CHAPTER 3 – PROJECT DESCRIPTION

3.1 PROJECT LOCATION

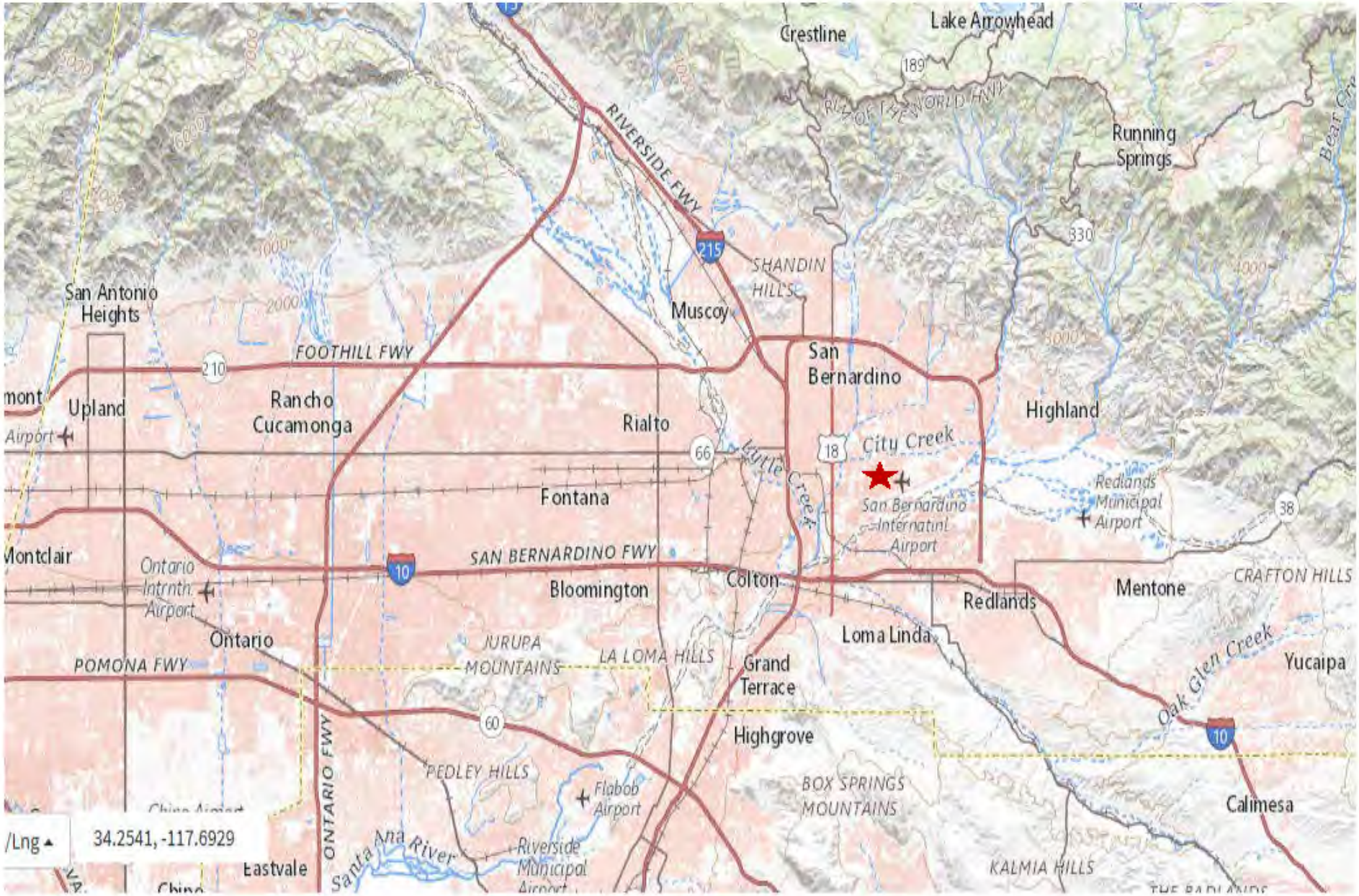
The Inland Valley Infrastructure Corridor (IVIC) Project area is located approximately 60 miles east of Los Angeles just south of the foothills of the San Bernardino Mountains. It is centrally located between three major freeways (State Route (SR)-210 to the north and east, the I-215 to the west, and the I-10 to the south) and regional attractions including the Loma Linda University and Medical Center (5 miles southwest of project area), University of Redlands (8 miles southeast of project area), the San Bernardino International Airport (SBIA), and commercial shopping destinations in Downtown San Bernardino and the Highland Town Center, both within 5 miles of the project area (see **Figure 3-1**, Regional Location).

The IVIC project area is located immediately north of the SBIA and the project area extends to the north side of 6th Street. The western boundary extends to the terminus of the City Creek Bypass Channel, where it joins with Twin Creek, which is about a quarter of a mile to the east of Waterman Avenue. The IVIC project area is bounded to the east by the SR-210 freeway. Third Street in both cities and Fifth Street in the City of Highland serve as the southern boundary of the project area.

The north side of the project area is predominantly bordered by a mix of vacant lands and low to medium density residential uses. The IVIC project area is located directly across the street from several public facilities including Indian Springs High School, Cypress Elementary School, Highland Community Park, the Highland Branch Library, and the SBIA.

3.2 BACKGROUND

The IVIC is a focused effort resulting from years of input and effort by the IVDA and many regional partners. In fact, IVDA has facilitated coordination of a number of infrastructure improvements within the IVIC project area with the participating agencies working with IVDA to implement this project. The other participating agencies in developing the IVIC include: City of Highland; City of San Bernardino; the Yuhaaviatam of San Manuel Nation (YSMN); and the East Valley Water District (EVWD). These stakeholders have jurisdictional and ownership/service interests in the project area and have invested significant time and resources in supporting the IVDA in completing the IVIC for the benefit of the area. A table outlining the infrastructure improvements—including the stage of development in the planning process, design process, construction phase, and those that are completed—in the project area is provided below, and **Figure 3-2** also shows a graphic of these infrastructure improvements. It indicates that IVDA has played a coordinating role in several infrastructure improvements within the project area over the last decade.



SOURCE:

FIGURE 3-1

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Regional Location

FIGURE 3-2

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IVIC Infrastructure Improvements

Table 3-1
CURRENT & COMPLETED INFRASTRUCTURE IMPROVEMENTS WITHIN THE IVIC PROJECT AREA

Project Name	Agency Partners	Funded By	Status	Project Cost	Project Distance (mi)
3rd Street Drainage Project	IVDA, YSMN	EDA[2]	Complete	$1,440,000.00	0.22
3rd Street Roadway and Infrastructure Improvements	SBIAA,[1] YSMN, City of Highland	EDA	Completed	$3,456,000.00	0.93
3rd Street/5thStreet Corridor Improvement Project	YSMN, City of Highland, IVDA	EDA	In Construction	$11,997,968.00	1.84
Sterling Avenue Upgrade Project	IVDA, YSMN	EDA	In Design	$3,814,391.00	0.01
3rd Street Corridor Project	IVDA	DOT[3]	In Design	$3,000,000.00	1.49
Victoria Avenue Storm Drain Improvement (City Creek Channel to 9th Street) Victoria Avenue Roadway Improvement (City Creek Channel to 6th Street)	City of Highland	YSMN-IGG[4] YSMN-CCF[5] DOT	In Design	$9,450,000.00	0.75
			TOTAL	$33,158,359.00	5.24

[1] SBIAA = San Bernardino International Airport Authority
[2] EDA = Federal Economic Development Agency
[3] DOT = California Department of Transportation
[4] YSMN-IGG = IGG - Indian Gaming Grant
[5] YSMN-CFF = CCF - Community Credit Fund

3.3 PROJECT OBJECTIVES

The IVIC is a focused effort resulting from years of input and effort by the IVDA and many regional partners. The IVIC represents a long-range infrastructure project that would be installed over an 20 year horizon. The IVIC project area covers territory within three jurisdictions—within the City of Highland and City of San Bernardino and County of San Bernardino—and the coordination of infrastructure concurrent with development of the project area is necessary to serve the whole of the area harmoniously. The IVIC would ensure that infrastructure improvements necessary to support the development of this area that has been forecast to occur pursuant to the respective jurisdictions' General Plan are implemented consistently across jurisdictional lines by the two cities. After conferring with the participating agencies, a group of local agencies and stakeholders agreed that the Inland Valley Development Agency (IVDA or Agency, a joint powers agency with responsibilities in both cities and intervening unincorporated areas) would assume the lead in managing the preparation of the IVIC and the environmental documentation required to comply with the California Environmental Quality Act (CEQA). Collectively, the participants determined that the project area would benefit from the preparation of the IVIC. The following objectives have been established for the proposed project to guide the implementation of the infrastructure improvements outlined herein:

- Provide comprehensive infrastructure improvements for water, sewer, circulation system, and stormwater drainage that resolve longstanding flooding and hydrology issues and that are adequately financed to meet future system needs. Infrastructure improvements

provide solutions to current issues in the area experienced by residents and businesses and plans for future needs related to:

- **Water** – Enhance potable water distribution system and expand the potential for utilization of recycled water in the future
- **Sewer** – Support sewer capacity and upgrade sewer system to meet projected demand
- **Roadways** – Improve traffic circulation, safety, mobility, and roadway conditions
- **Stormwater Drainage** – Address longstanding flooding issues within the IVIC project area by improving and expanding the capacity of drainage systems
- **Other Utility Integration –** Strive to accommodate other utilities/emerging technologies that can be integrated concurrently with above infrastructure improvements

- Efficiently connect future and existing development to the interstate system while providing safe spaces for pedestrians, cyclists, transit, and motor vehicles along 3rd, 5th and 6th Streets and gateway nodes.

The primary goal of the IVIC is to provide the necessary infrastructure improvements to the project area through a collaborative effort with IVDA partners to benefit the entire project area, and greater area surrounding the project utilizing this Inland Valley Infrastructure Corridor.

3.3 ENVIRONMENTAL SETTING

The IVIC project area extends west to east on the north side of the SBIA as shown in **Figure 3-3.** The IVIC project area occupies a visually prominent and heavily trafficked location as the roadways internal to the IVIC facilitate access to the northern entrance to the Airport from via the SR-210 freeway.

Over the last couple of years, the IVIC has seen growth in development, primarily in the City of Highland, which has led to far less vacant land within the IVIC project area than in years past. The land uses in the Highland and San Bernardino General Plans within the IVIC area envisioned light industrial, business park, general commercial and residential uses, as shown on **Figure 3-4a and 3-4b**, which depicts the existing land uses within the IVIC project area.

Existing land uses surrounding the IVIC project area include:

North:	Immediately north of 6th Street, single- and multi-family residential properties
East:	Immediately west of Interstate 210, industrial land uses
South:	SBIA and industrial uses
West:	Commercial, residential, and institutional

Elevations within the project area range from approximately from 1,470 feet to 1,500 feet above mean sea level (amsl). The terrain is essentially level, with a gradual increase in elevation to the north and east. No distinctive topographic features exist within or adjacent to the project site. Surface runoff within the project area generally flows to the south and west. Under present circumstances the area contains a mix of uses, with the majority of recent growth consisting of warehouses, logistics centers, and other business park uses, consistent with the City of Highland's General Plan. Much of the land in the center of the project area is designated for residential use by the City of San Bernardino's current General Plan—which is presently being updated. Most natural vegetation has been removed by past agricultural activities, and most trees and shrubs are found where limited human landscaping occurs. No rock outcrops are located in

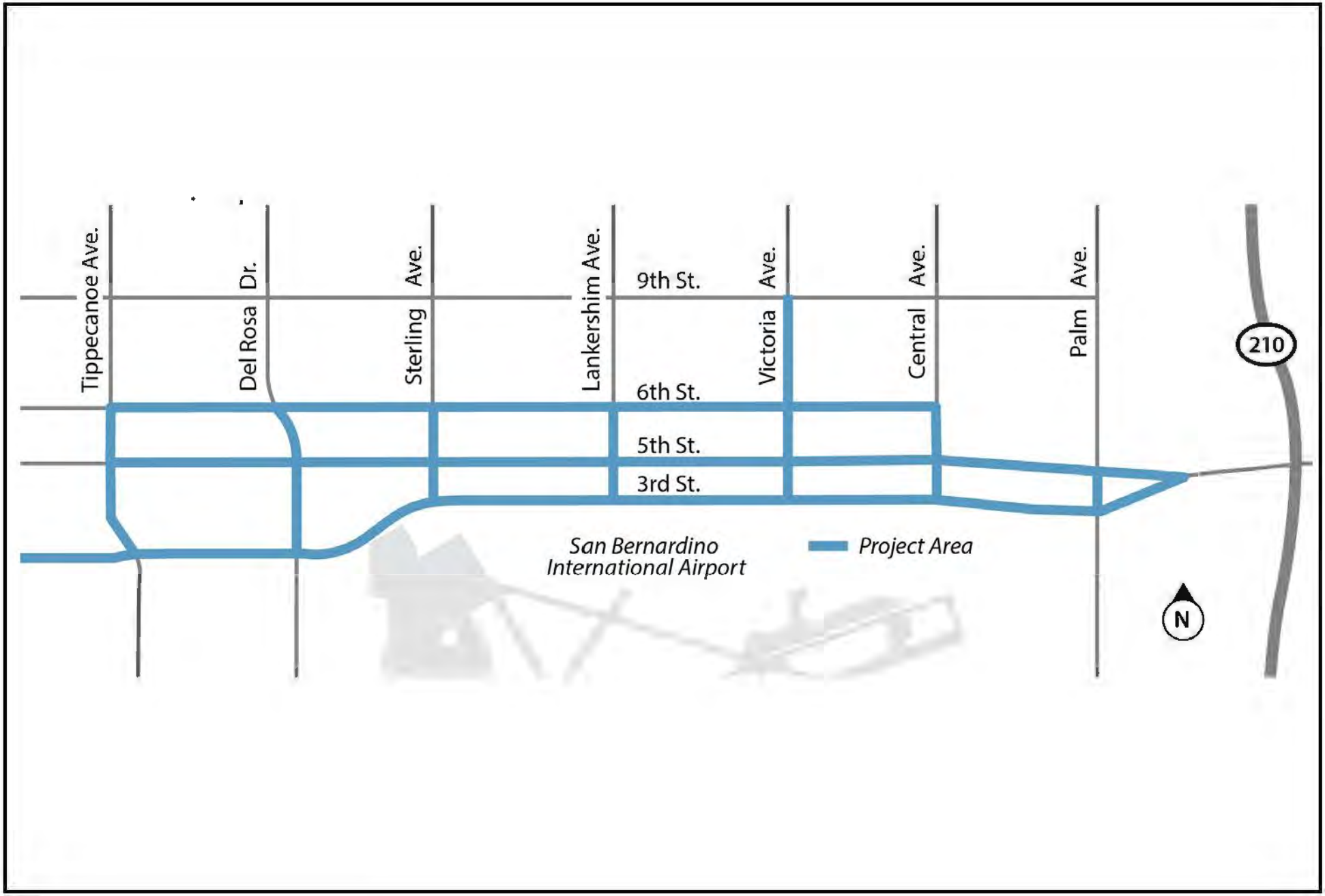

FIGURE 3-3

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Project Area

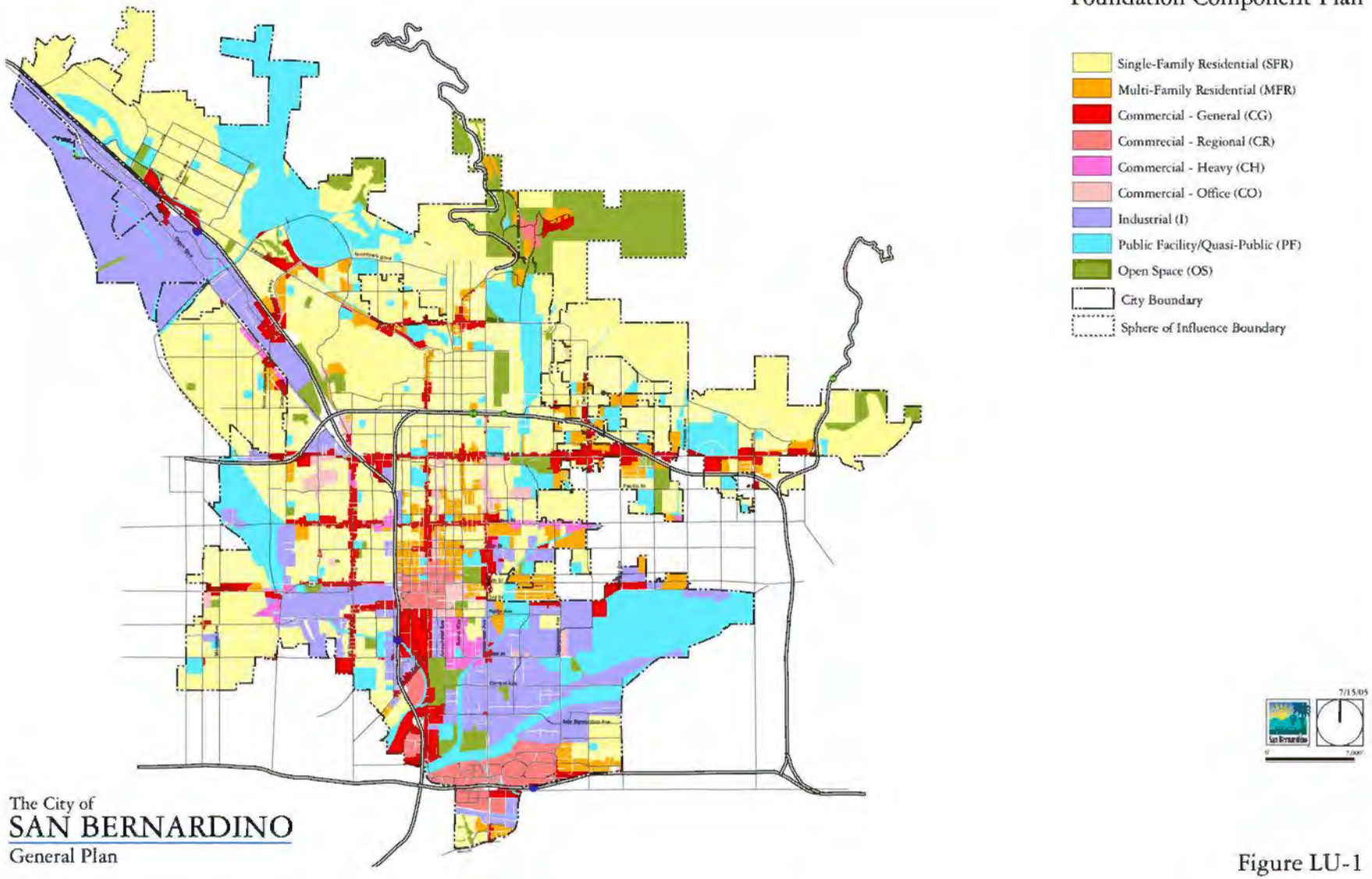

FIGURE 3-4a

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City of San Bernardino Land Uses

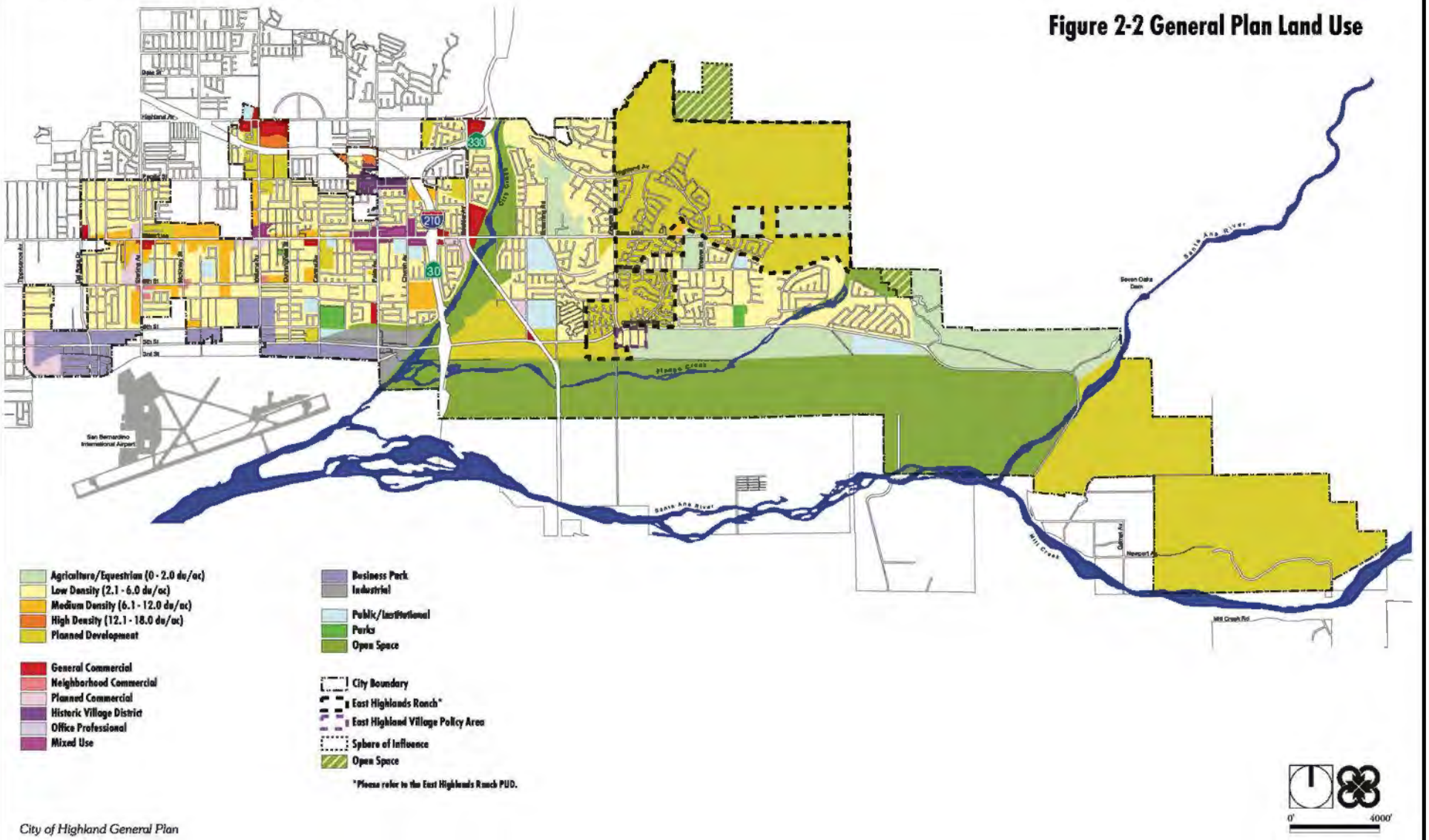

FIGURE 3-4b

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City of Highland Land Uses

the project area. A small man-made drainage channel, City Creek Bypass, crosses through the central-southern portion of the project area and continues west to a confluence with Twin Creek, which is the western limit of the IVIC project area. See **Figure 3-5** for an aerial photograph of the project area.

Resource specific descriptions of the environmental setting are provided in the "Environmental Setting" subsections of each subchapter of Chapter 4.

3.4 PROJECT CHARACTERISTICS

3.4.1 Existing and Proposed Water Infrastructure

3.4.1.1 Water

a. Existing Supply & Distribution

EVWD's existing supply sources consist of local groundwater, surface water from the Santa Ana River obtained through the North Fork Mutual Water Company, and imported water from the State Water Project (SWP). The project area is in a portion of EVWD's Lower Zone but mostly the project is in EVWD's Intermediate Zone. There is enough supply to meet existing demands under maximum day demand (MDD) conditions. The largest single source analysis from EVWD's 2019 Water Supply Master Plan (WSMP) indicates that there are supply deficiencies in the Lower Zone and Intermediate Zone if the largest single source is out of service during MDD conditions. However, the ability to transfer water from other zones would allow these supply deficiencies to be mitigated in the unlikely event that these extreme conditions occur.

EVWD operates existing water distribution infrastructure located throughout the project area with major east-west pipelines in 6th Street, some pipelines in 5th Street and some pipelines in 3rd Street. Within the project area there are six (6) active wells and four (4) pump stations all within the Lower and Intermediate Zones. The Lower Zone is west of Sterling Avenue and the Intermediate Zone is east of Sterling Avenue to Palm Avenue (refer to **Figure 3-6** and **3-7**). The backbone water system in the project area includes:

- A 12-inch cement line and coated water main located in 6th Street traverses the length from Tippecanoe Street to Sterling Street.
- A 36-inch ductile iron line starting at Indian Springs High School located along 6th Street and the pipeline traverses east to Grape Street. As part of the SNRC Project, the segment of this ductile iron line west of Sterling Avenue will be converted to a recycled water line.
- An 8-inch ductile iron line located in 6th Street from Victoria Avenue to Alabama Avenue.
- A 6-inch ACP line located in 6th Street from Victoria Avenue to Alabama Avenue.
- A 12-inch ductile iron line located in 5th Street traverses the length from Tippecanoe Street to 1,000 feet east of Del Rosa Drive.
- A 6 5/8-inch cement line and coated water main located in 5th Street immediately north of San Bernardino Airport supplied by Plant 141.
- A combination of 8-inch and 16-inch ductile iron line located in 4th Street transverses the length from Tippecanoe Street to the termination at San Bernardino International Airport.
- A 12-inch ductile iron line located in 3rd Street traverses the length from Tippecanoe Street to Shirley Avenue.
- A 16-inch ductile iron line located in 3rd Street immediately north of San Bernardino Airport supplied by Plant 141.

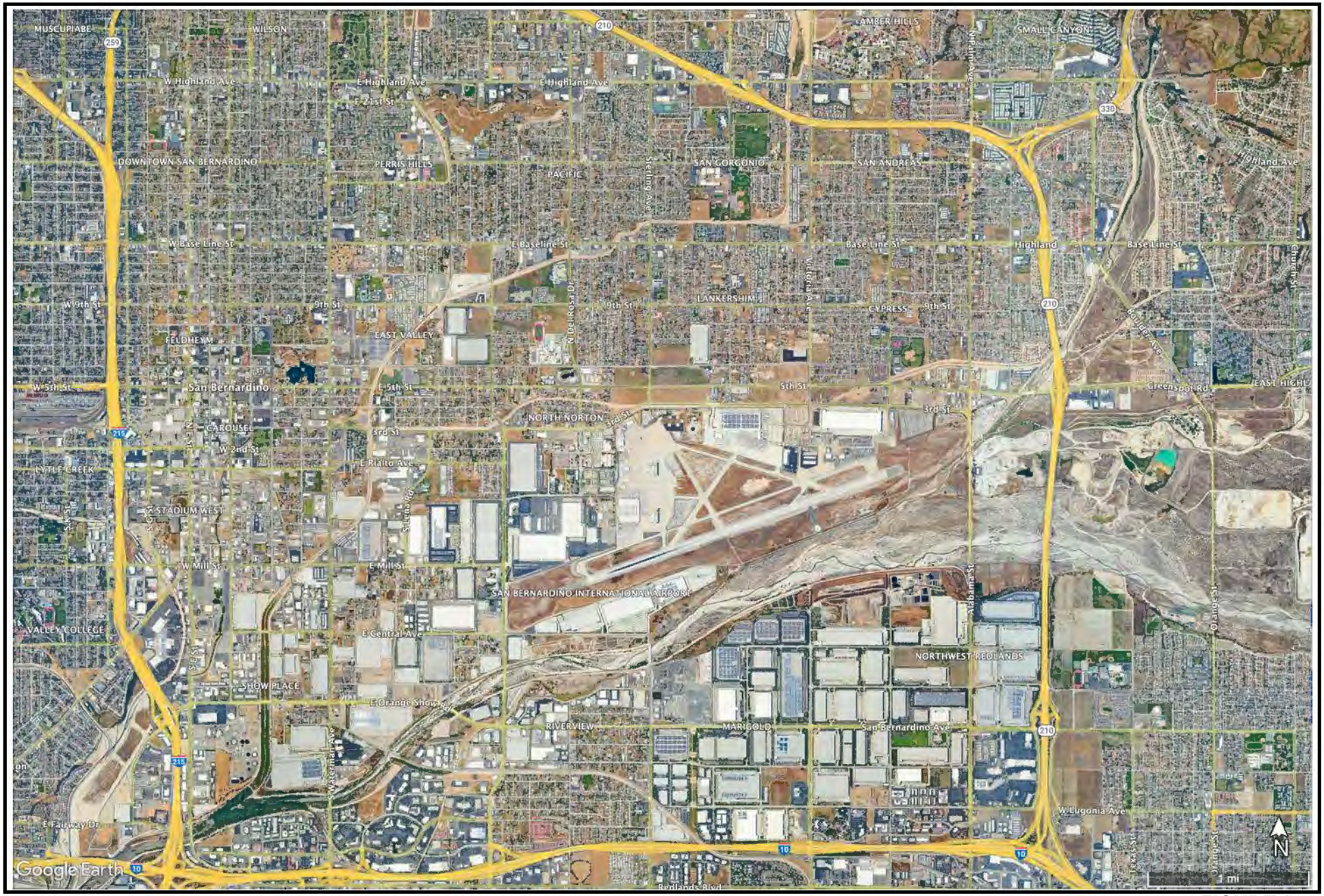

FIGURE 3-5

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Aerial of IVIC Area

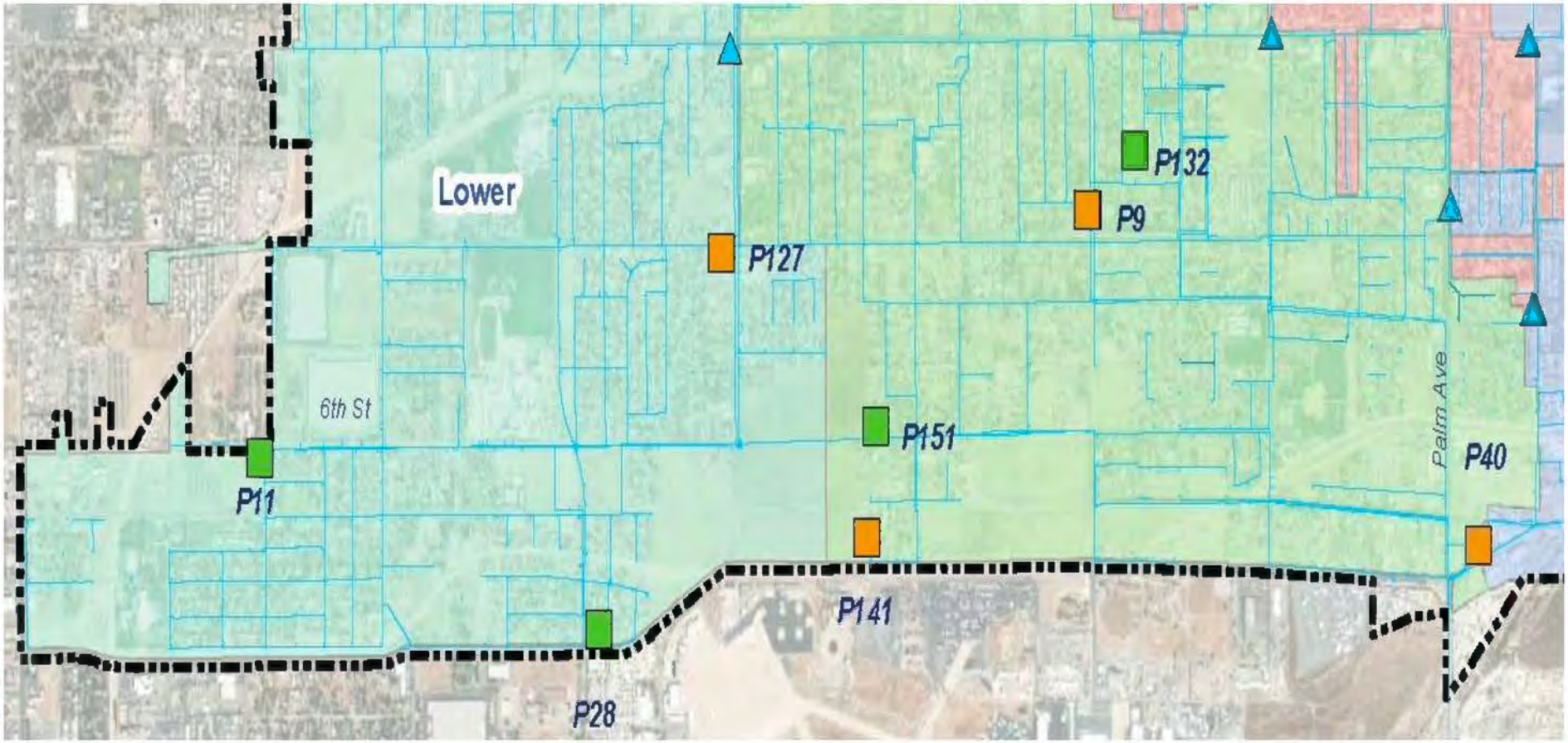

FIGURE 3-6

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Existing EVWD Water Infrastructure

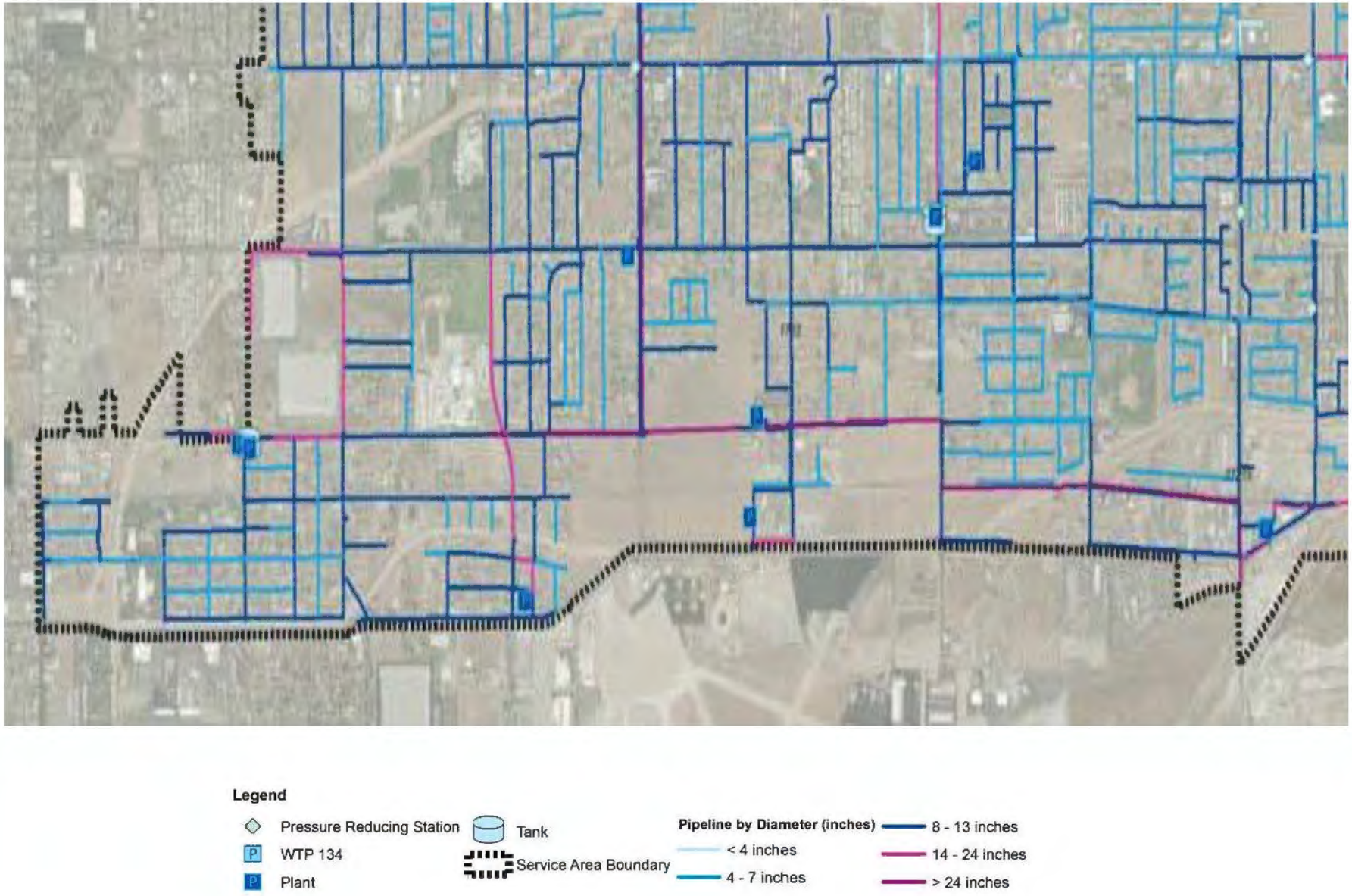

FIGURE 3-7

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Existing Water Pipelines by Diameters

- An 8-inch ACP and ductile iron line located in 3rd Street from Victoria Avenue to Alabama Avenue.

The existing water infrastructure systems are shown generally in **Figure 3-6** and existing water pipelines by diameters are shown in **Figure 3-7**.

b. Proposed Supply & Distribution

Based on the 2019 WSMP Build-Out Water System Improvements, which are outlined in Chapter 8 therein, there are no transmission pipeline recommendations. The water system improvements based on the 2019 WSMP build-out evaluation within the project area include the following projects:

- **Project 1** - 3.5 MG storage reservoir located in the Lower Zone;
- **Project 2 -** New Well 01 in the Intermediate Zone.

These recommended improvements to the existing EVWD system will be installed to enhance the existing robust distribution system to meet modern industry standards. The specific locations for these improvements have not yet been determined; however, **Figure 3-6** shows the general zones within which these improvements are anticipated to be installed. The horizon for installation of these water facilities within the next 20 years.

3.4.1.2 Wastewater

a. Existing Wastewater Collection System

The existing sewer system consists of approximately 213 miles of pipeline, 4,500 sewer manholes, 7 siphons, and 5 diversion structures. The existing sewer system conveys flows into the East Trunk Sewer which presently outlets to the San Bernardino Water Reclamation Plant (SBWRP) or, once operational, the Sterling Natural Resource Center (SNRC) is completed. The existing sewer system including transmission and collection pipeline, siphons, and manholes has been evaluated. The evaluation included existing and future conditions for deficiencies and to identify areas for improvements.

EVWD's sewer pipeline network includes approximately 213 miles of pipeline ranging in size from 4 inches to 24 inches in diameter. The East Trunk Sewer is approximately 9 miles long ranging in size from 8 inches to 54 inches in diameter. EVWD's system, including the East Trunk Sewer, encompasses nine siphons to convey flows under creeks and flood control channels. EVWD has five diversion structures in its sewer collection system. Diversion structures are generally installed in manholes to divert flows along a specific route in case of a blockage in the system or during times of high flow. EVWD's sewer system does not include any lift stations or force mains. All flow is conveyed by gravity to the East Trunk Sewer.

EVWD maintains all of the sewer pipes in the project area, which are gravity collection system pipelines made of a variety of sizes and made mostly of vitrified clay pipe (VCP). The majority of the pipelines were installed between 1960 and 1980. A few segments were built at a later date. The backbone wastewater system in the project area includes:

- A 24-inch VCP located in 6th Street traverses the length from Tippecanoe Street to Elm Street.
- A 21-inch VCP located in 6th Street traverses the length from Elm Street to Victoria Avenue.

- A 10-inch VCP located in 6th Street traverses the length from Victoria Avenue to Cunningham Street.
- An 8-inch VCP located in 6th Street traverses the length from Cunningham Street to Central Avenue.
- An 8-inch VCP located in 5th Street starting at Marilyn Avenue to 214 feet east of Shirley Avenue.
- A 21-inch VCP located in 5th Street traverses the length from Victoria Avenue to Cunningham Street.
- A 24-inch VCP located in 5th Street traverses the length from Cunningham Street to Route 10
- An 8-inch VCP located in 4th Street starting at Marilyn to 214 feet east of Shirley Avenue.
- There are new sewer pipes in 3rd Street.

b. Proposed Collection System

EVWD Sewer System Master Plan (SSMP) was updated in early 2019. According to the SSMP the objective was to evaluate the collection system capacity and provide a general assessment of the condition of the existing sewer collection system in order to develop a comprehensive 20-year CIP. The 20-year CIP includes pipeline condition and capacity improvement projects, long range maintenance program considerations, as well as conveyance needs. The recommended CIP was the basis for wastewater rate evaluations and long-range financial plans to be completed in separate financial studies. The final recommendations of the SSMP are located in Chapter 8 of the SSMP. In Chapter 9 of the SSMP, unit costs were developed for pipelines. Engineering, construction, and total project costs were developed for the capacity and condition projects. The recommended CIP includes both capacity and condition related capital projects and recommendations on further studies.

Within the project area, the recommended projects are shown on :

Project E-1 would upsize 5,900 feet of 27 to 48-inch pipe with 36 to 54-inch pipe, including a possible siphon upsize

Project E-4 would upsize 15,000 feet of 21 to 24-inch pipe with 30-inch pipe starting at Tippecanoe Street on 6th Street which would traverse east to Victoria Street then south to 5th Street then traverse east on 5th Street to Palm Avenue.

Project B-2 would upsize 2,200 feet of 15-inch pipe with 18-inch pipe, including a possible siphon upsize.

Refer to **Figure 3-8** for the Recommended Capacity Projects as outlined in the 2019 EVWD Sewer Master Plan. Chapter 6 of the SSMP describes how the new interceptor sewer that would direct flows to the Sterling Natural Resource Center will relieve flows from the pipelines associated with the projects **E-1, E-4, and B-2** listed above. Consequently, these projects are not anticipated to be necessary, and are not being considered as part of the IVIC project. However, as a contingency measure, it is forecast that up to 5,000 Feet of sewer may be installed to support the infrastructure needs of the IVIC area.

3.4.1.3 Recycled Water

EVWD has constructed the Sterling Natural Resource Center (SNRC), but the facility is not yet operational. It will be a state-of-the-art water recycling facility in the City of Highland that will provide a sustainable new water supply to boost the region's water independence. The SNRC is

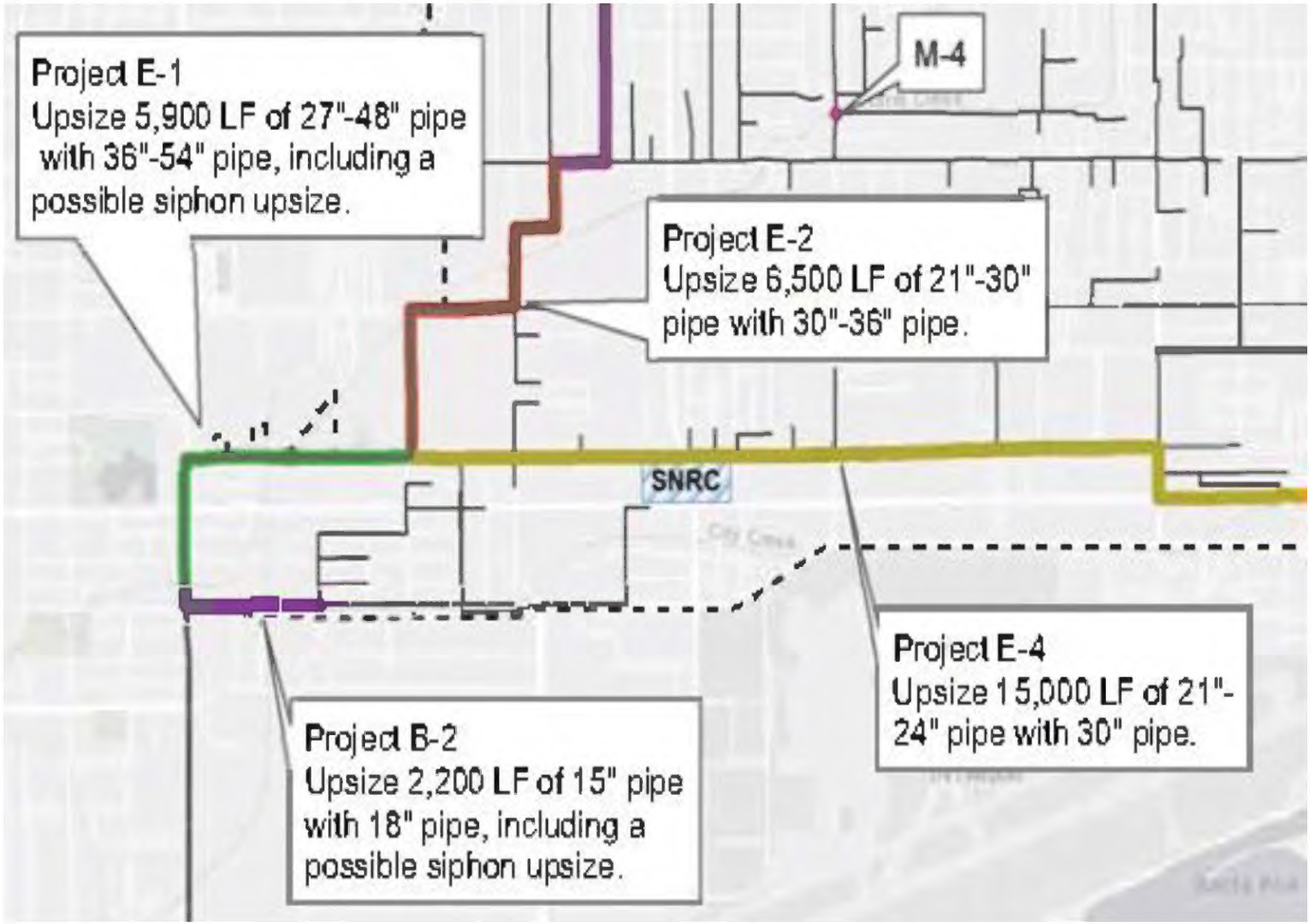

FIGURE 3-8

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Recommended Capacity Projects as Outlined in the 2019 EVWD Sewer Master Plan

located on a 14-acre parcel of land located at North Del Rosa Drive between East 5th Street and East 6th Street. The SNRC Treatment Facility is located on the eastern property while the Administration Center, which is fully operational, is located on the western parcel. The recycled water conveyance pipelines would be constructed along the existing rights-of-way within 6th Street. SNRC will be capable of treating up to 10 million gallons a day, the SNRC is being implemented to recharge the local Bunker Hill Groundwater Basin and will provide community education, training space, neighborhood improvements, and new habitat for the Santa Ana Sucker fish. The SNRC will produce Title 22 recycled water and at this time the recycled water produced at the SNRC is proposed to be used solely for groundwater recharge.

No new recycled water infrastructure would be installed as part of the IVIC.

3.4.2 Existing and Proposed Dry Utilities / Services

3.4.2.1 Electricity

Electricity for the project area is provided by Southern California Edison (SCE). The project area is linked to the state power grid, and the City of Highland, City of San Bernardino and unincorporated areas of the San Bernardino County have had a number of power interruptions during the peak energy crisis in 2001. Under an agreement with the California Independent System Operator (ISO), SCE must reduce its load if instructed to do so by the ISO during a Stage III power emergency. Such an emergency occurred most recently in March 2001, requiring SCE to temporarily interrupt electric service to some of its customers.

While the IVIC does not propose the installation of any electrical infrastructure, one of the goals of the IVIC is to accommodate the installation of other utilities and emerging technologies that could be integrated concurrently with the infrastructure improvements proposed under the IVIC project to avoid multiple rounds of trenching to install infrastructure within the roadways within the IVIC project area.

3.4.2.2 Natural Gas

Natural gas for the project area is currently being served by the Southern California Gas Company (SoCal Gas). SoCal Gas has a number of underground pipelines in the project area including:

- An 8-inch pipeline located in 6th Street traverses east the length from Tippecanoe Street to Victoria Avenue.
- A 3-inch pipeline located in 6th Street traverses east the length from Cunningham to Central Avenue.
- A 2-inch pipeline located in 5th Street traverses east the length from Tippecanoe Street to Roberts.
- A 2-inch pipeline located in 5th Street traverses east the length from Victoria Avenue to 500 feet from Central Avenue.
- A 2-inch pipeline located in 5th Street traverses east the length from Central Avenue to Palm Avenue.
- A 4-inch pipeline located in 5th Street traverses east from Church Avenue to Route 210.
- A 2-inch pipeline located in 4th Street traverses east the length from Tippecanoe Street to the termination of 4th Street.
- A 2-inch pipeline located in 3rd Street traverses the length from Tippecanoe Street to Sterling Street.

- An 8-inch pipeline located in 3rd Street traverses east the length from Victoria Avenue to Alabama Street.
- A 6-inch pipeline located in 3rd Street traverses east the length from Alabama Street/Palm Avenue to Church Avenue/5th Street intersection.

No new natural gas infrastructure is planned to be installed under the IVIC project.

3.4.2.3 Telecommunications

Time Warner has above and underground utilities in 6th Street from Tippecanoe Street to Sterling Avenue as well as above ground utilities in 5th Street from Tippecanoe Street to residences located between Del Rosa Drive and Sterling Avenue. Time Warner has above ground utilities in 6th Street from Lankershim Avenue to Central Avenue. MCI (Verizon) and Terradex have no above or underground utilities in the project area.

AT&T has above ground utilities (via cables) and underground utilities within conduits within the project area located in 3rd Street, 5th Street and 6th Street. Both above ground and underground utilities are located in 6th Street from Tippecanoe Street to Victoria Avenue as well as conduit located in 5th Street starting at Victoria Avenue traversing east terminating before Cunningham. Conduit is located within Central Avenue and Palm Street from 6th Street to 4th Street. Conduit and underground utilities are located in 5th Street from Church Avenue to Route 210. Conduit is located in 3rd Street starting at Victoria Avenue and terminates at Palm Avenue.

No new telecommunications infrastructure is planned to be installed under the IVIC project.

3.4.3 Existing and Proposed Drainage System

The existing drainage system in the project area is fairly rudimentary. **Figure 3-9** identifies the overall watershed area of the project, the existing storm drain systems, and the proposed storm drain systems and infrastructure storm drain systems identified by Comprehensive Storm Drain Plan #6 (CSDP #6) prepared by San Bernardino County Flood Control District. Storm water runoff within the area flows to the south over a very shallow grade. The information that follows is abstracted from a study of the area hydrology by JLC Engineering & Consulting, Inc, titled "Preliminary Hydrology and Channel Design for City Creek By-Pass Channel," April 20, 2020. The City Creek Bypass Channel is located along 3rd and 5th Streets and extends from Warm Creek Channel on the west (terminus) and terminates at City Creek Channel just north of the State Route 30 (SR-210) and 5th Street Interchange. Refer to **Figure 3-10** for a depiction of the City Creek Bypass Channel alignment. Additionally, the watershed area has existing storm drains that collect runoff from the watershed area located within Palm Avenue and Central Avenue. The existing storm drains and street sections collect surface runoff and convey the runoff into City Creek.

Coordination with local agencies has resulted in the identification of a proposed storm drain system that is located within Victoria Avenue (extending from 9th Street to the City Creek Bypass in the Victoria Avenue right-of-way). The storm drain system is currently under a Plan, Specification, and Estimate (PS&E) process with the City of Highland. The intent of the PS&E process is to develop a package that obtains CEQA clearances, design approvals and construction estimate to allow the project to be constructed.

The study describes the existing channel and concludes that downstream of the Victoria Avenue-City Creek Bypass Channel, the Channel is insufficient to convey the 100-year flood flows in its

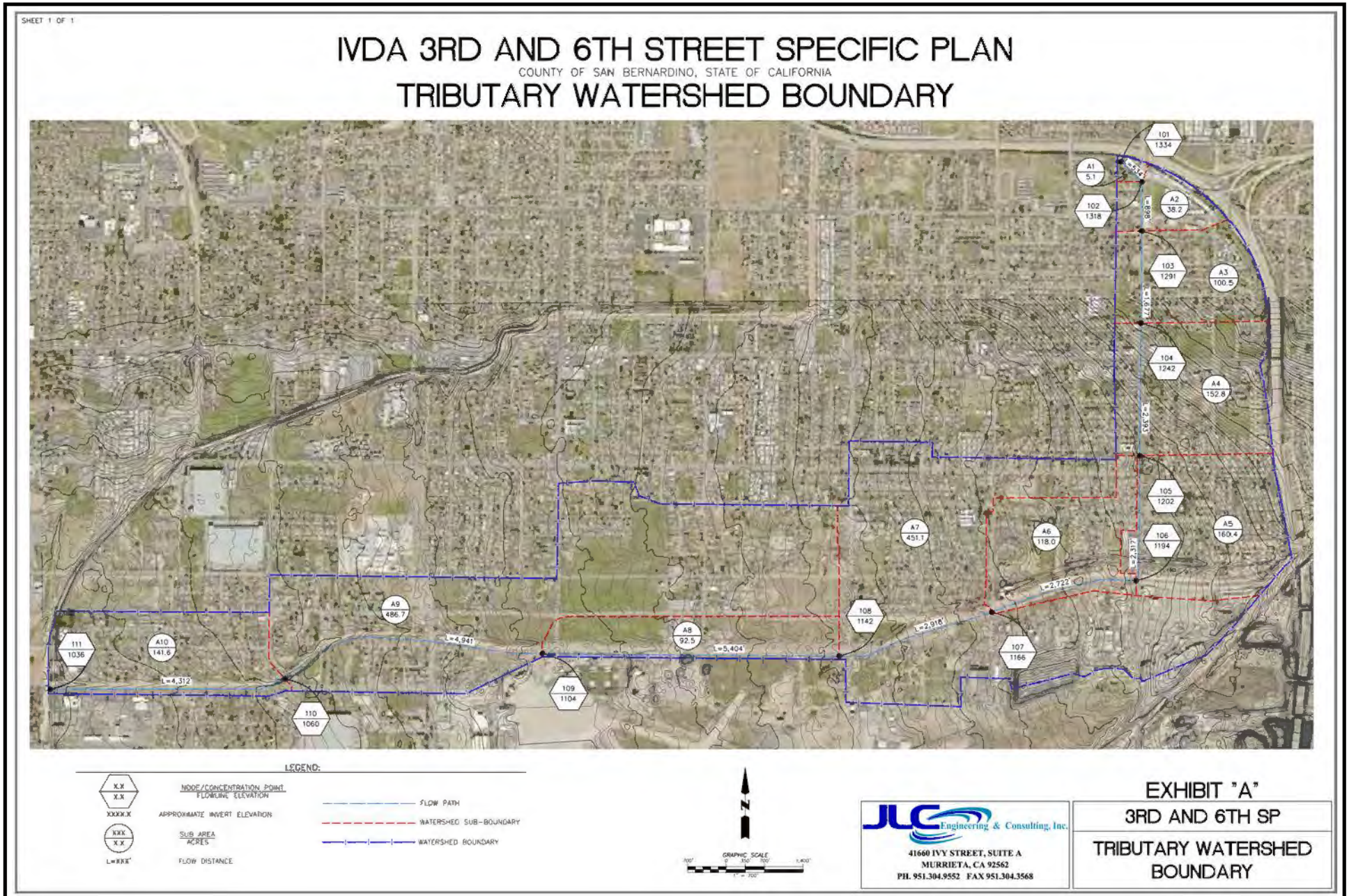

FIGURE 3-9

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Watershed Map

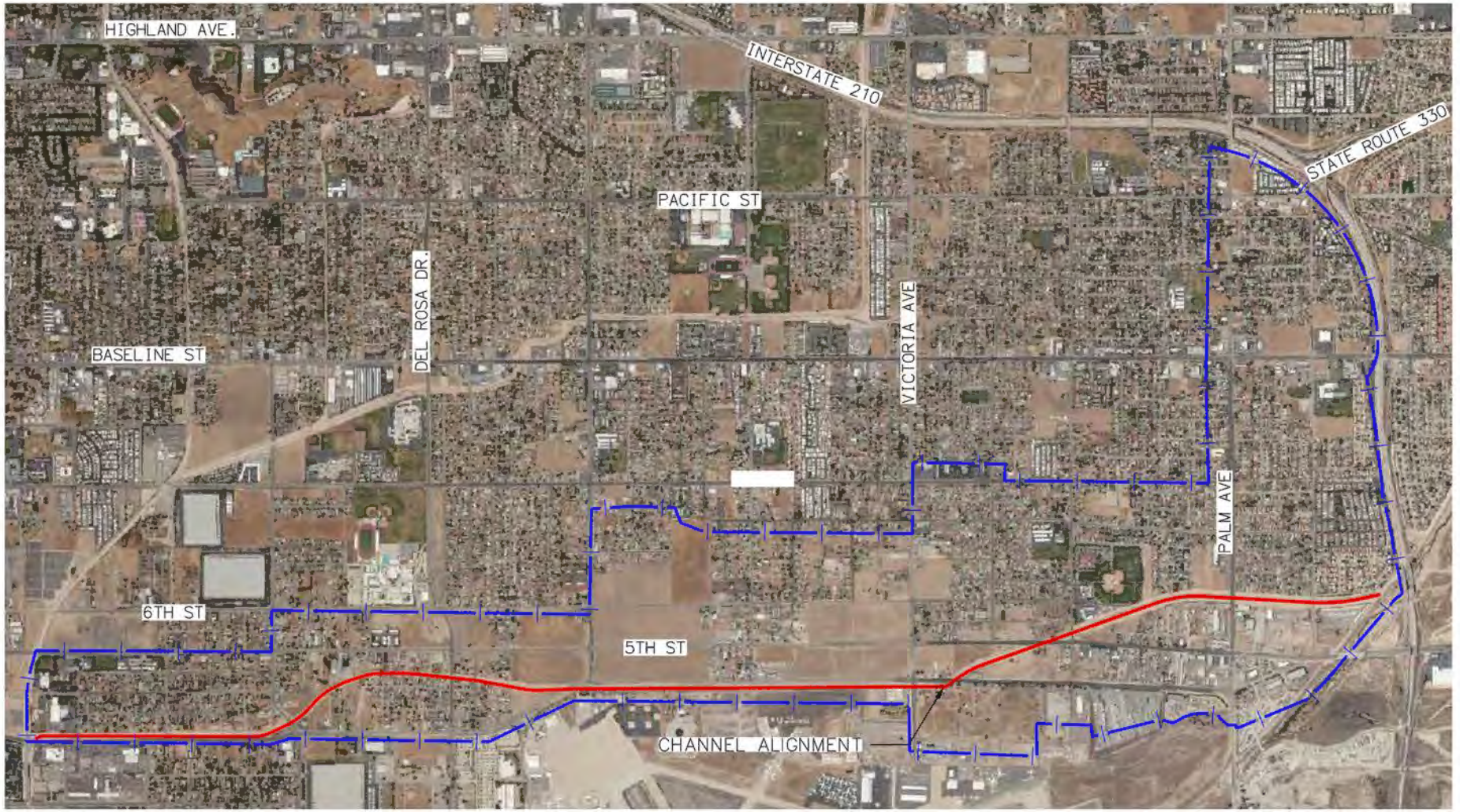

FIGURE 3-10

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City Creek Bypass Channel Alignment

current configuration. The study includes a new channel design (two alternatives) that will need to be installed to have sufficient capacity to convey the future 100-year flood flows between Victoria Avenue (just north of the Airport and south of 3rd Street) and the Twin Creek Channel. **Figures 3-11a** through **3-11d** show the alternative channel designs and acknowledges that these designs are preliminary and not ready for construction. The channel alternatives are defined in detail in the study. For planning and impact forecast purposes it is assumed that a maximum of one-half mile of new channel will be installed in any given year. Moreover, **Figure 3-10** has identified the storm drain infrastructure that will be required to provide flood protection for future development that may occur consistent with the existing General Plan land use designations, based on the CSDP #6. The purpose of the storm drain infrastructure is to provide flood protection and to meet the street design policies within the City of San Bernardino and the City of Highland. The following CSDP #6 system that protects the project area are as follows:

- 6-C1-01 which is a storm drain system that varies in diameter from 36-inches to 48-inches in diameter. The system extends along Tippecanoe Avenue to 5th Street.
- 6-C1-03 which is a storm drain that varies in diameter from 42-inches to 81-inches in diameter. The storm drain extends Sterling Avenue and 6th Street.

It should be noted that 6-WA-03, located within 6th Street, is adjacent to the northerly boundary of the IVIC project area. Based on the topographic contours for the watershed area, the runoff flows to the west toward Twin Creek. The IVIC project area will not require this system to ensure flood protection since 6th Street separately collects and conveys the runoff to Twin Creek Channel.

Finally, the CSDP #6 is a conceptual design that identifies regional infrastructure required to accommodate existing and future development that may occur consistent with the existing General Plan land use designations. The conceptual design provides a potential solution that would provide flood protection for an area and where the runoff from the watershed area needs to be directed.

Note that, the IVDA's Sterling Project (reference **Figure 3-2**) includes the installation of a storm drain that would ultimately connect with the City Creek Bypass.

This document evaluates the installation of the drainage improvements to occur on the whole over a period of 20 years. The horizon for installation of the drainage improvements is within the next 20 years.

3.4.4 Existing and Proposed Circulation System Infrastructure

The IVIC project area contains an established circulation system, which currently has many roadways with older, deteriorating pavement. **Figure 3-12** shows the circulation system in the area surrounding the project area. The City of San Bernardino General Plan Circulation Plan and the City of Highland General Plan Circulation Element provide roadway designations for the roadway system serving the project area and the surrounding vicinity. A copy of the City of San Bernardino Circulation Plan and Standard Cross Sections are provided on **Figures 3-13a** and **3-13b**. A copy of the City of Highland Circulation Element and Standard Cross Sections are provided on **Figures 3-14a** and **3-14b**. Regional access to the IVIC area is provided primarily by the Interstate 215 (I-215) Freeway, located approximately 2 miles to the west of the project area. In addition, the I-10 Freeway is located approximately 3 miles to the south of the project. State Route 210 (SR-210) is oriented in an east-west direction approximately 2.5 miles to the north of the

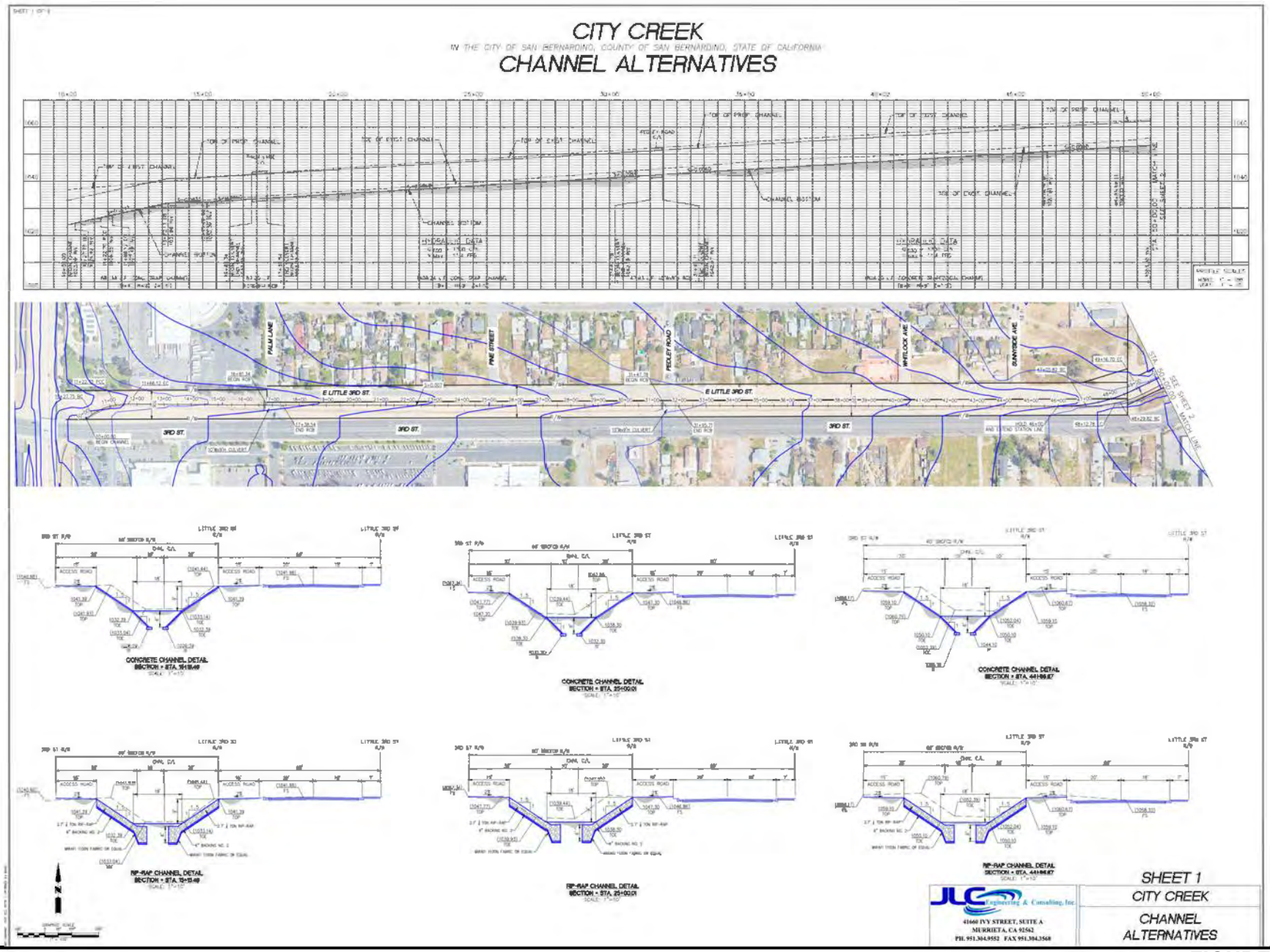

FIGURE 3-11a

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Environmental Consultants

City Creek Bypass Channel Alternative Alignments

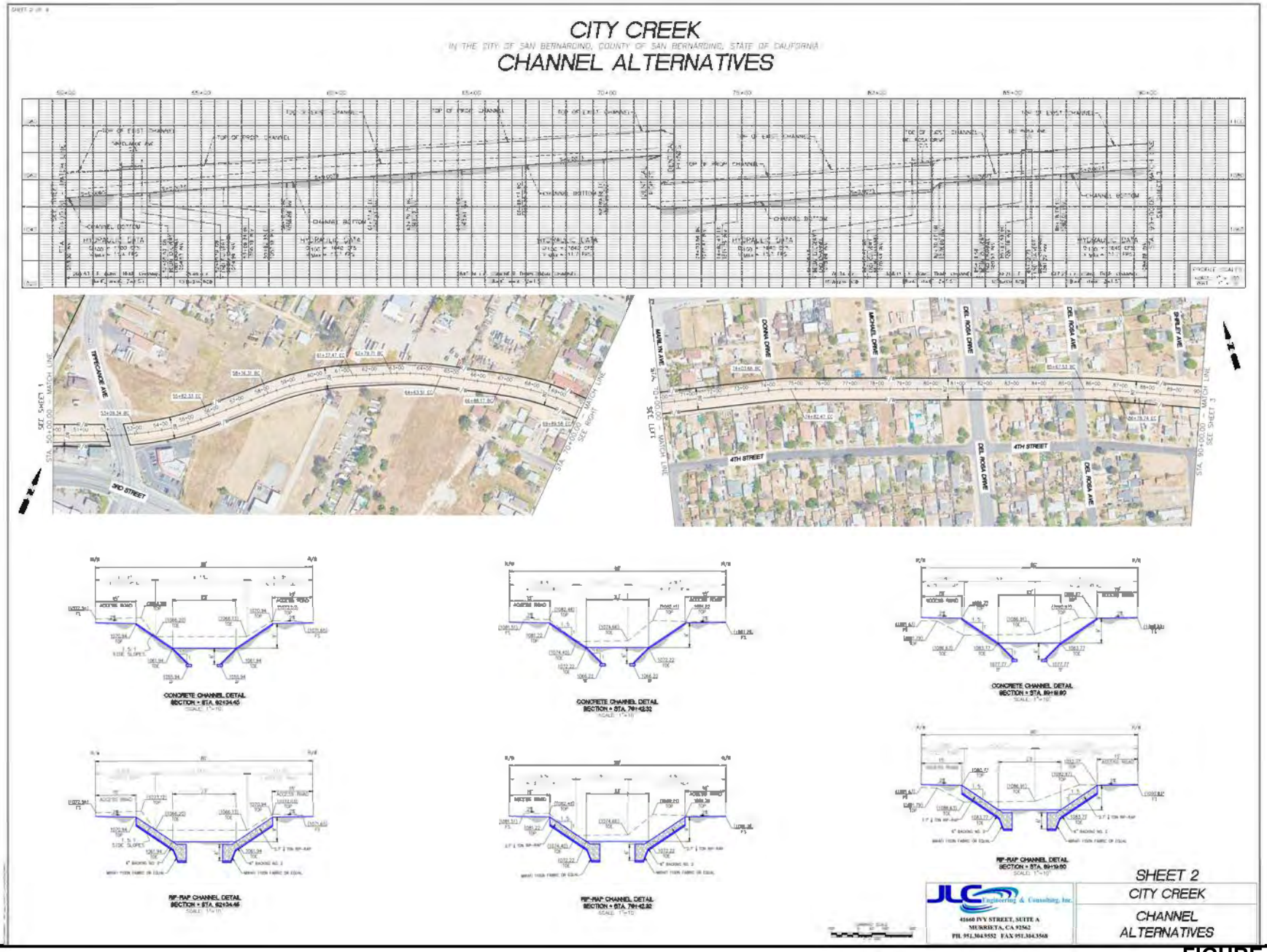

FIGURE 3-11b

Tom Dodson & Associates
Environmental Consultants

City Creek Bypass Channel Alternative Alignments

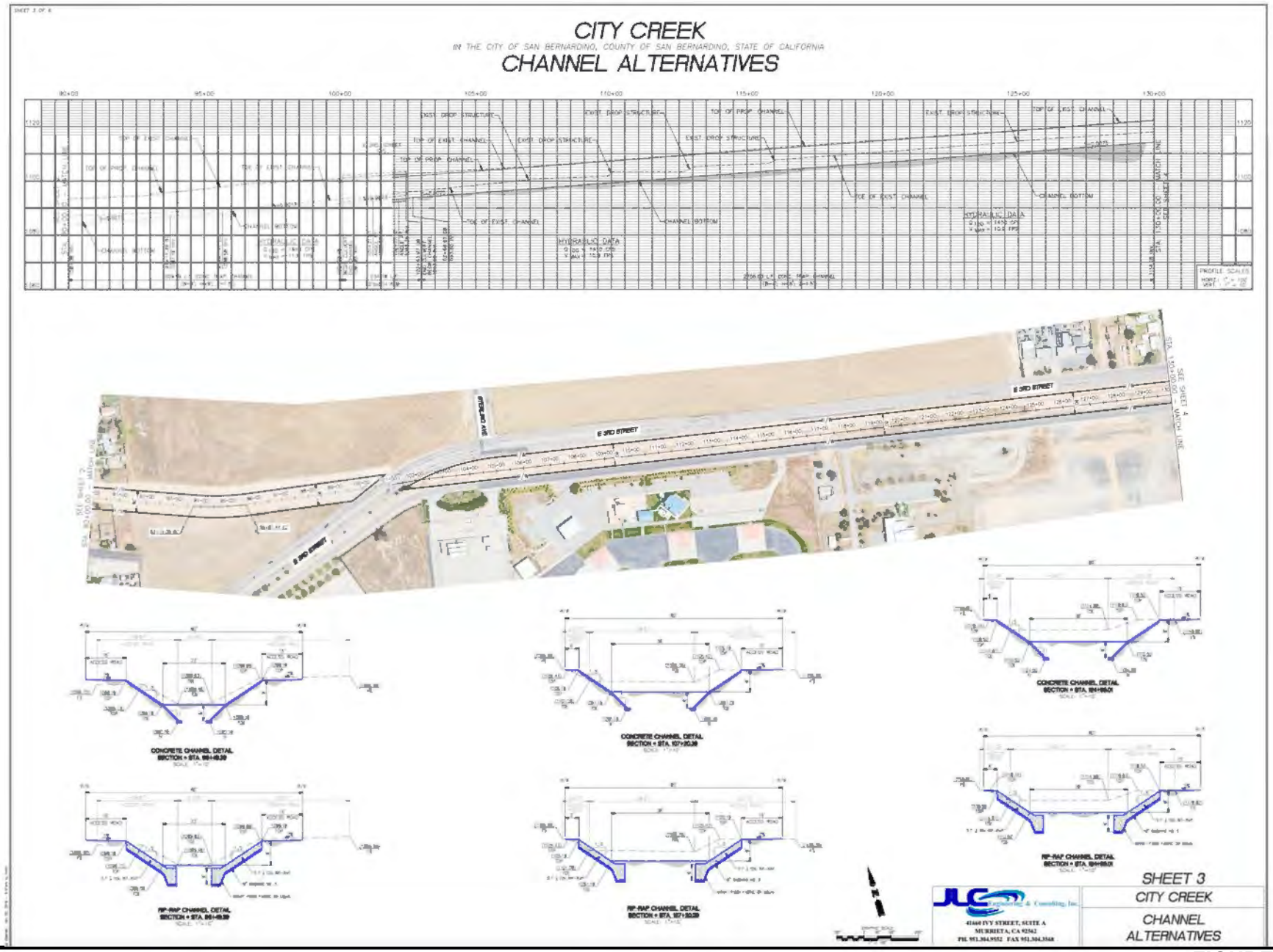

FIGURE 3-11c

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City Creek Bypass Channel Alternative Alignments

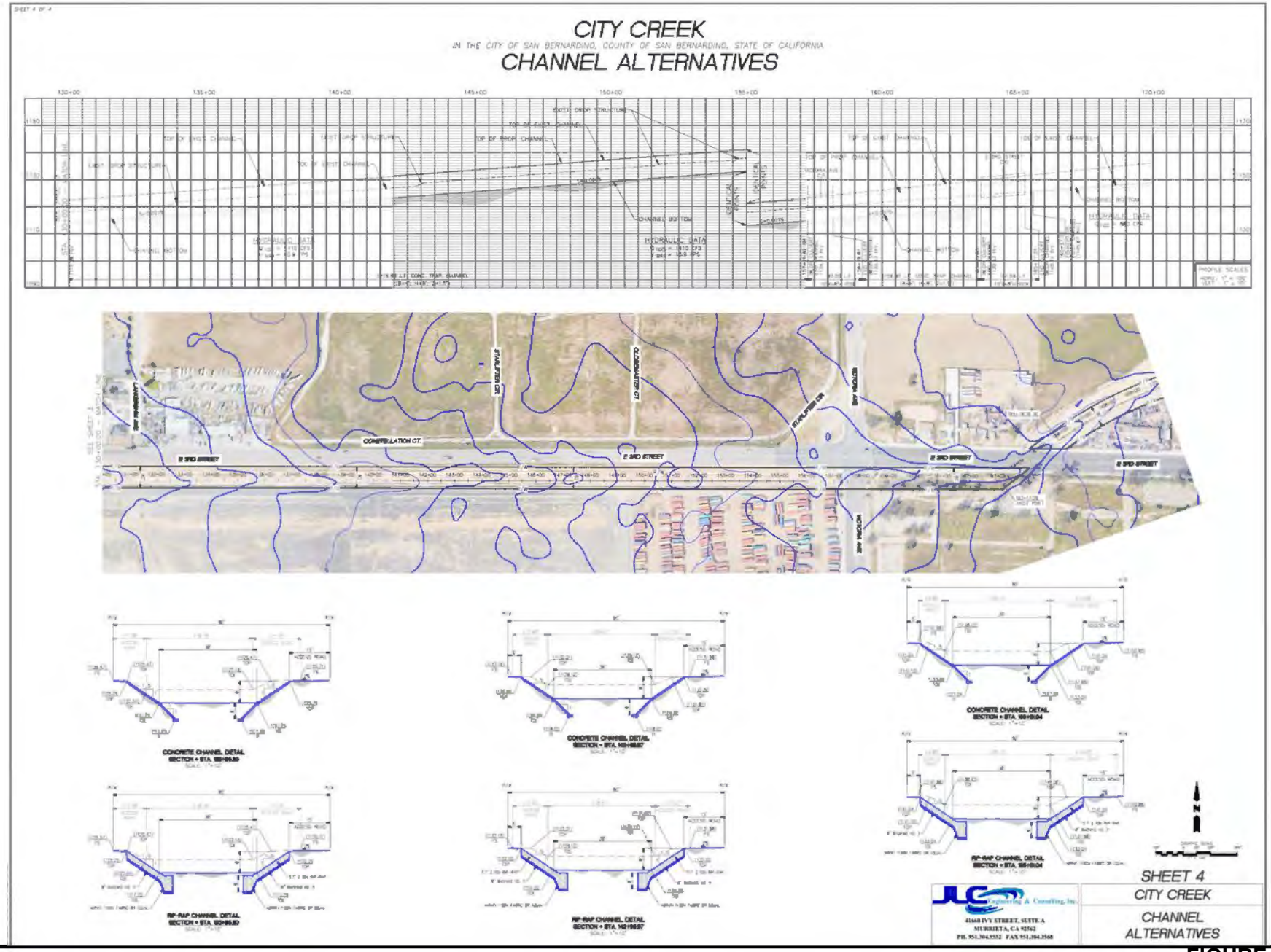

FIGURE 3-11d

Tom Dodson & Associates
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City Creek Bypass Channel Alternative Alignments

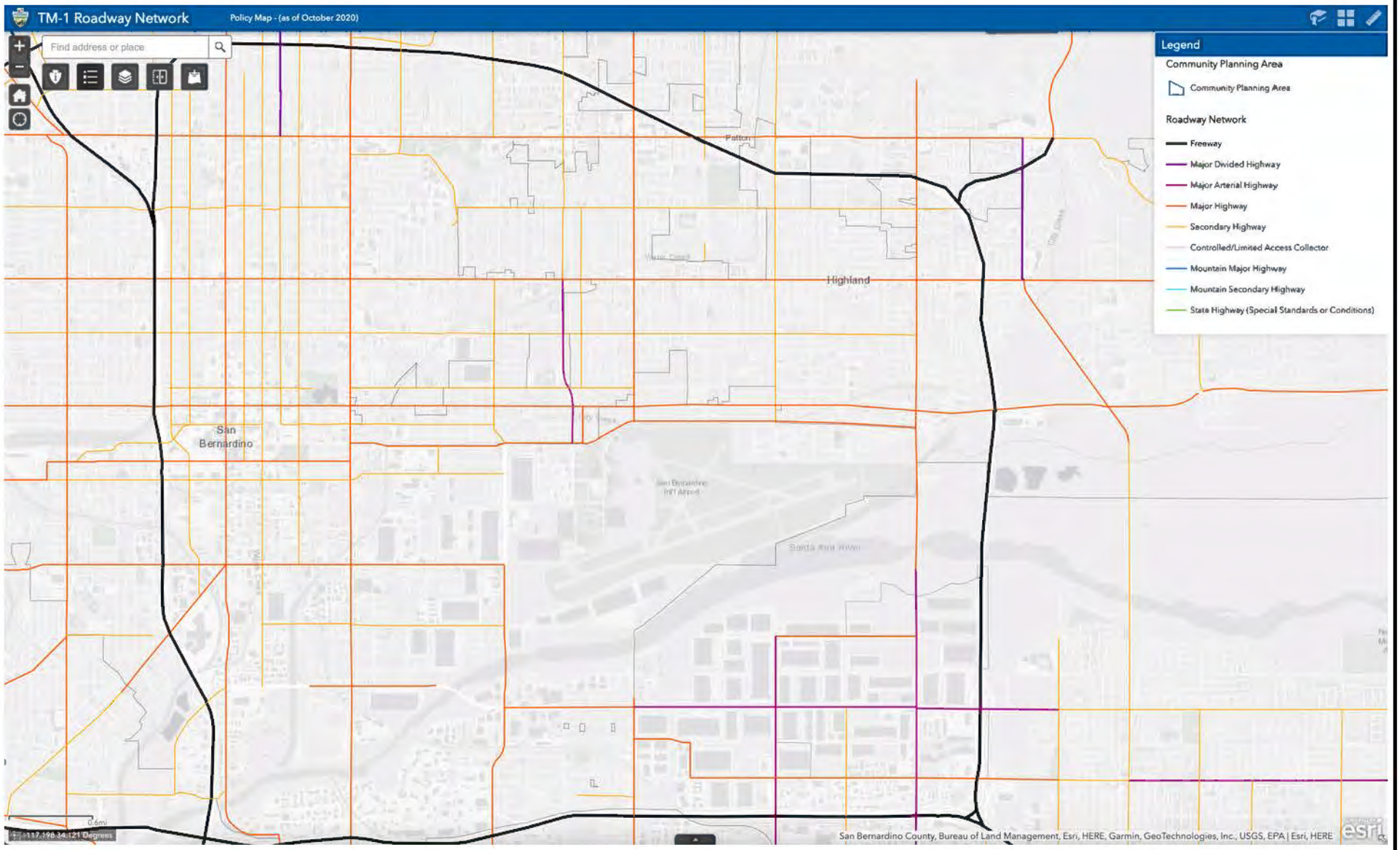


FIGURE 3-12

Tom Dodson & Associates
Environmental Consultants

IVIC Project Area Roadway Network

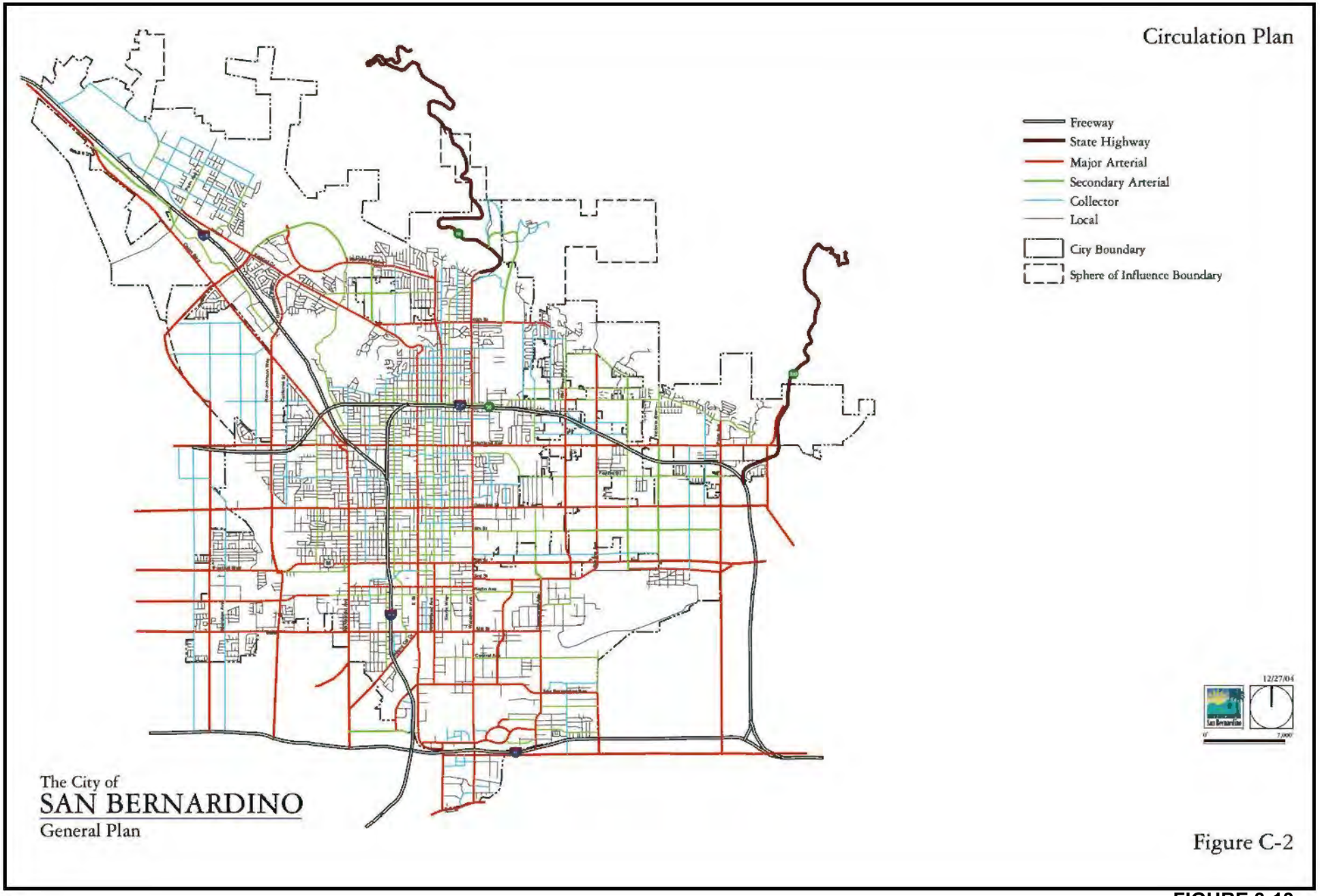
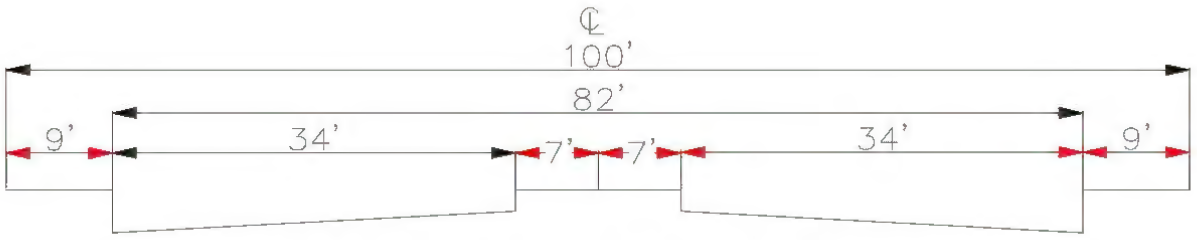


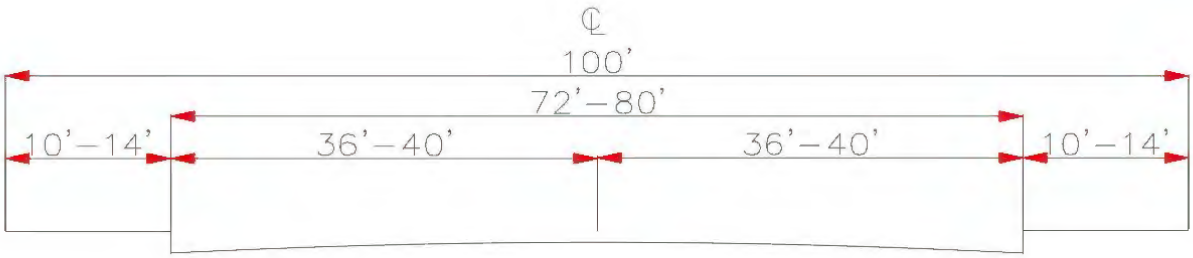
FIGURE 3-13a

Tom Dodson & Associates
Environmental Consultants

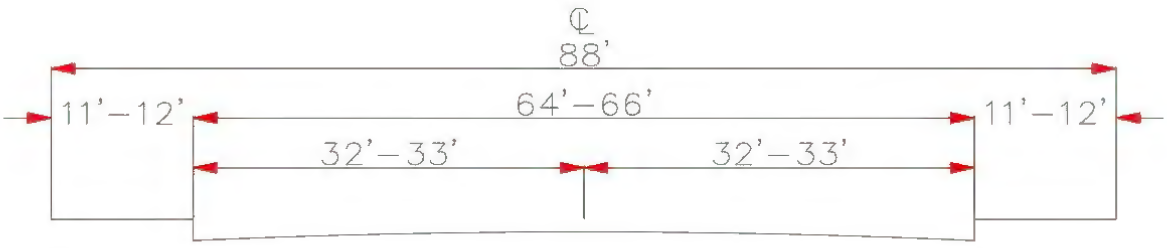
City of San Bernardino Circulation Network



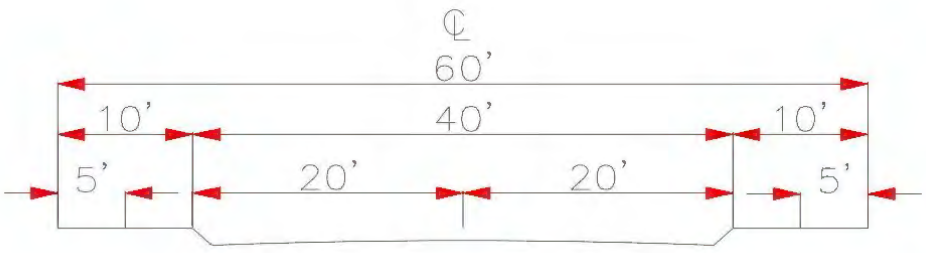
MAJOR DIVIDED HIGHWAYS



MAJOR HIGHWAY



SECONDARY HIGHWAY



COLLECTOR STREET

FOR USE IN QUARTER MILE STREETS,
SCHOOL AND INDUSTRIAL AREAS.

FIGURE 3-13b

Tom Dodson & Associates
Environmental Consultants

City of San Bernardino Standard Cross Sections

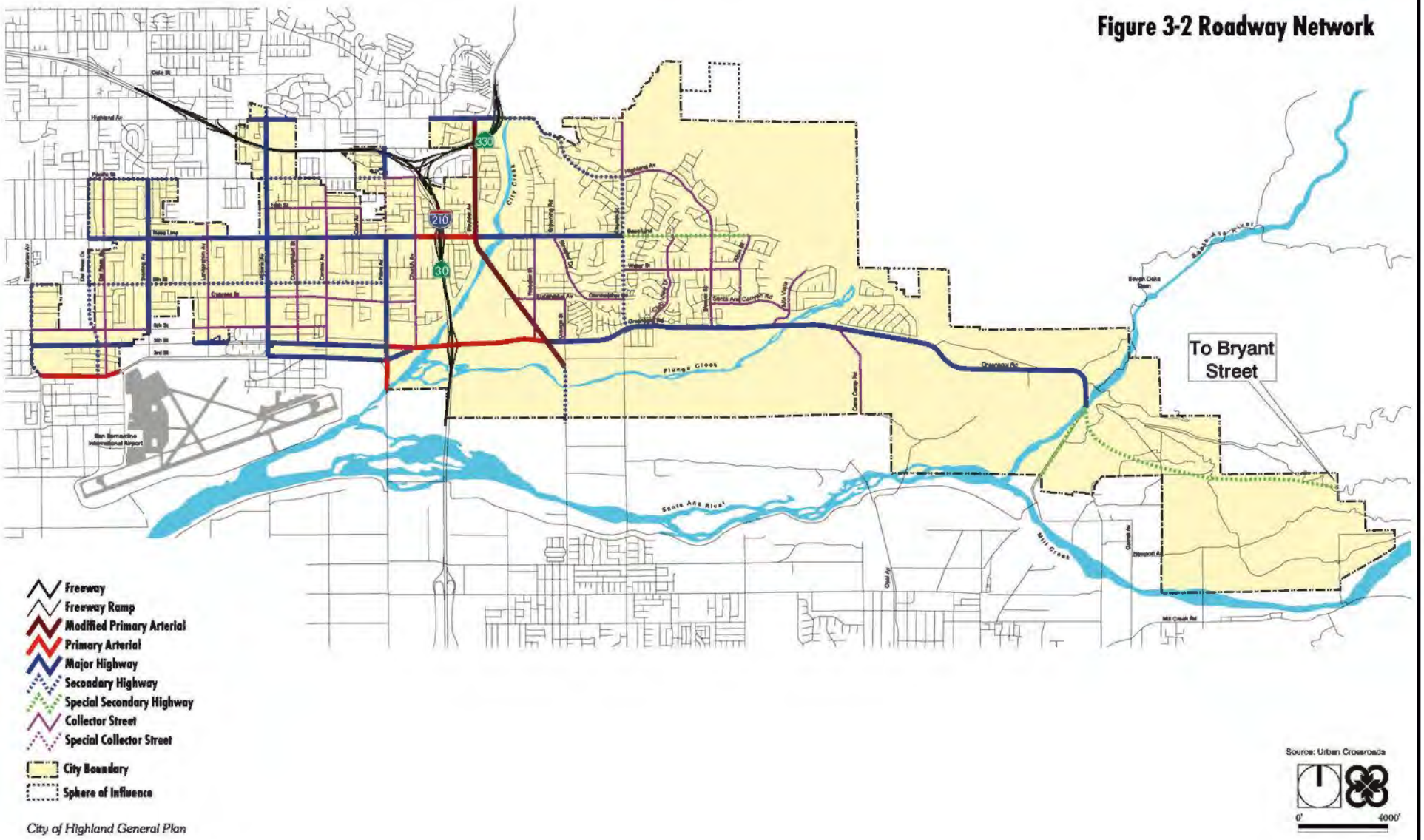


Figure 3-2 Roadway Network
To Bryant Street
Freeway
Freeway Ramp
Modified Primary Arterial
Primary Arterial
Major Highway
Secondary Highway
Special Secondary Highway
Collector Street
Special Collector Street
City Boundary
Sphere of Influence
City of Highland General Plan
Source: Urban Crossroads
0'
4000'

FIGURE 3-14a

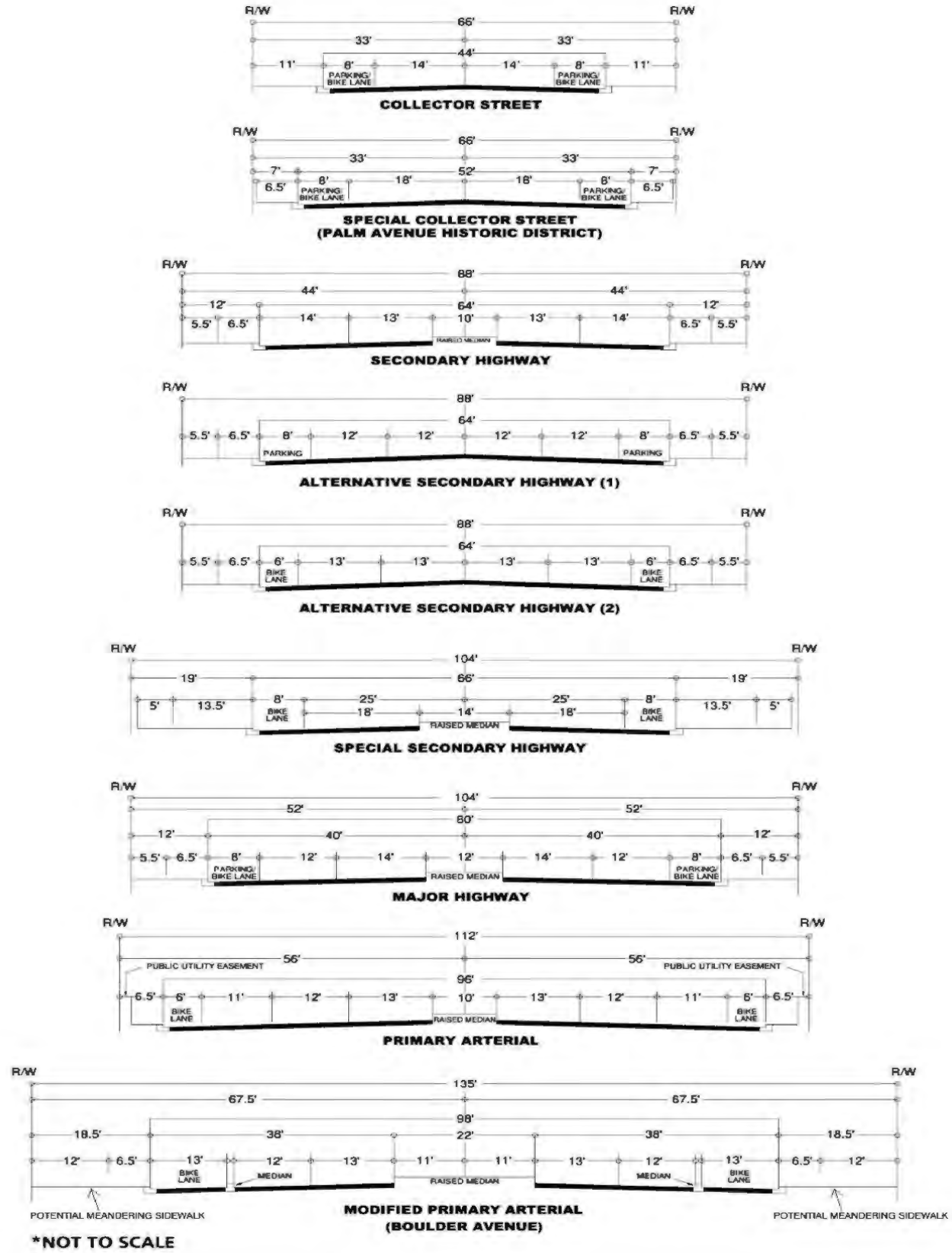


FIGURE 3-14b

Tom Dodson & Associates
Environmental Consultants

City of Highland Standard Cross Sections

project area, and then turns southward and is oriented in a north-south direction adjacent to the Specific Plan eastern boundary.

3.4.4.1 Current Street System

The existing street system in the general area and in the project area is described in the following text. The roadway system considered under the IVIC project extends from Tippecanoe to the west to the SR-210 to the east, and remains bound by 6th Street to the north and 3rd Street to the south.

Waterman Avenue is a north-south roadway that provides two to three lanes in each direction, with either a raised median or a center two-way left-turn lane in the project vicinity. The speed limit is 40 miles per hour (MPH) and on-street parking is prohibited on both sides. Waterman Avenue is designated on the City of San Bernardino's Circulation Plan as a Major Arterial.

Tippecanoe Avenue is a north-south roadway that provides two to three lanes in each direction, with either a raised median or a center two-way left-turn lane. Tippecanoe Avenue will form the westernmost boundary of the project area. The speed limit ranges from 30 to 45 MPH and on-street parking is prohibited on both sides of the roadway. Tippecanoe Avenue is designated on the City of San Bernardino's Circulation Plan as a Secondary Arterial north of 3rd Street and a Major Arterial south of 3rd Street; Tippecanoe Avenue is designated on the City of Highland's Circulation Element as a Secondary Highway.

Del Rosa Drive is a north-south roadway that provides one to two lanes in each direction, with either a raised median or a center two-way left-turn lane in the project vicinity. Del Rosa Drive extends through and beyond the Specific Plan boundary in both the north and south directions. The speed limit ranges from 35 to 45 MPH, with a 25-MPH school zone from Baseline Street to 6th Street. Del Rosa Drive is designated on the City of San Bernardino's Circulation Plan as a Major Arterial and is designated on the City of Highland's Circulation Element as a Secondary Highway.

Sterling Avenue is a north-south roadway that provides two lanes in each direction, with a center two-way left-turn lane in the project vicinity. Sterling Avenue starts at 3rd Street, and extends northward through and beyond the Specific Plan boundary. The speed limit is 40 MPH. Sterling Avenue is designated on the City of San Bernardino's Circulation Plan as a Major Arterial and is designated on the City of Highland's Circulation Element as a Major Highway.

Victoria Avenue is a north-south roadway that provides two lanes in each direction, with a center two-way left-turn lane in the project vicinity. Victoria Avenue extends through and beyond the Specific Plan boundary in both the north and south directions. The speed limit ranges from 40 to 45 MPH and on-street parking are prohibited on both sides. Victoria Avenue is designated on the City of San Bernardino's Circulation Plan as a Secondary Arterial and is designated on the City of Highland's Circulation Element as a Major Highway.

6th Street is an east-west undivided roadway that provides one travel lane in each direction. 6th Street will form the northern boundary of the project area from Tippecanoe Avenue to Central Avenue. The posted speed limit is 40 MPH, with a 25-MPH school zone from Tippecanoe Avenue to Del Rosa Drive. 6th Street is designated as a Collector Street on the City of San Bernardino's Circulation Plan and on the City of Highland's Circulation Element.

5th Street is an east-west roadway that provides one to two lanes in each direction in the project

vicinity, with a center two-way left-turn lane in some sections. 5th Street provides a direct connection to both the I-215 Freeway to the West and the SR-210 Freeway to the East. 5th Street will traverse the entire length of the project area and will have development on both sides of the street. The speed limit ranges from 40 to 45 MPH, with a 25-MPH school zone to the east of Waterman Avenue. 5th Street is designated on the City of San Bernardino's Circulation Plan as a Major Arterial and is designated on the City of Highland's Circulation Element as a Major Highway.

3rd Street is an east-west roadway that provides two lanes in each direction, with a center two-way left-turn lane. The speed limit ranges from 45 to 50 MPH. 3rd Street is designated on the City of San Bernardino's Circulation Plan as a Major Arterial and is designated on the City of Highland's Circulation Element as a Primary Arterial. 3rd Street will form the southern boundary of the project area from Tippecanoe Avenue to its eastern terminus.

3rd Street was recently connected to 5th Street just to the east of Church Avenue. The future connection to the east of Church Avenue allows eastbound traffic on 3rd Street to merge onto eastbound 5th Street. The connection to the west of Church Avenue allows limited access from 5th Street to westbound 3rd Street, but ultimately connects traffic utilizing 3rd Street with a direct approach via 5th Street to SR-210.

3.4.4.2 Existing Transit Service

Transit service within and to project area is provided by OmniTrans, which serves the Cities of San Bernardino, Highland and other surrounding cities. Currently, only OmniTrans Route 15 travels on any of the streets within the project area.

OmniTrans Route 15 operates between the City of Redlands and the City of Fontana, traveling through the project area along Tippecanoe Avenue, Del Rosa Avenue, Central Avenue, and Palm Avenue. Key stops along Route 15 include the San Bernardino County Court Building, Redlands Mall, San Bernardino Stadium, San Bernardino Valley College, Fontana Metrolink, and the San Bernardino Transit Center. At the San Bernardino Transit Center, passengers can transfer to other OmniTrans routes, as well as to Riverside Transit (RTA), Mountain Transit, Pass Transit, and Victor Valley Transit Authority (VVTA) routes, or to Metrolink.

Route 15 operates on weekdays from 6:40 AM to 10:40 PM with approximately 30-minute headways (the time between bus arrivals), and on Saturdays and Sundays from approximately 6:40 AM to 7:25PM with approximately 1-hour headways.

The OmniTrans bus stops located closest to the project area are as follows:

- Tippecanoe Avenue at 3rd Street
- Del Rosa Drive at 3rd Street
- Del Rosa Drive at 6th Street
- Central Avenue at 5th Street

3.4.4.3 Future Street System

The following summary of the differences between current and general plan build-out capacities for roadways within the IVIC project area

DEL ROSA DRIVE

Roadway Segment:	Within the IVIC area beginning at 3rd Street (to the South), with the potential for improvements extending north to the SR-210.
Current Configuration:	2 Lanes Undivided
General Plan Buildout Configuration:	Major Arterial (up to 8 lanes; may have raised medians)

6th STREET

Roadway Segment:	Within the IVIC area beginning at Church Avenue (to the east), with the potential for improvements extending west to Waterman Avenue.
Current Configuration:	2 Lanes Undivided
General Plan Buildout Configuration:	Collector Street (up to 2 lanes; 66-feet road right-of-way)

5th STREET

Roadway Segment:	Within the IVIC area beginning at SR-210 (to the east), with the potential for improvements extending west to the I-215.
Current Configuration:	2 Lanes Undivided (I-215 NB Ramps to E Street), 4 Lanes Divided (E Street to Waterman Avenue), 2 Lanes Undivided (Waterman Avenue to Victoria Avenue), and 4 Lanes Divided (Victoria Avenue to SR-210 Eastbound Ramps)
General Plan Buildout Configuration:	Major Highway Tippecanoe Avenue to Palm Avenue (4 Lane, 80-foot roadways; Primary Arterial Palm Avenue to SR-210 (up to 6 lanes; 96-foot roadways, curb-to-curb, within a minimum of 112-foot rights-of-way); Major Arterial Tippecanoe Avenue to I-215 (up to 8 lanes; may have raised medians)

3rd STREET

Roadway Segment:	Within the IVIC area beginning at SR-210 (to the east), with the potential for improvements extending west to the I-215.
Current Configuration:	4 Lanes Undivided
General Plan Buildout Configuration:	Major Highway Victoria Avenue to Church Avenue (4 Lane, 80-foot roadways; Primary Arterial Tippecanoe to N Leland Norton Way (up to 6 lanes; 96-foot roadways, curb-to-curb, within a minimum of 112-foot rights-of-

	way); Major Arterial N Leland Norton Way to Victoria Avenue (up to 8 lanes; may have raised medians)

TIPPECANOE AVENUE

Roadway Segment:	Within the IVIC area beginning at 3rd Street, with the potential for improvements extending north to Base Line.
Current Configuration:	4 Lanes Undivided
General Plan Buildout Configuration:	Secondary Highway 3rd Street to 9th Street (4 Lane roadway with a raised median and has a typical right-of-way width of 88 feet and a curb-to-curb pavement width of approximately 64 feet); Secondary Arterial 9th Street to Base Line (4 Lane);

STERLING AVENE

Roadway Segment:	Within the IVIC area beginning at 3rd Street, with the potential for improvements extending north to the SR-210.
Current Configuration:	2 Lanes Undivided
General Plan Buildout Configuration:	Major Arterial 3rd Street to the City of San Bernardino's Boundary just south of 6th Street (up to 8 lanes; may have raised medians); Major Highway City of Highland's boundary just south of 6th Street (4 Lane, 80-foot roadways); Major Arterial Pacific Street to SR-210 (up to 8 lanes; may have raised medians)

LANKERSHIM AVENUE

Roadway Segment:	Within the IVIC area beginning at 3rd Street, with the potential for improvements extending to 6th Street.
Current Configuration:	2 Lanes Undivided
General Plan Buildout Configuration:	Secondary Arterial from 3rd Street to 5th Street (up to 4 lanes); Collector Street from 5th Street north to the City of Highland's Boundary (up to 2 lanes; 66-feet road right-of-way)

VICTORIA AVENUE

Roadway Segment:	Within the IVIC area beginning at 3rd Street, with the potential for improvements extending north to the SR-210.
Current Configuration:	4 Lanes Undivided

General Plan Buildout Configuration:	Major Highway Victoria Avenue to Church Avenue (4 Lane, 80-foot roadways)

CUNNINGHAM STREET

Roadway Segment:	Within the IVIC area beginning at 5th Street, with the potential for improvements extending north to Base Line.
Current Configuration:	2 Lanes Undivided
General Plan Buildout Configuration:	Collector Street (up to 2 lanes; 66-feet road right-of-way)

CENTRAL AVENUE

Roadway Segment:	Within the IVIC area beginning at 5th Street, with the potential for improvements extending north to the City of Highland boundary, just south of Pacific Street.
Current Configuration:	2 Lanes Undivided
General Plan Buildout Configuration:	Collector Street (up to 2 lanes; 66-feet road right-of-way)

PALM AVENUE

Roadway Segment:	Within the IVIC area beginning at 3rd Street, with the potential for improvements extending north to the SR-210.
Current Configuration:	4 Lanes with a center queueing lane
General Plan Buildout Configuration:	Major Highway 3rd Street to Base Line and Pacific Street to SR-210 (4 Lane, 80-foot roadways (including a 12-foot median) curb-to-curb, within 104-foot rights-of-way); Special Collector Street (2 Lane; 52-foot roadway, curb-to-curb, within a 66-foot right-of-way; this section of Palm Avenue serves as the primary connection between the Town Center and Historic Village District and, in some areas, is constrained by existing historic structures in the area)

CHURCH AVENUE

Roadway Segment:	Within the IVIC area beginning at 3rd Street, with the potential for improvements extending north to the SR-210.
Current Configuration:	2 Lanes Undivided
General Plan Buildout Configuration:	Collector Street (up to 2 lanes; 66-feet road right-of-way)

The preceding roadway segments within the IVIC project area represent about 11 miles. Thus, it is anticipated that about 25 miles of new lane additions (single lane) will need to be installed over the estimated 20-year period. It is anticipated that as the area experiences growth in development, that roadway improvements will be installed gradually as the need for expanded roadway capacity becomes evident. However, IVDA and/or the local jurisdictions will seek opportunities to obtain grants or funding for specific roadway segments as identified above. This document evaluates the installation of up to two miles of new lane addition, plus curb and gutter improvements, per year, as a baseline to conduct the impact analysis.

3.5 PHASING AND CONSTRUCTION

The IVIC project is envisioned to be developed over a period of about 20 years in an incremental manner. As discussed above, the IVIC project includes the installation of the following:

- Up to 25 miles of roadway (assumes one-lane width)
- City Creek Bypass Channel improvements
- 3.5 MG storage reservoir located in the Lower Zone
- New Well 01 in the Intermediate Zone
- Up to 5,000 feet of sewer

In order to forecast the procession for development of the above infrastructure improvements, it is assumed that in the worst case year of construction, construction would consist of the following:

- Construction of one-half mile of new roadway, lane-width assumed to be 12 feet with curb and gutter;
- Installation of one third of the ultimate City Creek Bypass Channel design (length installed each year anticipated to be about one mile for a period of 3 years)
- Installation of a 3.5 MG storage reservoir
- Installation of a new extraction well
- Installation of 2,500 feet of sewer

3.5.1 Roadway Installation

About 2,640 lineal feet of roadway (one half mile) would be installed each year. Equipment will include one or more of the following: bull dozer, hydro-hammer, front-end loader, dump truck, chipper, water truck, and service truck. Major pieces of equipment to be engaged during construction will include one or more of the following: pavement grinder and saw cut machines, earth excavators, backhoe, boom truck, grader, water truck, front-end loader, compaction equipment, and service truck and delivery vehicles for deposit of aggregate base and asphalt concrete and Portland cement concrete. Up to 20 persons would be working the construction site per day, though the number of construction workers required will range from 10 to 20 persons per day..

3.5.2 City Creek Bypass Channel Improvement Installation

Construction is anticipated to require a maximum of 30 employees each day, though the number of construction workers required will range from 10 to 30 persons per day.

Installation of the City Creek Bypass Channel Improvements are anticipated to require one or more of the following equipment types: bull dozer, hydro-hammer, front-end loader, dump truck, chipper, water truck, and service truck. Major pieces of equipment to be engaged during construction will include one or more of the following: pavement grinder and saw cut machines,

earth excavators, backhoe, boom truck, grader, water truck, front-end loader, compaction equipment, and service truck and delivery vehicles for deposit of aggregate base and asphalt concrete and Portland cement concrete.

For any constriction that would encroach within the roadway, the contractor(s) will maintain one lane open in each direction throughout the construction process, as well as access at all times for emergency vehicles and access to all driveways, mailboxes, and bus stop(s).

3.5.3 Extraction Well

It is assumed that the average pumping capacity for the new extraction well will be up to 2,500 gallons per minute (gpm).

It is anticipated that about five persons will be on the well site at any one time to support drilling a well: three drillers, the hydrologist inspector, and a foreman. Daily trips to complete the well will average about 15 roundtrips per day. The types of trips including about 10 daily trips for employees plus, at various points of construction: two roundtrips for drill rigs (total for entirety of construction); between 6 and 12 roundtrips for cement trucks (total for the entirety of construction); and about 5 trips to deliver pipe (total for the entirety of construction).

For analysis purposes it is assumed that the well would be drilled using the direct rotary or fluid reverse circulation rotary drilling methods. The average area of disturbance of each well site is estimated to be one-half an acre or less. Access to the drilling site for the drilling rig and support vehicles would be from adjacent roadways. Typically, well drilling requires only minimal earth movement and/or grading.

The drilling and development of the well will require drilling up to 1,500 feet below ground surface (bgs). The proposed schedule for constructing the well would be as follows: drilling, construction, and testing of the well would require approximately six weeks to complete (about 45 days, of which 15 to 20 days would include 24-hour, 7-day a week drill activity). For planning purposes, a construction and testing schedule duration of 60 days for the well is assumed to account for unforeseen circumstances (e.g., extreme weather, equipment break downs, etc.) that could affect the drilling and testing schedule. The well casings are expected to be welded and it will be assumed that well development and installation will require a two-week use of a diesel generator.

The borehole for the well would be drilled using at least two separate drilling passes. The first pass, or pilot borehole, would be drilled using a 17.5-inch diameter bit to an estimated maximum depth below the ground surface, which would correspond to the top of the consolidated bedrock in the area, or a depth selected by the project hydrologist/hydrogeologist. Upon completion of the geophysical logs, the pilot borehole would be enlarged (reamed) to a diameter of 24 inches to approximately the same depth to accommodate the well casing, screen and filter pack.

Once the well is constructed it would immediately be developed through a process of swabbing and airlifting. During this process, drilling fluids and suspended sediment would be removed from the well. After the drilling fluids are removed along with most of the suspended sediment, the well would be further developed through pumping.

3.5.4 Storage Reservoir

A 3.5 MG water storage reservoir would be designed in accordance with the California Building Code (CBC), the Occupational Safety and Health Administration (OSHA), American Concrete

Institute (ACI), and AWWA's design standards. AWWA's design standards require that water storage reservoirs be operated at fill levels below their maximum physical height in order to prevent roof damage which may be caused by a "sloshing wave" during a seismic event. As a result, the usable capacity of the new water storage reservoirs will be reduced when compared to the water storage reservoir physical capacity by approximately 30% (the physical capacity would be about 4.55 MG).

Grading: The size of the water storage reservoir site is anticipated to be greater than one acre, with approximately one acre of disturbance required per water storage reservoir. Fine grading of the site will be completed after the water storage reservoir and piping are installed. It is assumed that a maximum of five to twelve workers will be on the site during grading, which would take place for about 10 days.

Foundation Construction: Following mass excavation, the reservoir foundation will be installed. The foundation will consist of concrete/steel/aggregate. It is assumed that a maximum of five to twelve workmen will be on the site during foundation construction for a maximum of about 25 days.

Reservoir Construction: The water storage reservoir will be constructed to be circular in the following fashion: floor; walls and columns; roof; prestressing; and appurtenances. It is assumed that a maximum of 12 employees will be on the site during water storage reservoir construction for a maximum of about 120 days.

Overall, water storage reservoir construction is anticipated to require about 6 months from start to finish.

3.5.5 Sewer Installation

Construction is anticipated to require a maximum of 15 employees each day, though the number of construction workers required will range from 10 to 20 persons per day.

Installation of the sewer would be anticipated to require one or more of the following equipment types: bull dozer, hydro-hammer, front-end loader, dump truck, chipper, water truck, and service truck. Major pieces of equipment to be engaged during construction will include one or more of the following: pavement grinder and saw cut machines, earth excavators, backhoe, boom truck, grader, water truck, front-end loader, compaction equipment, and service truck and delivery vehicles for deposit of aggregate base and asphalt concrete and Portland cement concrete.

For any constriction that would encroach within the roadway, the contractor(s) will maintain one lane open in each direction throughout the construction process, as well as access at all times for emergency vehicles and access to all driveways, mailboxes, and bus stop(s).

3.6 PROJECT APPROVALS AND RESPONSIBLE AND TRUSTEE AGENCIES

It is anticipated that the Inland Valley Development Agency, functioning as the CEQA Lead Agency, will approve the final IVIC and CEQA document. It is anticipated the cities of Highland and San Bernardino, and East Valley Water District will serve as responsible agencies for infrastructure components that would be installed under the respective jurisdiction. Additionally, the San Bernardino County Flood Control (Department of Public Works) may consider and approve the design for the City Creek Bypass channel. To install the support infrastructure within the project area, encroachment permits may be required by various agencies. Finally, in order to

make modifications to the City Creek Bypass channel, it will be necessary to obtain regulatory permits for discharge of fill or streambed alteration. In this instance both the Santa Ana Regional Water Quality Control Board and the California Department of Fish and Wildlife would function as CEQA Responsible Agencies.

Other agencies that may have permitting authority over the project may include:

- State Water Resources Control Board
- South Coast Air Quality Management District
- U.S. Army Corps of Engineers
- East Valley Water District
- Caltrans District 8
- U.S. Fish and Wildlife Service
- San Bernardino County Transportation Agency