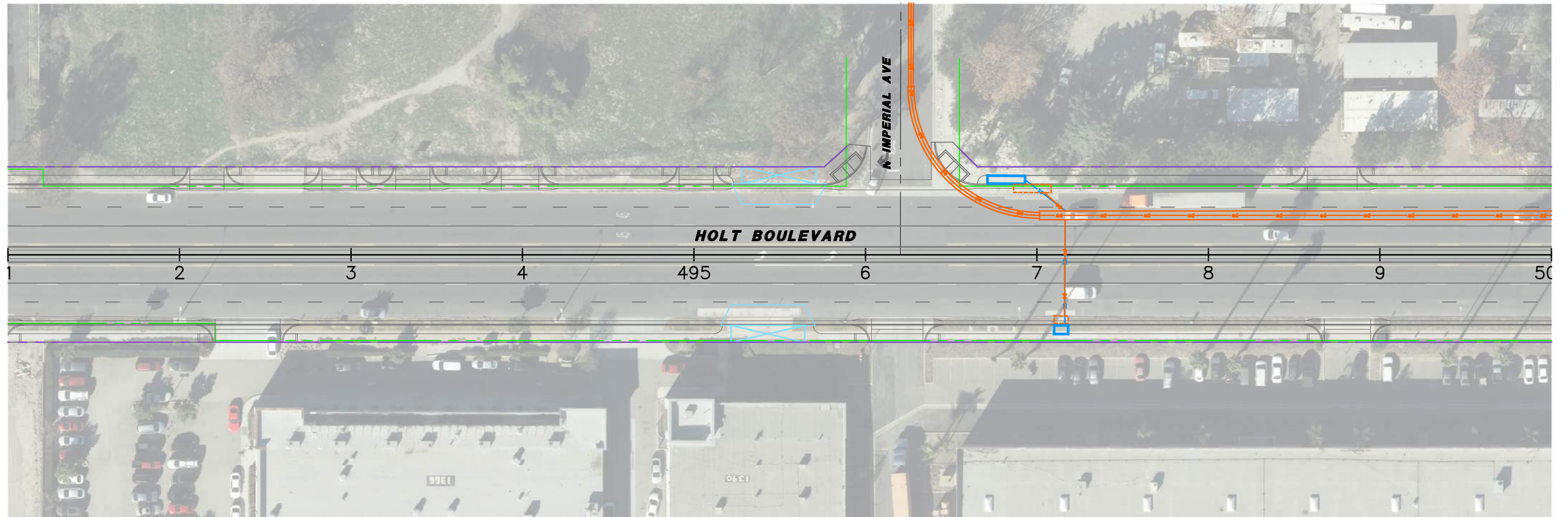


WEST VALLEY CONNECTOR CORRIDOR
PARSONS

**DRAFT PRELIMINARY
 DRAINAGE PLANS**

SCALE NTS
 SHEET # C-021

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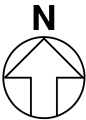
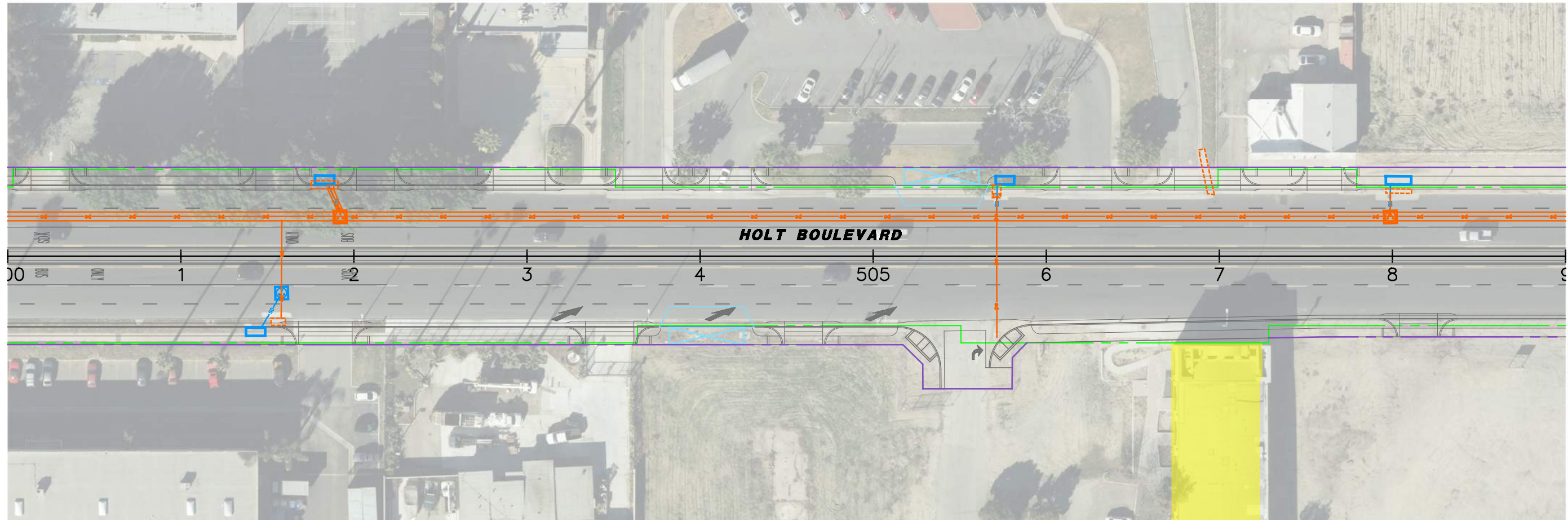
LEGEND	
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	EXISTING INLET
	EXISTING MANHOLE
	PROPOSED STORM DRAIN, ≤30"
	PROPOSED INLET
	PROPOSED MANHOLE



WEST VALLEY CONNECTOR CORRIDOR
PARSONS

**DRAFT PRELIMINARY
 DRAINAGE PLANS**

SCALE NTS
 SHEET # C-022



LEGEND	
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	EXISTING STORM DRAIN, >30"
	EXISTING INLET
	EXISTING MANHOLE
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	PROPOSED INLET
	PROPOSED MANHOLE

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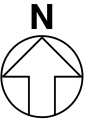
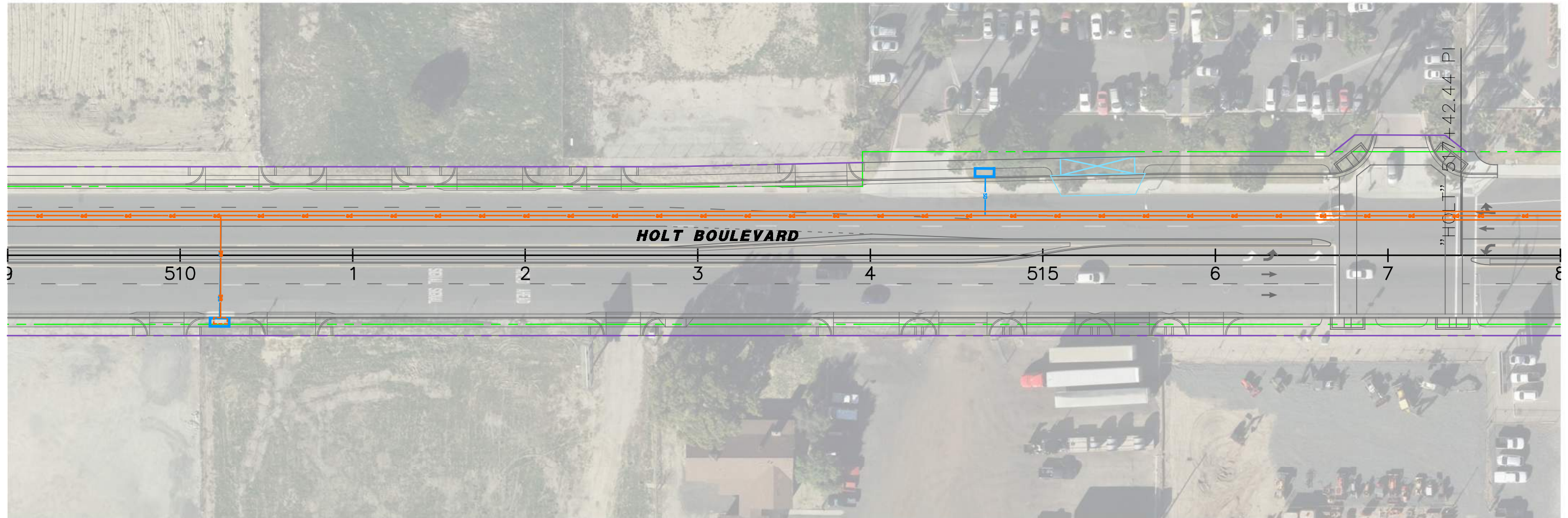
WEST VALLEY CONNECTOR CORRIDOR



DRAFT PRELIMINARY DRAINAGE PLANS

SCALE	NTS
SHEET #	C-023

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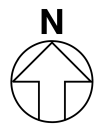
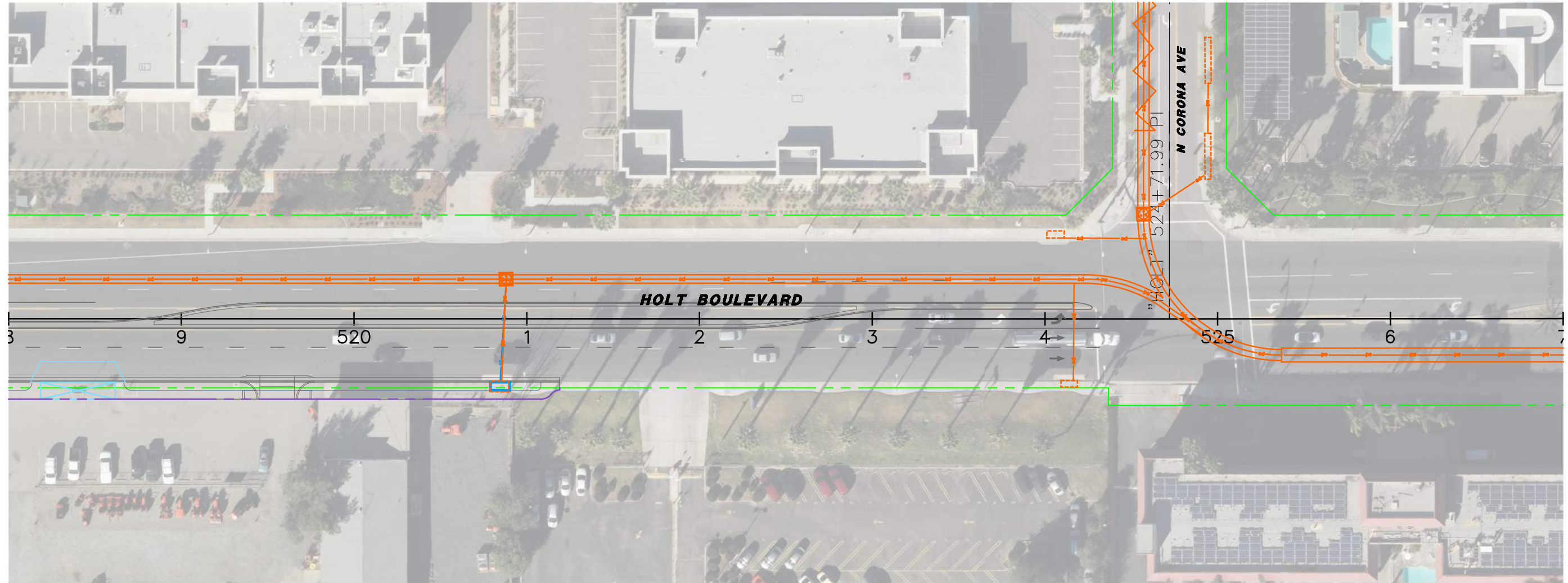
LEGEND	
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	EXISTING INLET
	EXISTING MANHOLE
	PROPOSED STORM DRAIN, ≤30"
	PROPOSED STORM DRAIN, >30"
	PROPOSED INLET
	PROPOSED MANHOLE



WEST VALLEY CONNECTOR CORRIDOR
PARSONS

**DRAFT PRELIMINARY
 DRAINAGE PLANS**

SCALE NTS
 SHEET # C-024



LEGEND	
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	EXISTING STORM DRAIN, >30"
	EXISTING INLET
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	PROPOSED INLET
	PROPOSED MANHOLE

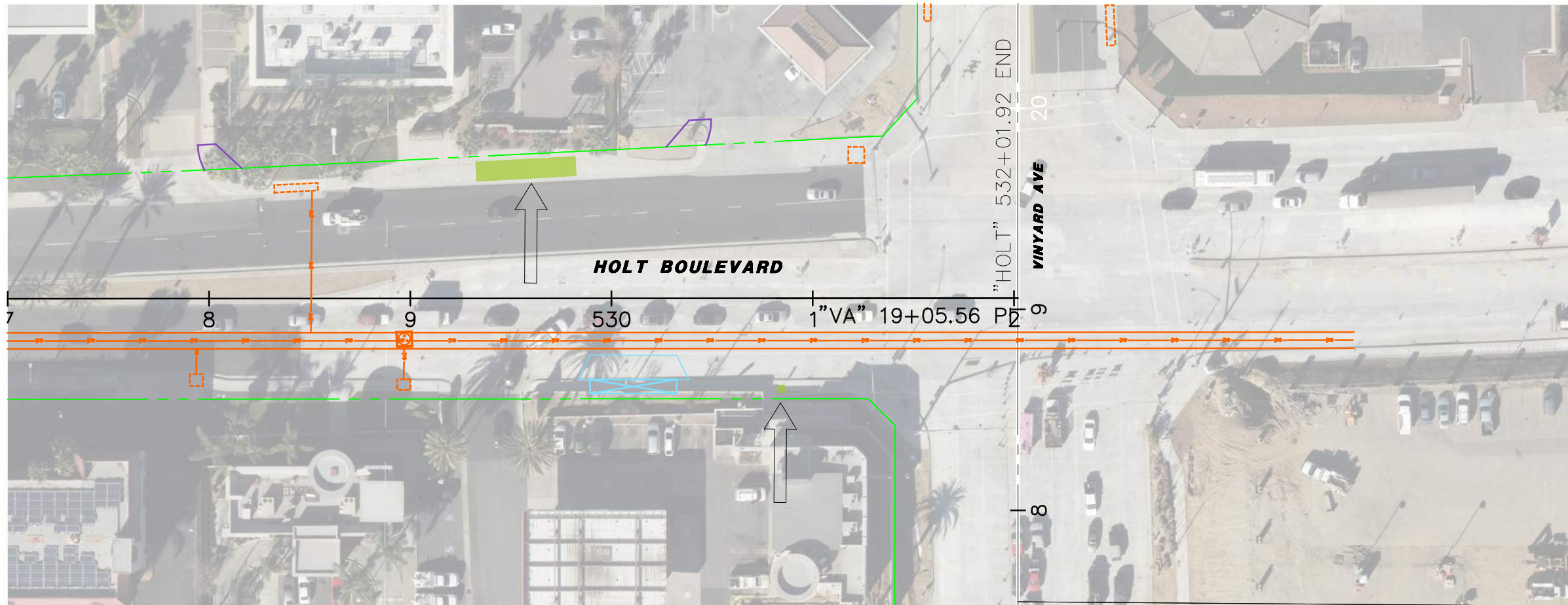
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WEST VALLEY CONNECTOR CORRIDOR
PARSONS

DRAFT PRELIMINARY DRAINAGE PLANS

SCALE NTS
 SHEET # C-025



LEGEND	
	EXISTING STORM DRAIN, ≤30"
	EXISTING STORM DRAIN, >30"
	EXISTING INLET
	EXISTING MANHOLE
	PROPOSED STORM DRAIN, ≤30"
	PROPOSED STORM DRAIN, >30"
	PROPOSED INLET
	PROPOSED MANHOLE



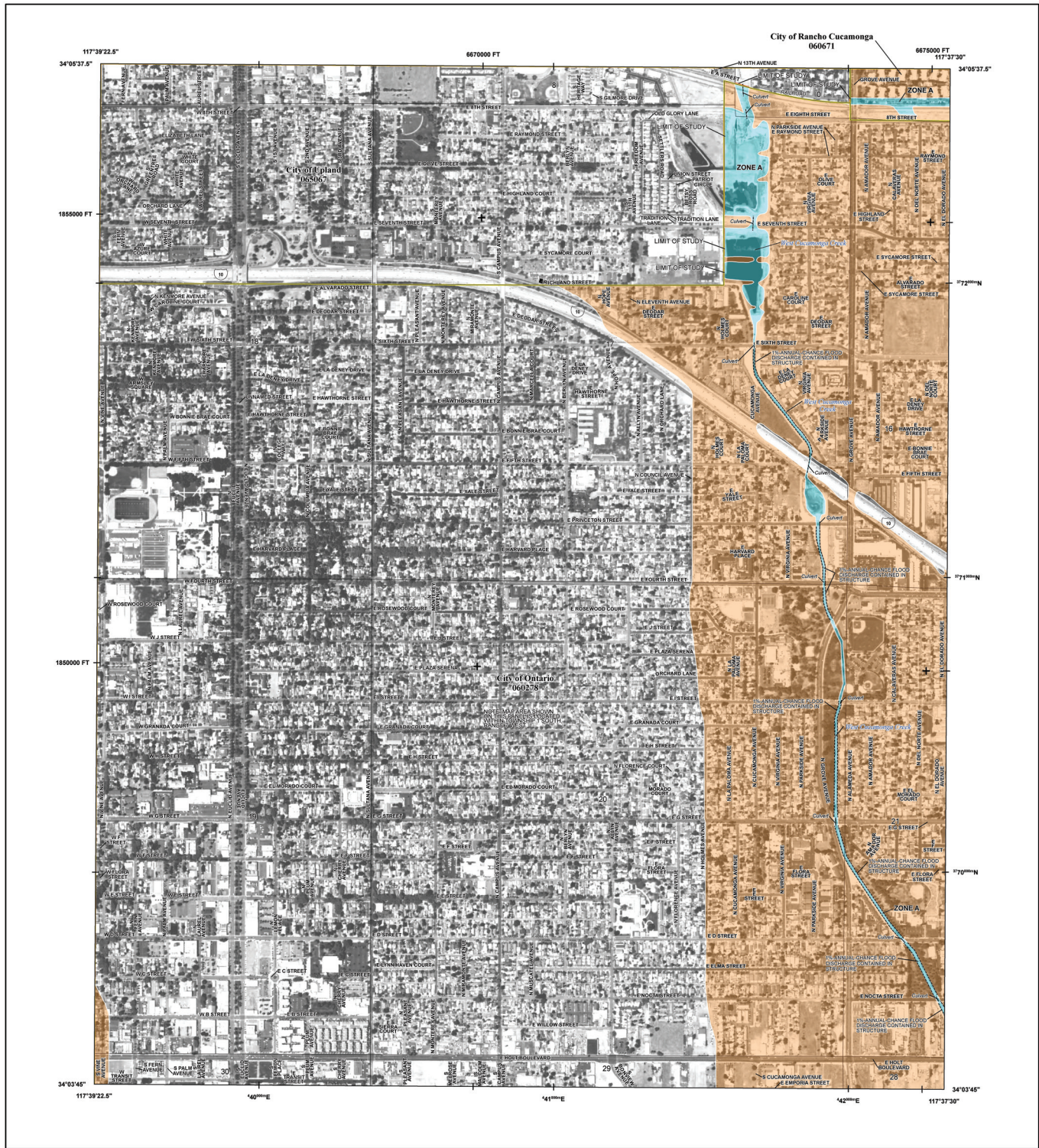
WEST VALLEY CONNECTOR CORRIDOR
PARSONS

**DRAFT PRELIMINARY
 DRAINAGE PLANS**

SCALE NTS
 SHEET # C-026

West Valley Connector BRT Project - FEMA FIRM Summary

<u>Channel</u>	<u>Firm Map</u>	<u>Nearest Intersection</u>
West Cucamonga Channel	06071C8609J 06071C8628J	Holt and Grove Ave
<u>Other Non-Affected Channels</u>	<u>Firm Map</u>	<u>Nearest Intersection</u>
San Antonio Channel	06037C1750F 06071C8615H	Holt and Mills Ave
Cucamonga Channel	06071C8628J 06071C8630J	Holt and N Vineyard
Deer Creek Channel	06071C8628J 06071C8629H 06071C8630J	Combines with Cucamonga
Day Creek	06071C8635J	Foothill Blvd and Day Creek Blvd
Etiwanda Creek Channel	06071C8635J	Foothill Blvd and East Ave



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT [HTTP://MSC.FEMA.GOV](http://MSC.FEMA.GOV)

- SPECIAL FLOOD HAZARD AREAS**
 - Without Base Flood Elevation (BFE)
 - With BFE or Depth Zone AE, AO, AH, VE, AR
 - Regulatory Floodway
- OTHER AREAS OF FLOOD HAZARD**
 - 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
 - Future Conditions 1% Annual Chance Flood Hazard Zone X
 - Area with Reduced Flood Risk due to Levee See Notes Zone X
 - NO SCREEN Areas of Minimal Flood Hazard Zone X
 - Area of Undetermined Flood Hazard Zone D
- OTHER AREAS**
 - Channel, Culvert or Storm Sewer Accredited or Provisionally Accredited Levee, Dike or Floodwall
 - Non-accredited Levee, Dike or Floodwall
 - Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
 - Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
 - Coastal Tract
 - Coastal Tract Baseline
 - Profile Baseline
 - Hydrographic Feature
 - Base Flood Elevation Line (BFE)
 - Limit of Study
 - Jurisdiction Boundary
- GENERAL STRUCTURES**
- OTHER FEATURES**

NOTES TO USERS

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

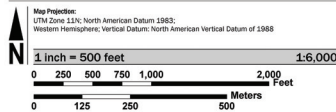
Communities requesting land on adjacent FIRMs panels must obtain a current copy of the adjacent panel as well as the current FIRMs index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to 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 1-800-438-6620.

Base map information shown on this FIRMs was derived from digital orthophotography collected by the U.S. Department of Agriculture Farm Service Agency. This imagery was flown in 2012 and was produced with a 1-meter ground sample distance.

SCALE



PANEL LOCATOR

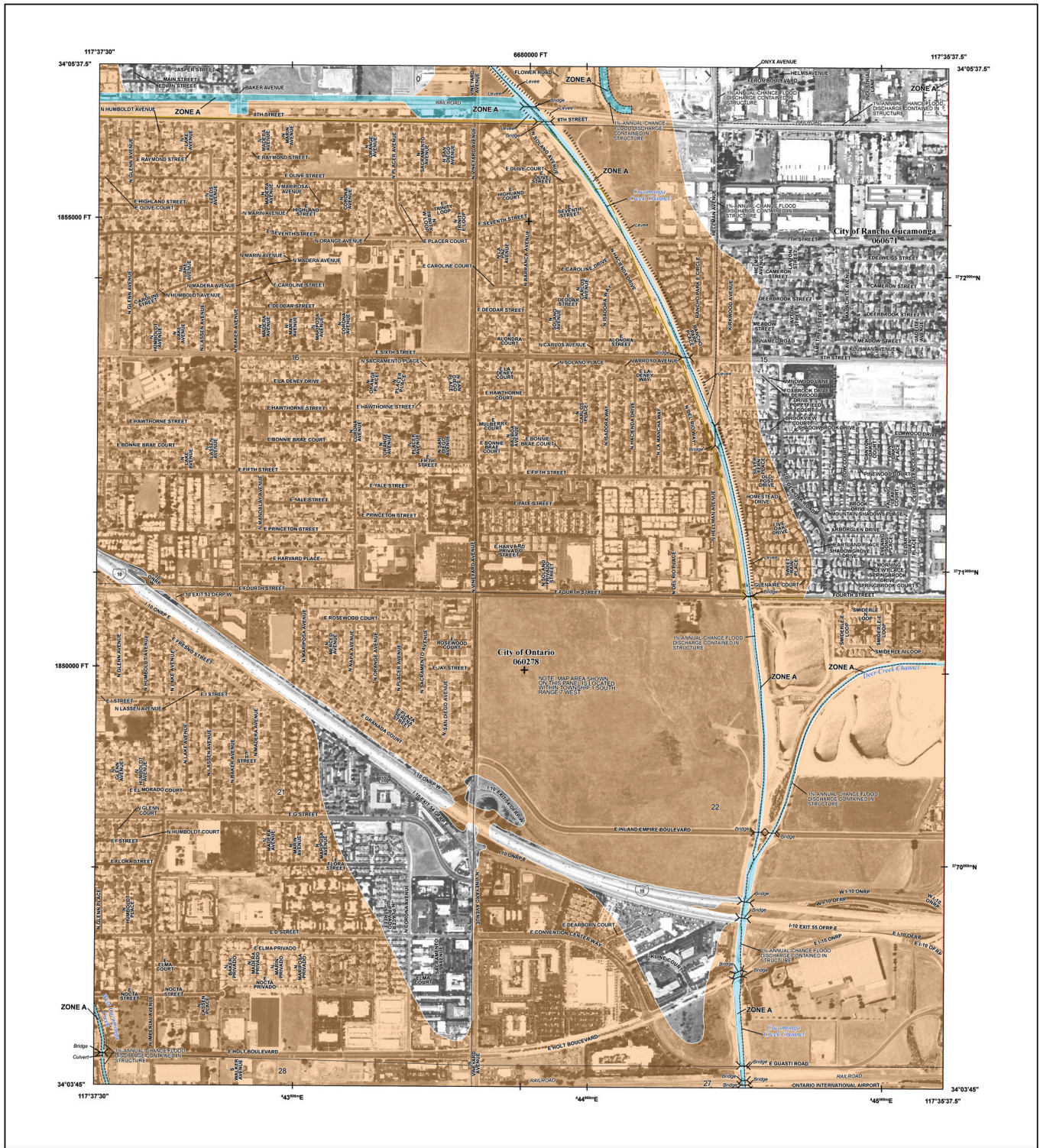


NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA
 and Incorporated Areas
 Panel 8009 of 9400

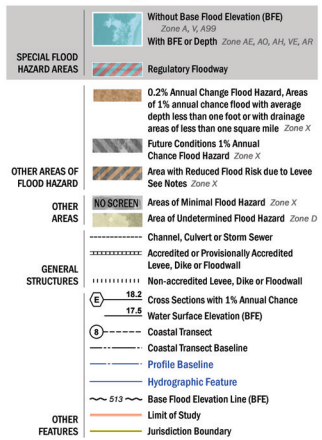
COMMUNITY	NUMBER	PANEL	SUFFIX
ONTARIO, CITY OF	060278	8609	J
RANCHO CUCAMONGA, CITY OF	060671	8609	J
UPLAND, CITY OF	060967	8609	J

VERSION NUMBER
2.3.2.3
 MAP NUMBER
06071C8609J
 MAP REVISED
FEBRUARY 18, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT
 THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING
 DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
[HTTP://MSC.FEMA.GOV](http://MSC.FEMA.GOV)



NOTES TO USERS

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

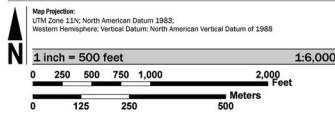
Communities entering land on adjacent FIRI panels must obtain a current copy of the adjacent panel as well as the current FIRI index. These may be ordered directly from the Map Service Center at the number listed above.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-438-6620.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

Base map information shown on this FIRI was derived from digital orthophotography collected by the U.S. Department of Agriculture Farm Service Agency. This imagery was flown in 2012 and was produced with a 1-meter ground sample distance.

SCALE



PANEL LOCATOR



FEMA
 National Flood Insurance Program

**NATIONAL FLOOD INSURANCE PROGRAM
 FLOOD INSURANCE RATE MAP**

SAN BERNARDINO COUNTY, CALIFORNIA
 and Incorporating Areas
 Panel 8628 of 9400

Panel Contains:
 COMMUNITY: ONTARIO, CITY OF
 RANCHO CUCAMONGA, CITY OF

NUMBER: 06028
 PANEL: 8628
 SUFFIX: J

VERSION NUMBER: 2.3.2.3
 MAP NUMBER: 06071C8628J
 MAP REVISED: FEBRUARY 18, 2015

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, NNGS12
National Geodetic Survey
SSMC-3, #6202
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 U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1994 or later and from National Geospatial Intelligence Agency imagery produced at a scale of 1:4,000 from photography dated 2003 or later.

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.

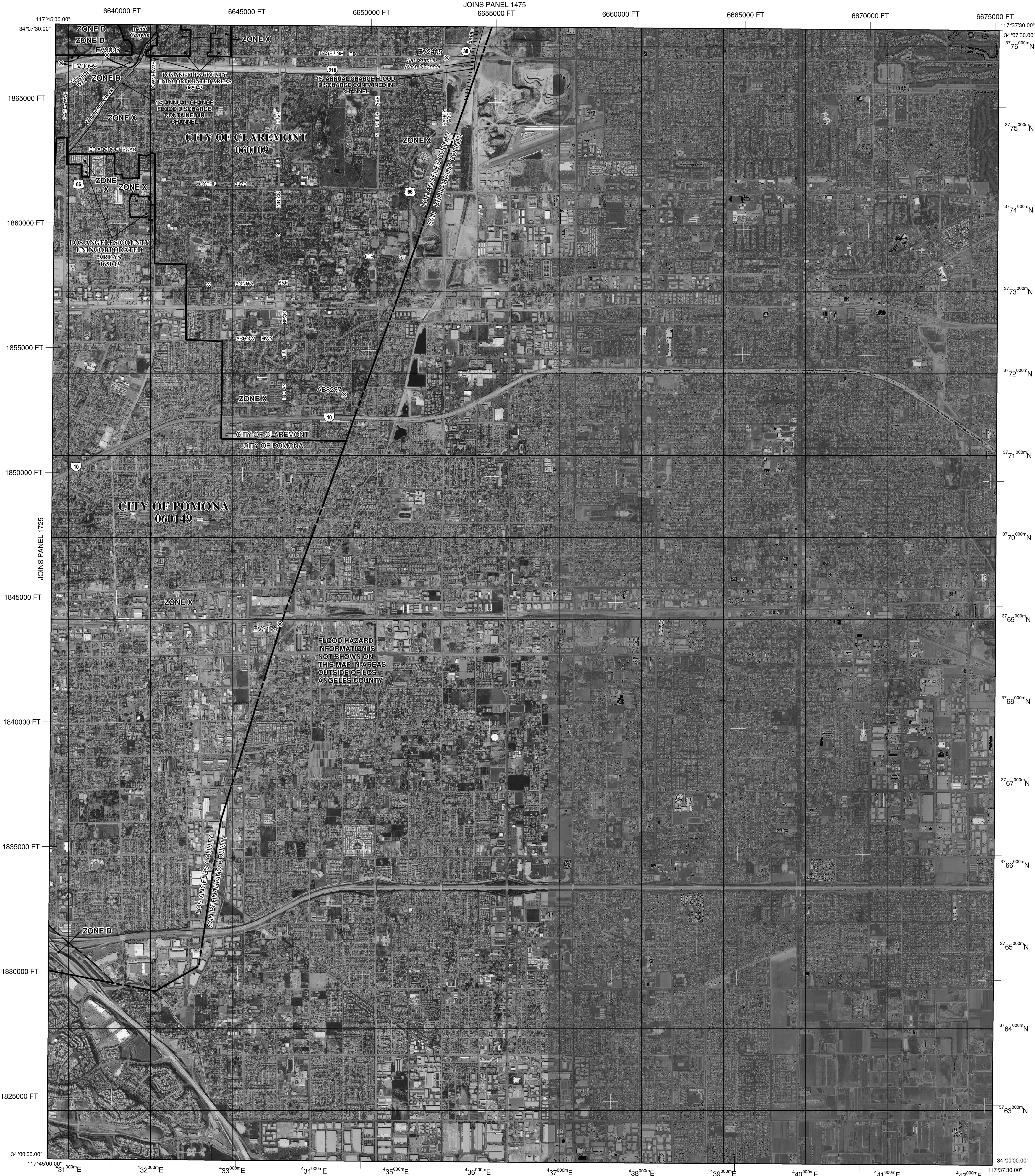
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

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/>.

WARNING: This levee, dike, or other structure has 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 October 16, 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.



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.
- 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)

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
September 26, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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

M1.5
River Mile

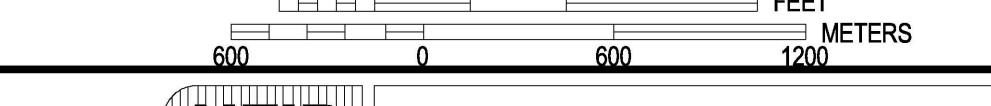
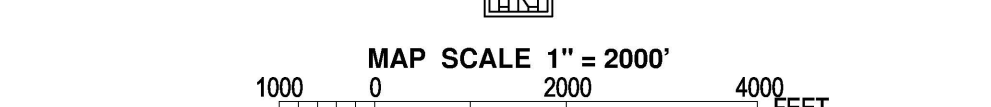
MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
September 26, 2008

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.



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1750F

FIRM FLOOD INSURANCE RATE MAP

LOS ANGELES COUNTY, CALIFORNIA

AND INCORPORATED AREAS

PANEL 1750 OF 2350
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LOS ANGELES COUNTY	065043	1750	F
CLAREMONT, CITY OF	060109	1750	F
POMONA, CITY OF	060149	1750	F

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
06037C1750F

EFFECTIVE DATE
SEPTEMBER 26, 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 to 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, NNG512
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.

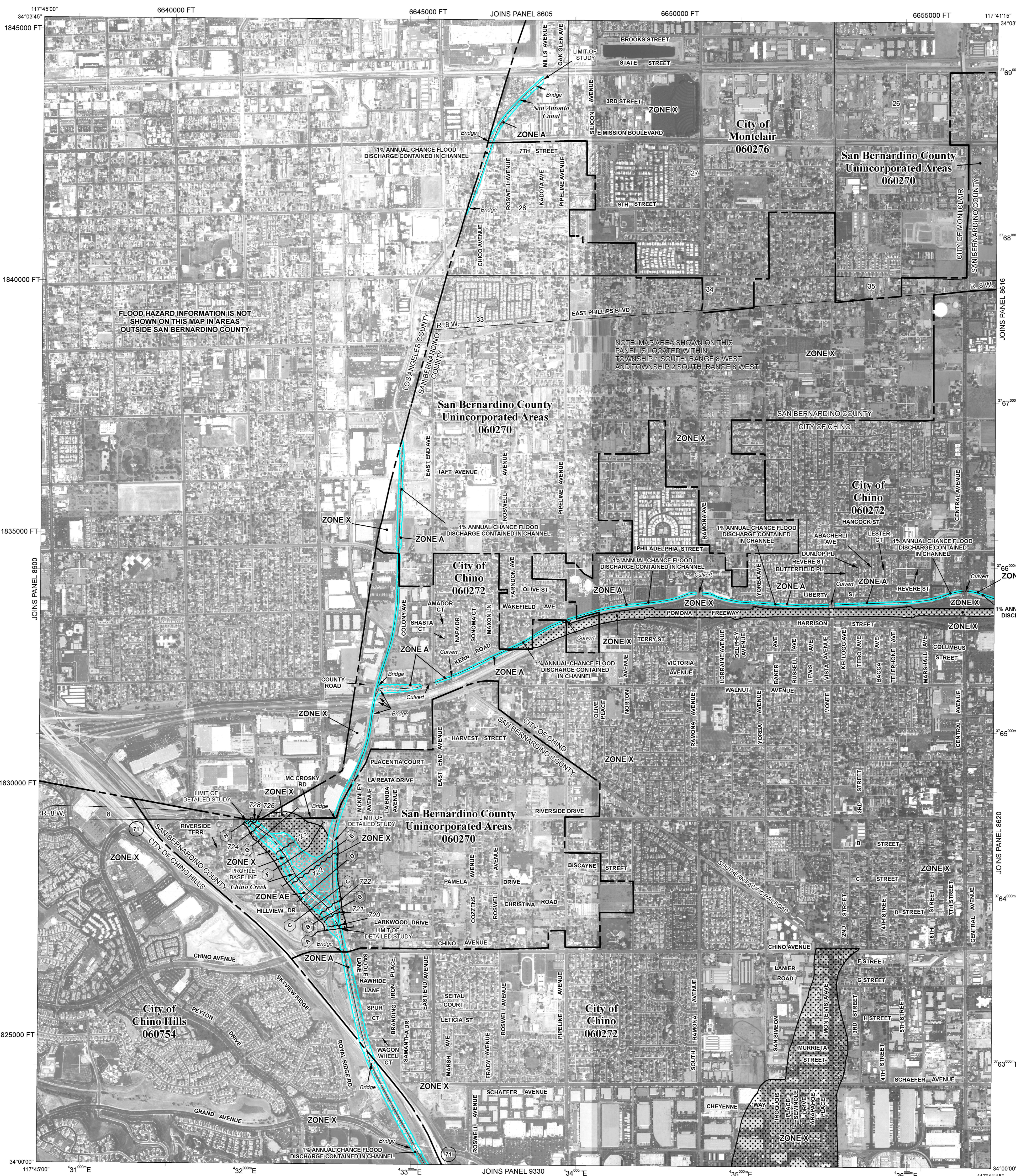
This map may reflect more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, 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.

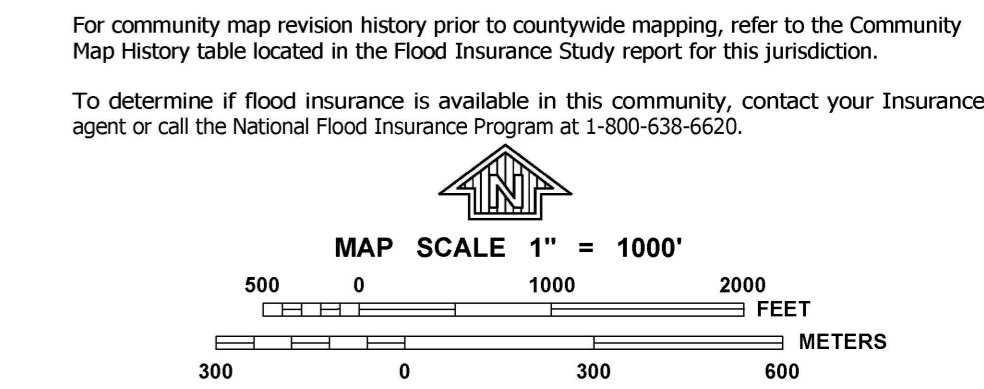
Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also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



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, AD, 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 derelict. 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.
- 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
- Cross section line
- Transect line
- Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 1000-meter Universal Transverse Mercator grid values, zone 11*
- 600000 FT
- 5000-foot grid ticks; California State Plane coordinate system, zone V (FPSZONE 0405), Lambert Conformal Conic projection
- Bench mark (see explanation in Notes to Users section of this FIRM panel)
- River Mile
- MAP REPOSITORY
- Refer to listing of Map Repositories on Map Index
- EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
- March 18, 1998
- 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.



PANEL 8615H

FIRM
FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA AND INCORPORATED AREAS
PANEL 8615 OF 9400
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

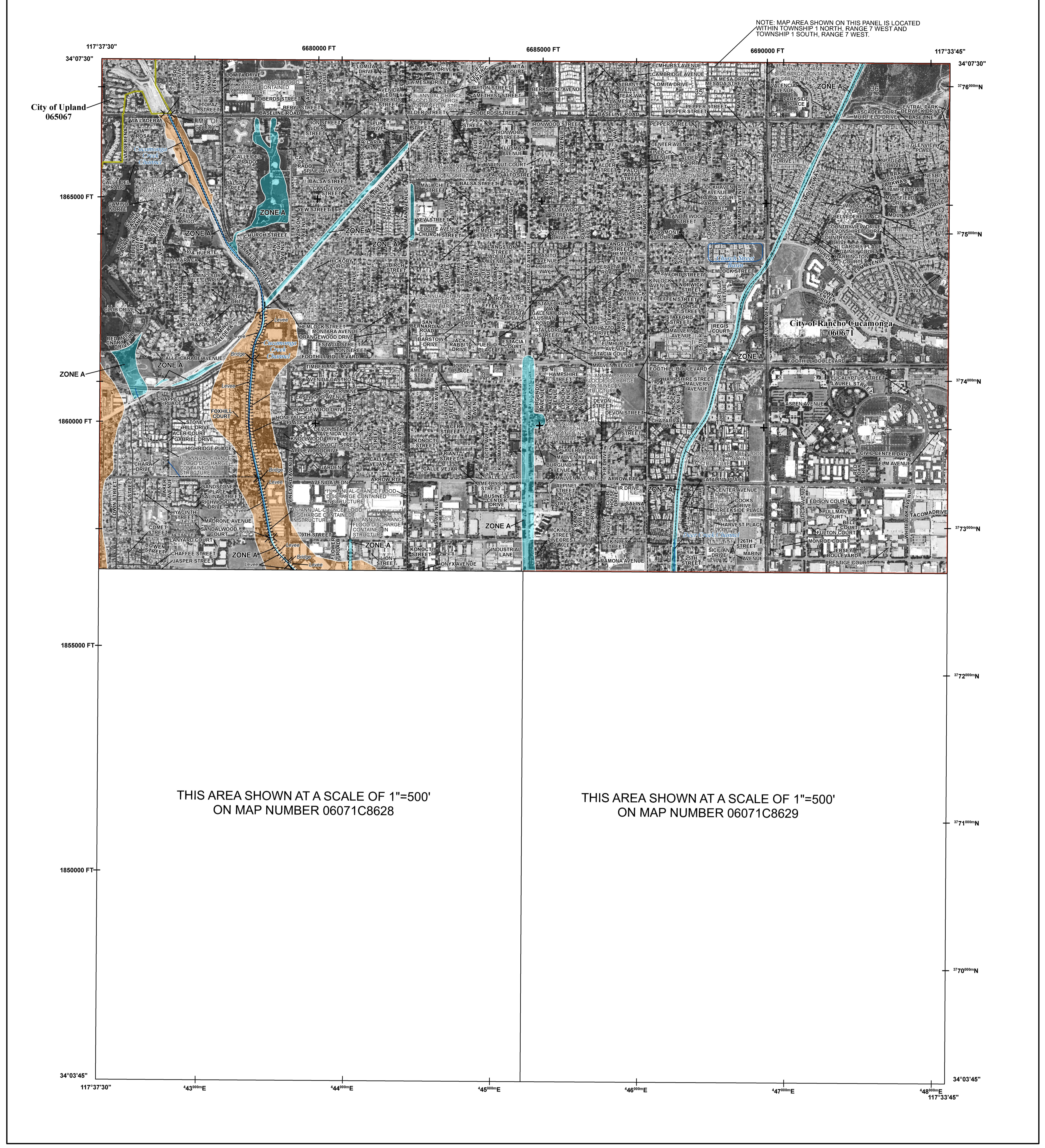
CONTAINS	COMMUNITY	NUMBER	PANEL	SUFFIX
	CHINO HILLS, CITY OF	060754	8615	H
	CHINO, CITY OF	060272	8615	H
	MONTCLAIR, CITY OF	060276	8615	H
	SAN BERNARDINO COUNTY	060270	8615	H

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
06071C8615H

MAP REVISED
AUGUST 28, 2008

Federal Emergency Management Agency



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT [HTTP://MSC.FEMA.GOV](http://msc.fema.gov)

	Without Base Flood Elevation (BFE) Zone A, V, A99
	With BFE or Depth Zone AE, AO, AH, VE, AR
	Regulatory Floodway
	0.2% Annual Change Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
	Future Conditions 1% Annual Chance Flood Hazard Zone X
	Area with Reduced Flood Risk due to Levee See Notes Zone X
	Areas of Minimal Flood Hazard Zone X
	Area of Undetermined Flood Hazard Zone D
	Channel, Culvert or Storm Sewer
	Accredited or Provisionally Accredited Levee, Dike or Floodwall
	Non-accredited Levee, Dike or Floodwall
	Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-338-2627) or visit the FEMA Map Service Center website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

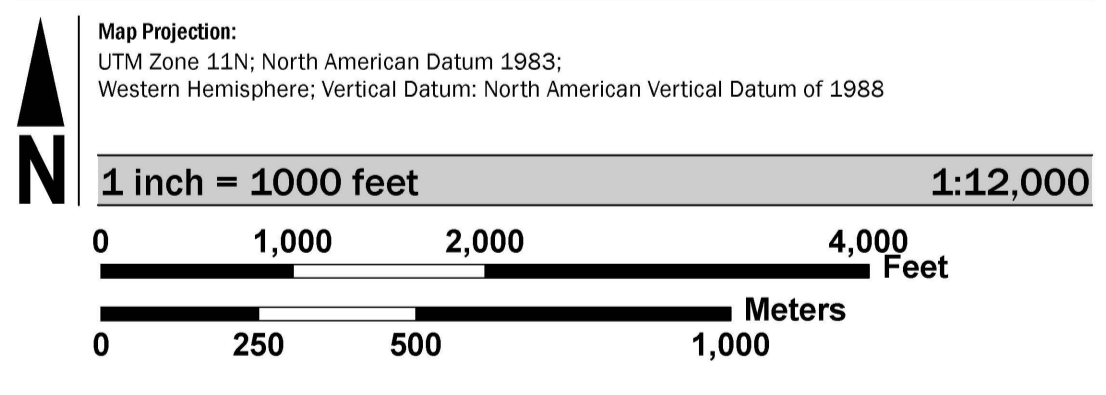
Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

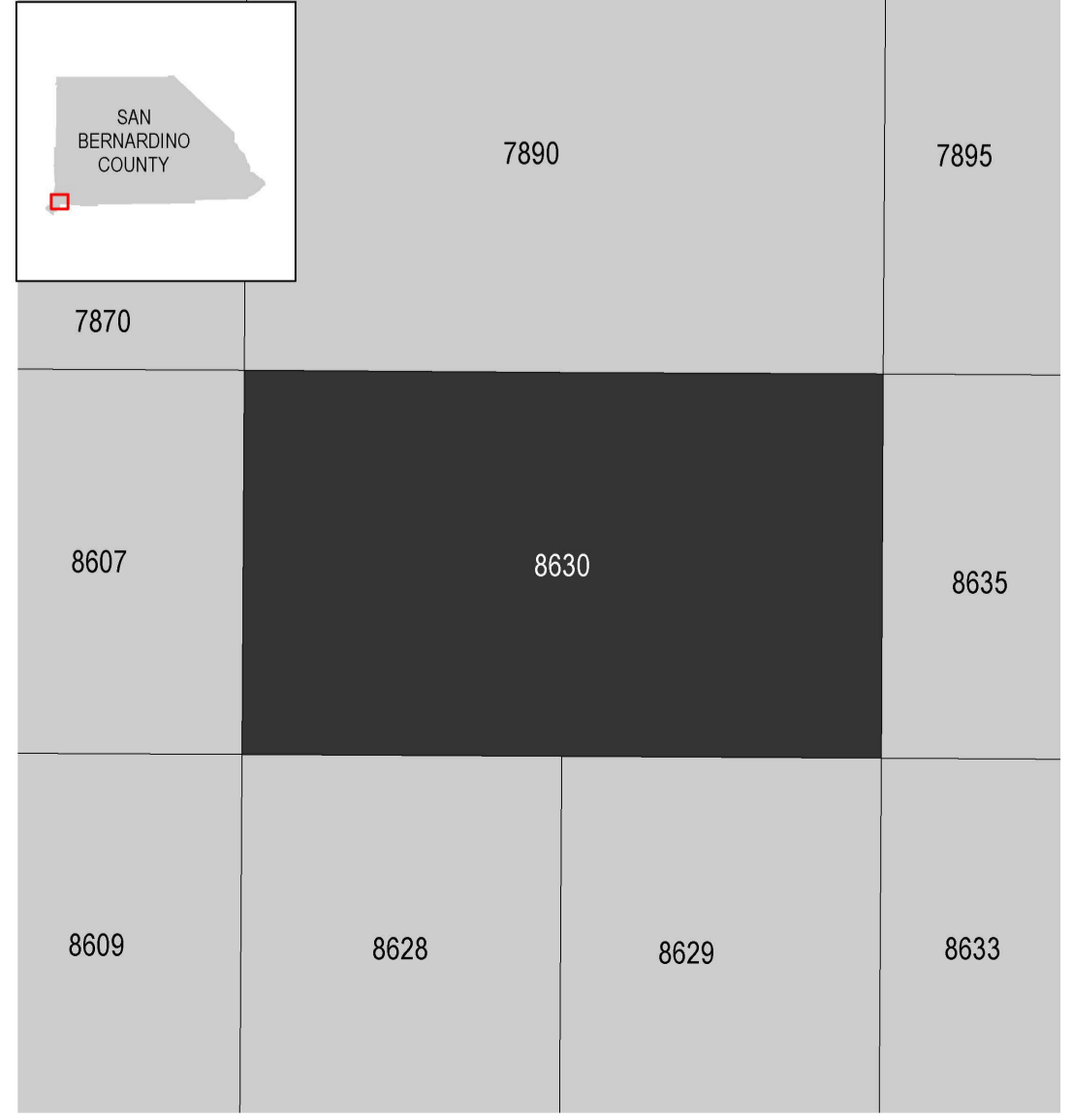
To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

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 2012 and was produced with a 1-meter ground sample distance.

SCALE



PANEL LOCATOR



FEMA
 National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
 FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA
 and Incorporated Areas
 Panel 8630 of 9400

Panel Contains:
 COMMUNITY NUMBER PANEL SUFFIX
 RANCHO CUCAMONGA, CITY OF 060671 8630 J
 UPLAND, CITY OF 065067 8630 J

VERSION NUMBER 2.32.3
 MAP NUMBER 06071C8630J
 MAP REVISED FEBRUARY 18, 2015

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, NNG512
 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.

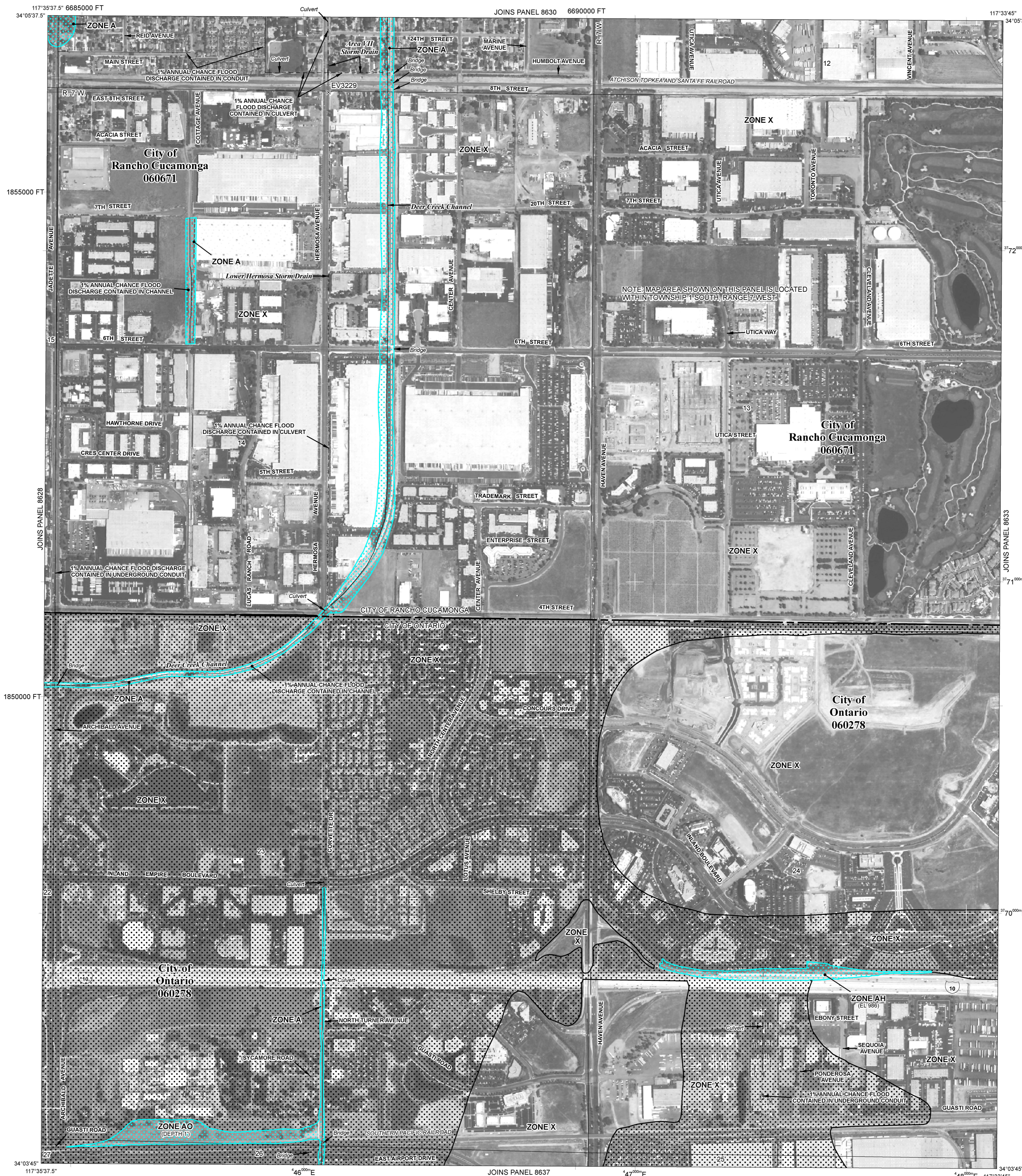
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Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community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

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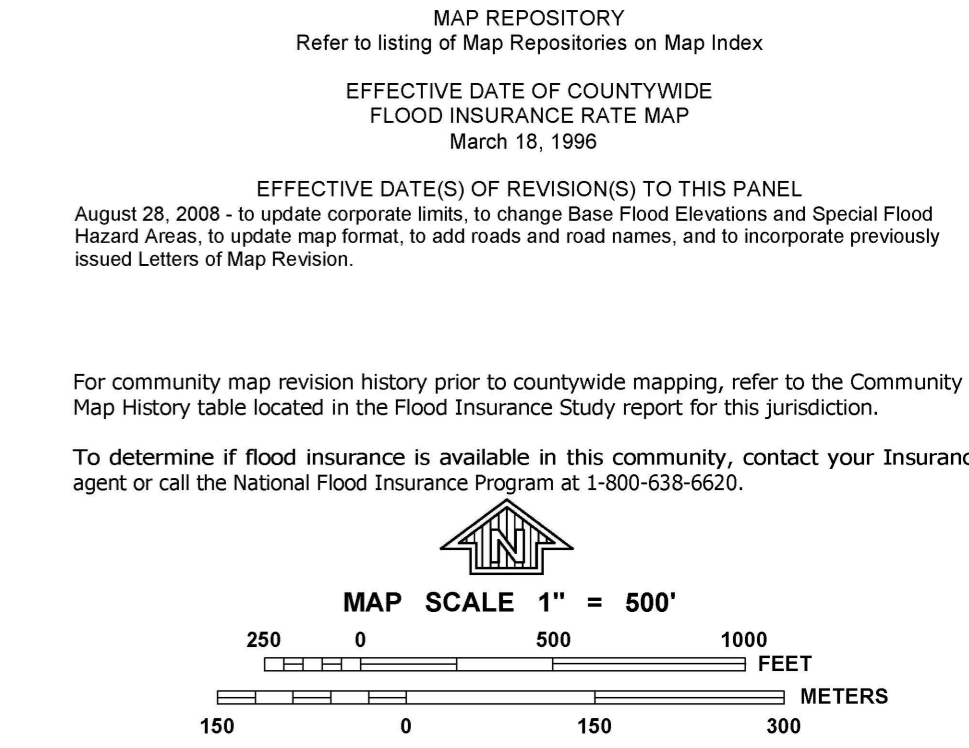
Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also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



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 identified. 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 XE** 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 boundaries dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*
- * Referenced to the North American Vertical Datum of 1988
- Cross section line
- Transsect line
- 87° 07' 45", 32° 22' 30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 76° 00' 00" 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 x 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 COUNTY-WIDE 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.



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)

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

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

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

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

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11 North. The horizontal datum was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane 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, NNGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

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

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

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

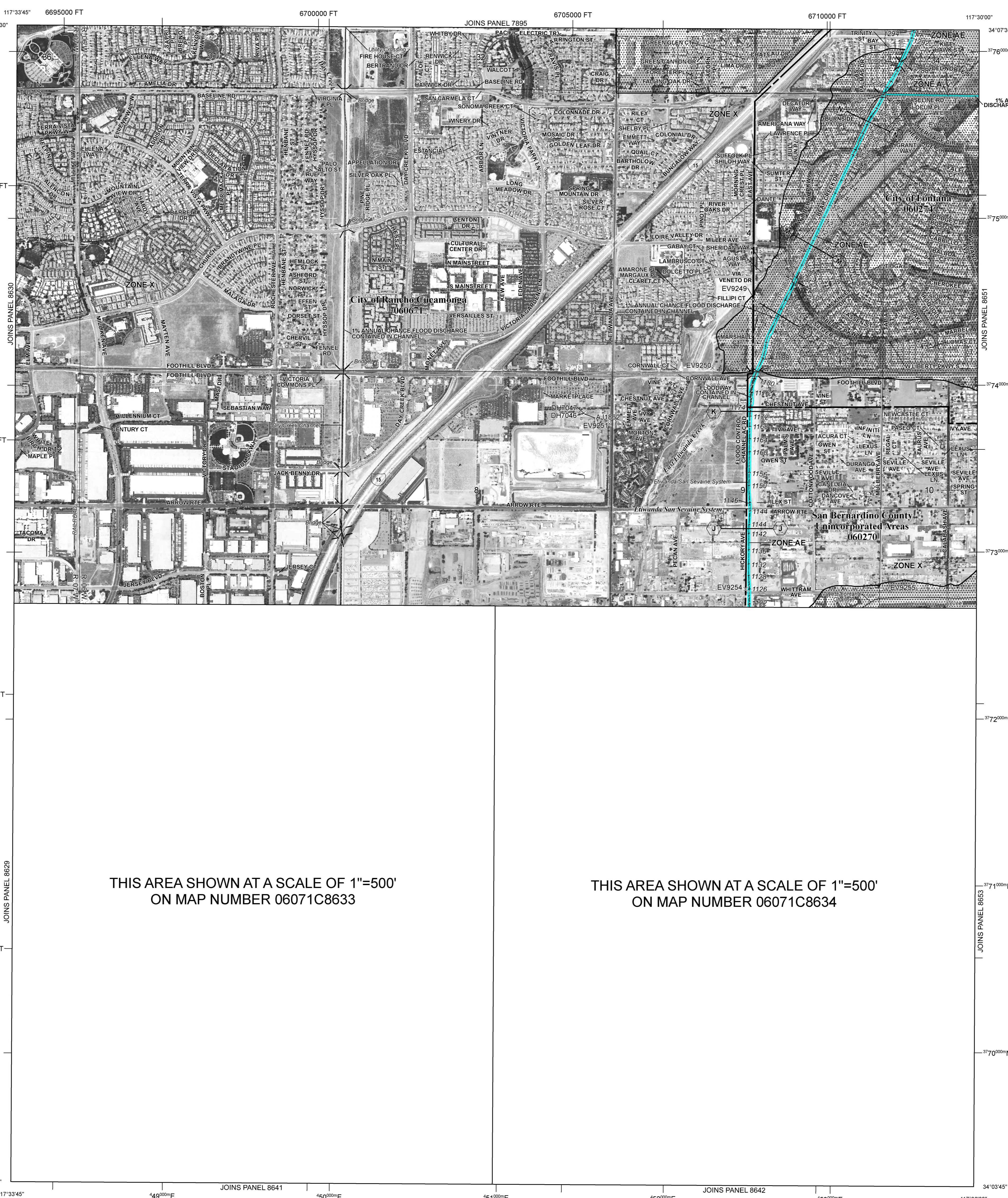
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

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

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

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.



THIS AREA SHOWN AT A SCALE OF 1"=500'
ON MAP NUMBER 06071C8633

THIS AREA SHOWN AT A SCALE OF 1"=500'
ON MAP NUMBER 06071C8634

LEGEND

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

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

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

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

OTHER FLOOD AREAS

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

OTHER AREAS

- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 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

Cross section line

Transect line

Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

1000-meter Universal Transverse Mercator grid values, zone 11

5000-foot grid ticks: California State Plane coordinate system, Zone V (FIPSZONE = 405), Lambert projection

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

MAP REPOSITORIES

Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

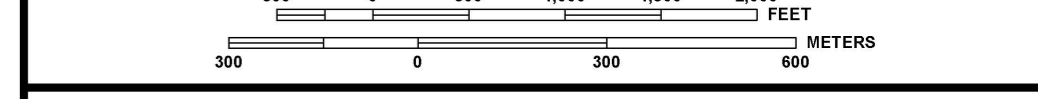
March 18, 1996

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

September 26, 2014, for a description of revisions, see Notice to Users page in the Flood Insurance Study report.

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.



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 8635J

FIRM

FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 8635 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FONTANA, CITY OF	060274	8635	J
RANCHO CUCAMONGA, CITY OF	060671	8635	J
SAN BERNARDINO COUNTY	060270	8635	J

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

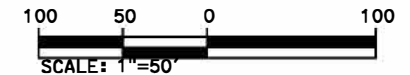
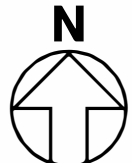
MAP NUMBER 06071C8635J

MAP REVISED SEPTEMBER 26, 2014

Federal Emergency Management Agency

**APPENDIX B – PROPOSED ROADWAY IMPROVEMENTS
ADJACENT TO FLOODPLAINS**

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 8/22/2016 4:41:52 PM



LEGEND

- | | | | |
|--|--------------------------------------|--|-----------------------------|
| | EXISTING RIGHT OF WAY | | FULL BUILDING ACQUISITION |
| | PROPOSED RIGHT OF WAY | | HOT MIX ASPHALT PAVEMENT |
| | PROPERTY LINE | | CONCRETE PAVEMENT |
| | LOCAL BUS STOP | | DRIVEWAY |
| | SIDEWALK | | CENTER RUNNING STATION |
| | LANDSCAPE | | NEW PARKWAY TREES |
| | RAISED MEDIAN | | NEW PARKWAY TREES BY OTHERS |
| | BUILDING TO REMAIN | | MEDIAN TREES |
| | EMERGENCY FIRE ACCESS (ROLLING CURB) | | |



WEST VALLEY CONNECTOR CORRIDOR



PROPOSED ROADWAY IMPROVEMENTS ADJACENT TO FLOOD PLAINS

SCALE 1" = 50'
SHEET #

APPENDIX C – LOCATION HYDRAULIC STUDY FORM

LOCATION HYDRAULIC STUDY FORM *

Dist. 8 Co.SB Rte.- P.M.-
EA - Bridge No.

Floodplain Description:

West Cucamonga Channel

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

Local street improvements along Holt Boulevard including roadway widening, grading, and culverts.

2. ADT: Current 1,880 Projected 2,523

3. Hydraulic Data: Base Flood Q₁₀₀=2,244 CFS
WSE₁₀₀=972.55' The flood of record, if greater than Q₁₀₀:
Q=unknown CFS WSE=unknown
Overtopping flood Q=unknown CFS WSE=unknown
Are NFIP maps and studies available? YES X NO

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

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

Potential Q₁₀₀ backwater damages:

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

6. Type of Traffic:

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

7. Estimated duration of traffic interruption for 100-year event hours: 0

8. Estimated value of Q₁₀₀ flood damages (if any) – moderate risk level.

A. Roadway \$ 0
B. Property \$ 0
Total \$ 0

9. Assessment of Level of Risk Low X
Moderate _____
High _____

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

Signature – Dist. Hydraulic Engineer _____ Date _____
(Item numbers 3,4,5,7,9)

Is there any longitudinal encroachment, significant encroachment, or any support of incompatible
Floodplain development? NO X YES _____

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

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

Signature – Dist. Project Engineer _____ Date _____
(Item numbers 1,2,6,8)

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

**APPENDIX D – SUMMARY FLOODPLAIN
ENCROACHMENT REPORT FEMA FIRM MAPS**

SUMMARY FLOODPLAIN ENCROACHMENT REPORT*

Dist. 8 Co. SBD Rte. - P.M. -

Project No.: - Bridge No. -

Limits: _____

Floodplain Description: West Cucamonga Channel, Zone X (Dotted)

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

PREPARED BY:

Signature - Dist. Hydraulic Engineer

Date

Signature - Dist. Environmental Branch Chief

Date

Signature - Dist. Project Engineer

Date

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

