Pomona Valley
ITS Project

Project Deliverable 4.1.3f

Individual City Report -
City of San Dimas

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INDIVIDUAL CITY REPORT -
SAN DIMAS

Kimley-Horn and Associates, Inc.

PROJECT DESCRIPTION

The County of Los Angeles, in cooperation with the cities within the Pomona Valley, has determined that development of an Intelligent Transportation System (ITS) in the Pomona Valley would help to reduce congestion, enhance mobility, provide traveler information during non-recurring and event traffic congestion, and manage event traffic. The Pomona Valley Intelligent Transportation Systems (PVITS) project was conceived as a recommendation from the Pomona Valley Feasibility Study completed by the MTA in 1995. The ultimate objectives of the Project are to:

- Improve mobility by optimizing traffic management on arterials and freeways;
- Enhance Route 60 capacity by better coordinating freeway traffic with parallel arterials;
- Improve agency efficiency by coordinating management of operations and maintenance efforts among and between agencies; and
- Increase agency staff productivity by providing low-maintenance, high-quality communications and computational tools to assist in daily management and coordination activities.

PURPOSE OF REPORT

The Conceptual Design of the Pomona Valley ITS project includes the preparation of a Stakeholder Operational Objectives Report that summarizes each project stakeholder's needs, objectives, and issues to consider in the planning, design, and implementation of advanced technologies for traffic control, traffic management, and traveler information systems. This Individual City Report document provides a summary of existing, planned (already approved), and desired transportation projects and policies within the City of San Dimas. This summary is based upon information in the 1995 Pomona Valley Forum Signal Synchronization Study, with updates to the information based upon city input from recent surveys and coordination meetings. Separate reports of data summaries and stakeholder objectives have been created for each City within the Pomona Valley project area.

This report provides the following information for the City of San Dimas:

- Section 1.0: Definition and overview of the study area
- Section 2.0: Existing, planned, and desired traffic control and communications infrastructure
- Section 3.0: Current issues and desired aspects of operations and maintenance
- Section 4.0: Current issues and desired aspects of interagency coordination

Figures illustrating the locations of existing and planned traffic control equipment and congestion issues are included in Appendix A. A list of all existing and proposed signalized intersections on study arterials (regionally significant arterials) within the City is included in Appendix B.

The Stakeholders Operational Objectives Report (Deliverable 4.1.2) is a separate document that will be developed as part of this project. It will provide more specific detail on the ideal operational characteristics of the PVITS equipment and user interfaces.

1.0 SAN DIMAS STUDY AREA CHARACTERISTICS

The study area for San Dimas utilized information from a definition of roadway "significance" that was defined in the 1995 Pomona Valley Forum Signal Synchronization Study. This determination of roadway significance utilized roadway Average Daily Traffic (ADT) levels and Level of Service (LOS) ratings, along with other factors such as roadway inclusion in the Congestion Management Program (CMP), the number of transit routes utilizing the roadway, and local agency preference.

1.1 Study Arterials

Table 1 on the next page provides a summary of the arterials considered as "regionally significant" within San Dimas, along with the major factors for prioritization that were utilized in the 1995 Synchronization Study. A review was made by Kimley-Horn of these coordination-meeting discussions with the City, along with a review of Arrow Highway's juxtaposition in the regional roadway network and direct access to the Fairplex. From these reviews, it was determined that Arrow Highway should be included as a study arterial within the San Dimas city study area, as well as the entire PVITS study area.

The regionally significant arterials, and other roadways in the City are illustrated in **Figure 1** of Appendix A.

TABLE 1: STUDY AREA ARTERIAL SIGNIFICANCE SUMMARY

Street	Average Daily Traffic	Number of Transit Routes	CMP Arterial
Foothill Boulevard	21,730 – 22,800	2	Yes
Arrow Highway	22,893 – 27,256	3	No

Source: Kimley-Horn and Associates, Inc., 2001

Transit Availability

Table 1 also indicates transit availability along the city study arterials. Two transit lines serve Foothill Boulevard within San Dimas, while Arrow Highway is served by three transit lines. In total, the city is served by six transit lines, all provided by Foothill Transit:

- Line 187 serves Foothill Boulevard throughout its segment within San Dimas. The line also serves other cities between Pasadena (to the west) and Montclair (in San Bernardino County).
- Line 276 serves Foothill Boulevard between Lone Hill and San Dimas Avenues. Other streets are utilized to reach the remaining points on the route, which include Glendora, downtown San Dimas, West Covina, and Industry.

- Lines 494 and 499 provide limited peak-hour service on Arrow Highway between San Dimas Avenue and the I-210 freeway. These lines share an eastern terminus at the San Dimas Park and Ride, on San Dimas Avenue north of Arrow Highway. Both lines serve a different set of mid-route stops, but share a western terminus in downtown Los Angeles.
- Foothill Transit Line 492 serve Bonita Avenue east of the I-210, and Arrow Highway west of the I-210. The line is a local/express service that serves cities between Montclair and Arcadia, then utilizes the I-10 freeway busway/carpool lanes to reach downtown Los Angeles.

Line 690 is an express route that serves park-and-ride commuters in Montclair, Claremont, La Verne, and San Dimas that are destined for Pasadena. The line does not serve either of the regionally significant arterials in San Dimas, but does have a stop at the Lone Hill Avenue Park and Ride located in Glendora, near San Dimas, just south of the I-210 freeway.

Roadway Descriptions

The following text summarizes the characteristics of each of study area arterial within San Dimas.

Foothill Boulevard: This four-lane major roadway provides east-west access in the northern area of San Dimas, from the City of Glendora to the west of San Dimas, to the City of La Verne boundary on the east side of the city. It is designated as SR-66, and is a part of Historic U.S. Route 66. The City of San Dimas has had discussions with Caltrans about relinquishing this roadway to the City. Foothill Boulevard is the only designated truck route in the City.

The roadway provides access to the north-south roadways, such as San Dimas Avenue and San Dimas Canyon Road. Foothill Boulevard currently has a limited-access interchange with the SR-30 freeway in La Verne.

Arrow Highway: This roadway is a major east-west arterial within the central area of San Dimas, providing access from the Glendora city limits on the west to the La Verne city limits on the east. The roadway provides a full access interchange to the I-210 freeway, along its north-south segment between I-10 and the current SR-30 freeway corridor.

Existing truck route designations within the study area are illustrated in **Figure 2** of Appendix A.

1.2 Traffic Congestion and Development

Traffic counts were made at congested points within San Dimas in order to supplement intersection Level of Service (LOS) and arterial average daily traffic (ADT) data provided by the City. Congestion as defined in this report, does not rely only on average congestion values such as LOS, but also on sporadic congestion caused by special event traffic, heavily used railroad grade crossings, and other causes.

Table 2 below indicates the LOS of selected intersections that were analyzed utilizing June, 2001 traffic counts within the San Dimas study area.

TABLE 2: LEVEL OF SERVICE (LOS) OF SELECTED INTERSECTIONS, SAN DIMAS STUDY AREA		
Intersection	**AM Peak Period LOS**	**PM Peak Period LOS**
Arrow Highway / Covina Blvd/ Cataract Avenue	B	C
Arrow Highway / San Dimas Avenue	B	B
Arrow Highway / Bonita Avenue / I-210 west ramps	B	C
Foothill Boulevard / San Dimas Avenue	A	C
Lone Hill Avenue / Arrow Highway	A	A
LOS values are based upon intersection turn movement counts conducted during the week of June 25, 2001. Data was analyzed utilizing the 1997 Highway Capacity Manual method.		

Table 2 indicates that these intersections operate at acceptable Levels of Service (LOS) in both the a.m. peak and p.m. peak periods. Three intersections are at LOS C during the p.m. peak period, which is still within acceptable operating conditions: Arrow Highway / Covina Boulevard, Arrow Highway / Bonita Avenue / I-210 west ramps, and Foothill Boulevard / San Dimas Avenue.

Figure 3 in Appendix A illustrates the Average Daily Traffic levels of the study area arterials, as well as the Level of Service (LOS) of the study area intersections.

According to City of San Dimas staff, sporadic congestion sometimes occurs along Arrow Highway in the vicinity of Bonita Avenue and the I-210 freeway. The congested areas are illustrated in **Figure 4** of Appendix A.

- The most congested intersections in the City are Arrow Highway / Cataract Avenue, Arrow Highway / San Dimas Avenue, and Arrow Highway at the I-210 northbound and southbound ramps.
- The City has a particular concern about growing congestion on Lone Hill Avenue, based on the growing number of development projects along this street, both within Glendora and within San Dimas.

New development projects in the City include a major project at the northeast corner of the Bonita Avenue /Arrow Highway intersection that will contribute significantly to future traffic levels within San Dimas. This project includes a new Lowe's Home Improvement Warehouse, at the site of a current Levitz furniture showroom. The existing Levitz building will be demolished and replaced with the 160,000 square-foot Lowe's building. The project also includes a new 46,000 square-foot Levitz Showroom Facility and a 3,000 square-foot drive-through restaurant pad.

Developments on the east side of the City of Glendora could have significant effects on traffic levels along Lone Hill Avenue, which runs in a north-south direction through the west side of the City:

- At the northwest corner of the Lone Hill / Gladstone Street intersection, there is a 50-acre retail project under development that lies within Glendora, next to the west side of San Dimas. A Home Depot was completed in spring of 2001, and a Sam's Club will open in August 2001. A department store, two auto dealers, and other tenants will bring the total project square footage to 460,000 of general retail.

- The traffic study for this project included approximately 8-12 intersections in the study area. Primary recommendations from the study included ramp improvements at Lone Hill Avenue and the I-210, north of the project.

- Glendora is also planning to develop the northeast corner of the Valley Center Avenue / Gladstone Street intersection, which also borders the west side of San Dimas. The site is 30 acres in size, and may be developed with a city park, a housing development, or an industrial park. The final development concept has not been finalized.

2.0 TRAFFIC CONTROL AND MONITORING SYSTEM

This section provides an overview of the existing and planned traffic signal equipment, and related communications and monitoring equipment. This represents the core infrastructure from which an ITS system can be conceptualized. The remaining sections of the document provide an overview of traffic operations, and system operations and institutional issues.

San Dimas is primarily a developed community with open space remaining in hills and canyons. For the developed areas of the City, traffic patterns and traffic signal systems are established. Many remaining areas of development may require new traffic signals arterials within the study area. **Figure 5** in Appendix A indicates the existing signalized intersections on the regionally significant arterials within San Dimas. **Appendix B** provides a list of the equipment at locations on regionally significant arterials within the city.

Issues concerning the City's existing traffic signal control system, and its objectives for planned (and desired but not funded) equipment, including a communications system, are provided in the following lists:

<u>Existing System</u>

- There are 38 signals on all city roadways, all with Type 170 controllers and WWV coordination.
- Caltrans operates and maintains 10 signals within the city.
- The current signal system utilizes advanced vehicle loop detection.
- Timing plans are implemented during selected times of the day, when possible, to assist in alleviating congestion.
- Signal timing plans are prepared by Los Angeles County, or consultants, depending on the breadth of system timing changes.
- The City feels that the current signal system could better manage seasonal traffic variations if the resources were available to implement new signal timing plans more often.
- The north and south approaches of the Arrow Highway / San Dimas Avenue intersection have video detection.
- Coordination of signals is achieved through time-of-day plan selection.

- Portions of Covina Boulevard have interconnect conduit, between Cypress Avenue and Arrow Highway.
- Badillo Avenue has interconnect conduit, on its segment within San Dimas.
- Arrow Highway has operational interconnect conduit, installed by the City of San Dimas with signal coordination done as part of the Los Angeles County signal synchronization projects.
- An interconnect project was recently completed on Covina Boulevard along the San Dimas High School frontage.
- Fiber is strung above ground via utility poles along Walnut Avenue and Arrow Highway. This fiber is connected into the east side of City Hall, connecting the City's Maintenance Yard to City Hall.
- San Dimas City Hall is cable-TV-equipped

Planned Improvements

- The City recognizes that communications hardware would need to be upgraded and new conduits would need to be established to achieve a centralized traffic management system.
- The City has no current plans to upgrade the current traffic control system before 2006.

Desired Improvements

- The north and south approaches of the Arrow Highway / San Dimas Avenue intersection have video detection for signal actuation. On the east and west approaches, detection is achieved through in-pavement loops. The east and west approaches would be prime candidates for video monitoring.
- The City desires full interconnect between jurisdictions on significant arterials for better traffic signal coordination.
- The City feels that Changeable Message Signs (CMS) would be much more effective than Highway Advisory Radio (HAR) systems.
- The City would like CCTV capability.
- Monitoring of signal status and traffic volumes would have the highest priority along the study arterials of Arrow Highway and Foothill Boulevard. The City would also like to expand future systems to the non-PVITS corridors of Covina Boulevard / Badillo Avenue and, and San Dimas Avenue.
- The City has a concern over the aesthetics of planned CMS equipment.
- The location recommended by the City for CMS equipment placement within the PVITS study area is in the vicinity of the Arrow Highway / I-210 junction. Other preferred locations outside of the study area include, San Dimas Avenue, SR30/SR210, Covina Boulevard / I-210, Via Verde / I-10.
- The City has some knowledge of adaptive control systems, and feels that such a system could be of benefit to future traffic control systems.

The City's objectives for an improved signal system and a potential local city control site are as follows:

- Future systems would monitor and control signals at certain intersections.
- Data retrieval from field equipment should be available in a centralized location.

- Communication links via dial-up phone lines should be avoided, due to operational cost.

- Data could be shared with City planning and emergency services personnel.
- The San Dimas Police Department should have a link to the system for monitoring purposes. Communication of this nature should also be extended to the Fire Department and the City maintenance yard, if possible.
- Future systems should provide special event and seasonal traffic management, as well as emergency management / disaster operations functions.
- The system should be able to share information with other agencies for improved coordinated over city boundaries.
- The control site should provide remote monitoring of traffic levels and signal status (through CCTV and ATMS).
- The highest priority for desired CCTV video monitoring is at the intersection of Arrow Highway / San Dimas Avenue.
- Maintenance information should be available through the system.
- The City sees the need for a Traffic Management Center.
- The City desires a TMC that would display traffic volumes and speeds on a graphical map, and consolidate information and management of transit, video camera images, events, and incidents.

3.0 OPERATIONS AND MAINTENANCE ISSUES

The City of San Dimas has identified specific system operations and maintenance issues regarding PVITS implementation within the City. The issues discussed during project coordination meetings included resources and staffing for maintenance of the current traffic control system, monitoring of traffic, and traffic data collection. Also discussed were operations and maintenance issues of an ITS system, and all of its related components.

- Maintenance of current traffic control system is handled by contractor staff (about 80% of the time) and by one city employee.
- The City's approximate annual maintenance cost on the current control system includes $20,000 for personnel, $20,000 for equipment, $10,000 for spare parts, $1,000 for software, $40,000 for contract labor, and $10,000 for painting equipment.
- Problems with traffic control equipment are currently identified proportionally by public call-in (10-15%), police department call-in (20-25%), city traffic department field checks (25%), and maintenance contractors or staff (50-60%).
- The City rates its own ability to identify problems with traffic control equipment as good, and its own ability to respond to problems as good to excellent.
- Installation of equipment on newly paved streets would be prohibited by City guidelines, if cutting of pavement would be necessary.
- City staff is busy; the existing staff would be hard-pressed to take on more workload.
- The City asked how training would take place. This has not yet been determined and will be defined as the project is defined.
- Funding would be desired for operations, training, etc.

4.0 INTERAGENCY AND LOCAL CITY ISSUES

The following list documents issues of communication, cooperation, and agreement between internal city, and other local and regional agencies.

- The City would like to have direct control of signals through a Local City Control Site.
- The City has difficulty coordinating with Caltrans. The City contacts Caltrans when signal timing starts working poorly, but response times from Caltrans vary. The City considers this to be the most important institutional issue.
- Coordination of Caltrans and City signals along the I-210 corridor at Arrow Highway is lost when Caltrans makes adjustments and changes to the ramp signal controllers. The City has made previous, unsuccessful attempts to work with Caltrans to coordinate interconnect projects and modifications to the signal controllers at these locations.
- There is an interest to have informational kiosks throughout the city at locations such as Target, Lowes, the city library, City Hall, and the police station.
- The City desires kiosks that display information on congestion levels, incidents, special events, recurring congestion, and transit information. Advertisements and tourist information provisions are secondary goals.
- The City is willing to share phase indication, volume, and speed information with adjacent cities.
- The City would find benefit in receiving information on phase indication, volume/occupancy/speed, freeway congestion data, and transit schedules/status from adjacent cities and regional cities.
- There is a concern that the sharing of video with other agencies could be a civil rights issue. Implementation of video technology could result in citizen concerns over invasion of privacy issues.
- The City would be willing to temporarily relinquish control of the city traffic management system when the following conditions are met:
  - Pre-approved alternate timing plans are in place.
  - Legal requirements have been met establishing ownership and control responsibilities
  - Hours of relinquishment are established at the beginning of an event or control cycle.
  - Security and liability issues for the City of San Dimas are addressed.

5.0 NEXT STEPS

The information summarized within this document will be utilized to formulate the Stakeholders and Operational Objectives Report (Deliverable 4.1.2). This document will provide a project-wide evaluation of stakeholder needs and wishes, and provide a basis for the Requirements Analysis under Task 5 of this project. The Stakeholders and Operational Objectives Report will provide the following analyses of PVITS project implementation, from information summarized in the Individual City Reports:

- Anticipated benefits to stakeholders
- Potential cost implications to stakeholders
- Potential impacts on local agency staffing and operation
- Potential impacts on local agency management and maintenance costs

Deliverables from the Addendum Report, Route 60 Feasibility Study, and the Fairplex Traffic Management Plan efforts will also be incorporated into the Requirements Analysis task, and into tasks beyond this, such as the Concept of Operations and Alternatives Analysis.

Appendix A

Figure 1: Regionally Significant Arterials

Figure 2: Existing Truck Routes

Figure 3: Average Daily Traffic and Level of Service (LOS)

Figure 4: Traffic Congestion Locations

Figure 5: Traffic Signal and Control Equipment Locations on Regionally Significant Arterials

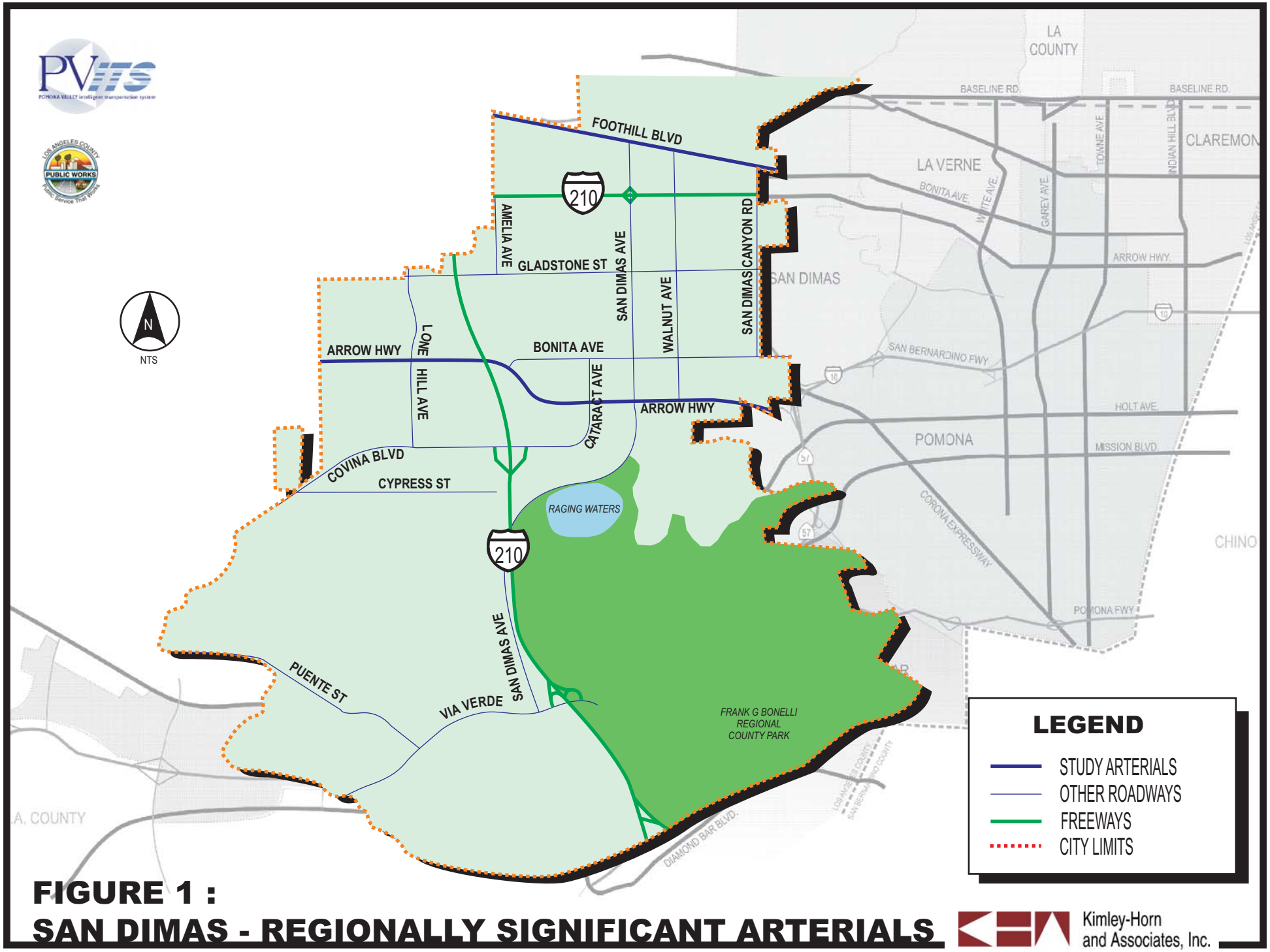

FIGURE 1 :
SAN DIMAS - REGIONALLY SIGNIFICANT ARTERIALS

Kimley-Horn and Associates, Inc.

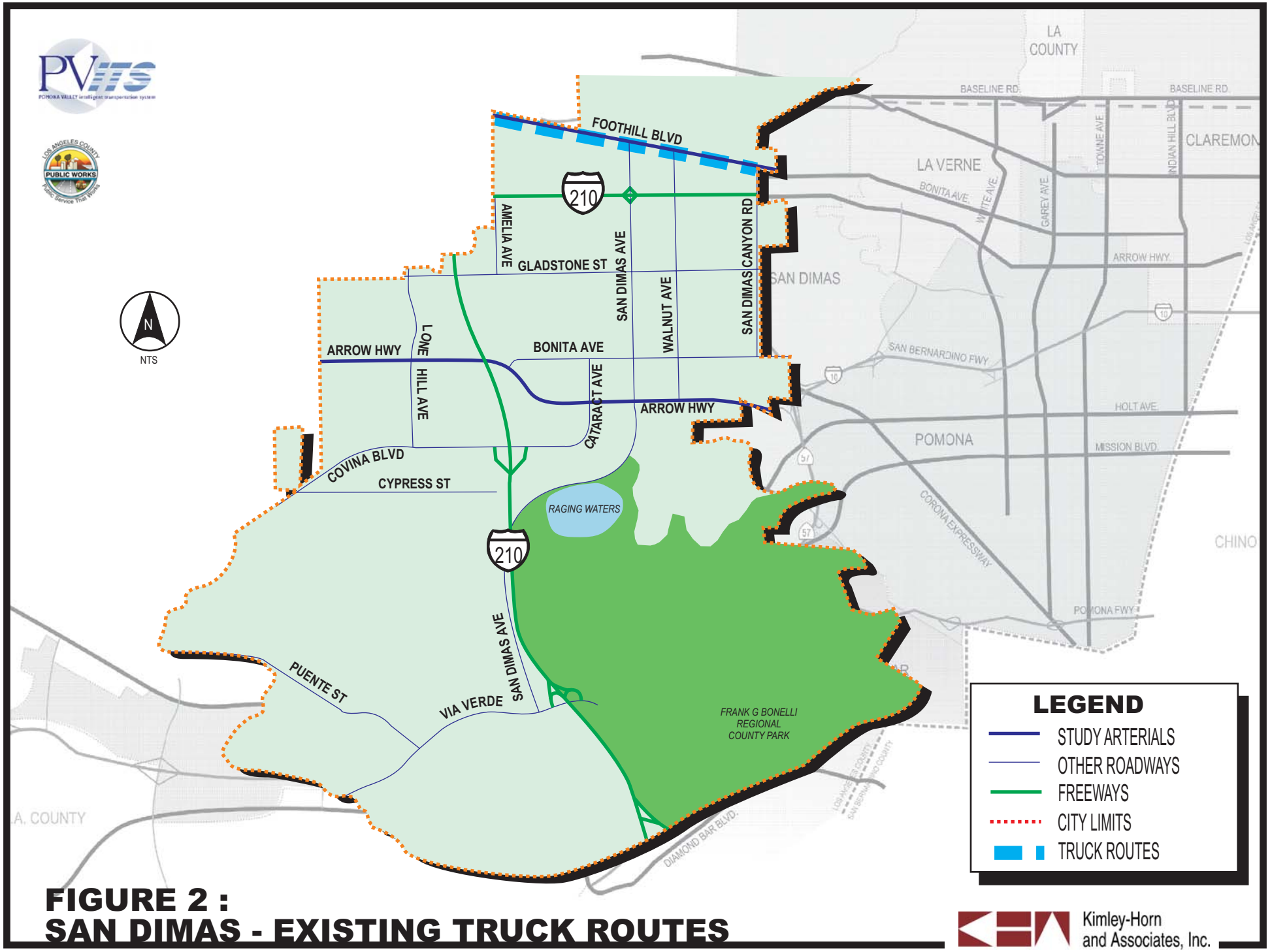

FIGURE 2 :
SAN DIMAS - EXISTING TRUCK ROUTES

Kimley-Horn and Associates, Inc.

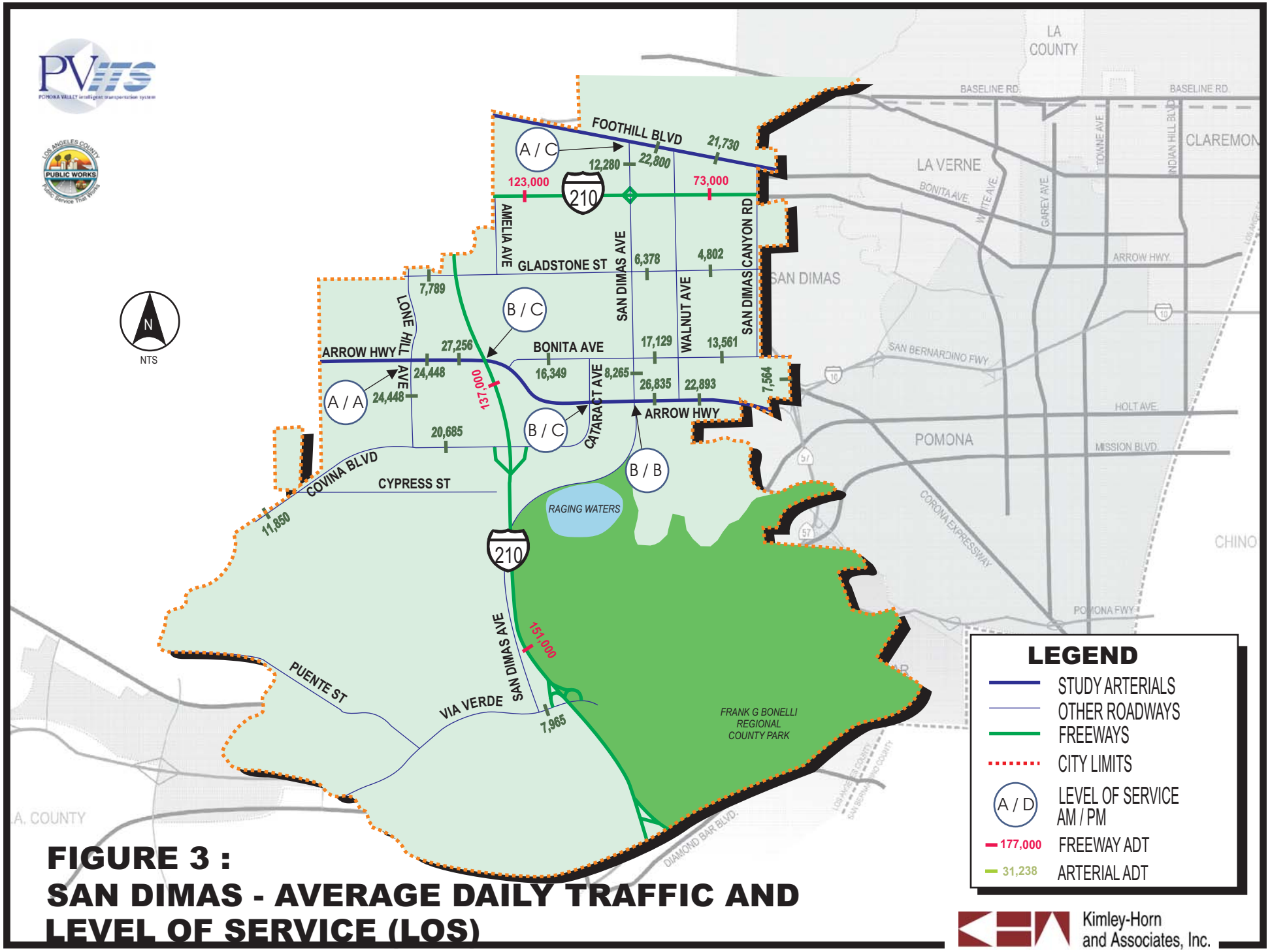

FIGURE 3 :
SAN DIMAS - AVERAGE DAILY TRAFFIC AND LEVEL OF SERVICE (LOS)

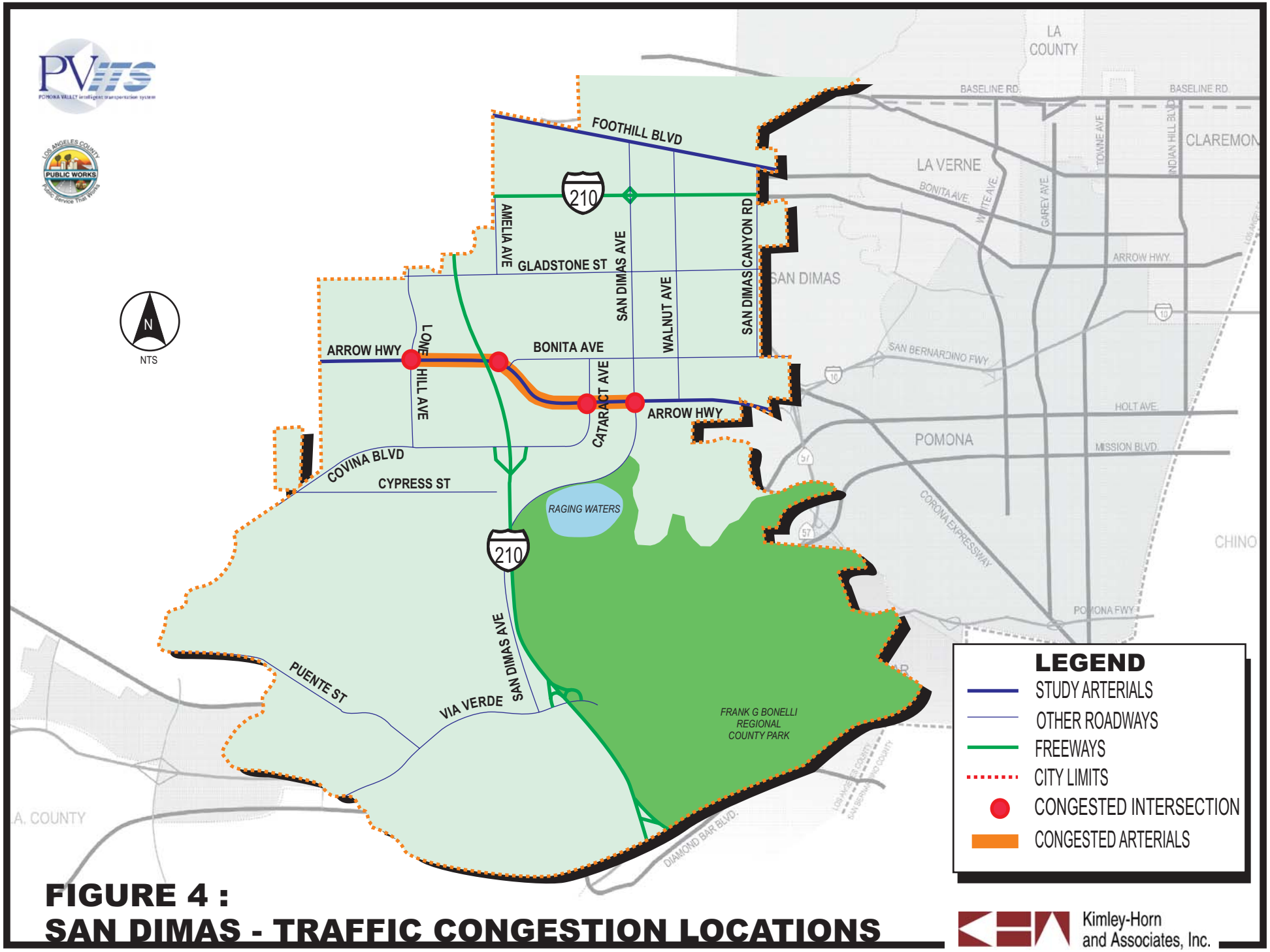

FIGURE 4 :
SAN DIMAS - TRAFFIC CONGESTION LOCATIONS

Kimley-Horn and Associates, Inc.

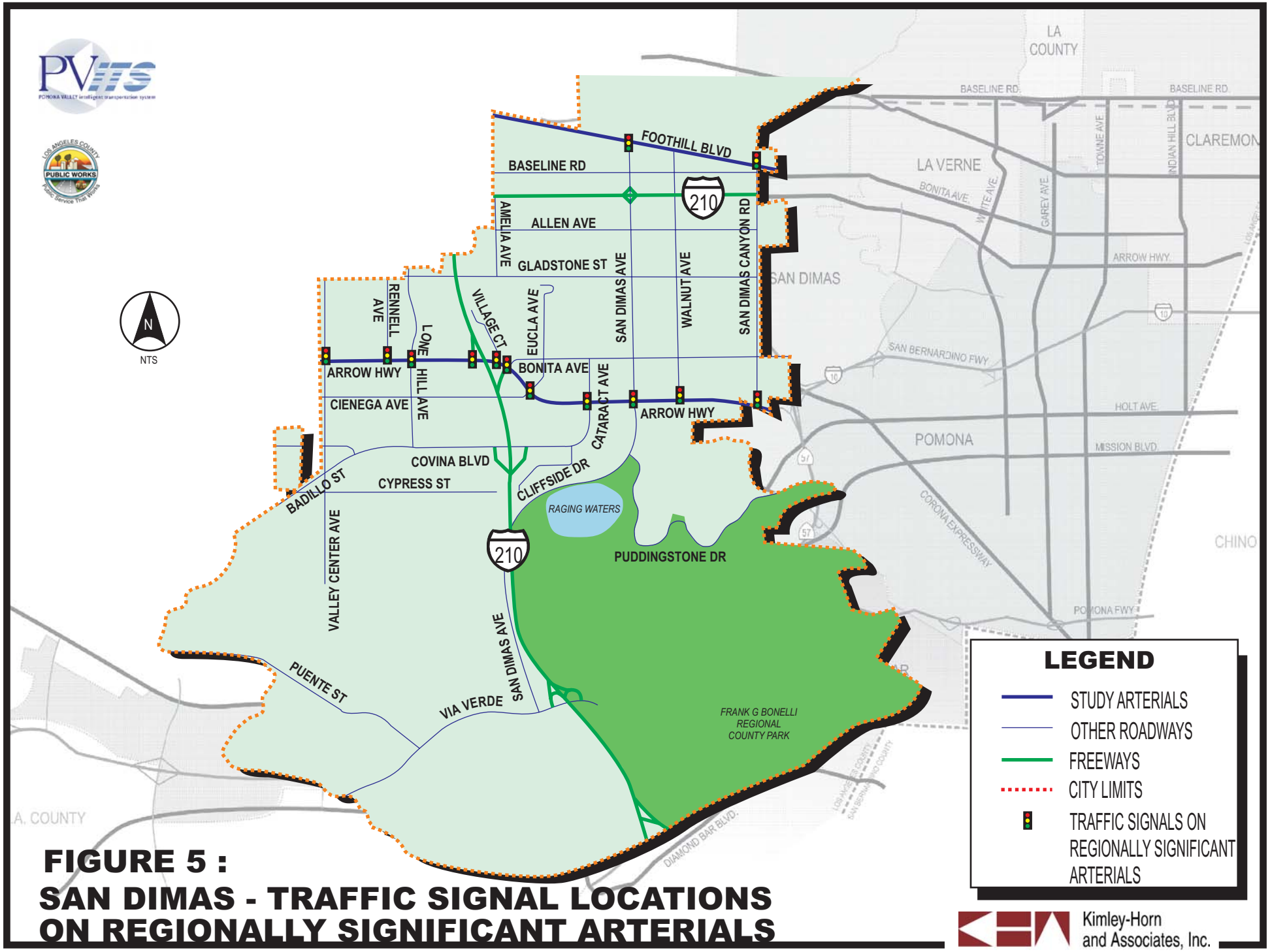

FIGURE 5 :
SAN DIMAS - TRAFFIC SIGNAL LOCATIONS ON REGIONALLY SIGNIFICANT ARTERIALS

Appendix B

TRAFFIC SIGNAL EQUIPMENT ON REGIONALLY SIGNIFICANT ARTERIALS WITHIN SAN DIMAS		
Signalized Intersection	**Phases**	**Ownership**
Arrow Highway / Lone Hill Avenue	8	City of San Dimas
Arrow Highway / Rennel Avenue	6	City of San Dimas
Arrow Highway / San Dimas Avenue	8	City of San Dimas
Arrow Highway / San Dimas Canyon	8	City of San Dimas / City of La Verne
Arrow Highway / Valley Center Avenue	4	City of San Dimas / City of Glendora
Arrow Highway / Village Court	3	City of San Dimas
Arrow Highway / Walnut Avenue	8	City of San Dimas
Arrow Highway / Eucla Avenue	4	City of San Dimas
Arrow Highway / Cataract Avenue / Covina Boulevard	8	City of San Dimas
Arrow Highway / Bonita Avenue / I-210 westbound ramps	6	City of San Dimas / Caltrans
Arrow Highway / I-210 eastbound ramps	2	Caltrans
Foothill Boulevard / San Dimas Avenue	3	City of San Dimas
Foothill Boulevard / San Dimas Canyon	4	City of San Dimas