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5.10 TRAFFIC AND TRANSPORTATION

Hydrogen Energy California LLC (HECA LLC) is proposing an Integrated Gasification Combined Cycle (IGCC) polygeneration project (HECA or Project). The Project will gasify a fuel blend of 75 percent coal and 25 percent petroleum coke (petcoke) to produce synthesis gas (syngas). Syngas produced via gasification will be purified to hydrogen-rich fuel, and used to generate a nominal 300 megawatts (MW) of low-carbon baseload electricity in a Combined Cycle Power Block, low-carbon nitrogen-based products in an integrated Manufacturing Complex, and carbon dioxide (CO_2) for use in enhanced oil recovery (EOR). CO_2 from HECA will be transported by pipeline for use in EOR in the adjacent Elk Hills Oil Field (EHOF), which is owned and operated by Occidental of Elk Hills, Inc. (OEHI). The EOR process results in sequestration (storage) of the CO_2.

Terms used throughout this section are defined as follows:

- **Project or HECA.** The HECA IGCC electrical generation facility, low-carbon nitrogen-based products Manufacturing Complex, and associated equipment and processes, including its linear facilities.

- **Project Site or HECA Project Site.** The 453-acre parcel of land on which the HECA IGCC electrical generation facility, low-carbon nitrogen-based products Manufacturing Complex, and associated equipment and processes (excluding off-site portions of linear facilities), will be located.

- **OEHI Project.** The use of CO_2 for EOR at the EHOF and resulting sequestration, including the CO_2 pipeline, EOR processing facility, and associated equipment.

- **OEHI Project Site.** The portion of land within the EHOF on which the OEHI Project will be located and where the CO_2 produced by HECA will be used for EOR and resulting sequestration**.**

- **Controlled Area.** The 653 acres of land adjacent to the Project Site over which HECA will control access and future land uses.

This introduction provides brief descriptions of both the Project and the OEHI Project. Additional HECA Project description details are provided in Section 2.0. Additional OEHI Project description details are provided in Appendix A of this Application for Certification (AFC) Amendment.

HECA Project Linear Facilities

The HECA Project includes the following linear facilities, which extend off the Project Site (see Figure 2-7, Project Location Map):

- **Electrical transmission line.** An approximately 2-mile-long electrical transmission line will interconnect the Project to a future Pacific Gas and Electric Company (PG&E) switching station east of the Project Site.

- **Natural gas supply pipeline.** An approximately 13-mile-long natural gas interconnection will be made with PG&E natural gas pipelines located north of the Project Site.

- **Water supply pipelines and wells.** An approximately 15-mile-long process water supply line and up to five new groundwater wells will be installed by the Buena Vista Water Storage District (BVWSD) to supply brackish groundwater from northwest of the Project Site. An approximately 1-mile-long water supply line from the West Kern Water District (WKWD) east of the Project Site will provide potable water.

- **Coal transportation.** HECA is considering two alternatives for transporting coal to the Project Site:

  — **Alternative 1, rail transportation.** An approximately 5-mile-long new industrial railroad spur that will connect the Project Site to the existing San Joaquin Valley Railroad (SJVRR) Buttonwillow railroad line, north of the Project Site. This railroad spur will also be used to transport some HECA products to market.

  — **Alternative 2, truck transportation.** An approximately 27-mile-long truck transport route via existing roads from an existing coal transloading facility northeast of the Project Site. This alternative was presented in the 2009 Revised AFC.

OEHI Project

OEHI will be installing the CO_2 pipeline from the Project Site to the EHOF, as well as installing the EOR Processing Facility, including any associated wells and pipelines needed in the EHOF for CO_2 EOR and sequestration. The following is a brief description of the OEHI Project, which is described in more detail in Appendix A of this AFC Amendment:

- **CO_2 EOR Processing Facility.** The CO_2 EOR Processing Facility and 13 satellites are expected to occupy approximately 136 acres within the EHOF. The facility will use 720 producing and injection wells: 570 existing wells and 150 new well installations. Approximately 652 miles of new pipeline will also be installed in the EHOF.

- **CO_2 pipeline.** An approximately 3-mile-long CO_2 pipeline will transfer the CO_2 from the HECA Project Site south to the OEHI CO_2 EOR Processing Facility.

This section assesses traffic and transportation impacts associated with the construction and operation of the Project. The analysis included in this section focuses on the HECA Project as well as the CO_2 pipeline associated with the OEHI Project. The analysis of the CO_2 EOR Processing Facility associated with the OEHI Project is included in Appendix A-1, Section 4.15, Transportation and Traffic, and Appendix A-2, Section 2.10, Traffic and Transportation, of this AFC Amendment. The study area for this traffic and transportation analysis, as depicted on Figure 5.10-2, Transportation Setting of the Local Project Area and Affected Roadways, was developed in consultation with Kern County. The analysis primarily examines impacts on roadway circulation system levels of service (LOS) within the study area during the construction and operation of the Project. This section also identifies and reviews applicable laws, ordinances, regulations, and standards (LORS) relevant to traffic and transportation activities.

Information sources include data collected from the California Department of Transportation (Caltrans) traffic count database; field review and observations; and communications with local, regional, and federal agencies. URS staff performed reconnaissance on February 26, 2008, for a former candidate site that is near the Project Site to document roadway characteristics, identify physical constraints, and assess general traffic conditions. Additional field reconnaissance to update previously obtained data was conducted on February 1, 2012. New traffic counts for the 25 study intersections were collected in February 2012.

5.10.1 Affected Environment

5.10.1.1 Regional Setting

The affected environment relative to the Project Site is discussed in both a regional and local context. The regional setting includes the existing and planned public and private roads, rail lines, and pipelines considered in the transportation impact analysis. Figure 5.10-1, Regional Vicinity, depicts the affected environment as discussed below and illustrates the relationship of the Project to local and major roads and highways in the study area. Figure 5.10-2, Transportation Setting of the Local Project Area and Affected Roadways, depicts the location of the study area.

The following plans and programs describe the framework for managing the transportation resources in the study area.

Kern Council of Governments' Regional Transportation Plan

Kern County's Regional Transportation Plan (RTP), also known as Destination 2030, is a planning guide projecting the following in the next 24-year period: (1) transportation and air quality goals; (2) policies and actions for now and into the future; and (3) programs and projects for congestion management, transit, airports, bicycles, pedestrians, roadways, and freight.

Key functions and roles of the RTP are further summarized below:

- Provide a discussion of all mechanisms used to finance transportation and air quality program implementation.

- Provide a multi-modal plan representing Kern Council of Governments' (COG) vision for a better transportation system to the planning horizon of 2030.

- Provide the basic policy and program framework for long-term investment in a vast regional transportation system in a coordinated, cooperative, and continuous manner.

- Provide a regional long-range and comprehensive plan that coordinates local transportation plans for all communities within the Kern County region.

Kern County Airport Land Use Compatibility Plan

Kern County has adopted an Airport Land Use Compatibility Plan (ALUCP) and alternative process to comply with the State Aeronautics Act (Public Utilities Code commencing with Section 21670). Pursuant to Public Resources Code Section 21675, in each county containing a public use airport, an Airport Land Use Commission (ALUC) is required to assist local agencies in ensuring compatible land uses in the vicinity of existing or proposed airports; to coordinate planning at state, regional, and local levels; to prepare and adopt an airport land use plan; to review plans, regulations, or locations of agencies and airport operators; and to review and make recommendations regarding the land uses, building heights, and other issues relating to air navigation safety and promotion of air commerce.

Kern County is designated as the agency responsible for carrying out functions of the Kern County ALUC. The Airport Land Use Policy Plan of the Kern County ALUC provides the criteria for evaluating land-use compatibility between proposed development in the vicinity of the county's public-use general aviation airport facilities. The Kern County ALUCP (Figure 9—Circulation Element Kern Region Airports) covers a total of 14 public-use airports, 3 private airports, and 2 military airports. There are five public airport facilities within the immediate vicinity of the Project Site:

- **Elk Hills–Buttonwillow Airport.** Approximately 26,400 feet (5 miles) northwest of the Project Site.
- **Taft Airport.** Approximately 63,360 feet (12 miles) southwest of the Project Site.
- **Minter Field.** Approximately 89,760 feet (17 miles) northeast of the Project Site.
- **Meadows Field.** Approximately 105,600 feet (20 miles) northeast of the Project Site.
- **Bakersfield Municipal.** Approximately 110,880 feet (21 miles) east of the Project Site.

A landing strip is shown on the northwest quadrant of the Project Site in topographic maps; however, this landing strip was private, is no longer used, and will be removed upon purchase of the property for the Project Site.

Kern County General Plan Circulation Element

The authority and purpose of the Kern County General Plan Circulation Element is quoted in its entirety below:

> State of California Government Code 65302(b) includes requirements and authority for the Circulation Element. The Circulation Element is one of seven mandated elements each local government must maintain in its general plan.
>
> The general plan shall include a Circulation Element consisting of the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other local public utilities and facilities, all correlated with the Land Use Element of the plan.
>
> The purpose of a Circulation Element is to set up local Goals and guiding Policies about building transportation improvements. A Circulation Element introduces planning tools

essential for achieving the local transportation Goals and Policies. Several California Court decisions have compelled local governments to make their Circulation Element consistent with the Land Use Element.

A Circulation Element consists of the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other local public utilities and facilities, all correlated with the Land Use Element of the plan.

City of Wasco General Plan Circulation Element

According to the City of Wasco General Plan Circulation Element, the City of Wasco intends to design their circulation systems to account for projected traffic volume and to maintain city-adopted LOS standards. Because the City of Wasco has not adopted significance criteria and performance levels, Kern County criteria are assumed to apply within the City of Wasco.

City of Shafter General Plan Transportation Program

According to the City of Shafter General Plan Transportation Program, the City of Shafter aims to maintain a roadway system that "operates at Level of Service C on a daily and peak hour basis except in the vicinity of freeway interchanges where Level of Service D is acceptable."

California Public Utilities Commission Rail Safety Action Plan

The proposed transportation and conveyance of feedstock via a dedicated rail facility may be subject to the CPUC Rail Safety Action Plan.

5.10.1.2 Highways and Roadways

The transportation network within the Project study area is composed of a mix of interstate, county highways, and local roadways. The circulation system plays a major role in the movement of farm products originating from the San Joaquin Valley, Kern County, and outlying agricultural communities that require access and rely on the state and county roadways.

As illustrated on Figure 5.10-1, Regional Vicinity, the Project study area is primarily served by Interstate 5 (I-5) to the east. The majority of the existing roadways serving the Project are relatively straight, and the terrain is flat to moderate, with adequate sight distance in both directions.

Regional Roadway Facilities

Interstate 5. I-5 is a major north-south interstate freeway through the Central Valley and the length of California, extending north from San Diego County toward the states of Oregon and Washington. Located approximately 4 miles east of the Project Site, I-5 provides two mainline lanes in each direction with wide shoulders and a center median. I-5 has separate acceleration/ deceleration lanes at the interchange of I-5/State Route (SR) 119, I-5/Stockdale Highway, and I-5/SR 58. It is posted at 70 miles per hour (mph) for cars and 55 mph for trucks in the vicinity

of the Project. The annual average daily traffic (AADT) on the segment of I-5 in the study area is 31,000 vehicles per day, and the truck traffic percentile is 25 percent.

State Route 119. SR 119 is an east-west state highway located approximately 7 miles south of the Project Site that provides regional and emergency egress and workforce commute to the Project. SR 119 connects to State Route 99 (SR 99) on the east with State Route 33 (SR 33) on the west. It has a two-lane (one lane in each direction) cross section with an 8- to 12-foot shoulder on both sides. SR 119 is posted at 55 mph in the vicinity of the Project. The average daily traffic (ADT) on the roadway just west of the I-5 southbound ramps is 10,000 vehicles per day and the truck traffic percentile is 20 percent. As a proactive measure, the Project does not plan to use SR 119 as the primary access route during construction and operation activities; this measure will therefore minimize Project-added traffic through the unincorporated community of Tupman.

State Route 58. SR 58 is an east-west state highway located approximately 4 miles north of the Project Site. It is a two-lane highway posted at 55 mph. SR 58 is designated as a state truck route. It is a two-lane conventional state highway with 4- to 8-foot shoulders on flat terrain and moderate grades. The I-5 southbound ramp/SR 58 interchange is currently signalized. The ADT on the segment of SR 58 west of SR 43 is 6,900 vehicles per day, and the truck traffic percentile is 21 percent.

State Route 43. SR 43 is a north-south highway in Kern County approximately 7 miles from the Project Site. North of its intersection with Stockdale Highway, it is a two-lane road. SR 43 becomes Central Valley Highway in the city of Shafter, California, and widens to a four-lane undivided highway. North of Shafter, SR 43 becomes a four-lane divided highway with a 65 mph speed limit. In Kern County, SR 43 is a designated Terminal Access Truck Route. The ADT on the segment of SR 43 north of Stockdale Highway is 9,000 vehicles per day, and the truck traffic percentile is 21 percent.

Local Roadway Facilities

The primary local north-south roadways near the vicinity of the Project include Tupman Road, Dairy Road, and Morris Road. Station Road and Adohr Road provide local east-west access adjacent to and north of the Project Site. In consultation with the Kern County Roads Department, the traffic analysis will focus on the a.m. and p.m. peak hour intersection operations, as illustrated on Figure 5.10-3, Existing Traffic Volumes (a.m./p.m. Peak). The local roadway characteristics are briefly described below. Figure 5.10-4, Existing Intersection Geometrics, shows the roadway circulation network and intersection lane configurations in the Project vicinity.

Stockdale Highway. Stockdale Highway is an east-west highway 1 mile north of the Project Site. It starts near Wasco Way on the west and continues to the east through metropolitan Bakersfield. An unsignalized freeway interchange provides connection to I-5. The segment of Stockdale Highway in the vicinity of the Project Site has two through lanes (one lane in each direction) with no shoulders. The roadway segment is relatively straight and the terrain is flat with good sight distance in both directions. The speed limit on Stockdale Highway is currently 55 mph in the vicinity of the Project Site.

Tupman Road. Tupman Road is a north-south, two-lane primary road adjacent to the eastern boundary of the Project Site. Tupman Road is classified as a collector road by the Kern County General Plan Circulation Element. Tupman Road starts at SR 119 on the south and ends at Adohr Road on the north. It has two through lanes (one in each direction) with 2-foot shoulders on both sides. The intersection of Tupman Road and SR 119 is unsignalized, with stop signs on Tupman Road. Heading north from SR 119, the terrain has a relatively flat to moderately rolling grade. Some segments have limited horizontal sight visibility to opposing traffic. The posted speed limit is 55 mph in the vicinity of the Project Site.

Station Road. Station Road is a two-lane, east-west local roadway. It starts at Tupman Road on the west and ends at Morris Road on the east. The intersection of Tupman Road and Station Road is controlled by a stop sign on Station Road. The roadway segment is relatively straight, and the terrain is flat with good sight distance in both directions.

Morris Road. Morris Road is a two-lane, north-south local roadway. It starts at Station Road on the south and ends at Stockdale Highway on the north. The intersection of Stockdale Highway and Morris Road is controlled by a stop sign on Morris Road. The roadway segment is relatively straight, and the terrain is flat with good sight distance in both directions.

Dairy Road. Dairy Road is a two-lane, north-south local roadway. It starts at Adohr Road on the south and ends at Stockdale Highway on the north. The intersection of Stockdale Highway and Dairy Road is controlled by a stop sign on Dairy Road. The roadway segment is relatively straight, and the terrain is flat with good sight distance in both directions.

Adohr Road. Adohr Road is a two-lane, east-west roadway and is classified as a major (arterial) highway by the Kern County General Plan Circulation Element. It starts at Freeborn Road on the west and ends at Tupman Road on the east. The roadway segment is relatively straight, and the terrain is flat with good sight distance in both directions.

9th Street. 9th Street is a two-lane, east-west street in Wasco, California, extending from H Street to J Street on the north side of Wasco Coal Terminal. The street is 55 feet wide, and parking is allowed on both sides of the street. The roadway segment is relatively straight, and the terrain is flat with good sight distance in both directions.

H Street. H Street is a two-lane, north-south street in Wasco, California, extending north from J Street on the west side of Wasco Coal Terminal. The street is 55 feet wide, and parking is allowed on both sides of the street. The roadway segment is relatively straight, and the terrain is flat with good sight distance in both directions.

J Street. J Street is a four-lane, north-south street in Wasco, California, extending from Poso Avenue on the east side of Wasco Coal Terminal. The street is 56 feet wide; no parking is allowed on either side of the street. Before it intersects with H Street, J Street narrows to one lane in each direction. The roadway segment is relatively straight, and the terrain is flat with good sight distance in both directions.

Wasco Avenue. Wasco Avenue is a two-lane, north-south street in Wasco, California. It extends from Poso Avenue to Kimberlina Road on the east side of the railroad tracks. North of Poso

Avenue, Wasco Avenue turns and becomes J Street. The roadway segment is relatively straight, and the terrain is flat with good sight distance in both directions.

Poso Avenue. Poso Avenue is a two-lane, east-west street in Wasco, California. It intersects SR 43 at an All Way STOP controlled intersection. Between SR 43 and Wasco Avenue there is an at-grade rail crossing with gates and flashing lights. The roadway segment is relatively straight, and the terrain is flat with good sight distance in both directions.

5.10.1.3 Railroads

The following railroad lines currently serve the Project study area:

- Both Burlington Northern Santa Fe (BNSF) and Union Pacific Railroad (UPRR) provide interstate and transcontinental connection and service. The railroad tracks are located east of I-5 and the Project Site.
- SJVRR provides local train connection to areas west of Bakersfield and I-5.
- AMTRAK California San Joaquin Route connects downtown Bakersfield to Sacramento and the Bay Area.
- Various short spur lines serve former and current commercial- and industrial-related operations in the area.

A key component of Alternative 1 will be a new rail spur that will be constructed to the Project Site to facilitate feedstock and equipment delivery as well as low-carbon nitrogen-based product and other product off-take. The rail spur will run approximately 5 miles from the SJVRR to the Project Site. Public and private at-grade crossings will be required. Several private crossings will be needed for farmers' access to crop lands and the irrigation canal. Irrigation piping and ditches will be relocated as required to maintain existing field irrigation.

5.10.1.4 Public Transportation

Kern Regional Transit. Kern Regional Transit provides transit service to the unincorporated communities of Buttonwillow, Lamont, Kern River Valley, Frazier Park, Rosamond, and Mojave. In addition, the county has agreements with several small cities to share the cost of providing transit service to county areas surrounding incorporated places (i.e., Delano, Ridgecrest, Shafter, Taft, Tehachapi, and Wasco).

5.10.1.5 Pipelines

A network of gas and oil production lines is currently in place within the Project study area. A new gas line will supply natural gas from an existing PG&E pipeline located north of the Project Site. In addition, two new water lines will supply process water and potable water from Buena Vista Water Storage District and West Kern Water District, respectively. A new pipeline will also supply CO_2 from the Project Site to the EHOF. The pipeline linear routes are shown on Figure 5.10-2, Transportation Setting of the Local Project Area and Affected Roadways.

5.10.1.6 Bicycle Routes and Pedestrian Circulation

No existing or planned bicycle facilities are within the immediate vicinity of the Project Site. The 2001 Kern County Bicycle Plan (Kern Council of Governments, 2001) describes the existing and planned bicycle facilities for the metropolitan Bakersfield area, Wasco, Taft, and other cities and communities in Kern County.

5.10.1.7 Level of Service Concept

LOS is identified through a letter designation and is an indicator of operating conditions on a roadway or at an intersection. LOS is defined in categories ranging from A to F (i.e., LOS A to LOS F). These categories can be viewed much like school grades, with A representing the best traffic flow conditions and F representing poor conditions. LOS A indicates free-flowing traffic, while LOS F indicates substantial congestion with stop-and-go traffic and long delays at intersections.

Table 5.10-1, Intersection Level of Service Description, describes the LOS performance designations for both signalized and unsignalized intersections.

5.10.1.8 Existing Traffic Conditions

As previously described, the Project will be located 1.5 miles northwest of the unincorporated community of Tupman. The regional vicinity map of the Project within the surrounding region is depicted on Figure 5.10-1, Regional Vicinity. The Project location, including major roads, local streets, and highways in the immediate vicinity of the Project, is illustrated on Figure 5.10-2, Transportation Setting of the Local Project Area and Affected Roadways. The existing traffic volumes in the vicinity of the Project are shown on Figure 5.10-3, Existing Traffic Volumes (a.m./p.m. peak). The existing geometric configuration of roadway segments and intersections in the vicinity of the Project Site is shown on Figure 5.10-4, Existing Intersection Geometrics. The existing traffic volumes are based on traffic counts collected by National Data Services (NDS) in February 2012. The intersection turning movement counts are included in Appendix R, Traffic Data.

Existing Intersection Level of Service

Table 5.10-2, Existing Intersection Levels of Service, presents results for peak hour intersection LOS and average vehicle delay under existing conditions. The LOS calculation worksheets are provided in Appendix R, Traffic Data. Figure 5.10-3, Existing Traffic Volumes (a.m./p.m. Peak), shows existing a.m. and p.m. peak-hour turning movement volumes at each study area intersection.

As shown in Table 5.10-2, Existing Intersection Levels of Service, all study intersections are currently operating at acceptable LOS C or better, with the exception of SR 119/Tupman Road, which is operating at LOS F during the p.m. peak hour.

5.10.2 Environmental Consequences

5.10.2.1 Significance Criteria

The Kern County California Environmental Quality Act (CEQA) Implementation Document and the Kern County Environmental Checklist provide seven significance criteria for evaluating a project's impact on transportation and traffic, of which two are relevant to the Project. The Project will have the potential to result in adverse impacts for the following two significance criteria:

1. Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections).

2. Exceed, either individually or cumulatively, an LOS standard established by the county congestion management agency or adopted county threshold for designated roads or highways. Specifically, would implementation of the project cause the LOS for roadways and/or intersections to decline below the following standards or further degrade already degraded segment(s)?

State Level of Service Standard

For Caltrans facilities (intersections, roadway segment, freeway segments, and freeway ramp junctions), a degradation in the level of service from an acceptable level (LOS C/D threshold or better) to an unacceptable level (LOS D, E, or F) is a significant impact. The Caltrans standard for state highways is LOS C-D.

County Facilities Level of Service Standard

The Kern County General Plan Circulation Element policies consider LOS D acceptable within the General Plan area for county-maintained roads.

5.10.2.2 Project Trip Generation and Distribution

Project Construction Trip Generation

During Project construction, the study area will experience short-term increases in traffic that are associated primarily with construction worker commute trips and material and equipment delivery trips. The traffic analysis evaluated the worst-case Project construction scenario by analyzing the peak month worker commute plus material and equipment delivery trips.

Construction Workers

The construction trade projections provided by the Project design engineer estimate that during the peak construction month approximately 2,500 workers will be working on site on a daily basis. The traffic analysis assumed that some workers would carpool and that one-third of the

worker vehicles would arrive during the morning peak hour (7:00 a.m. to 9:00 a.m.), and also assumed that all would depart during the evening peak hour (4:00 p.m. to 6:00 p.m.).

Truck Deliveries

The construction equipment and material delivery projections provided by the Project design engineer indicate that during the peak construction month, there will be 50 truck deliveries daily, a total that is equal to 100 daily one-way truck trips per day. These trips were subsequently converted into passenger car equivalent (PCE) trips at 3 PCE per truck (or 300 PCE trips). Even though truck deliveries will likely arrive and depart throughout the day, to represent the worst-case scenario the truck trips were conservatively assumed to occur during the morning peak hour. Additionally, the analysis assumed that there will be minimal deliveries during the evening peak hour (e.g., deliveries of time-critical equipment and materials and specialty loads).

Soil Fill Deliveries

During Project construction, soil fill materials will be imported to the Project Site. The soil fill material deliveries are assumed to originate from local sources. The soil fill projections provided by the Project design engineer indicate that during the peak construction month, there will be on average 160 truck deliveries daily, or 320 one-way daily truck trips per day. As with the truck delivery trips described above, these trips were subsequently converted into PCE trips at 3 PCE per truck (or 960 trips). Specific details of the soil fill delivery assumptions are described in greater detail in the footnotes of Table 5.10-3, Anticipated Project Construction Trip Generation. See Section 5.9, Soils, regarding the local borrow pit site.

The Project construction trip generation data in Table 5.10-3, Anticipated Project Construction Trip Generation, show the trips that would be generated by construction personnel, by construction equipment and material delivery trucks, and by soil fill delivery trucks.

Project Operations Trip Generation

During Project operations, the Project study area will experience increases in traffic associated primarily with operation worker commute trips, feedstock deliveries, process materials and products truck trips, and operation and maintenance (O&M) trips.

Operations

According to the Project design engineer, during Project operations each shift normally consists of one shift supervisor, three inside operators, and seven outside operators. A number of maintenance workers and supervisors may be on site during the day shift, and fewer maintenance personnel would be on site during the off-hour shifts. Workers on site, other than the O&M personnel, are not expected to make frequent routine trips to the Project Site.

To evaluate the worst-case scenario, these vehicle trips were assumed to arrive during the morning peak period (7:00 a.m. to 9:00 a.m.) and to depart during the evening peak period (4:00 p.m. to 6:00 p.m.).

Deliveries

To sustain and support Project operations, regular deliveries of feedstock, O&M supplies, and shipments of product off site are anticipated at the Project Site. Delivery trips will likely arrive and depart throughout the day. The Project operations traffic impact analysis evaluated two alternatives for transporting coal: Alternative 1 (rail) and Alternative 2 (truck). The respective alternatives are presented in Table 5.10-4 and Table 5.10-5.

Project Trip Distribution

Trip Distribution and Assignment

Consistent with the information presented in Section 5.8, Socioeconomics and Environmental Justice, it is assumed that the majority of workers will come from metropolitan Bakersfield and adjoining communities. It is anticipated that construction and operation staff will be originating from the geographical area shown in Table 5.10-6, Workforce and Material Distribution.

5.10.2.3 Planned Roadway and Circulation Improvements

Based on information shared by Caltrans staff, there are no applicable roadway and circulation improvements to be considered at this time and during the course of the Project construction for inclusion in the traffic analysis scenarios conducted for this Project. Recent applicable improvements along SR 119 were incorporated in the existing conditions discussion of this report. Additional consultation with the Kern County Roads Department confirmed that there are no anticipated roadway and circulation improvements within the Project study area.

5.10.2.4 Future Baseline Traffic Projections

Based on consultation with the Kern County Roads Department and on information from the Planning Department staff, no significant cumulative projects were identified within the immediate vicinity of the Project that could potentially contribute cumulative added trips.

Consistent with the Kern County Roads Department requirements and data from recently conducted traffic studies, an annual ambient traffic growth of 2 percent was used to establish No Project baselines for Year 2016 Construction and Year 2017 Project Operations analysis scenarios. This assumption is conservative and will adequately account for any unforeseen traffic growth or development occurring during the aforementioned future traffic analysis scenarios.

Both the Years 2016 and 2017 No Project traffic conditions shown on Figures 5.10-5 and 5.10-7, were derived by applying the 2 percent annual growth rate per year to existing traffic volumes.

5.10.2.5 Project Impacts

Construction of the Project will result in a temporary increase in traffic associated with the movement of construction vehicles, equipment, and personnel on the transportation network serving the study area. Where warranted, the Project will use proper signs and traffic control

measures in accordance with Caltrans and Kern County requirements during the construction period. The Project will also coordinate construction activities with appropriate Caltrans, California Highway Patrol (CHP) and Kern County departments, and other jurisdictions to maintain traffic flow and safety, including the transport of oversized and overweight loads on state and county roadways.

Operation of the Project will result in the addition of traffic associated with employees, feedstock deliveries, and O&M trips serving the Project.

The key concern of Kern County Roads Department staff regarding the Project is the structural integrity of the local roadways to handle construction and operations traffic, specifically heavy construction equipment and feedstock deliveries during Project operations. Both Project construction and operation scenarios are discussed in detail below as they relate to potential traffic and transportation effects in the study area.

Project Construction Impacts

Project construction is expected to start in 2013 and to be completed in late 2016 with varying levels of manpower, construction delivery, and equipment use. The majority of Project construction activities are expected to occur during normal daytime work hours. Possible exceptions may include limited night construction activities that are considered time-critical or continuous in nature (such as concrete pours), and that may require extension of work hours based on inherent process requirements or material-driven characteristics. These nighttime construction activities are considered non-recurring events that would generate a minimal number of trips, retain a small number of workers on site, and would likely have a minimal effect on evening peak hour traffic. Therefore, nighttime work is anticipated to be a non-critical trip generation factor in the Project construction phase, with no significant effects.

During Project construction, the local roadways adjacent to the Project Site could potentially be subjected to heavy loads from material delivery carriers that would also need wider turning radii at the local intersections near the Project Site. HECA will work and coordinate with the Kern County Roads Department to remedy potential pavement deterioration associated with heavy loadings, improve the local intersections to facilitate traffic flow via the introduction of dedicated turn lanes, and improve the turn radius at the affected intersections. The design and implementation of these proposed improvements will be subject to the Kern County Roads Department oversight and standards. These proactive mitigation measures are discussed in Section 5.10.4, TRA-1 Roadway Improvements and TRA-2 Intersection Improvements for Dairy Road/Stockdale Highway and Dairy Road/Adohr Road intersections.

The aforementioned proactive measures will also continue to benefit the Project during operations, ensuring more efficient traffic circulation and movement of feedstock material deliveries and of operations and maintenance trips to and from the Project Site.

During the Project construction, small quantities of hazardous materials will be delivered, and construction waste products will be hauled from the Project Site. A more detailed discussion on Project handling of hazardous materials and waste management is presented in Section 5.12, Hazardous Materials Handling, and Section 5.13, Waste Management, respectively. All applicable LORS will be observed during the course of Project construction.

Intersection Level of Service During Project Construction

Table 5.10-7, Peak-Hour Intersection LOS—Year 2016 No Project Conditions, presents peak hour intersection LOS and average vehicle delay results under Year 2016 No Project conditions. The intersection LOS presented in Table 5.10-7 is the baseline for which Project construction impacts were evaluated. The LOS calculation worksheets are provided in Appendix R, Traffic Data. Figure 5.10-5, Year 2016 No Project Traffic Volumes, shows Year 2016 No Project morning and evening peak-hour turning-movement volumes at each study area intersection.

As shown in Table 5.10-7, Peak-Hour Intersection LOS—Year 2016 No Project Conditions, all study intersections are forecast to operate at LOS C or better with the exception of SR 43/ Stockdale Highway and SR 119/Tupman Road which operate at LOS E and F, respectively, during the evening peak hour.

Table 5.10-8, Peak-Hour Intersection LOS—Year 2016 Project Construction Conditions, presents the peak-hour intersection LOS and average vehicle delay results under Year 2016 Project Construction conditions for both Project Alternatives 1 and 2. The LOS calculation worksheets are provided in Appendix R, Traffic Data. Figure 5.10-6, Year 2016 No Project Traffic Plus Project Construction Traffic Volumes, shows Year 2016 Project construction conditions for morning and evening peak-hour turning-movement volumes at each study area intersection.

As shown in Table 5.10-8 the following intersections will be significantly impacted by Project construction activities.

- **SR 43/Stockdale Highway.** Will be significantly impacted during the p.m. peak hour when LOS E without Project construction becomes LOS F with Project construction.

- **SR 119/Tupman Road.** Will be significantly impacted during the p.m. peak hour when LOS F without Project construction remains LOS F with Project construction, but the increase in delay exceeds the reporting range.

The proposed mitigation measures for the aforementioned construction traffic impacts are discussed in Section 5.10.4.

Project Operations Impacts

The Project is expected to be in full operation by Year 2017. During the operations of the Project, a fulltime employee workforce will oversee Project O&M. There will be regular deliveries of feedstock to sustain Project operations. Occasional delivery- and maintenance-related trips are anticipated as part of normal Project operations. During Project operations, small quantities of hazardous materials will be delivered and products will be shipped from the Project Site. More detailed discussions on Project handling of hazardous materials and on waste management are presented in Section 5.12, Hazardous Materials Handling, and Section 5.13, Waste Management, respectively.

The following sections describe the operational effects of the Project.

Intersection Level of Service during Project Operations

Table 5.10-9, Peak-Hour Intersection LOS, Year 2017 No Project Conditions, presents peak-hour intersection LOS and average vehicle delay under Year 2017 No Project conditions. The intersection LOS presented in Table 5.10-9 is the baseline for which Project operations impacts were evaluated. The LOS calculation worksheets are provided in Appendix R, Traffic Data. Figure 5.10-7, Year 2017 No Project Traffic Volumes, shows Year 2017 No Project conditions for morning and evening peak-hour turning-movement volumes for each traffic study area intersection.

As shown in Table 5.10-9, Peak-Hour Intersection LOS, Year 2017 No Project Conditions, all study intersections are forecast to operate at LOS C or better with the exception of SR 43/ Stockdale Highway and SR 119/Tupman Road, which operate at unacceptable LOS E and F, respectively, during the evening peak-hour.

The above finding does not include the proposed construction mitigation of providing traffic signals at the two impacted intersections (SR 43/Stockdale Highway and SR 119/Tupman Road).

Alternative 1 Project Operations

Table 5.10-10 presents the peak-hour intersection LOS and average vehicle delay results under Year 2017 Project Operations Conditions for Project Alternative 1. The LOS results shown in Table 5.10-10 include the incorporation of the mitigation for the construction traffic impacts at SR 43/Stockdale Highway and SR 119/Tupman Road, which is discussed in greater detail in Section 5.10.4. The LOS calculation worksheets are provided in Appendix R, Traffic Data.

Figure 5.10-8, Year 2017 No Project Traffic Plus Project Operations Traffic Volumes – Alternative 1, shows Year 2017 Project operations morning and evening peak-hour turning-movement volumes for each study area intersection.

As shown in Table 5.10-10, all traffic study area intersections are forecast at LOS D or better under Year 2017 Project operations conditions for Alternative 1.

It must be noted that during Project operations, the intersection of SR 43/Stockdale Highway would operate at LOS B (a.m.) and LOS F (p.m.), and the intersection of SR 119/Tupman Road would operate at LOS C (a.m.) and LOS F (p.m.), without any mitigation measures. Nevertheless, the traffic signals that will be installed for construction impact mitigation (see Mitigation Measure TRA-3) will remain during operations. Based on these findings, no significant traffic effects would occur at the traffic study area intersections during Project operations.

Alternative 2 Project Operations

Table 5.10-11 presents peak-hour intersection LOS and average vehicle delay results under Year 2017 Project operations conditions under Project Alternative 2—Truck Option. The LOS results shown in Table 5.10-10 include the incorporation of the mitigation for the construction traffic impacts at SR 43/Stockdale Highway and SR 119/Tupman Road, which is discussed in greater

detail in Section 5.10.4. The LOS calculation worksheets are provided in Appendix R, Traffic Data.

Figure 5.10-9, Year 2017 No Project Traffic Plus Project Operations Traffic Volumes – Alternative 2, shows Year 2017 Project operations morning and evening peak-hour turning-movement volumes for each study area intersection.

As shown in Table 5.10-11, all traffic study area intersections are forecast at LOS D or better under Year 2017 Project operations for Alternative 2—Truck Option.

It must be noted that during Project operations, the intersection of SR 43/Stockdale Highway would operate at LOS C (a.m.) and LOS F (p.m.), and the intersection of SR 119/Tupman Road would operate at LOS C (a.m.) and LOS F (p.m.), without any mitigation measures. Nevertheless, the traffic signals that will be installed for construction impact mitigation (see Mitigation Measure TRA-3) will remain during operations. Based on these findings, no significant traffic effects would occur at the traffic study area intersections during Project operations.

5.10.2.6 Project Impact Summary

Project Construction Traffic Impacts on Roadways

The roadways that will experience a short-term increase in traffic due to construction worker commute trips and truck deliveries will be Stockdale Highway, I-5, SR 43 (Enos Lane), SR 119 (Taft Highway), and Tupman Road. Additionally, some construction traffic will seek alternative routes to enter and leave the Project Site during peak construction activity. During Project construction, some roadways could be subjected to loads beyond their current use as local or farm access roads. In consultation with the Kern County Roads Department, county engineers will conduct pavement evaluations to ascertain the loading characteristics of these roadways. When this report was prepared, the results of the pavement evaluations had not yet been provided to URS. However, with the implementation of mitigation measures discussed in Section 5.10.4, below, impacts on roadway loading during construction would be reduced to less-than-significant levels.

Project Construction Traffic Impacts on Intersections

The results of the intersection LOS analysis shown in Table 5.10-8 indicate that two study intersections would operate at LOS E or F under Year 2016 Project construction conditions. The following intersections will be significantly affected by Project construction activities.

- **SR 43/Stockdale Highway.** Will be significantly impacted during the p.m. peak hour when LOS E without Project construction becomes LOS F with Project construction.

- **SR 119/Tupman Road.** Will be significantly impacted during the p.m. peak hour when LOS F without Project construction remains LOS F with Project construction, but the increase in delay exceeds the reporting range.

However, with the implementation of mitigation measures discussed in Section 5.10.4 below, impacts on all intersections during construction would be reduced to less-than-significant levels.

Project Operations Traffic Impacts on Roadways

Similar to construction conditions, the roadways that will experience Project operational traffic will be Stockdale Highway, I-5, SR 43 (Enos Lane), SR 119 (Taft Highway), and Tupman Road under both Project Alternatives 1 and 2 operations.

The projected added trips from operational workers, feedstock and maintenance deliveries, and visitors along the local roadways could potentially contribute to roadway wear-and-tear due to Project operational trips. However, with the implementation of mitigation measures discussed in Section 5.10.4, below, impacts on roadway wear-and-tear during operations would be reduced to less-than-significant levels.

Project Operations Traffic Impacts on Intersections

The results of the intersection LOS analysis for Project Alternative 1 and Alternative 2, shown in Table 5.10-10 and Table 5.10-11 respectively, indicate that all study intersections would operate at an acceptable LOS D or better during both morning and evening peak hours.

Based on these findings, no significant traffic effects would occur at the traffic study intersections during both Project Alternative 1 and Alternative 2 operations.

5.10.2.7 OEHI Project

An analysis of the potential of the OEHI Project to impact traffic is included in Appendix A-1, Section 4.15, Transportation and Traffic, and Appendix A-2, Section 2.10, Traffic and Transportation, of this AFC Amendment. Appendix A concludes that with implementation of recommended mitigation measures, the OEHI Project will not have significant adverse impacts to transportation or traffic.

5.10.3 Cumulative Impacts Analyses

Under certain circumstances, CEQA requires consideration of a project's cumulative impacts (CEQA Guidelines Section 15130). A "cumulative impact" consists of an impact which is created as a result of the combination of the project under review together with other projects causing related impacts (CEQA Guidelines Section 15355). CEQA requires a discussion of the cumulative impacts of a project when the project's incremental effect is cumulatively considerable (CEQA Guidelines Section 15130[a]). "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (CEQA Guidelines Section 15065 [a][3]).

When the combined cumulative impact associated with a project's incremental effect and the effects of other projects is not significant, further discussion of the cumulative impact is not necessary (CEQA Guidelines Section 15130[a]). It is also possible that a project's contribution

to a significant cumulative impact is less than cumulatively considerable and thus not significant (CEQA Guidelines Section 15130[a]).

The discussion of cumulative impacts should reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great a level of detail as is provided for the effects attributable to the project under consideration (CEQA Guidelines Section 15130[b]). The discussion should be guided by standards of practicality and reasonableness (CEQA Guidelines Section 15130[b]).

A cumulative impact analysis starts with a list of past, present, and probable future projects within a defined geographical scope with the potential to produce related or cumulative impacts (CEQA Guidelines Section 15130[b]). Factors to consider when determining whether to include a related project include the nature of the environmental resource being examined, the location of the project, and its type (CEQA Guidelines Section 15130[b]). For purposes of this AFC Amendment, Kern County was contacted to obtain a list of related projects, which is contained in Appendix I. Depending on its location and type, not every project on this list is necessarily relevant to the cumulative impact analysis for each environmental topic.

Based on information provided by Kern County Roads Department staff, the Project's construction traffic would not coincide with any potential future project within the study area, so the Project's contribution to cumulative traffic impacts during construction would not be cumulatively considerable, and cumulative impacts of the Project would therefore be less than significant.

In addition, of the projects identified in Appendix I, only one project (a proposed dairy farm) is expected to occur within the traffic study area. The generally low trip-generation potential of dairy farming operations is not expected to contribute to a cumulative Project impact. As an added note, the dairy project has been on the cumulative project list for over 3 years.

The results of the traffic analysis showed that the Project's construction and operational traffic, combined with future ambient traffic growth, will not be cumulatively considerable, and cumulative impacts of the Project would therefore be less than significant.

Based on the above findings, it is expected that the Project will not result in cumulative construction and operational Project impacts.

An analysis of the potential of the OEHI Project to impact traffic is included in Appendix A-1, Section 4.15, Transportation and Traffic, and Appendix A-2, Section 2.10, Traffic and Transportation, of this AFC Amendment. Appendix A concludes that with implementation of recommended mitigation measures, the OEHI Project will not have significant adverse cumulative impacts to transportation or traffic.

5.10.4 Mitigation Measures

The following mitigation measures will be implemented by the Project Applicant.

5.10.4.1 Project Construction Mitigations

During Project construction, the following locations would potentially require improvements or mitigation:

- **Local roadways.** Would potentially be subjected to heavy loads.
- **SR 43/Stockdale Highway.** Will be significantly impacted during the p.m. peak hour when LOS E without Project construction becomes LOS F with Project construction.
- **SR 119/Tupman Road.** Will be significantly impacted during the p.m. peak hour when LOS F without Project construction remains LOS F with Project construction, but increases delay.

Specific details of the proposed mitigation measures are described below.

Mitigation Measures

The following proposed mitigation measures will be offered proactively to address Project-related activities during construction.

TRA-1 Roadway Improvements. The Project Applicant will coordinate with Kern County to identify and construct roadway improvements, if needed, to support construction traffic to ensure that roadway impacts are less than significant.

TRA-2 Intersection Improvements. The Project Applicant will coordinate with Kern County and Caltrans to identify and construct intersection improvements needed to support construction traffic so that intersection impacts are reduced to less-than-significant levels. The following intersections will require improvements:

- **Intersection of SR 43 (Enos Lane) and Stockdale Highway.** Signalization of the current 4-way-stop intersection would improve p.m. peak hour LOS F conditions to LOS B conditions during Project construction, thereby mitigating a significant Project construction traffic impact. A traffic signal warrant analysis was conducted to determine the need for a traffic signal. The result of the analysis shows that signalization is warranted. The peak-hour traffic-signal warrant sheet is included in Appendix R, Traffic Data.
- **Intersection of SR 119 and Tupman Road.** Signalization of the current 2-way-stop intersection would improve p.m. peak-hour LOS F conditions to LOS D conditions during Project construction, thereby mitigating a significant Project construction traffic impact. A traffic-signal warrant analysis was conducted to determine the need for a traffic signal. The result of the analysis shows that signalization is warranted. The peak-hour traffic-signal warrant sheet is included in Appendix R, Traffic Data.
- **Intersection of Dairy Road and Stockdale Highway.** Construct a separate left-turn lane on the westbound approach of Stockdale Highway, and construct a separate right-turn lane on

the northbound approach of Dairy Road. This improvement will facilitate the safe and efficient movement of construction and operations vehicles to and from the Project Site.

- **Dairy Road/Adohr Road:** Reconstruct the intersection to accommodate the turning radius needed by large trucks to make the turns. This improvement will facilitate the safe and efficient movement of construction and operations vehicles to and from the Project Site.

TRA-3 Traffic Control Measures. Use proper signs and traffic control measures in accordance with Caltrans and county requirements. All traffic signs, equipment, and control measures shall conform to the provisions specified in the Manual of Uniform Traffic Control Device (MUTCD), California Edition.

TRA-4 Lane Closures. Schedule potential traffic lane or road closures during off-peak hours whenever possible.

TRA-5 Limit Construction Traffic. Limit vehicular traffic to designated access roads, construction laydown and worker parking areas, and the Project construction site.

TRA-6 Implement Transportation Demand Management Measures (TDM). Encourage worker carpooling to minimize drive-alone worker trips. Provide incentives and develop a reward system to increase voluntary participation of various TDM measures.

Level of Significance after Mitigation

With the application of the mitigation measures described above, the impacted study intersections LOS and operational performance will improve reducing impacts to less-than-significant levels.

5.10.4.2 Project Operations Mitigation

Mitigation Measures

The following proposed mitigation measures will be offered proactively to address Project-related activities during operation. It must be noted that Project construction mitigation measure TRA-2 will also continue in place for the life of the Project:

TRA-7 Minimize Operations Traffic. Limit vehicular traffic to designated access roads. Encourage worker carpooling to minimize drive-alone worker trips.

Level of Significance after Mitigation

The study intersections are not significantly impacted based on the traffic impact threshold of significance; therefore, no mitigation is required to reduce impacts to less-than-significant levels. However, mitigation is proposed, as described above, to present a proactive approach to minimize operational traffic.

5.10.5 Laws, Ordinances, Regulations, and Standards

5.10.5.1 Federal

Title 49, Code of Federal Regulations (CFR), Parts 171-177. Governs the transportation of hazardous materials, the types of materials defined as hazardous, and the marking of the transportation vehicles.

The administering agencies for the above regulation are the CHP and the U.S. Department of Transportation (DOT), Pipeline and Hazardous Materials Safety Administration (PHMSA).

The Project would conform to this law by requiring that shippers of hazardous materials use the required markings on their transportation vehicles.

Title 14, CFR, Section 77.13(2)(i). Requires an Applicant to notify the Federal Aviation Administration (FAA) of the construction of structures with a height (1) greater than 200 feet from grade or (2) greater than an imaginary surface extending outward and upward at a slope of 10 to 1 from the nearest point of the nearest runway of an airport with at least one runway more than 3,200 feet in length.

The administering agencies for the above regulation are the DOT and FAA.

The Project includes several structures taller than 200 feet. The Project's tallest structure, at 260 feet, is the CO_2 vent. FAA notification is required for all structures that exceed 200 feet (refer to Section 5.10.7, Permits Required and Permit Schedule—FAA Permit).

49 U.S.C. § 10501(b)(2). Preempts state regulatory authority over railroad operations.

49 U.S.C. § 10906. Precludes all regulation of industrial or spur tracks.

5.10.5.2 State

California Vehicle Code, Section 353. Defines hazardous materials as any substance, material, or device posing an unreasonable risk to health, safety, or property during transportation, as defined by regulations adopted pursuant to Section 2402.7.

The administering agency for the above statute is the CHP.

The Project would comply with these codes by continuing to classify all hazardous materials in accordance with their classification.

California Vehicle Code, Sections 2500-2505. Authorizes the Commissioner of Highway Patrol to issue licenses for the transportation of hazardous materials, including explosives.

The administering agency for the above statutes is the CHP.

The Project would comply with these codes by requiring that contractors and employees be properly licensed and endorsed when operating vehicles used to transport hazardous materials.

California Vehicle Code, Sections 13369, 15275, 15278. Addresses the licensing of drivers and the classification of license required for the operation of particular types of vehicles. Requires a commercial driver's license to operate commercial vehicles. Requires an endorsement issued by the Department of Motor Vehicles (DMV) to drive any commercial vehicle identified in Section 15278.

The administering agency for the above statutes is the DMV.

The Project would comply with these codes by requiring that contractors and employees be properly licensed and endorsed when operating such vehicles.

California Vehicle Code, Sections 31303-31309. Requires that the transportation of hazardous materials be on the state or interstate highway that offers the shortest overall transit time possible.

The administering agency for the above statutes is the CHP.

The Project would comply with this law by requiring that shippers of hazardous materials use the shortest route possible to and from the Project Site.

California Vehicle Code, Sections 31600-31620. Regulates the transportation of explosive materials.

The administering agency for the above statutes is the CHP.

It must be noted that the Project would not use explosive materials specifically defined in Section 12000 of the Health and Safety Code. However, the Project would comply with this law by requiring that shippers of other potentially explosive materials have the required licenses from the CHP.

California Vehicle Code, Sections 32000-32053. Authorizes the CHP to inspect and license motor carriers transporting hazardous materials of the type requiring placards.

The administering agency for the above regulation is the CHP.

The Project would comply with this law by requiring that motor carriers of hazardous materials be properly licensed by the CHP.

California Vehicle Code, Sections 32100-32109. Requires that shippers of inhalation hazards in bulk packaging comply with rigorous equipment standards, inspection requirements, and route restrictions.

The administering agency for the above regulation is the CHP.

If applicable, the Project would comply with this law by requiring shippers of these types of material to comply with all route restrictions, equipment standards, and inspection requirements.

California Vehicle Code, Sections 34000-34100. Establishes special requirements for vehicles having a cargo tank and for hazardous waste transport vehicles and containers, as defined in

Section 25167.4 of the Health and Safety Code. The commissioner shall provide for the establishment, operation, and enforcement of random on- and off-highway inspections of cargo tanks and hazardous waste transport vehicles and containers, and ensure that they are designed, constructed, and maintained in accordance with the regulations adopted by the commissioner pursuant to this code and Chapter 6.5 (commencing with Section 25100) of Division 20 of the Health and Safety Code.

The administering agency for the above regulation is the CHP.

The Project would comply with this law by requiring that shippers of hazardous materials maintain their hazardous material transport vehicles in a manner that ensures the vehicles will pass CHP inspections.

California Vehicle Code, Section 34500. Regulates the safe operation of vehicles, including those vehicles that are used for the transportation of hazardous materials.

The administering agency for the above regulation is the CHP.

The Project would comply with this law by requiring shippers of hazardous materials to have the necessary permits, inspections, and licenses issued by the CHP for the safe operation of the hazardous materials transport vehicles.

California Vehicle Code, Section 35550. Imposes weight guidelines and restrictions upon vehicles traveling on freeways and highways. The section holds that "a single axle load shall not exceed 20,000 pounds. The load on any one wheel or wheels supporting one end of an axle is limited to 10,500 pounds. The front steering axle load is limited to 12,500 pounds." Furthermore, California Vehicle Code Section 35551 defines the maximum overall gross weight as 80,000 pounds, and adds that "the gross weight of each set of tandem axles shall not exceed 34,000 pounds."

The administering agency for the above statute is Caltrans.

The Project would comply with this code by requiring compliance with weight restrictions and by requiring heavy haulers to obtain permits, if required, prior to delivery of any heavy haul load.

California Vehicle Code, Section 35780. Requires a Single-Trip Transportation Permit to transport oversized or excessive loads over state highways. The permit can be acquired through Caltrans.

The administering agency for the above statute is Caltrans.

The Project would comply with this code by requiring that heavy haulers obtain a Single-Trip Transportation Permit for oversized loads for each vehicle, prior to delivery of any oversized load.

California Streets and Highways Code, Section 117. Unless otherwise specifically provided in the instrument conveying title, the acquisition by the department of any right-of-way (ROW) over any real property for state highway purposes includes the right of the department to issue, under Chapter 3 (commencing with Section 660), permits for the location in the ROW of any

structures or fixtures necessary to telegraph, telephone, or electric power lines or of any ditches, pipes, drains, sewers, or underground structures.

The administering agency for the above statute is Caltrans.

If applicable, the Project would comply with this code by acquiring the necessary permits and approval from Caltrans with regard to use of public ROWs.

The California Streets and Highways Code, Sections 660, 670, 672, 1450, 1460, 1470, 1480, *et seq*. Defines highways and encroachment, and requires encroachment permits for projects involving excavation in state highways and county/city streets. This law is generally enforced at the local level.

The administering agencies for the above regulation are Caltrans, the Kern County Roads Department, and the City of Bakersfield Public Works Department.

The Project or its assigned contractors would apply for encroachment permits for any excavation in state and county roadways prior to construction.

California Health and Safety Code, Section 25160 *et seq*. Addresses the safe transport of hazardous wastes, requires a manifest for hazardous waste shipments, and requires a person who transports hazardous waste in a vehicle to have a valid registration issued by the Department of Toxic Substances Control (DTSC) in his or her possession while transporting the hazardous waste.

The administering agency for the above regulation is the DTSC.

The Project would comply with this law by requiring shippers of hazardous wastes to be properly licensed by the DTSC and hazardous waste transport vehicles to be in compliance with DTSC requirements.

California Manual on Uniform Traffic Control Devices, Section 6C.01. Requires a temporary traffic control plan to be provided for "continuity of function (movement of traffic, pedestrians, bicyclists, transit operations) and access to property/utilities" during any time the normal function of a roadway is suspended. Some important elements that cannot be conveniently shown in the plans will be incorporated in the Special Provisions of the temporary traffic control plan.

The administering agency for the above regulation is Caltrans and/or the Kern County Roads Department. If needed, the Applicant would file a temporary traffic control plan prior to the start of construction.

5.10.5.3 Local

Kern County General Plan

Circulation Element, 2.3 Highways, 2.3.3 Highway Plan, Policies. The goal of the General Plan is to provide a network of roadway systems for the county. The county requires new development to provide for local roads in areas where the traffic model estimates little growth through and beyond year 2010.

The administering agency for the above regulation is the Kern County Roads Department. If needed, the Applicant would build the necessary roadways to access the Project Site.

The applicable LORS related to traffic and transportation are summarized in Table 5.10-12, Summary of LORS—Traffic and Transportation.

City of Wasco General Plan

Circulation Element, 5.1 Street System, Goal 1, Policy 5. Established truck routes will be maintained. New truck routes should be limited to arterials and collectors.

The administering agency for the above regulation is the City of Wasco Public Department.

Project truck traffic will use only the city's designated truck routes or where permitted and allowed.

City of Shafter General Plan

Transportation Program, 3.2 Streets and Highways, Policy 1. Facilitate meeting the City's roadway performance objective through the implementation of the City's Circulation Plan.

The administering agency for the above regulation is the City of Shafter Public Works Department.

The Project is not anticipated to contribute to the deterioration of the City's roadway performance along the Project route.

Transportation Program, 3.3 Parking, Policy 1. Maintain an adequate parking supply.

The administering agency for the above regulation is the City of Shafter Public Works Department.

The Project is not anticipated to reduce or render inadequate the City's parking supply.

5.10.6 Involved Agencies and Agency Contacts

Table 5.10-13, Agency Contact List for LORS, provides agency contacts for traffic and transportation.

5.10.7 Permits Required and Permit Schedule

FAA Permit. FAA will be notified for structures exceeding 200 feet.

Encroachment Permit. Any connection to a county-maintained road is considered an encroachment. If a building permit involves the construction of a new driveway or improvement to an existing one, or the connection to utilities under the road, an encroachment permit will be required. Encroachment permits allow individuals, contractors, or utilities to do work within the public ROW. Permits are issued by the Kern County Roads Department Transportation and Encroachment Permit Division.

Pipeline permits are also issued as part of the encroachment permit process. Depending on road conditions, a determination is made as to whether a road may be open-cut or bored.

Transportation Permit. Required whenever the size or weight of a vehicle and/or load exceeds the maximums allowed by the California Vehicle Code. A transportation permit is written permission to move an oversized load on roads within Kern County's jurisdiction. A permit may be granted to a private company or an individual. Permits are issued by the Kern County Roads Department Transportation and Encroachment Permit Division. An applicant can apply for a single trip permit, or if qualified, for an annual blanket transportation permit.

Construction-Related Road Closures. Permits are issued when a road closure is necessary for public safety for any road construction. A detour plan is required as part of the permit application process.

Building Permit. Building permits issued within the jurisdiction of the county follow the Kern County Engineering and Survey Services Permit Process.

In addition to Kern County, Caltrans District 6, which has operational jurisdiction on I-5, SR 58, SR 119, and SR 33, also requires permits for work conducted within the state highway ROW. Table 5.10-14, Applicable Permits, shows the permits that need to be included.

5.10.8 References

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Kern County Planning Department, 2008. Telephone conversation with Mr. Randall Cates, Planner 2, Land Division Unit—Parcel Maps, Tract Maps, Lot Line Adjustments, Certificates Of Compliance, May 28, 2008, (661)862-8612

Kern County Roads Department, 2008. Telephone conversation and e-mail correspondence with Mr. Barry Nienke, P.E., Kern County Traffic Engineer, April 1, 3, 2008, (805)781-5252, email: barryn@co.kern.ca.us.

Kern County Roads Department, 2008. Telephone conversation and e-mail correspondence with Mr. Brian Blacklock, P.E., Kern County Roads Department, March to May, 2008, March 16, 2009, March 27, 2012 (661)862-8881, email: blacklockb@co.kern.ca.us.

McTrans Center, University of Florida, 2000. *Highway Capacity Software.* Version 4.1a.

Transportation Research Board, 2000. *Highway Capacity Manual*.

Table 5.10-1
Intersection Level of Service Description

Description of Operation	Signalized Intersection Delay (seconds per vehicle)	Stop-Controlled Intersection Delay (seconds per vehicle)
LOS A describes operations with very low delay. This occurs when progression is extremely favorable, and most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	<10.0	<10.0
LOS B describes operations with generally good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.	10.1–20.0	10.1–15.0
LOS C describes operations with higher delays, which may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.	20.1–35.0	15.1–25.0
LOS D describes operations with high delay resulting from some combination of unfavorable progression, long cycle lengths, or high volumes. The influence of congestion becomes more noticeable, and individual cycle failures are noticeable.	35.1–55.0	25.1–35.0
LOS E is considered the limit of acceptable delay. Individual cycle failures are frequent occurrences.	55.1–80.0	35.1–50.0
LOS F describes a condition of excessively high delay; considered unacceptable to most drivers. This condition often occurs when arrival flow rates exceed the LOS D capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes to such delay.	>80.0	>50.0

Source: HECA, 2012.
Notes:
< = less than
> = greater than
LOS = level of service

Table 5.10-2
Existing Intersection Levels of Service

Intersection	Control	Peak Hour (a.m.)		Peak Hour (p.m.)	
		Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1. I-5 NB Ramp/Stockdale Highway	Unsignalized	8.8	A	11.5	B
2. I-5 SB Ramp/Stockdale Highway	Unsignalized	9.2	A	13.2	B
3. I-5 NB Ramp/SR 119	Unsignalized	11.2	A	17.7	C
4. I-5 SB Ramp/SR 119	Unsignalized	12.0	A	18.0	C
5. SR 119/SR 43	Signalized	25.3	C	23.0	C
6. SR 43/Stockdale Highway	Unsignalized	11.3	B	22.8	C
7. Stockdale Highway/Morris Road	Unsignalized	8.8	A	9.3	A
8. SR 119/Tupman Road	Unsignalized	19.3	C	65.4	F
9. Tupman Road/Grace Avenue	Unsignalized	7.0	A	7.0	A
10. Tupman Road/Station Road	Unsignalized	8.6	A	8.6	A
11. Dairy Road/Stockdale Highway	Unsignalized	8.7	A	10.4	B
12. Dairy Road/Adohr Road	Unsignalized	9.0	A	8.8	A
13. SR 43/Poso Avenue	Unsignalized	10.6	B	11.5	B
14. SR 43/Kimberlina Road	Signalized	23.8	C	20.9	C
15. SR 43/Shafter Avenue	Signalized	12.8	B	12.8	B
16. SR 43/Central Avenue	Signalized	9.0	A	10.4	B
17. SR 43/Lerdo Highway	Signalized	22.1	C	21.6	C
18. SR 43/7th Standard Road	Unsignalized	11.5	B	19.9	C
19. SR 43/SR 58 (Rosedale Hwy West)	Unsignalized	10.6	B	13.6	B
20. SR 43/SR 58 (Rosedale Hwy East)	Unsignalized	10.7	B	14.7	B
21. H Street/9th Street	Unsignalized	8.5	A	8.7	A
22. H Street/Wasco Avenue	Unsignalized	8.7	A	8.9	A
23. Wasco Avenue/Poso Avenue	Unsignalized	10.2	B	10.6	B
24. Wasco Avenue/Kimberlina Road	Unsignalized	10.2	B	10.2	B
25. J Street/9th Street	Unsignalized	8.5	A	8.6	A

Notes:
a.m./p.m. = morning/evening
I-5 = Interstate 5
LOS = level of service
NB = northbound
SB = southbound
sec/veh = seconds per vehicle
SR = State Route

Table 5.10-3
Anticipated Project Construction Trip Generation

Vehicle Type	Actual Vehicle Round Trips	Peak Daily Trips	Peak Hourly Trips (a.m.)			Peak Hourly Trips (p.m.)		
			Inbound	Outbound	Total	Inbound	Outbound	Total
Construction Worker Vehicles[1]	1,230	2,460	410	0	410	0	1,230	1,230
Truck Deliveries[2]	50	300	75	75	150	0	0	0
Soil Fill Deliveries[3]	160	960	48	48	96	0	0	0

Source: HECA, 2012.

Notes:

[1]. Note that 2.0 passenger occupancy per vehicle was assumed to account for the carpooling of approximately 2,461 workers conservatively analyzed during the peak construction month, yielding 1,230 vehicles for the construction workers. It was conservatively assumed that one-third of the worker vehicles will arrive during the a.m. (peak one hour between 7:00 to 9:00 a.m.) and all will leave during p.m. (peak one hour between 4:00 to 6:00 p.m.) peak hours.

[2]. Trucks deliveries shown in the table were adjusted into Passenger Car Equivalent (3 PCE) vehicles. The trip generation estimate was based on the average 24-hour and maximum 1-hour truck delivery trips during Project construction. There are 50 (average 24-hour) truck deliveries @ 3 PCE/truck = 150 PCE vehicles. Peak daily trips (including both the inbound and outbound trips) = 2 × 150 PCE vehicles = 300 PCE Trips. There are 25 (maximum 1-hour) truck deliveries @ 3 PCE/truck = 75 PCE vehicles. Therefore, peak hourly trips (assuming equal number of inbound and outbound trips) = 2 × 75 PCE vehicles = 150 PCE Trips. It was further assumed that there will no Project deliveries during the p.m. peak hour.

[3]. Average import fill delivery truck trips (at 18-cubic-yard capacity per truck), adjusted into PCE vehicles (3 PCE per truck). The trip generation estimate was based on the average 24-hour and 1-hour trips during Project construction site preparation. There are 160 (average 24-hour) truck deliveries @ 3 PCE/truck = 480 PCE vehicles. Peak daily trips (including both the inbound and outbound trips) = 2 × 480 PCE vehicles = 960 PCE Trips. There are 16 (average 1-hour) truck deliveries @ 3 PCE/truck = 48 PCE vehicles. Therefore, peak hourly trips (assuming equal number of inbound and outbound trips) = 2 × 48 PCE vehicles = 96 PCE Trips. It must be noted that applying the maximum number of fill material truck loads is not appropriate, as these trips are anticipated to decrease and taper off on the later months of the Project construction schedule. For construction analysis purposes, using the average number of fill material truck loads is very conservative when added to the peak construction workforce as well as construction material delivery trips as these peak construction activities overlap. Source data: HECA Project, 2012.

a.m. = morning
p.m. = evening

Table 5.10-4
Project Operations Trip Generation—Alternative 1, Train Option

Vehicle Type	Actual Vehicle Round Trips	Peak Daily Trips	Peak Hourly Trips (a.m.)			Peak Hourly Trips (p.m.)		
			Inbound	Outbound	Total	Inbound	Outbound	Total
Operations and Maintenance Trips[1]	154	308	110	0	110	22	132	154
Process Materials and Byproducts Trips[2, 3]	213	426	18	18	36	18	18	36
Feedstock Material Delivery Trips[3, 4]	165	330	15	15	30	15	15	30

Notes:
[1] Source: HECA, 2012.
[2] Total process materials and product truck trips, adjusted into Passenger Car Equivalent (PCE) vehicles (3 PCE per truck). The trip generation estimate is based on the maximum 24-hour and 1-hour trips during Project operation. There are 71 (maximum 24-hour) truck deliveries and shipments @ 3 PCE/truck = 213 PCE vehicles. Peak daily trips (including both the inbound and outbound trips) = 2 × 213 PCE vehicles = 426 PCE Trips. There are 6 (maximum 1-hr) truck deliveries and shipments @ 3 PCE/truck = 18 PCE vehicles. Therefore, peak hourly trips (assuming equal number of inbound and outbound trips) = 2 × 18 PCE vehicles = 36 PCE Trips.
[3] Source: HECA Project, 2012.
[4] Total feedstock material delivery truck trips (including petcoke and coal), adjusted into Passenger Car Equivalent vehicles (3 PCE per truck). The trip generation estimate is based on the maximum 24-hour and 1-hour trips during Project operation. There are 55 (maximum 24-hour) truck deliveries @ 3 PCE/truck = 165 PCE vehicles. Peak daily trips (including both the inbound and outbound trips) = 2 × 165 PCE vehicles = 330 PCE trips. There are 5 (maximum 1-hour) truck deliveries @ 3 PCE/truck = 15 PCE vehicles. Therefore, peak hourly trips (assuming equal number of inbound and outbound trips) = 2 × 15 PCE vehicles = 30 PCE trips. The feedstock trip assumption was based on the train delivery of coal and trucking of petcoke to the Project site.
a.m. = morning
p.m. = evening

Table 5.10-5
Project Operations Trip Generation—Alternative 2, Truck Option)

Vehicle Type	Actual Vehicle Round Trips	Peak Daily Trips	Peak Hourly Trips (a.m.)			Peak Hourly Trips (p.m.)		
			Inbound	Outbound	Total	Inbound	Outbound	Total
Operations and Maintenance Trips[1]	154	308	110	0	110	22	132	154
Process Materials and Byproducts Trips[2, 3]	399	798	36	36	72	36	36	72
Feedstock Material Delivery Trips[3, 4]	900	1,800	60	60	120	15	15	30

Notes:
[1] Source: HECA, 2012.
[2] Total process materials and products truck trips, adjusted into Passenger Car Equivalent (PCE) vehicles (3 PCE per truck). The trip generation estimate is based on the maximum 24-hour and 1-hour trips during Project operation. There are 133 (maximum 24-hour) truck deliveries and shipments @ 3 PCE/truck = 399 PCE vehicles. Peak daily trips (including both the inbound and outbound trips) = 2 × 399 PCE vehicles = 798 PCE trips. There are 12 (maximum 1-hour) truck deliveries and shipments @ 3 PCE/truck = 36 PCE vehicles. Therefore, peak hourly trips (assuming equal number of inbound and outbound trips) = 2 × 36 PCE vehicles = 72 PCE trips.
[3] Source: HECA Project, 2009.
[4] Total feedstock material delivery truck trips (including petcoke, and coal), adjusted into Passenger Car Equivalent vehicles (3 PCE per truck). The trip generation estimate is based on the maximum 24-hour and 1-hour trips during Project operation. There are 300 (maximum 24-hour) truck deliveries @ 3 PCE/truck = 900 PCE vehicles. Peak daily trips (including both the inbound and outbound trips) = 2 × 900 PCE vehicles = 1,800 PCE Trips. There are 20 (maximum 1-hour) truck deliveries @ 3 PCE/truck = 60 PCE vehicles. Therefore, peak hourly trips (assuming an equal number of inbound and outbound trips) = 2 × 60 PCE vehicles = 120 PCE trips. There will a break in coal trucking activities during the evening peak hour to minimize roadway conflicts with heavy vehicles; coal trucking activities will resume immediately after the peak evening traffic has dissipated.
a.m. = morning
p.m. = evening

Table 5.10-6
Workforce and Material Distribution

Origin of Vehicle Travel to Project Site	Construction Workforce (%)	Operation Workforce (%)	Material/Feedstock Petcoke (%)	Material/Feedstock Coal (%)
I-5 North (Kern County)	10	5	N/A	N/A
I-5 North (San Luis Obispo and Santa Barbara County)	N/A	N/A	45	N/A
I-5 South (Kern County)	8	5	N/A	N/A
I-5 South (Los Angeles County)	2	< 1	45	N/A
Stockdale Highway East (Metro Bakersfield)	35	50	5	N/A
SR 119 East (Metro Bakersfield)	30	25	5	N/A
SR 119 West (Taft and Buttonwillow)	5	5	N/A	N/A
SR 43 North (Wasco)[1]	5	5	N/A	100
Local (Tupman and others)	5	5	N/A	N/A

Source: HECA, 2012.
Notes:
[1] Coal will be transported via rail for Alternative 1 and via trucks for Alternative 2
% = percent
I-5 = Interstate 5
N/A = not applicable
SR = State Route

Table 5.10-7
Peak-Hour Intersection LOS—Year 2016 No Project Conditions

Intersection	Control	Peak Hour (a.m.)		Peak Hour (p.m.)	
		Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1. I-5 NB Ramp/Stockdale Highway	Unsignalized	8.9	A	12.0	B
2. I-5 SB Ramp/Stockdale Highway	Unsignalized	9.3	A	14.3	B
3. I-5 NB Ramp/SR 119	Unsignalized	11.6	B	19.7	C
4. I-5 SB Ramp/SR 119	Unsignalized	12.5	B	20.4	C
5. SR 119/SR 43	Signalized	26.2	C	24.2	C
6. SR 43/Stockdale Highway	Unsignalized	12.5	B	36.4	E
7. Stockdale Highway/Morris Road	Unsignalized	8.8	A	9.5	A
8. SR 119/Tupman Road	Unsignalized	21.9	C	105.0	F
9. Tupman Road/Grace Avenue	Unsignalized	7.0	A	7.0	A
10. Tupman Road/Station Road	Unsignalized	8.7	A	8.6	A
11. Dairy Road/Stockdale Highway	Unsignalized	8.7	A	9.8	A
12. Dairy Road/Adohr Road	Unsignalized	9.0	A	8.9	A
13. SR 43/Poso Avenue	Unsignalized	11.2	B	12.4	B
14. SR 43/Kimberlina Road	Signalized	24.1	C	21.2	C
15. SR 43/Shafter Avenue	Signalized	12.9	B	13.2	B
16. SR 43/Central Avenue	Signalized	9.1	A	10.5	B
17. SR 43/Lerdo Highway	Signalized	22.3	C	21.8	C
18. SR 43/7th Standard Road	Unsignalized	12.4	B	27.5	D
19. SR 43/SR 58 (Rosedale Hwy West)	Unsignalized	11.3	B	15.4	C
20. SR 43/SR 58 (Rosedale Hwy East)	Unsignalized	11.3	B	17.2	C
21. H Street/9th Street	Unsignalized	8.6	A	8.7	A
22. H Street/Wasco Avenue	Unsignalized	8.7	A	9.0	A
23. Wasco Avenue/Poso Avenue	Unsignalized	10.4	B	10.8	B
24. Wasco Avenue/Kimberlina Road	Unsignalized	10.5	B	10.4	B
25. J Street/9th Street	Unsignalized	8.5	A	8.6	A

Notes:
a.m./p.m. = morning/evening
I-5 = Interstate 5
NB/SB = northbound/southbound
sec/veh = seconds per vehicle
SR = State Route

Table 5.10-8
Peak-Hour Intersection LOS—Year 2016 Project Construction Conditions
(Alternatives 1 and 2)

Intersection	Control	Peak Hour (a.m.)		Peak Hour (p.m.)	
		Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1. I-5 NB Ramp/Stockdale Highway	Unsignalized	11.5	B	15.8	C
2. I-5 SB Ramp/Stockdale Highway	Unsignalized	10.8	B	32.4	D
3. I-5 NB Ramp/SR 119	Unsignalized	21.6	C	30.8	D
4. I-5 SB Ramp/SR 119	Unsignalized	14.0	B	34.7	D
5. SR 119/SR 43	Signalized	27.6	C	27.3	C
6. SR 43/Stockdale Highway	Unsignalized	15.9	C	142.2	F
7. Stockdale Highway/Morris Road	Unsignalized	10.7	B	13.5	B
8. SR 119/Tupman Road	Unsignalized	25.4	D	OVRFL	F
9. Tupman Road/Grace Avenue	Unsignalized	7.9	A	11.6	B
10. Tupman Road/Station Road	Unsignalized	9.4	A	14.5	B
11. Dairy Road/Stockdale Highway	Unsignalized	11.6	B	28.2	D
12. Dairy Road/Adohr Road	Unsignalized	16.2	C	14.1	B
13. SR 43/Poso Avenue	Unsignalized	11.4	B	13.0	B
14. SR 43/Kimberlina Road	Signalized	24.0	C	20.8	C
15. SR 43/Shafter Avenue	Signalized	12.8	B	13.2	B
16. SR 43/Central Avenue	Signalized	9.1	A	10.4	B
17. SR 43/Lerdo Highway	Signalized	22.2	C	22.1	C
18. SR 43/7th Standard Road	Unsignalized	12.6	B	33.0	D
19. SR 43/SR 58 (Rosedale Hwy West)	Unsignalized	11.7	B	21.8	C
20. SR 43/SR 58 (Rosedale Hwy East)	Unsignalized	11.7	B	32.2	D
21. H Street/9th Street	Unsignalized	8.6	A	8.7	A
22. H Street/Wasco Avenue	Unsignalized	8.7	A	9.0	A
23. Wasco Avenue/Poso Avenue	Unsignalized	10.4	B	10.8	B
24. Wasco Avenue/Kimberlina Road	Unsignalized	10.5	B	10.4	B
25. J Street/9th Street	Unsignalized	8.5	A	8.6	A

Notes:
a.m./p.m. = morning/evening
I-5 = Interstate 5
NB/SB = northbound/southbound
sec/veh = seconds per vehicle
SR = State Route
OVRFL = Overflow (seconds/vehicle delay exceeds reporting range)

Table 5.10-9
Peak-Hour Intersection LOS,
Year 2017 No Project Conditions

Intersection	Control	Peak Hour (a.m.)		Peak Hour (p.m.)	
		Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1. I-5 NB Ramp/Stockdale Highway	Unsignalized	8.9	A	12.1	B
2. I-5 SB Ramp/Stockdale Highway	Unsignalized	9.3	A	14.6	B
3. I-5 NB Ramp/SR 119	Unsignalized	11.7	B	20.1	C
4. I-5 SB Ramp/SR 119	Unsignalized	12.6	B	21.0	C
5. SR 119/SR 43	Signalized	26.4	C	24.5	C
6. SR 43/Stockdale Highway	Unsignalized	12.8	B	40.9	E
7. Stockdale Highway/Morris Road	Unsignalized	8.8	A	9.5	A
8. SR 119/Tupman Road	Unsignalized	22.5	C	117.7	F
9. Tupman Road/Grace Avenue	Unsignalized	7.0	A	7.0	A
10. Tupman Road/Station Road	Unsignalized	8.7	A	8.6	A
11. Dairy Road/Stockdale Highway	Unsignalized	8.7	A	9.8	A
12. Dairy Road/Adohr Road	Unsignalized	9.0	A	8.9	A
13. SR 43/Poso Avenue	Unsignalized	11.3	B	12.6	B
14. SR 43/Kimberlina Road	Signalized	24.1	C	21.2	C
15. SR 43/Shafter Avenue	Signalized	13.0	B	13.3	B
16. SR 43/Central Avenue	Signalized	9.1	A	10.5	B
17. SR 43/Lerdo Highway	Signalized	22.4	C	21.9	C
18. SR 43/7th Standard Road	Unsignalized	12.6	B	29.7	D
19. SR 43/SR 58 (Rosedale Hwy West)	Unsignalized	11.4	B	15.8	C
20. SR 43/SR 58 (Rosedale Hwy East)	Unsignalized	11.5	B	17.9	C
21. H Street/9th Street	Unsignalized	8.6	A	8.8	A
22. H Street/Wasco Avenue	Unsignalized	8.7	A	9.0	A
23. Wasco Avenue/Poso Avenue	Unsignalized	10.4	B	10.9	B
24. Wasco Avenue/Kimberlina Road	Unsignalized	10.5	B	10.5	B
25. J Street/9th Street	Unsignalized	8.5	A	8.6	A

Notes:
a.m./p.m. = morning/evening
I-5 = Interstate 5
NB/SB = northbound/southbound
sec/veh = seconds per vehicle
SR = State Route

Table 5.10-10
Peak-Hour Intersection LOS,
Year 2017 Project Operations Conditions—Alternative 1

Intersection	Control	Peak Hour (a.m.)		Peak Hour (p.m.)	
		Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1. I-5 NB Ramp/Stockdale Highway	Unsignalized	9.7	A	14.2	B
2. I-5 SB Ramp/Stockdale Highway	Unsignalized	9.7	A	17.8	C
3. I-5 NB Ramp/SR 119	Unsignalized	12.2	B	21.2	C
4. I-5 SB Ramp/SR 119	Unsignalized	13.0	B	22.5	C
5. SR 119/SR 43	Signalized	26.8	C	24.6	C
6. SR 43/Stockdale Highway	Signalized[1]	18.7	B	21.2	B
7. Stockdale Highway/Morris Road	Unsignalized	9.7	A	10.2	B
8. SR 119/Tupman Road	Signalized[1]	2.9	A	9.4	A
9. Tupman Road/Grace Avenue	Unsignalized	7.2	A	7.2	A
10. Tupman Road/Station Road	Unsignalized	9.5	A	10.3	B
11. Dairy Road/Stockdale Highway	Unsignalized	8.7	A	9.8	A
12. Dairy Road/Adohr Road	Unsignalized	10.3	B	9.3	A

Notes:
[1] Assumed to be signalized as part of Project Construction Mitigation.
a.m./p.m. = morning/evening
I-5 = Interstate 5
NB/SB = northbound/southbound
sec/veh = seconds per vehicle
SR = State Route

Table 5.10-11
Peak-Hour Intersection LOS,
Year 2017 Project Operations Conditions—Alternative 2

Intersection	Control	Peak Hour (a.m.)		Peak Hour (p.m.)	
		Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1. I-5 NB Ramp/Stockdale Highway	Unsignalized	10.5	B	18.2	C
2. I-5 SB Ramp/Stockdale Highway	Unsignalized	10.6	B	27.7	D
3. I-5 NB Ramp/SR 119	Unsignalized	12.3	B	22.4	C
4. I-5 SB Ramp/SR 119	Unsignalized	13.0	B	24.1	C
5. SR 119/SR 43	Signalized	26.8	C	24.7	C
6. SR 43/Stockdale Highway	Signalized[1]	16.2	B	18.5	B
7. Stockdale Highway/Morris Road	Unsignalized	10.9	B	11.4	B
8. SR 119/Tupman Road	Signalized[1]	2.0	A	7.5	A
9. Tupman Road/Grace Avenue	Unsignalized	7.2	A	7.5	A
10. Tupman Road/Station Road	Unsignalized	9.9	A	12.2	B
11. Dairy Road/Stockdale Highway	Unsignalized	8.7	A	10.1	B
12. Dairy Road/Adohr Road	Unsignalized	10.3	B	9.7	A
13. SR 43/Poso Avenue	Unsignalized	11.6	B	12.7	B
14. SR 43/Kimberlina Road	Signalized	24.2	C	21.1	C
15. SR 43/Shafter Avenue	Signalized	12.6	B	13.3	B
16. SR 43/Central Avenue	Signalized	8.7	A	10.5	B
17. SR 43/Lerdo Highway	Signalized	22.1	C	21.9	C
18. SR 43/7th Standard Road	Unsignalized	14.2	B	31.0	D
19. SR 43/SR 58 (Rosedale Hwy West)	Unsignalized	12.5	B	16.1	C
20. SR 43/SR 58 (Rosedale Hwy East)	Unsignalized	12.6	B	18.2	C
21. H Street/9th Street	Unsignalized	8.7	A	8.8	A
22. H Street/Wasco Avenue	Unsignalized	8.9	A	9.0	A
23. Wasco Avenue/Poso Avenue	Unsignalized	11.5	B	10.9	B
24. Wasco Avenue/Kimberlina Road	Unsignalized	10.3	B	10.5	B
25. J Street/9th Street	Unsignalized	8.7	A	8.6	A

Notes:
[1] Assumed to be signalized as part of Project Construction Mitigation.
a.m./p.m. = morning/evening
I-5 = Interstate 5
NB/SB = northbound/southbound
sec/veh = seconds per vehicle
SR = State Route

Table 5.10-12
Summary of LORS—Traffic and Transportation

LORS	Requirements	Conformance Section	Administering Agency	Agency Contact[1]
Federal Jurisdiction				
Title 49, Code of Federal Regulations, Section 171-177	Governs the transportation of hazardous materials, including the marking of transportation vehicles.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.1 Federal	CHP, USDOT Pipeline and Hazardous Materials Safety Administration	2, 3
Title 14, Code of Federal Regulations, Section 77.13(2)(i)	Requires Applicant to notify FAA of any construction greater than height limits defined by the FAA.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.1 Federal	FAA	1
State Jurisdiction				
California Vehicle Code, Section 353	Defines the hazardous materials.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CHP	3
California Vehicle Code, Sections 2500-2505	Authorizes the Commissioner of Highway Patrol to issue licenses for the transportation of hazardous materials, including explosives.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CHP	3
California Vehicle Code, Sections 13369, 15275, 15278	Addresses the licensing of drivers and the classification of license required for the operation of particular types of vehicles. In addition, these sections require the possession of certificates for permitting the operation of vehicles transporting hazardous materials.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Department of Motor Vehicles	4
California Vehicle Code, Sections 31303-31309	Requires transporters of hazardous materials to use the shortest route possible.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CHP	3

Table 5.10-12
Summary of LORS—Traffic and Transportation

LORS	Requirements	Conformance Section	Administering Agency	Agency Contact[1]
California Vehicle Code, Sections 31600-31620	Regulates the transportation of explosive materials.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CHP	3
California Vehicle Code, Section 32000-32053	Regulates the licensing of carriers of hazardous materials and notice requirements.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CHP	3
California Vehicle Code, Section 32100-32109	Transporters of inhalation hazardous materials or explosive materials must obtain a hazardous materials transportation license.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CHP	3
California Vehicle Code, Section 34000-34100	Establish special requirements for flammable and combustible liquids over public roads and highways.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CHP	3
California Vehicle Code, Section 34500	Regulate the safe operation of vehicles, including those that are used for the transportation of hazardous materials.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CHP	3
California Vehicle Code, Section 35550	Imposes weight guidelines and restrictions on vehicles traveling upon freeways and highways.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Department of Transportation	4
California Vehicle Code, Section 35780	Requires approval for a permit to transport oversized or excessive load over state highways.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Department of Transportation	4

Table 5.10-12
Summary of LORS—Traffic and Transportation

LORS	Requirements	Conformance Section	Administering Agency	Agency Contact[1]
California Streets and Highways Code, Sections 117	Permits for the location in the ROW of any structures or fixtures necessary to telegraph, telephone, or electric power lines or of any ditches, pipes, drains, sewers, or underground structures.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Department of Transportation	5
California Streets and Highways Code, Sections 660, 670, 672, 1450,1460,1470, 1480 et seq.	Defines highways and encroachment. Regulate ROW encroachment and the granting of permits with conditions for encroachment in state and county roads.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Department of Transportation, Kern County Roads Department	6, 7
California Health and Safety Code, Section 25160 et seq.	Addresses the safe transport of hazardous materials.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Department of Toxic Substance Control	8
California Manual on Uniform Control Devices (MUTCD), Section 6C.01	Requires traffic control plans to ensure continuity of traffic during roadway construction.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Department of Transportation, Kern County Roads Department	6, 7
CPUC Code Reference §§1001, 1007, 1008, 1904(a)	Requires an Application for Certificate of Public Convenience and Necessity (CPCN) to operate a rail facility.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CPUC	9
CPUC General Order 22-B	Reports of accidents on railroads	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CPUC	9
CPUC General Order 26-D	Clearances on railroads and street railroads as to side and overhead structures, parallel tracks and crossings	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CPUC	9

Table 5.10-12
Summary of LORS—Traffic and Transportation

LORS	Requirements	Conformance Section	Administering Agency	Agency Contact[1]
CPUC General Order 33-B	Construction, reconstruction, maintenance and operation of interlocking plants of railroads	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CPUC	9
CPUC General Order 72-B	Standard types of pavement construction at railroad grade crossings	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CPUC	9
CPUC General Order 75-D	Regulations Governing Standards for Warning Devices for At-Grade Highway-Rail Crossings	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CPUC	9
CPUC General Order 88-B	Rules for Altering Public Highway-Rail Crossings	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CPUC	9
CPUC General Order 95	Overhead electric line construction. Revised 1/12/2012 (D1201032)	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CPUC	9
CPUC General Order 108	Filing of railroad operating department rules	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CPUC	9
CPUC General Order 110	Radio communications in railroad operations	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CPUC	9
CPUC General Order 114	Minimum safety, health and comfort requirements for railroad cabooses	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CPUC	9

Table 5.10-12
Summary of LORS—Traffic and Transportation

LORS	Requirements	Conformance Section	Administering Agency	Agency Contact[1]
CPUC General Order 118-A	Construction, reconstruction and maintenance of walkways and control, of vegetation adjacent to railroad tracks.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CPUC	9
CPUC General Order 125	Construction and filing of freight tariffs and classifications issued by railroads	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CPUC	9
CPUC General Order 126	Contents of first-aid kits provided by railroads	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CPUC	9
CPUC General Order 135	The occupancy of public grade crossings by railroads	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CPUC	9
CPUC General Order 145	Railroad crossings to be classified exempt from the mandatory stop requirements of Section 22452 of the Vehicle Code	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CPUC	9
CPUC General Order 161	Transportation of hazardous materials by rail	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	CPUC	9

Table 5.10-12
Summary of LORS—Traffic and Transportation

LORS	Requirements	Conformance Section	Administering Agency	Agency Contact[1]
Local Jurisdiction				
Kern County General Plan, Circulation Element	Provide a network of roadway systems for the county	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.3 Local	Kern County Roads Department	6

Source: HECA, 2012.
Notes:
[1] Numbers in this column correspond to Agency Contacts listed in Table 5.10-11.
CHP = California Highway Patrol
CPUC = CPUC
FAA = Federal Aviation Administration
LORS = laws, ordinances, regulations, and standards
ROW = right-of-way
USDOT = United States Department of Transportation

Table 5.10-13
Agency Contact List for LORS

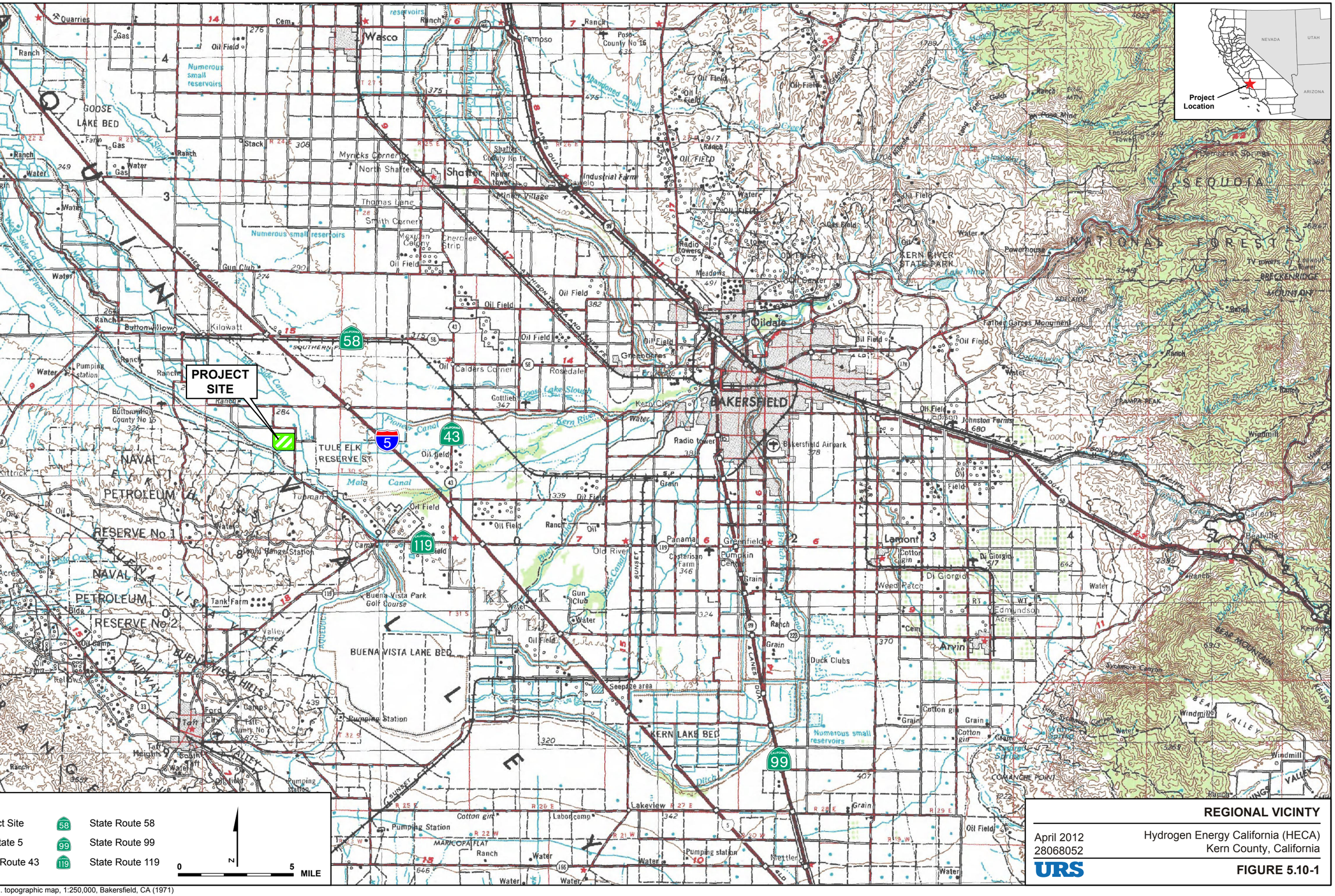
Number	Agency	Contact	Address	Telephone
1	Federal Aviation Administration	Karen McDonald, Obstruction Evaluation Specialist	Federal Aviation Administration Western Pacific Region AWP5202 15000 Aviation Boulevard Lawndale, CA 90261	(310) 725-6557
2	U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA)	Jeffrey Gilliam, Team Leader, California Office	3401 Centrelake Drive Suite 550B Ontario, CA 91761	(909) 937-3279 (720) 963-3160
3	CHP	Officer Justin Olson, Accident Investigator	29449 Stockdale Highway Bakersfield, CA 93312	(661) 764-5580
4	Caltrans North Region Permits Office MS# 41	Kien Le, Permits Manager	Caltrans North Region Permits Office MS# 41 1823 14th Street Sacramento, CA 94287	(916) 322-6001
5	Department of Motor Vehicles, Licensing Operations Division	Public Inquiry	2415 1st Avenue Mail Station F101 Sacramento, CA 95818	(916) 657-8698
6	Kern County Roads Department	Barry Nienke, P.E., County Traffic Engineer	2700 M Street, Suite 400 Bakersfield, CA 93301	(661) 862-8850
7	California Department of Transportation, District 6	Kurt Hatton, Transportation Engineer	1352 West Olive Avenue Fresno, CA 93728	(559) 243-3451
8	California Department of Toxic Substance Control	Gloria Conti, Information Officer	1001 I Street Mail: P.O. Box 806 Sacramento, CA 95812-0806	(800) 728-6942

Source: HECA, 2012.
Note:
CHP = California Highway Patrol
LORS = laws, ordinances, regulations, and standards

Table 5.10-14
Applicable Permits

Responsible Agency	Permit/Approval	Schedule
Federal Aviation Administration	Notification for structure heights exceeding 200 feet	TBD
Caltrans	State Highways Encroachment Permit	TBD
Caltrans	State Highways Transportation Permit	TBD
Kern County Roads Department Transportation and Encroachment Permit Division	Encroachment Permit Pipeline Permit	TBD
Kern County Roads Department Transportation and Encroachment Permit Division	Transportation Permit	TBD
Kern County Roads Department Transportation and Encroachment Permit Division	Construction-Related Roadway Closure	As needed
Kern County Engineering and Survey Services Department Building Inspection Division	Building Permit	TBD
CPUC	Construction of Rail Spur Line (Alternative 1)	TBD

Source: HECA, 2012.
Note:
TBD = to be determined



Source: USGS 1x2 min. topographic map, 1:250,000, Bakersfield, CA (1971)

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REGIONAL VICINITY

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Hydrogen Energy California (HECA)
Kern County, California

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FIGURE 5.10-1

R4 HWY

SR-58: State Highway facility located north of the project site. AADT is 16,000 vehicles per day. Peak-hour is 2,150 vehicles per hour. Trucks = 32%.

R5 HWY

Stockdale Highway: Highway facility located north of the project site. Two lanes (one in each direction) with a posted speed limit of 55 mph.

- Project Site
- Construction Staging Area
- Railroad[1]
- Carbon Dioxide
- Natural Gas[1]
- Potable Water
- Process Water
- Transmission

Note:
1. Feature temporarily designated as confidential

0 1,000 2,000 FEET

TRANSPORTATION SETTING OF THE LOCAL PROJECT AREA AND AFFECTED ROADWAYS

April 2012
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Hydrogen Energy California (HECA)
Kern County, California

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FIGURE 5.10-2 (1)

Sources: USGS (7.5' quads: Buttonwillow 1976, East Elk Hills 1977, Tupman 1977, Stevens, 1977). Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved. Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved. HECA Project Team (Traffic Data, 2009).

R5 HWY

R9 COL

R10 COL

R8 COL

R7 COL

R6 COL

PROJECT SITE

Truck Route

BELLEVUE ROAD

DITCH ROAD

MAIN DRAIN

DITCH

FREEBORN ROAD

DAIRY ROAD

ADOHR ROAD

MORRIS ROAD

EAST SIDE CANAL

WEST SIDE CANAL

AQUEDUCT

CANAL

LEVEE

OUTLET

Reservoir

TUPMAN

STATION ROAD

PIPELINE

Pump

Wells

Well

Weir

WT

TULE ELK RESERVE

STATE PARK

Mile 237

1 2 3 4 5 6 7 8 9 10 12 13 14 15 16 18 22 23

280 284 285 290 293 295 296 300 302 360 400 430

R5 HWY — Stockdale Highway: Highway facility located north of the project site. Two lanes (one in each direction) with a posted speed limit of 55 mph.

R6 COL — Tupman Road: Collector facility located east of the project site. Two lanes (one in each direction) with a posted speed limit of 55 mph.

R7 COL — Station Road: Collector facility located southeast of the project site. Two lanes (one in each direction) with no posted speed limit.

R8 COL — Morris Road: Collector facility located northeast of the project site. Two lanes (one in each direction) with no posted speed limit.

R9 COL — Dairy Road: Collector facility located northwest of the project site. Two lanes (one in each direction) with no posted speed limit.

R10 COL — Adohr Road: Collector facility located north of the project site. Two lanes (one in each direction) with no posted speed limit.

Truck Route
Project Site
Construction Staging Area
Railroad[1]
Carbon Dioxide
Natural Gas[1]
Potable Water
Process Water
Transmission

N

0 1,000 2,000 FEET

Note:
1. Feature temporarily designated as confidential

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FIGURE 5.10-2 (2)

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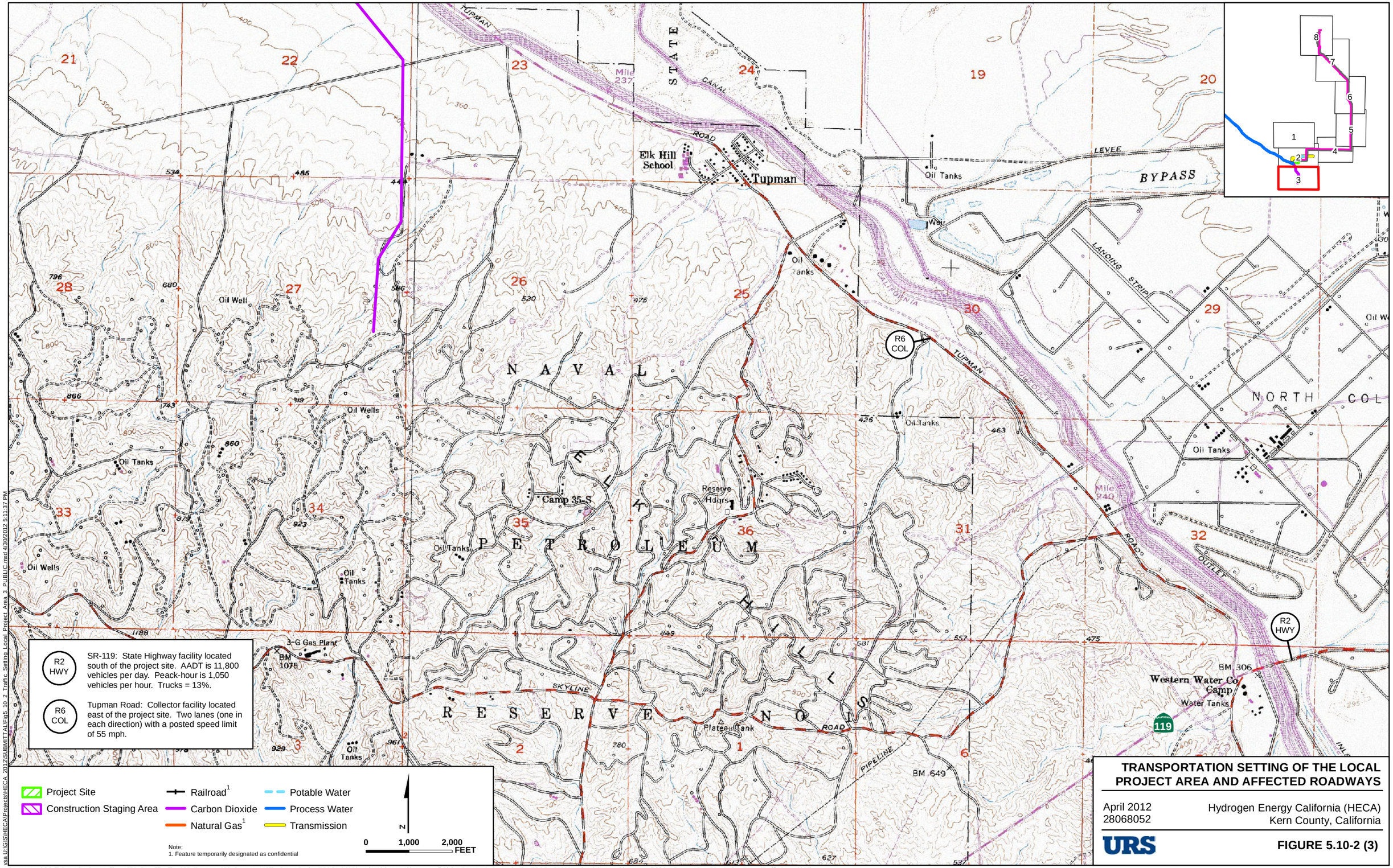

TRANSPORTATION SETTING OF THE LOCAL PROJECT AREA AND AFFECTED ROADWAYS

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FIGURE 5.10-2 (3)

Sources: USGS (7.5' quads: Buttonwillow 1976, East Elk Hills 1977, Tupman 1977, Stevens, 1977). Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved. Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved. HECA Project Team (Traffic Data, 2009).

R5 HWY

ROAD

Truck Route

BELLEVUE ROAD

PIONEER

CANAL

LEVEE

PIPELINE

Buena Vista Ranch

R7 COL

R3 HWY

R1 FWY

PIPELINE

CANAL

DIXON

AND

JAMES

Oil Well

CANAL OIL FIELD

OIL TANKS

Rio Bravo Pumping St

Pipelines

ENOS

PIPE LINE

STRA

Well

Res

Slough

I-5: Interstate Freeway facility located east of the project site. AADT is 31,000 vehicles per day. Peak hour is 4,900 vehicles per hour. Trucks = 25%.

SR-43: State Highway facility located east of the project site. AADT is 5,500 vehicles per day. Peak hour is 630 vehicles per hour. Trucks = 21%.

Stockdale Highway: Highway facility located north of the project site. Two lanes (one in each direction) with a posted speed limit of 55 mph.

Station Road: Collector facility located southeast of the project site. Two lanes (one in each direction) with no posted speed limit.

- Truck Route
- Project Site
- Construction Staging Area
- Railroad[1]
- Carbon Dioxide
- Natural Gas[1]
- Potable Water
- Process Water
- Transmission

Note:
1. Feature temporarily designated as confidential

N

0 1,000 2,000 FEET

TRANSPORTATION SETTING OF THE LOCAL PROJECT AREA AND AFFECTED ROADWAYS

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FIGURE 5.10-2 (4)

Sources: USGS (7.5' quads: Buttonwillow 1976, East Elk Hills 1977, Tupman 1977, Stevens, 1977). Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved. Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved. HECA Project Team (Traffic Data, 2009).

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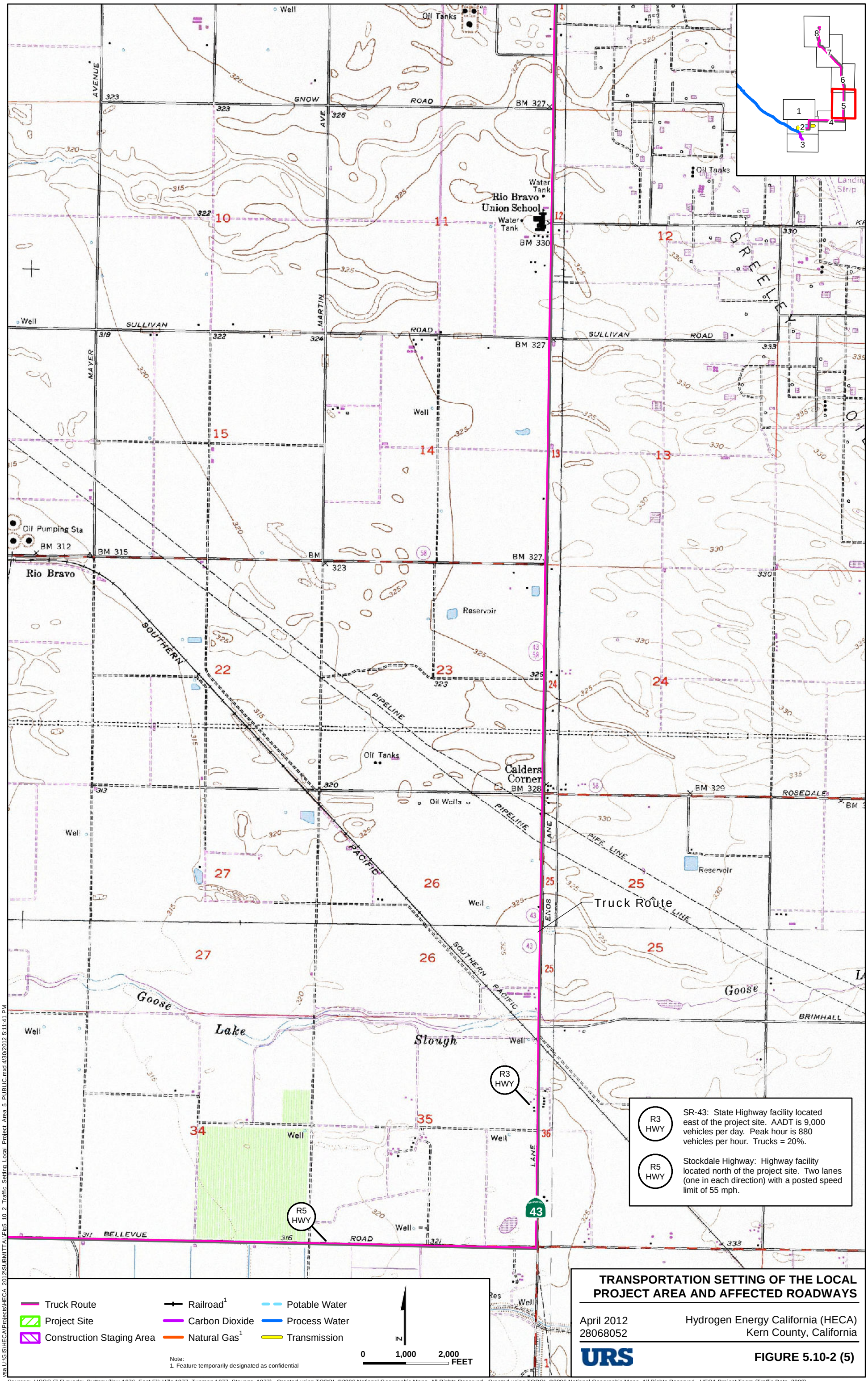

TRANSPORTATION SETTING OF THE LOCAL PROJECT AREA AND AFFECTED ROADWAYS

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FIGURE 5.10-2 (5)

Sources: USGS (7.5' quads: Buttonwillow 1976, East Elk Hills 1977, Tupman 1977, Stevens, 1977). Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved. Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved. HECA Project Team (Traffic Data, 2009).

Truck Route

R3 HWY

SR-43: State Highway facility located east of the project site. AADT is 14,000 vehicles per day. Peak hour is 1,250 vehicles per hour. Trucks = 16%.

Truck Route
Project Site
Construction Staging Area
Railroad[1]
Carbon Dioxide
Natural Gas[1]
Potable Water
Process Water
Transmission

Note:
1. Feature temporarily designated as confidential

0 1,000 2,000 FEET

TRANSPORTATION SETTING OF THE LOCAL PROJECT AREA AND AFFECTED ROADWAYS

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FIGURE 5.10-2 (6)

Sources: USGS (7.5' quads: Buttonwillow 1976, East Elk Hills 1977, Tupman 1977, Stevens, 1977). Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved. Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved. HECA Project Team (Traffic Data, 2009).

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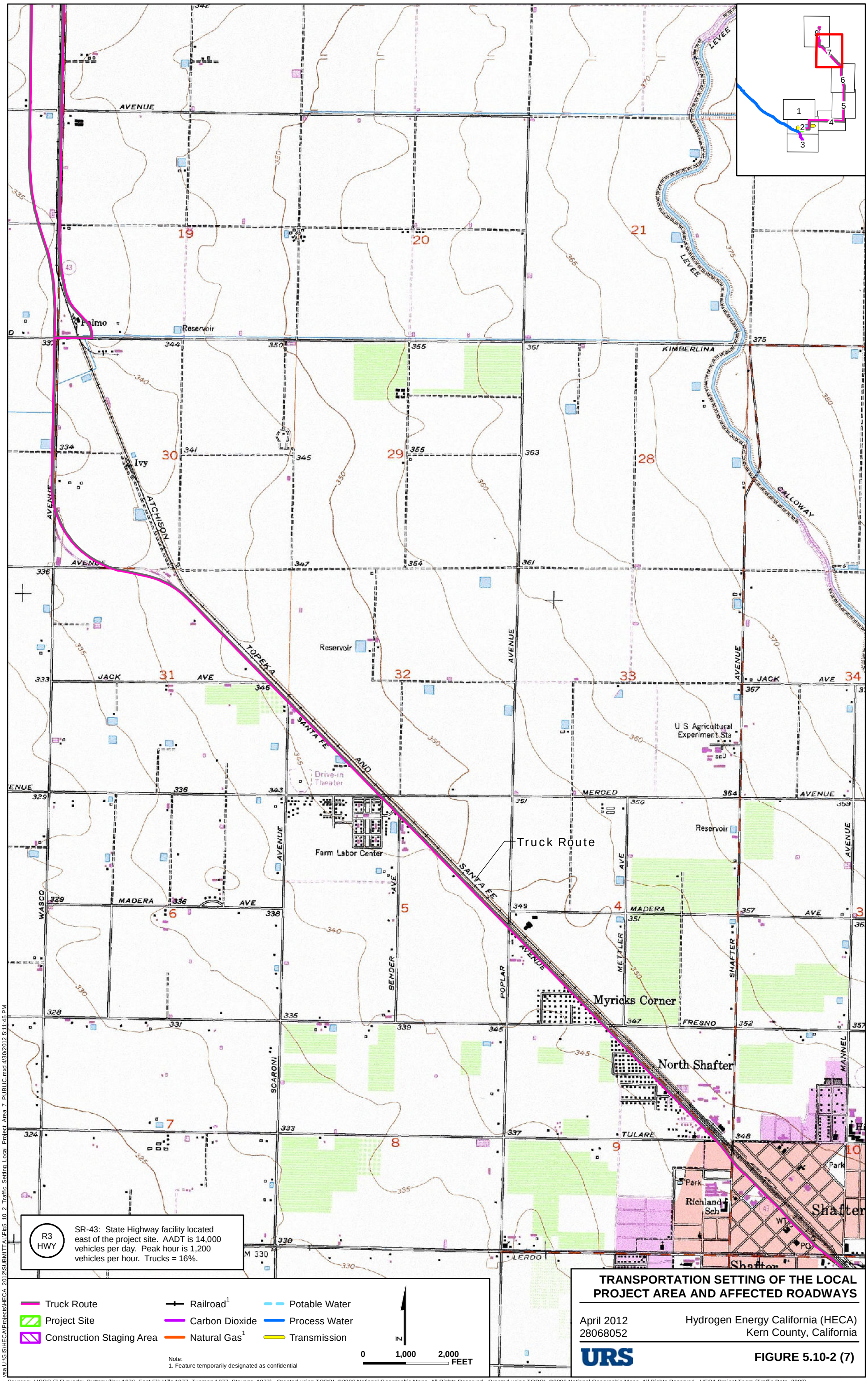
AVENUE
LEVEE
LEVEE
19
20
21
Palmo
Reservoir
KIMBERLINA
Ivy
ATCHISON
TOPEKA
SANTA FE
AND
SANTA FE
CALLOWAY
Reservoir
AVENUE
JACK
AVE
U S Agricultural Experiment Sta
Drive-in Theater
MERCED
AVENUE
Farm Labor Center
Truck Route
Reservoir
AVENUE
MADERA
AVE
WASCO
MADERA
AVE
BENDER
POPLAR
METTLER
AVENUE
SHAFTER
Myricks Corner
FRESNO
MANNEL
North Shafter
SCARONI
TULARE
Park
Richland Sch
Shafter
LERDO
R3 HWY
SR-43: State Highway facility located east of the project site. AADT is 14,000 vehicles per day. Peak hour is 1,200 vehicles per hour. Trucks = 16%.
Truck Route
Project Site
Construction Staging Area
Railroad[1]
Carbon Dioxide
Natural Gas[1]
Potable Water
Process Water
Transmission
N
0
1,000
2,000
FEET
Note:
1. Feature temporarily designated as confidential
TRANSPORTATION SETTING OF THE LOCAL PROJECT AREA AND AFFECTED ROADWAYS
April 2012
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FIGURE 5.10-2 (7)
Sources: USGS (7.5' quads: Buttonwillow 1976, East Elk Hills 1977, Tupman 1977, Stevens, 1977). Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved. Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved. HECA Project Team (Traffic Data, 2009).
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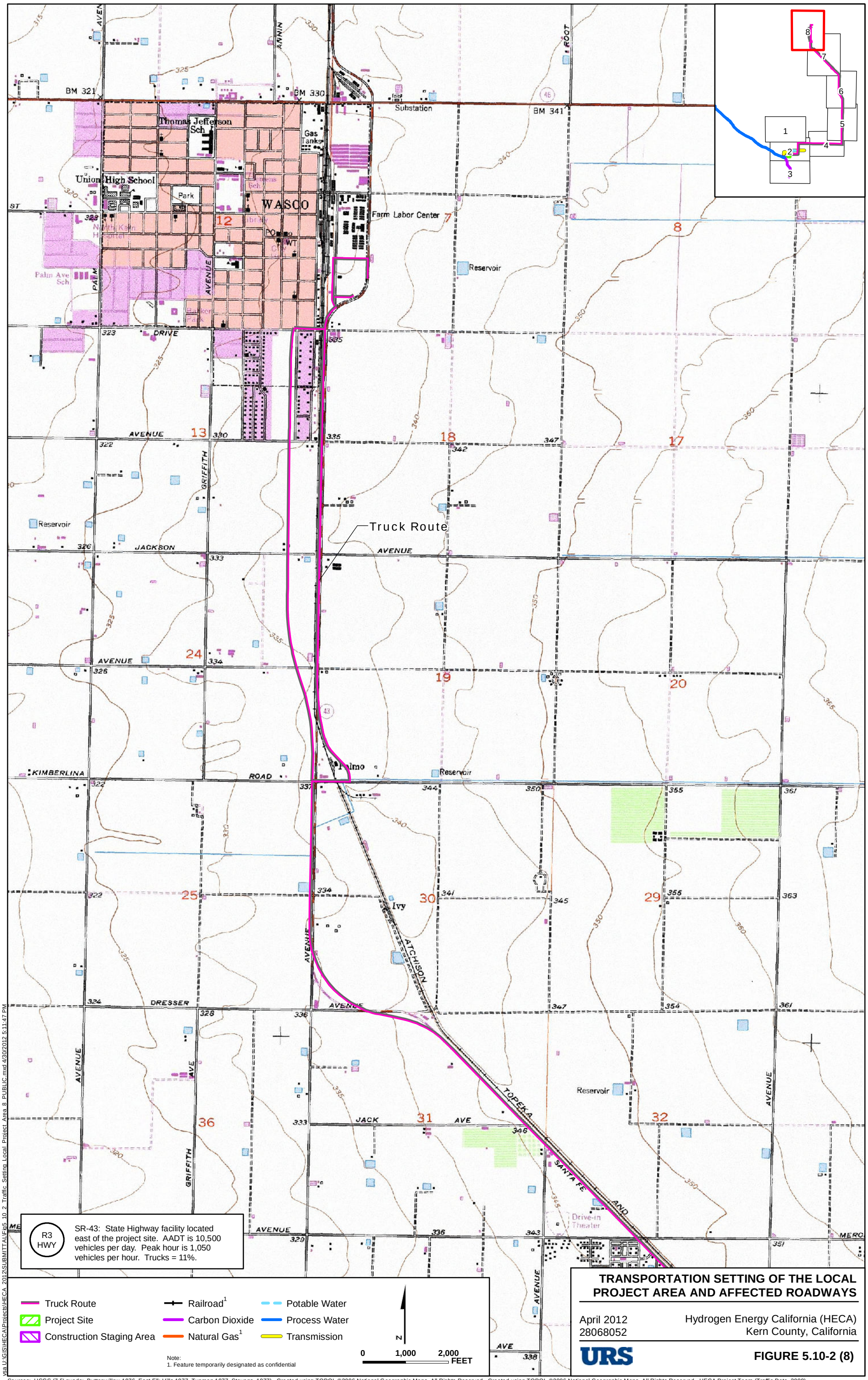

Sources: USGS (7.5' quads: Buttonwillow 1976, East Elk Hills 1977, Tupman 1977, Stevens, 1977). Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved. Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved. HECA Project Team (Traffic Data, 2009).

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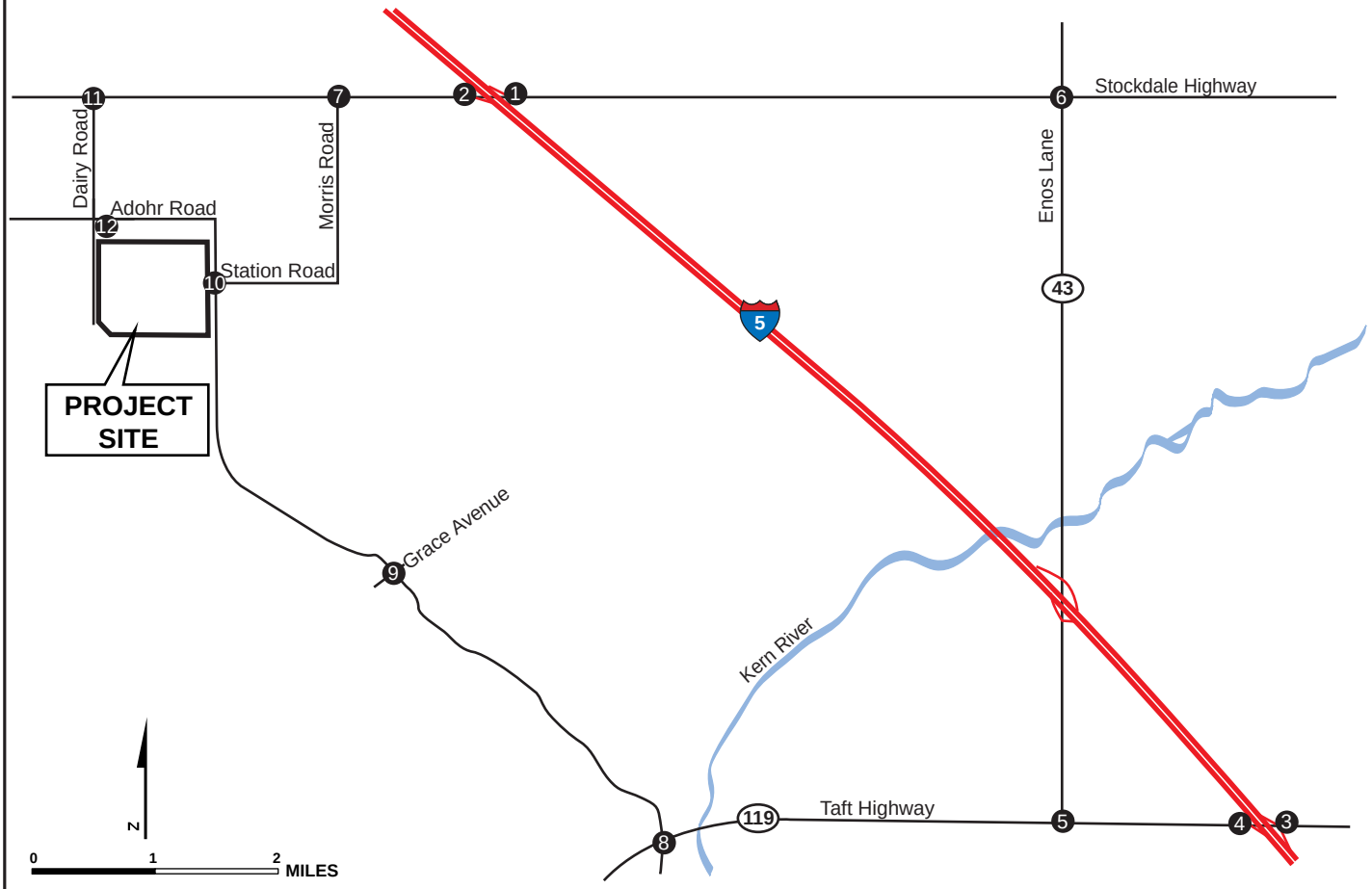
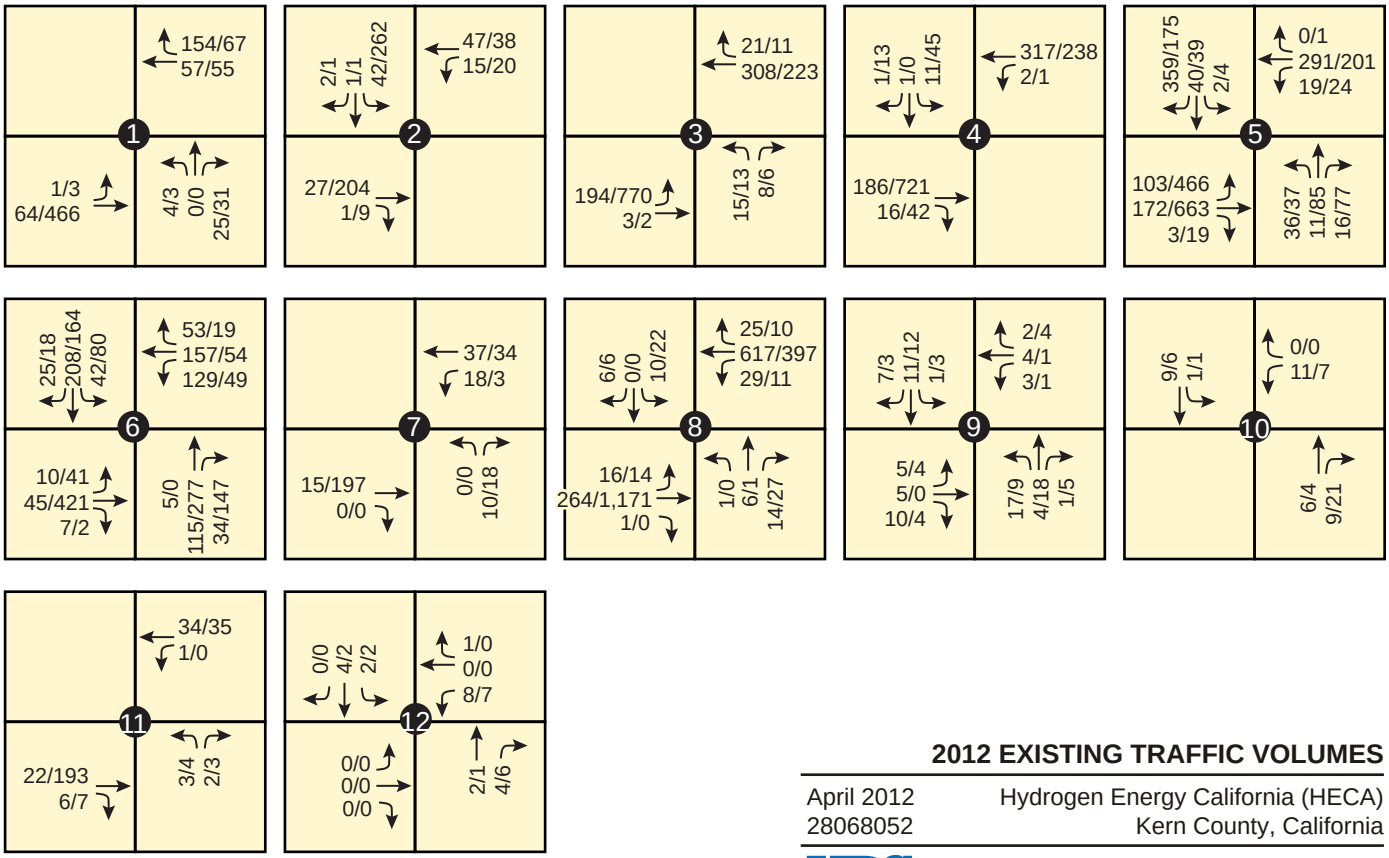


NOTE: Intersection # 7 has been analyzed as a T-intersection. The north leg has minimum/negligible traffic volumes.



2012 EXISTING TRAFFIC VOLUMES

April 2012 — Hydrogen Energy California (HECA)
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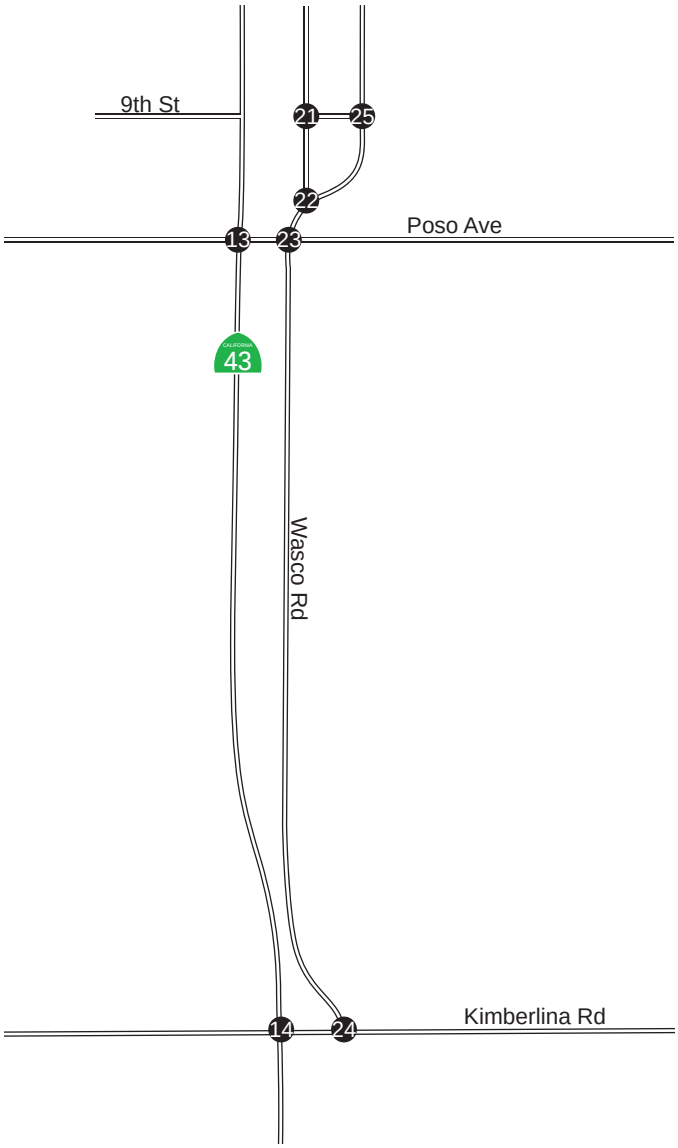
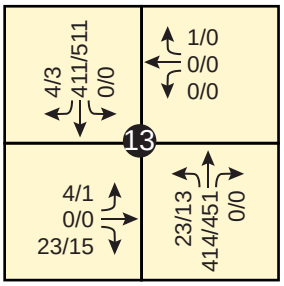
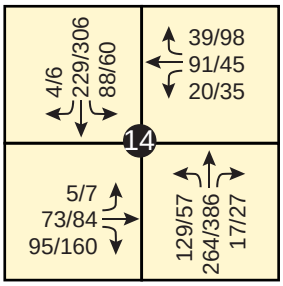
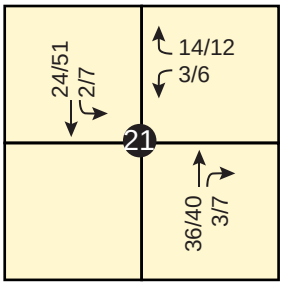
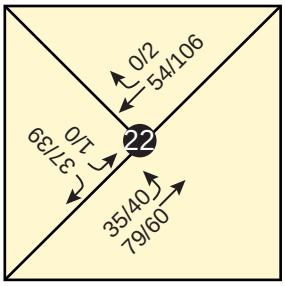
FIGURE 5.10-3a

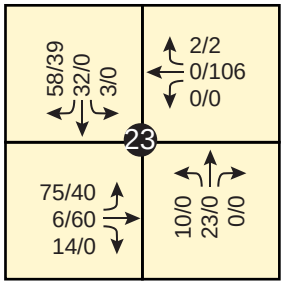


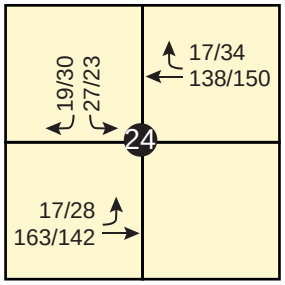


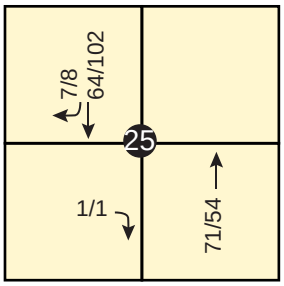


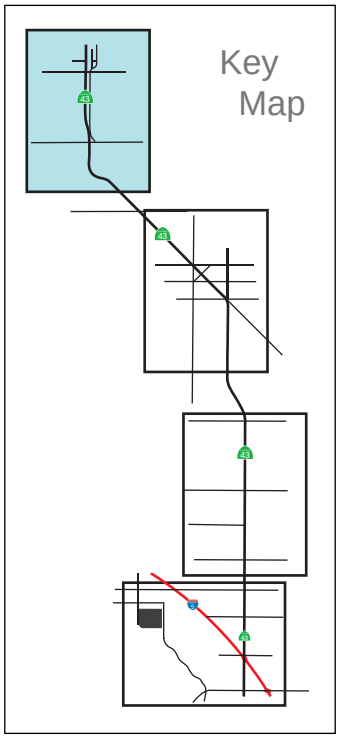












2012 EXISTING TRAFFIC VOLUMES

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FIGURE 5.10-3b

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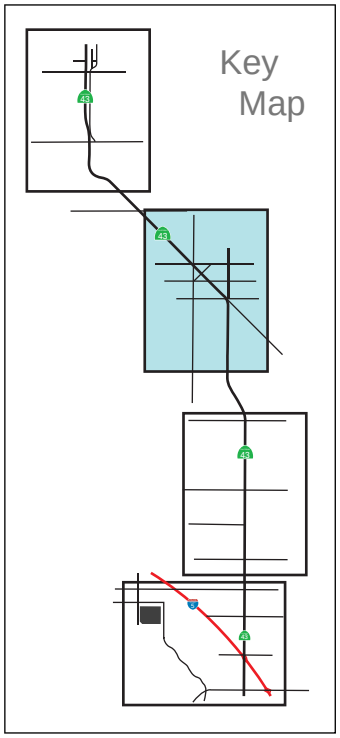

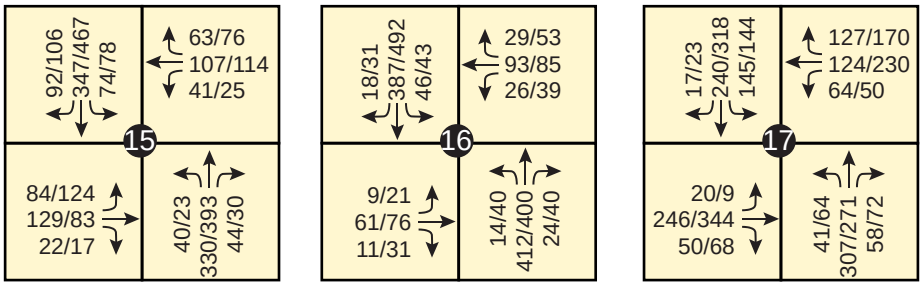

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2012 EXISTING TRAFFIC VOLUMES

April 2012
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FIGURE 5.10-3c

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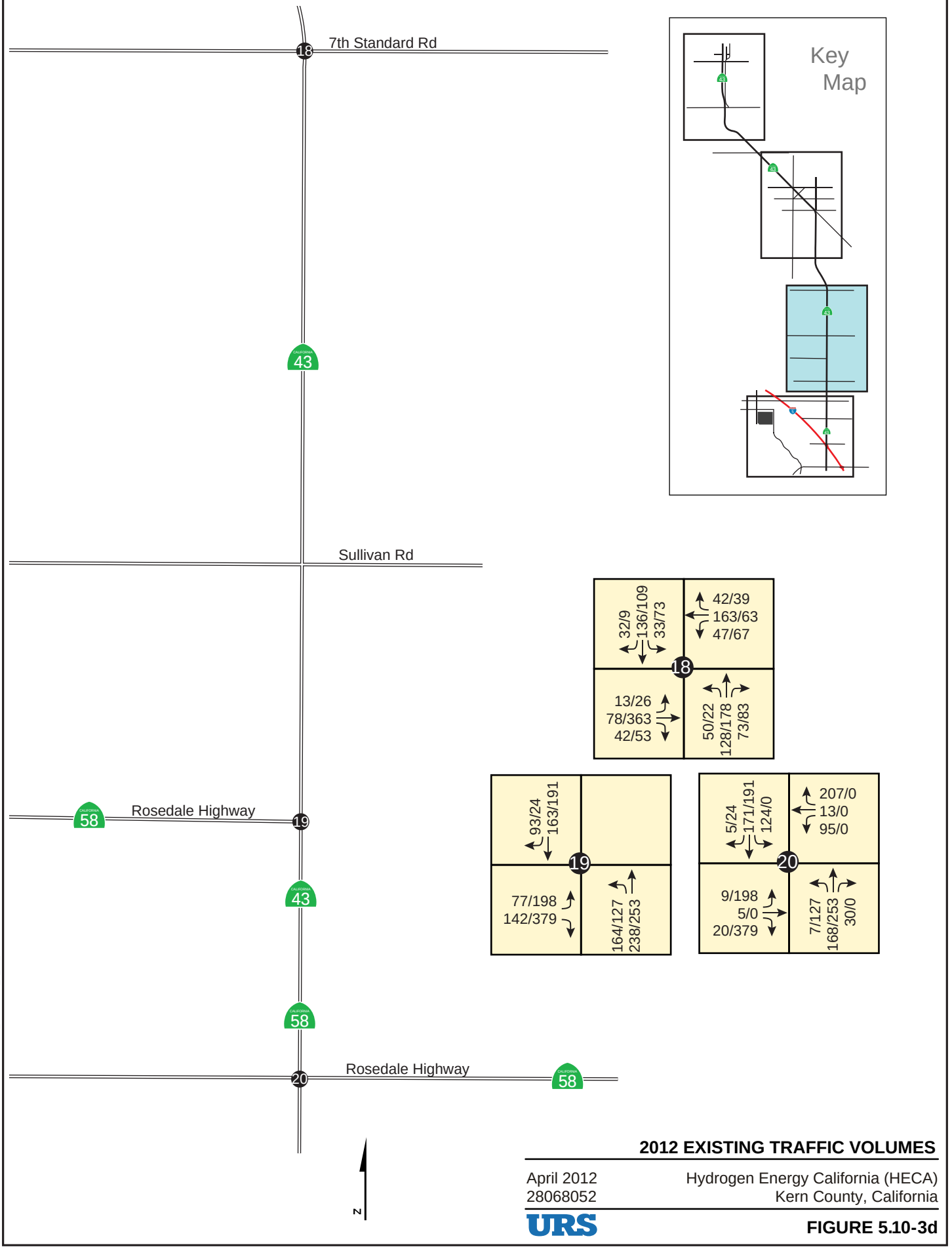

2012 EXISTING TRAFFIC VOLUMES

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FIGURE 5.10-3d

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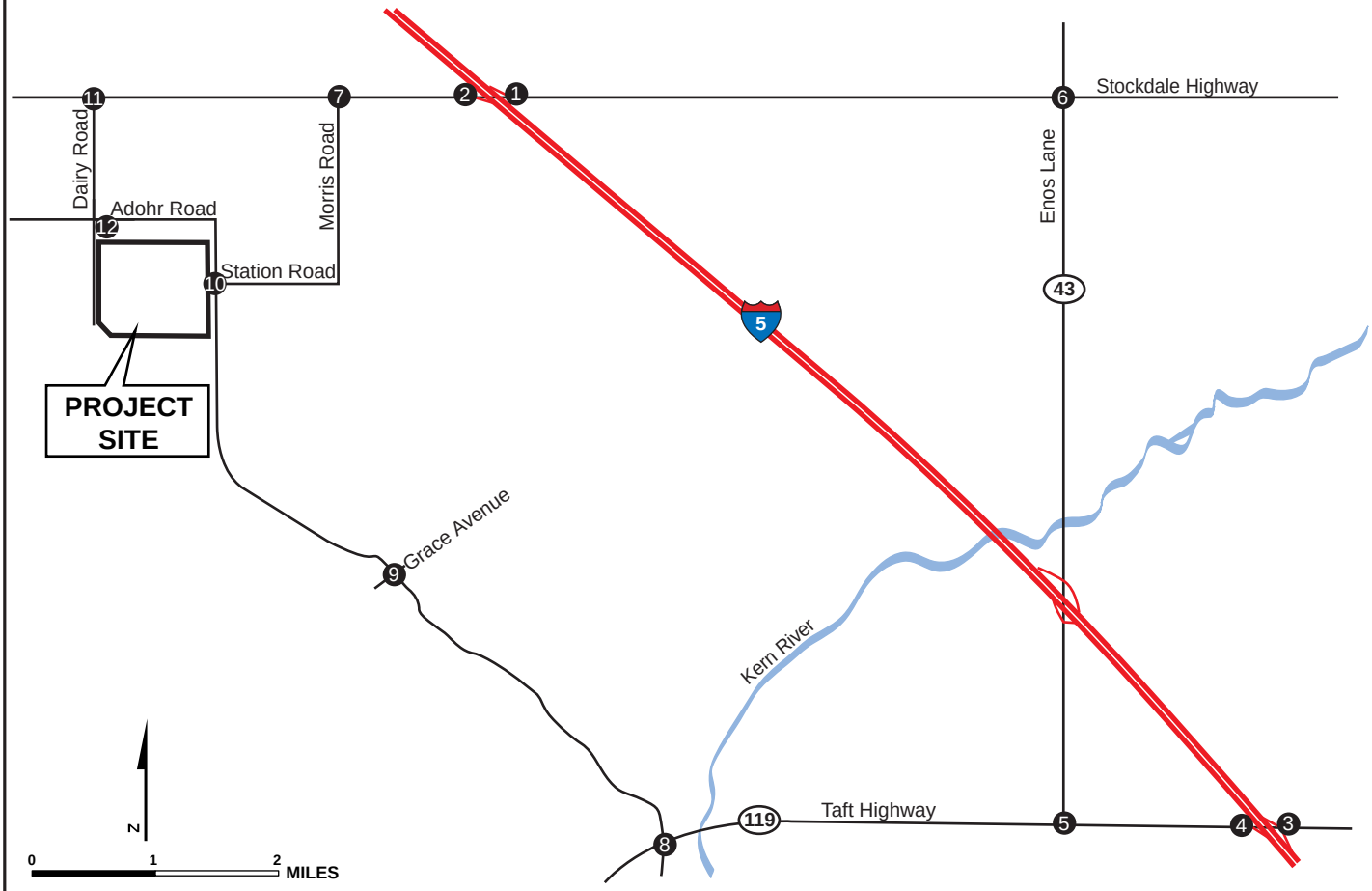

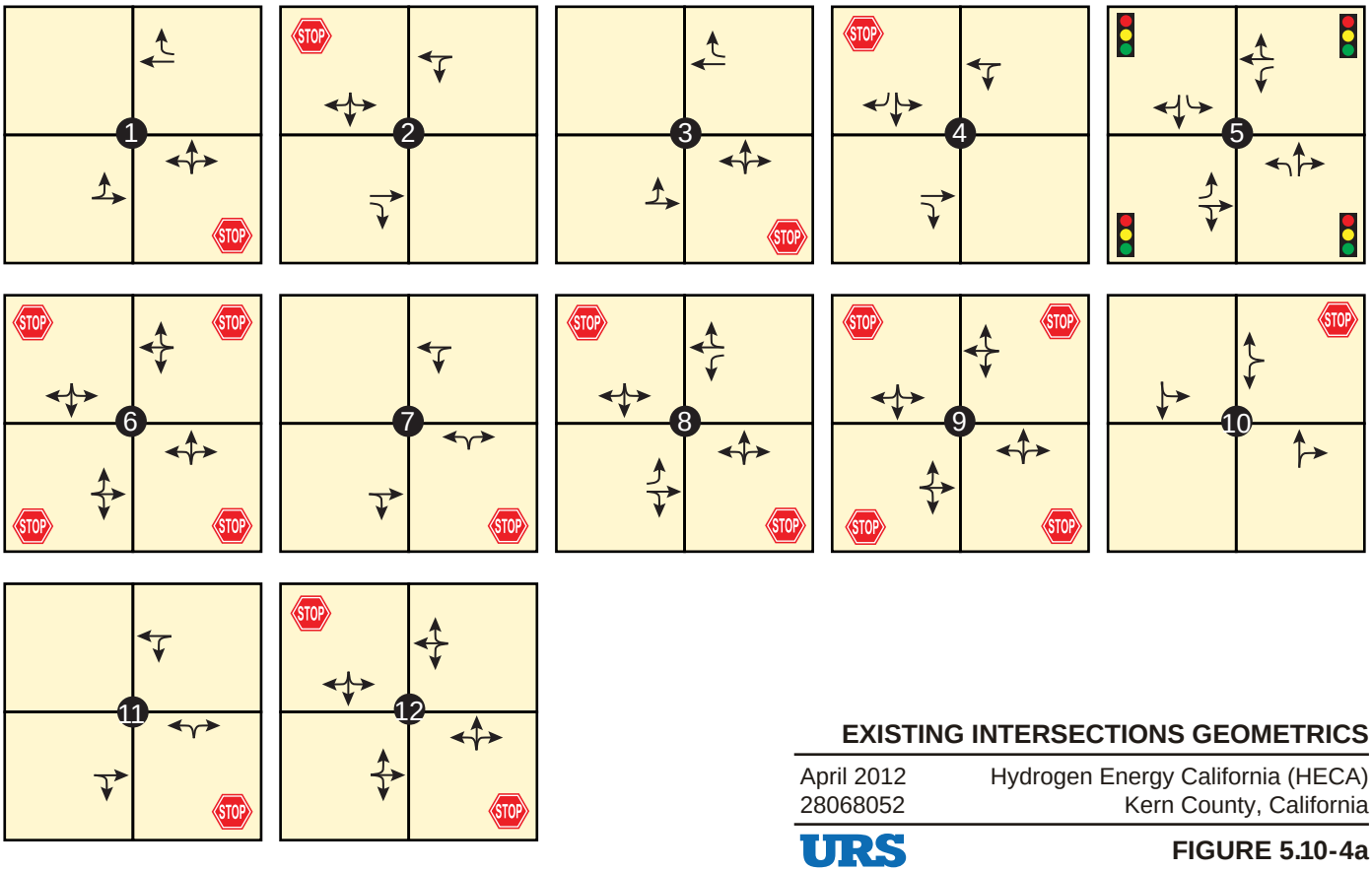

EXISTING INTERSECTIONS GEOMETRICS

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28068052 — Kern County, California

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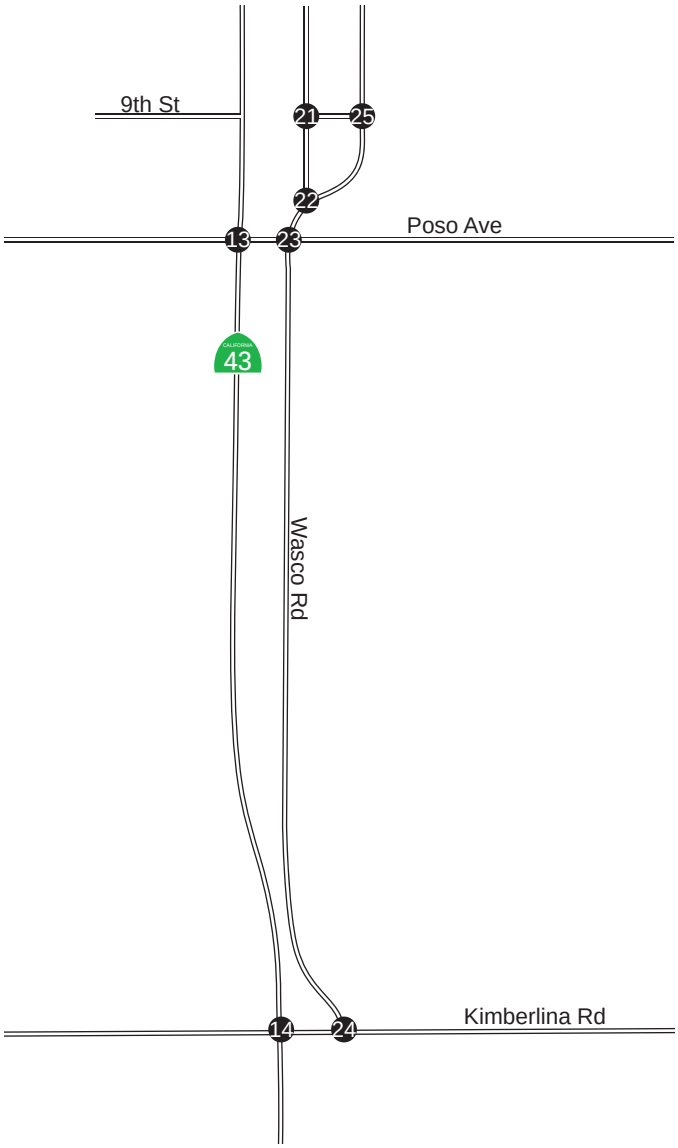
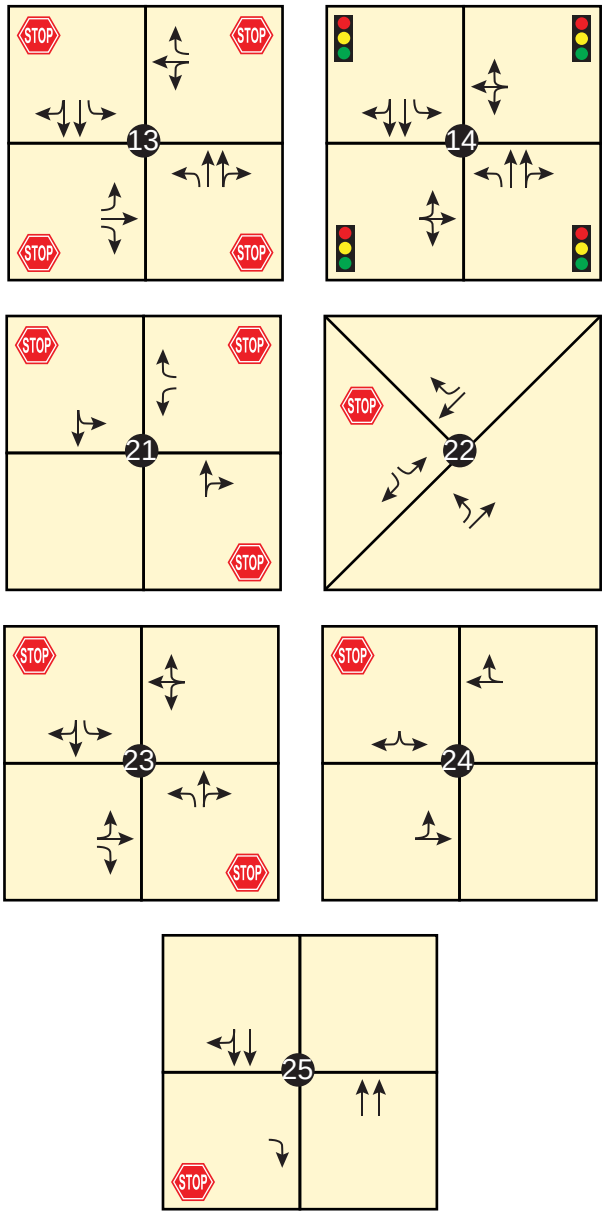
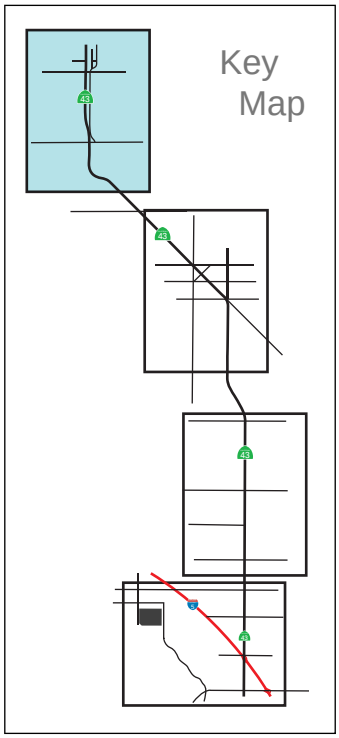
FIGURE 5.10-4a

4/26/12 vsa/hk...T:\HECA-SCS 2012\GRAPHICS 2012\5.10_Traffic\Fig_5_10_4a_geo.ai







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EXISTING INTERSECTIONS GEOMETRICS

April 2012
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Hydrogen Energy California (HECA)
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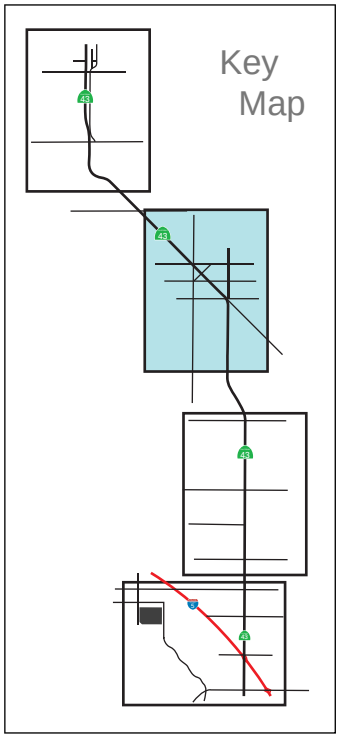
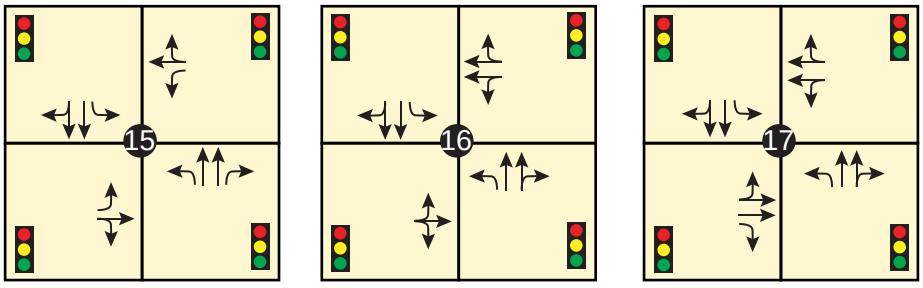
URS

FIGURE 5.10-4b

4/24/12 vsa...T:\HECA-SCS 2012\GRAPHICS 2012\5.10_Traffic\Fig_5_10_4b.ai





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EXISTING INTERSECTIONS GEOMETRICS

April 2012
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Hydrogen Energy California (HECA)
Kern County, California

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FIGURE 5.10-4c

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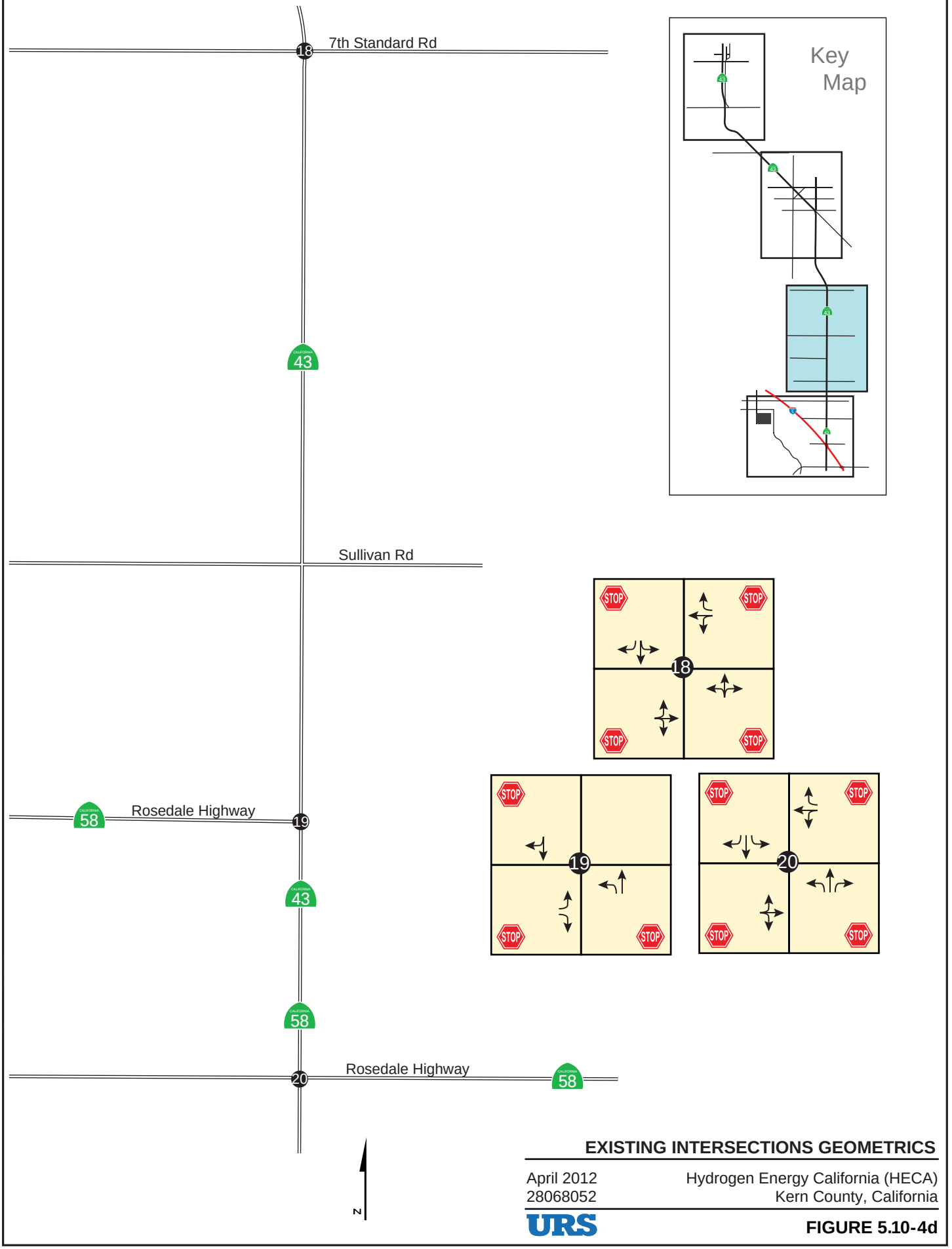


EXISTING INTERSECTIONS GEOMETRICS

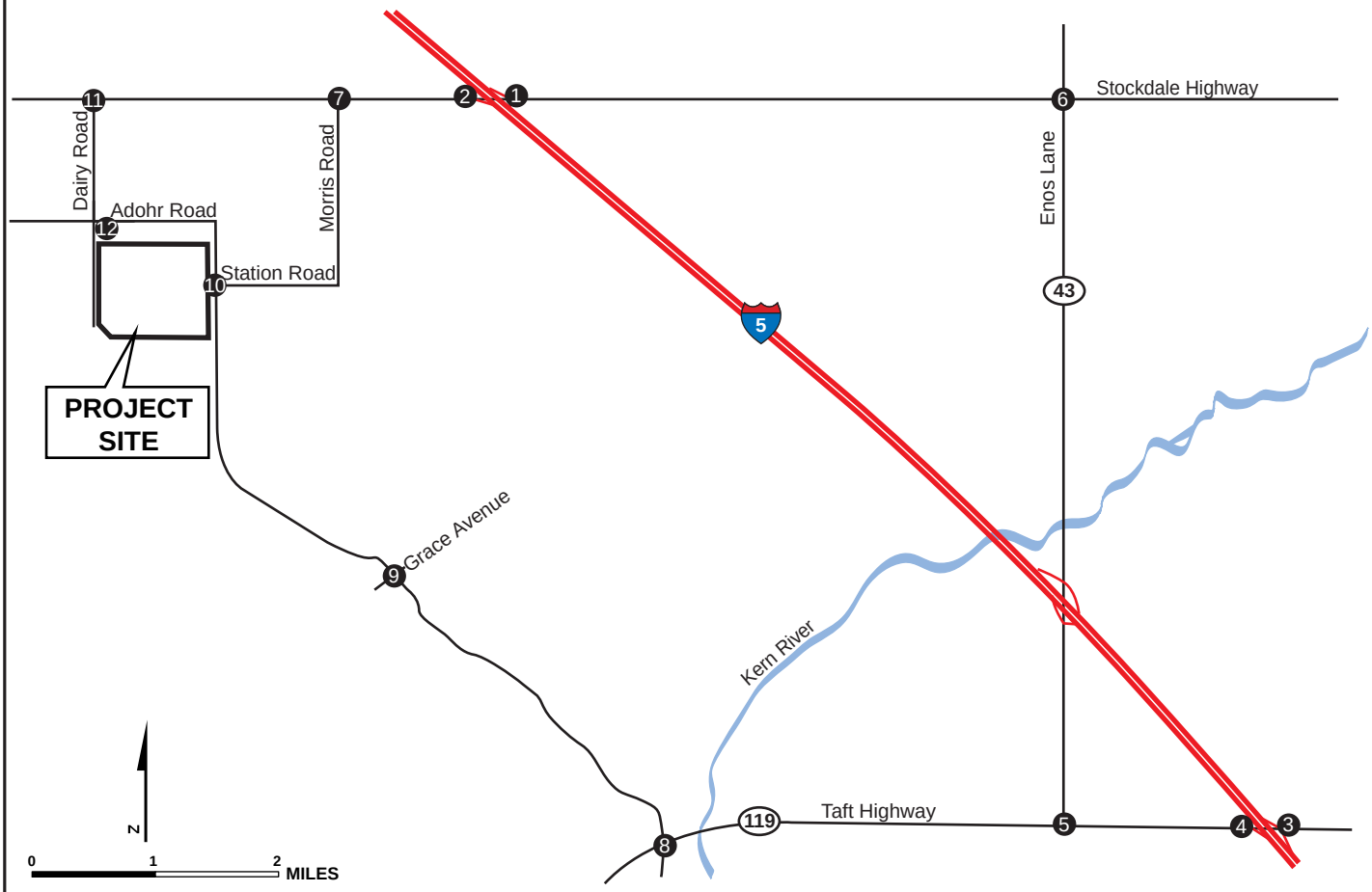
April 2012
28068052

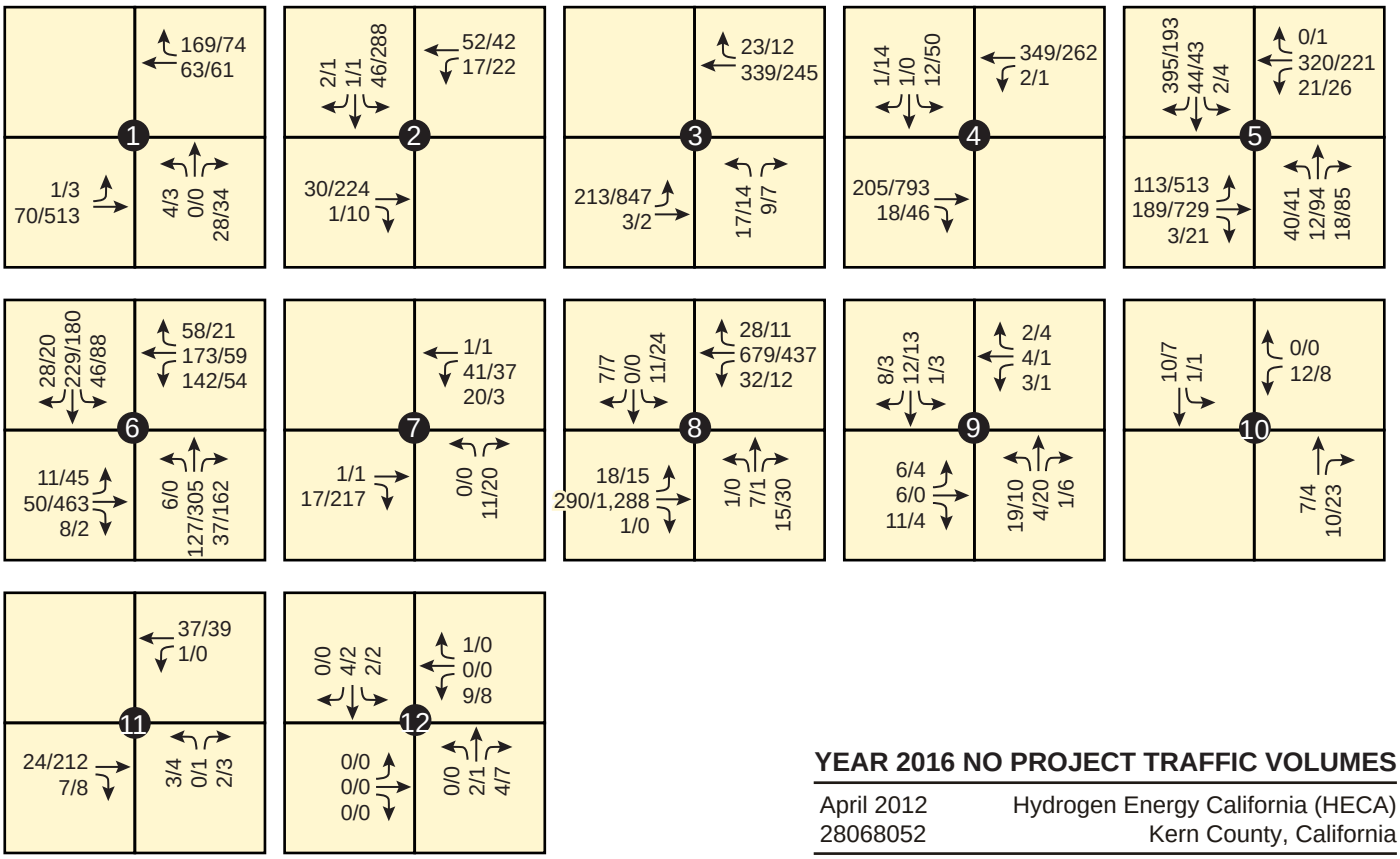
Hydrogen Energy California (HECA)
Kern County, California

URS

FIGURE 5.10-4d

4/26/12 vsa...T:\HECA-SCS 2012\GRAPHICS 2012\5.10_Traffic\Fig_5_10_4d.ai





YEAR 2016 NO PROJECT TRAFFIC VOLUMES

April 2012 — Hydrogen Energy California (HECA)
28068052 — Kern County, California

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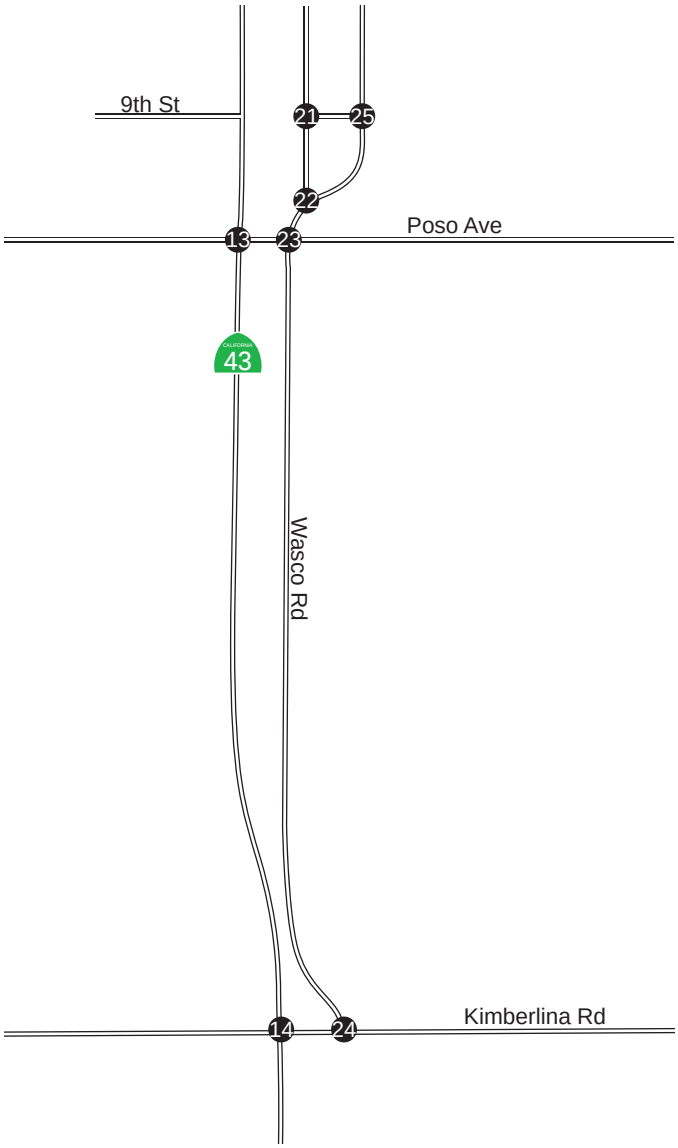
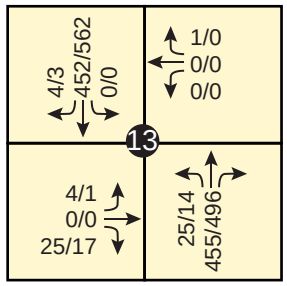
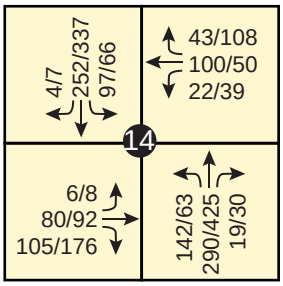
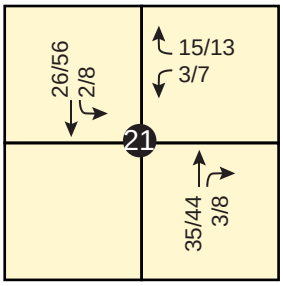
FIGURE 5.10-5a

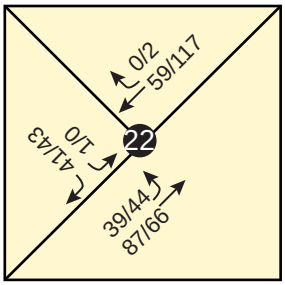
4/26/12 vsa/hk...T:\HECA-SCS 2012\GRAPHICS 2012\5.10_Traffic\Fig_5_10_5a_2016no.ai

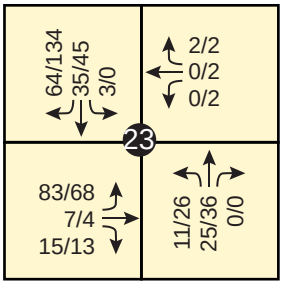


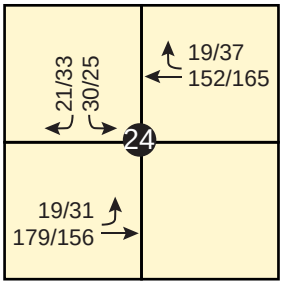


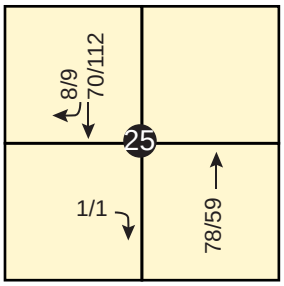


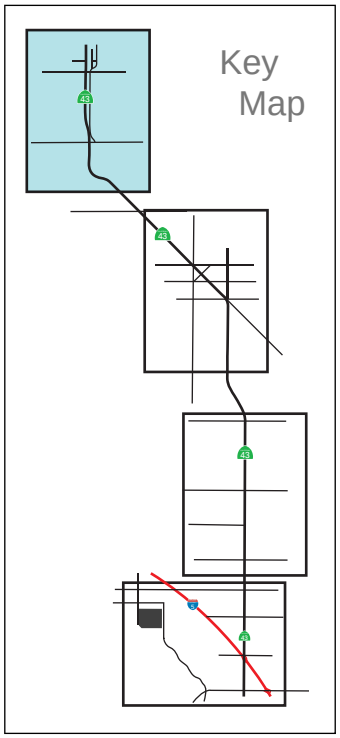












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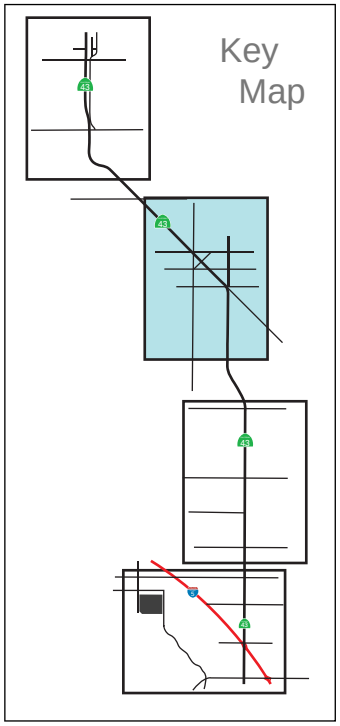
YEAR 2016 NO PROJECT TRAFFIC VOLUMES

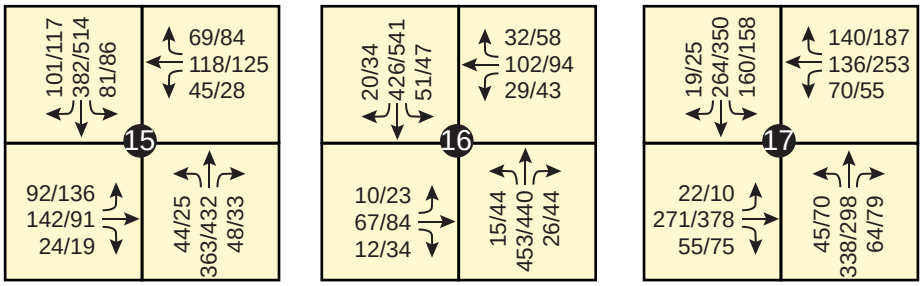
April 2012 — Hydrogen Energy California (HECA)
28068052 — Kern County, California

URS

FIGURE 5.10-5b

4/26/12 vsa...T:\HECA-SCS 2012\GRAPHICS 2012\5.10_Traffic\Fig_5_10_5b.ai





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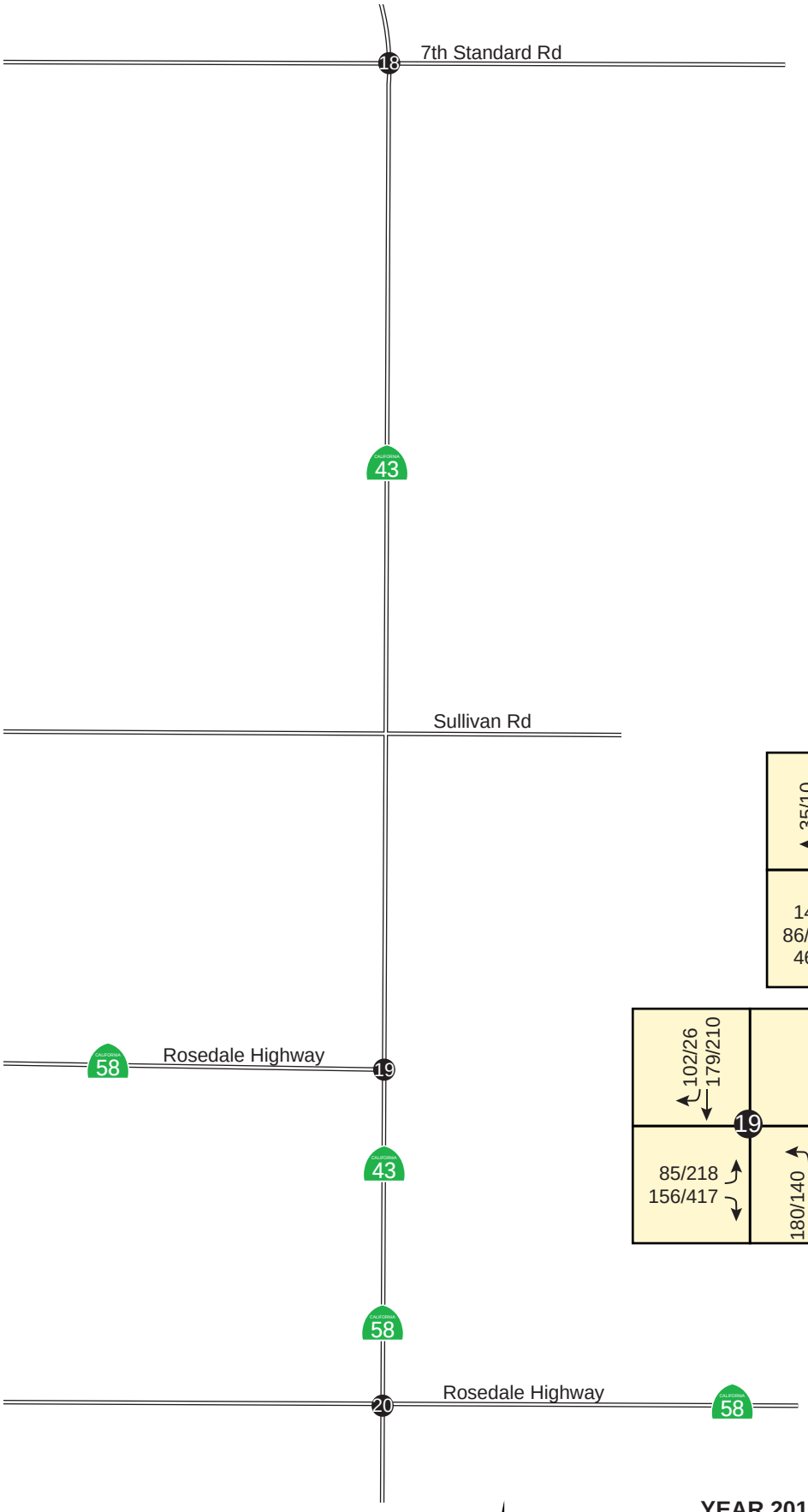
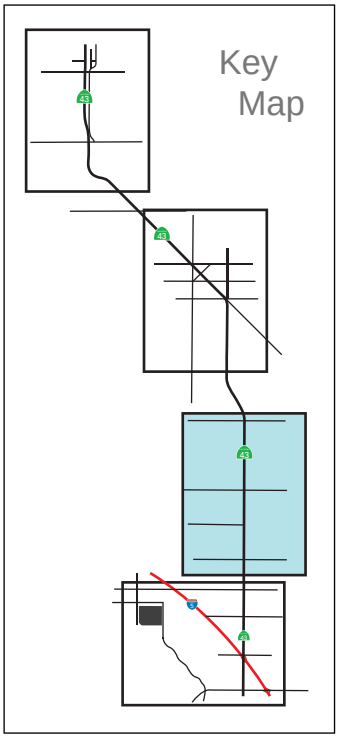
YEAR 2016 NO PROJECT TRAFFIC VOLUMES

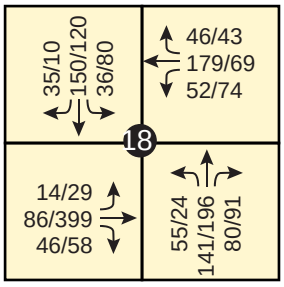
April 2012 — Hydrogen Energy California (HECA)
28068052 — Kern County, California

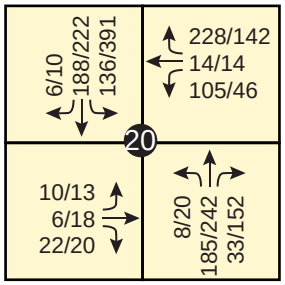
URS

FIGURE 5.10-5c









YEAR 2016 NO PROJECT TRAFFIC VOLUMES

April 2012 — Hydrogen Energy California (HECA)
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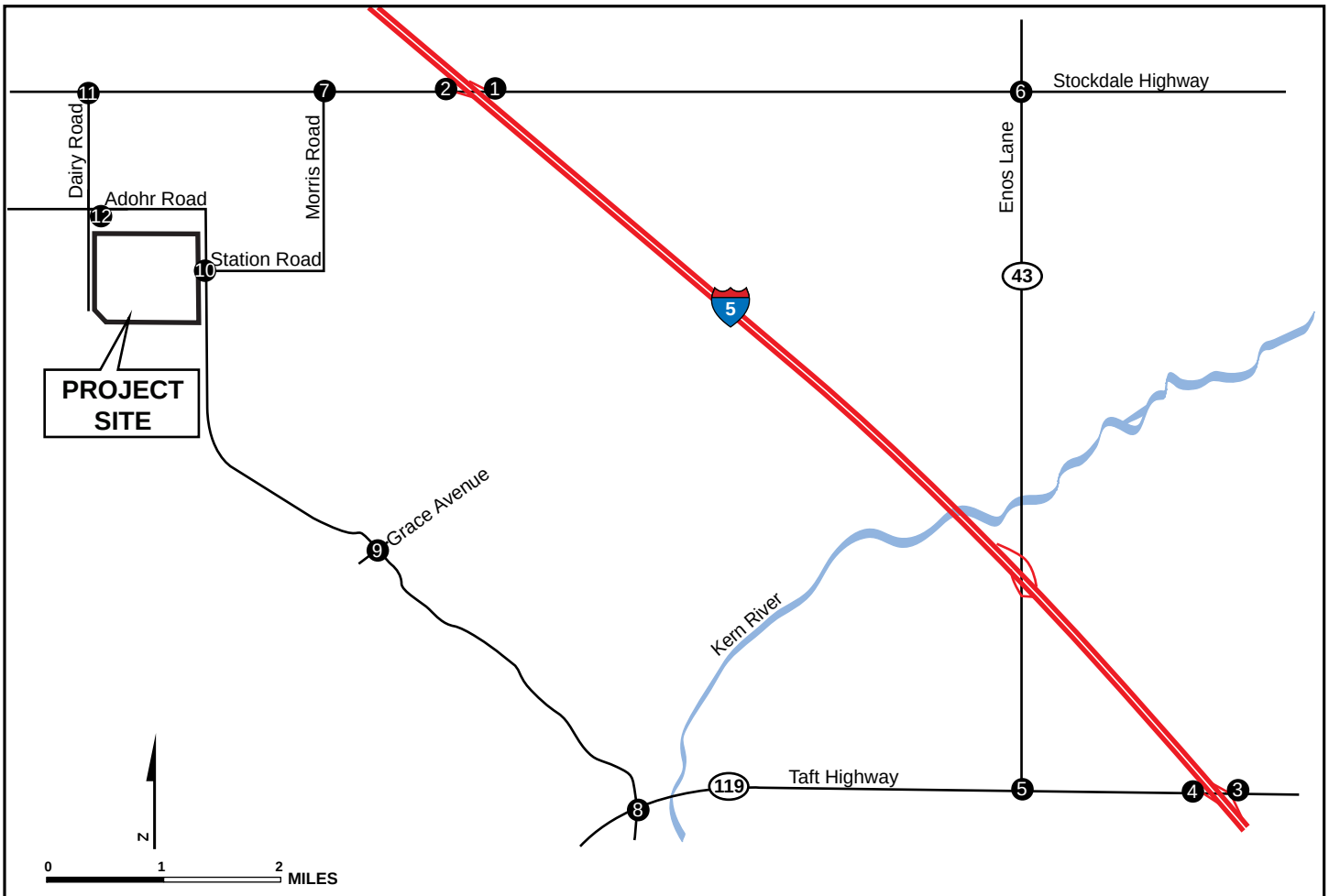
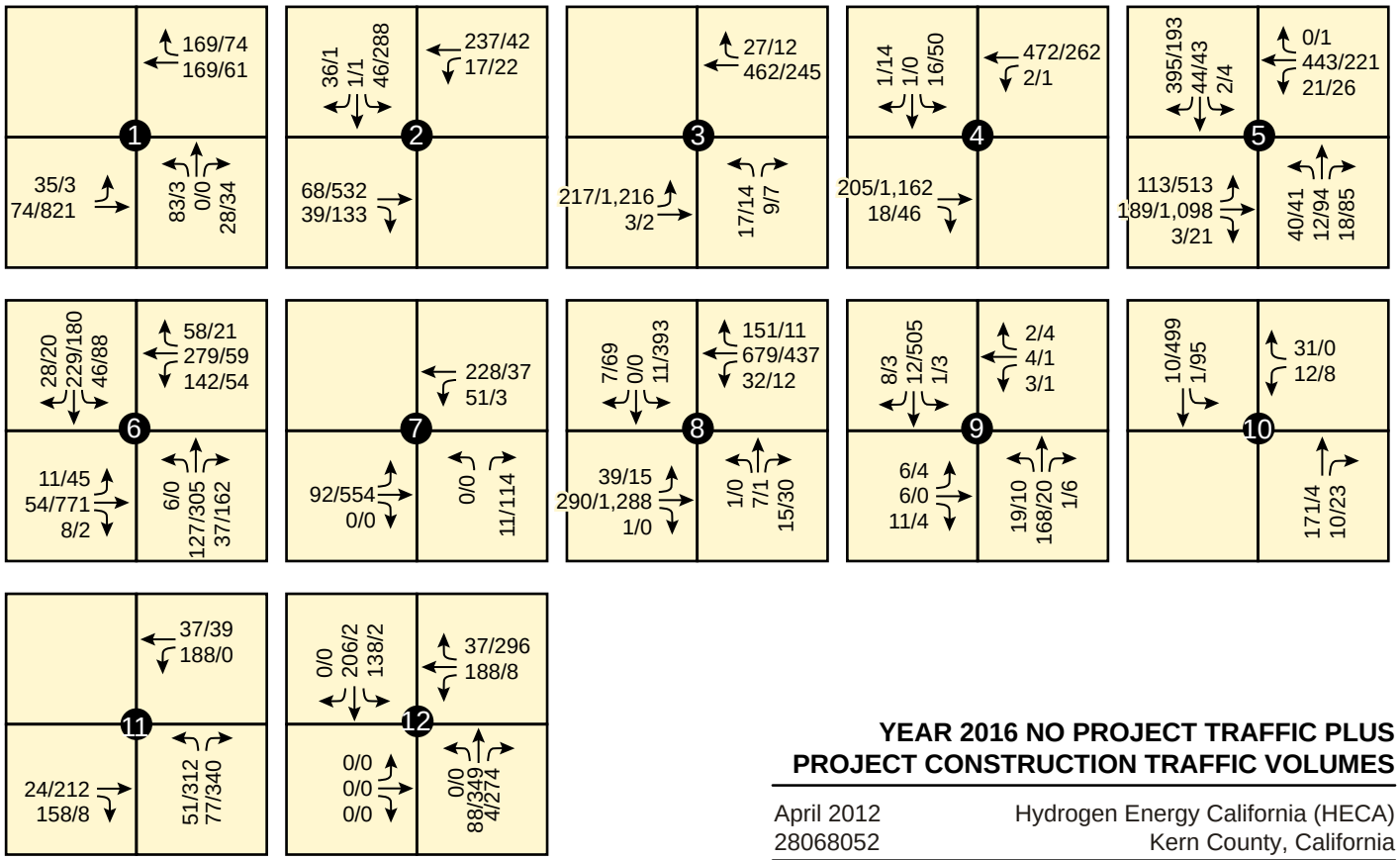
FIGURE 5.10-5d

4/26/12 vsa...T:\HECA-SCS 2012\GRAPHICS 2012\5.10_Traffic\Fig_5_10_5d.ai





YEAR 2016 NO PROJECT TRAFFIC PLUS PROJECT CONSTRUCTION TRAFFIC VOLUMES

April 2012
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Hydrogen Energy California (HECA)
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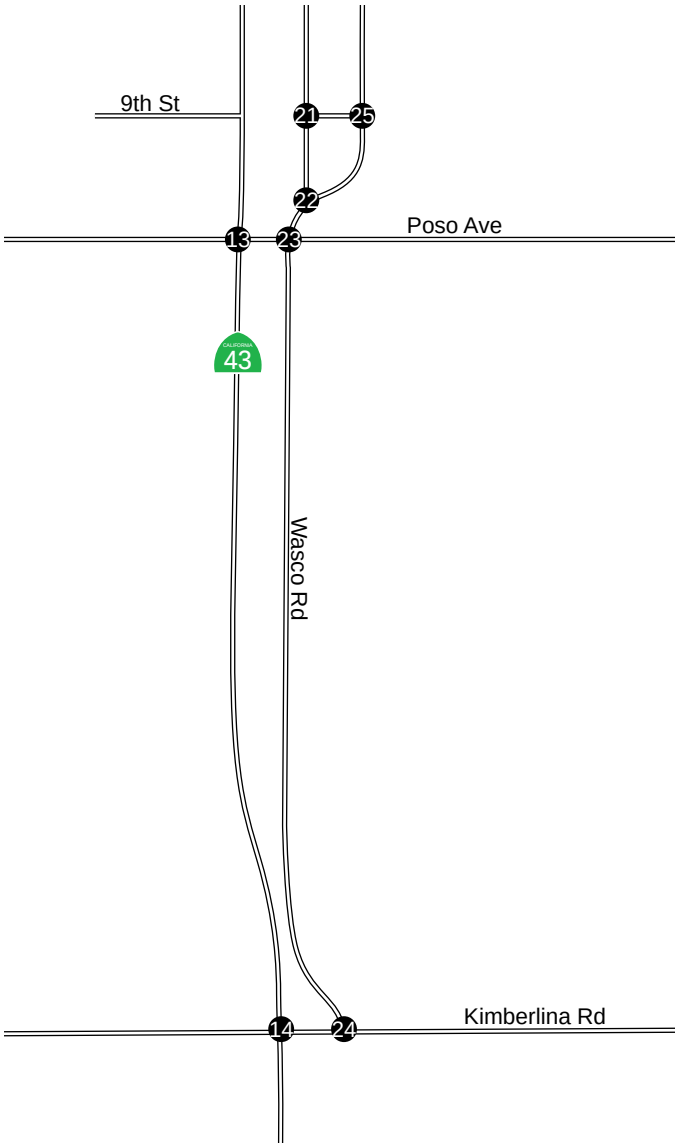
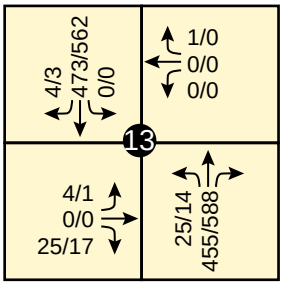
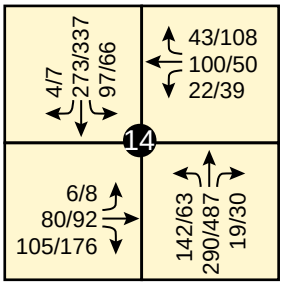
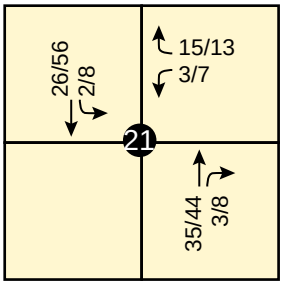
FIGURE 5.10-6a

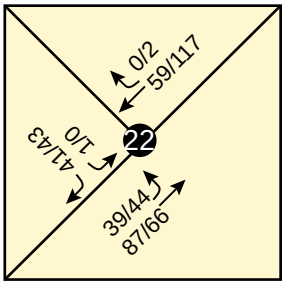
4/26/12 vsa/hk..T:\HECA-SCS 2012\GRAPHICS 2012\5.10_Traffic\Fig_5_10_6a.ai

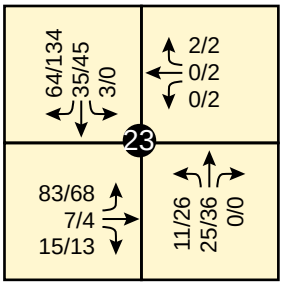


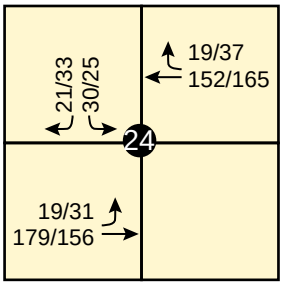


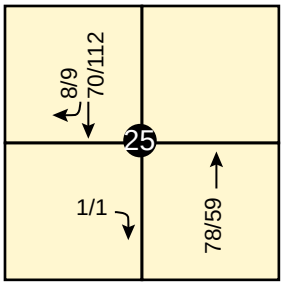


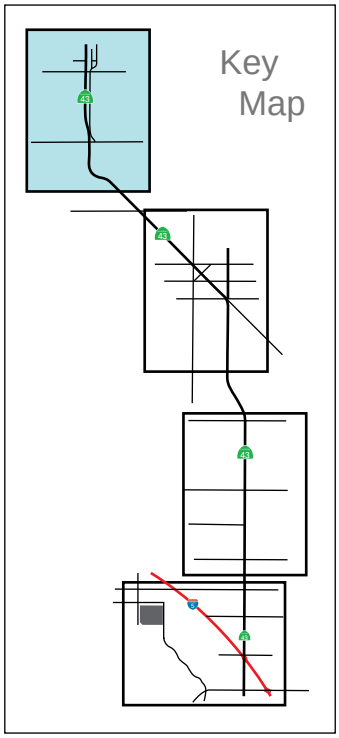












YEAR 2016 NO PROJECT TRAFFIC PLUS PROJECT CONSTRUCTION TRAFFIC VOLUMES

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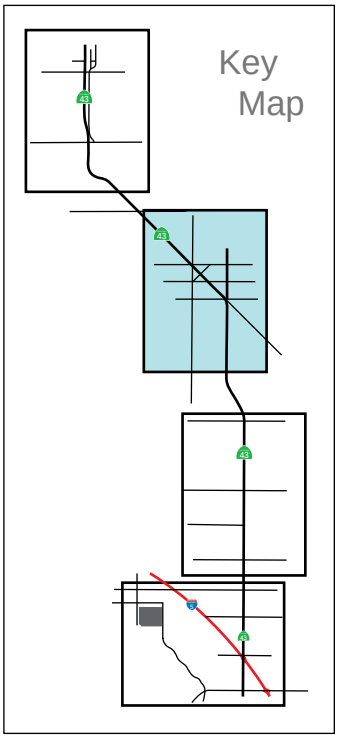
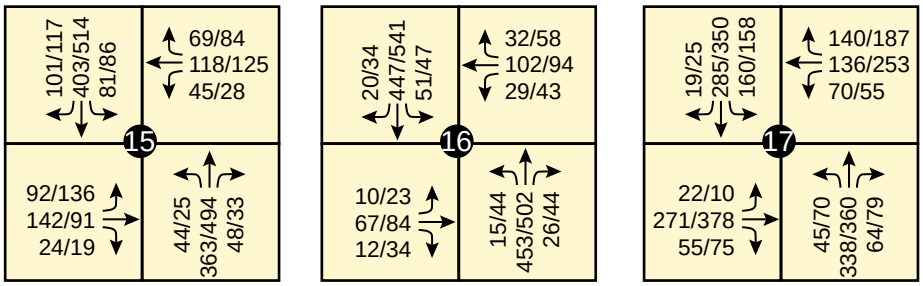
FIGURE 5.10-6b





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YEAR 2016 NO PROJECT TRAFFIC PLUS PROJECT CONSTRUCTION TRAFFIC VOLUMES

April 2012
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Hydrogen Energy California (HECA)
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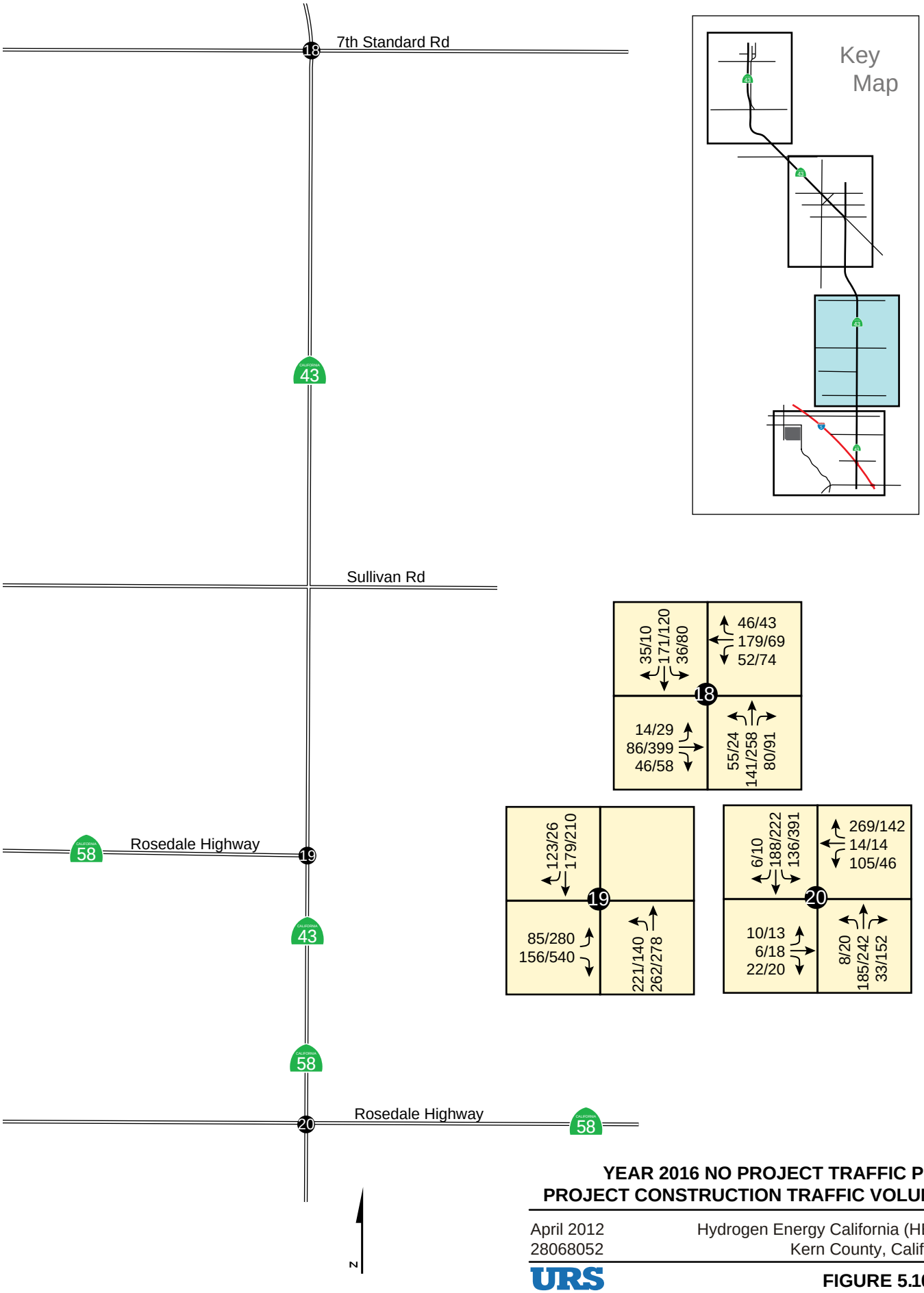
URS

FIGURE 5.10-6c

4/26/12 vsa/hk..T:\HECA-SCS 2012\GRAPHICS 2012\5.10_Traffic\Fig_5_10_6c.ai



YEAR 2016 NO PROJECT TRAFFIC PLUS PROJECT CONSTRUCTION TRAFFIC VOLUMES

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Hydrogen Energy California (HECA)
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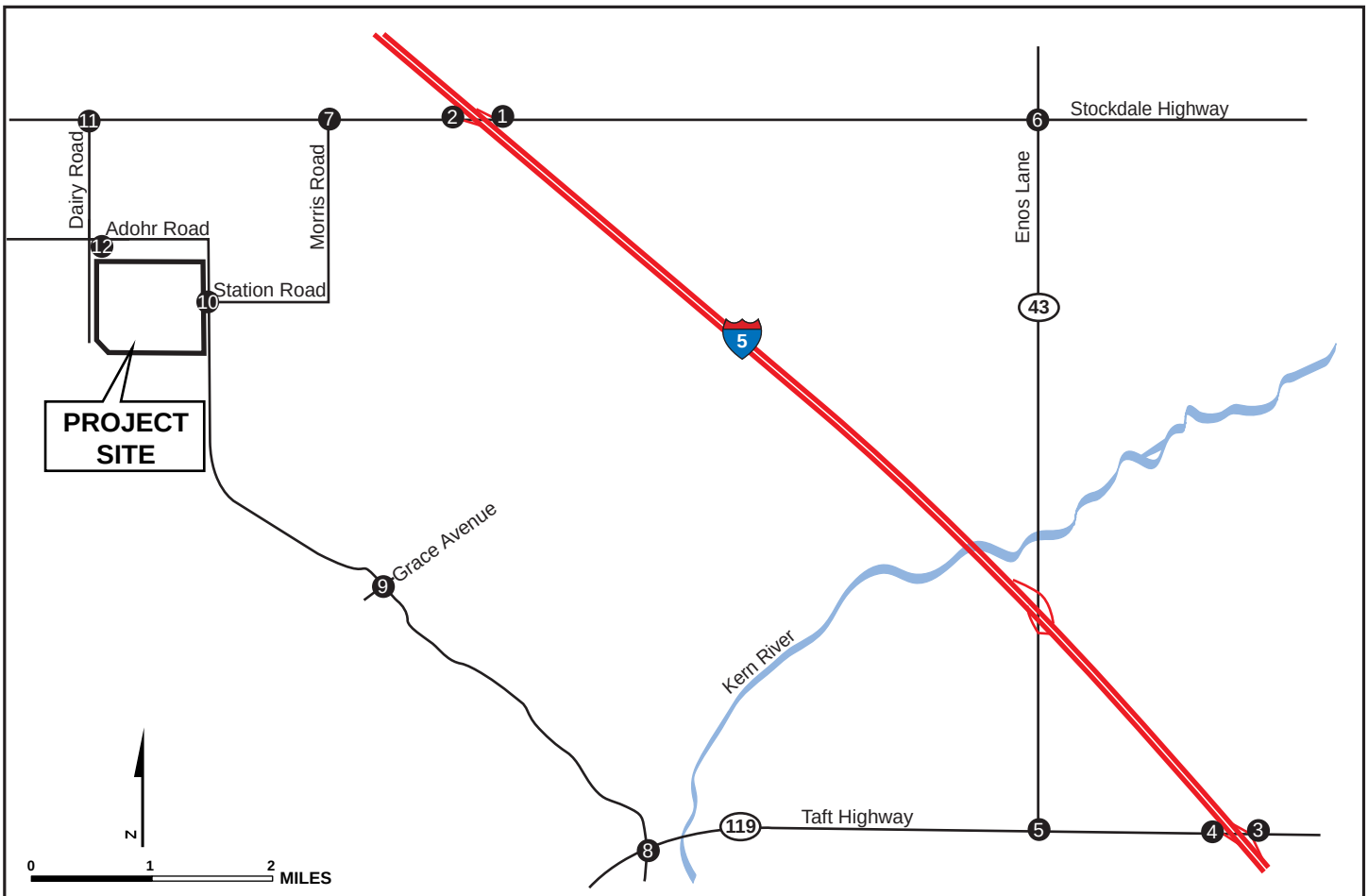
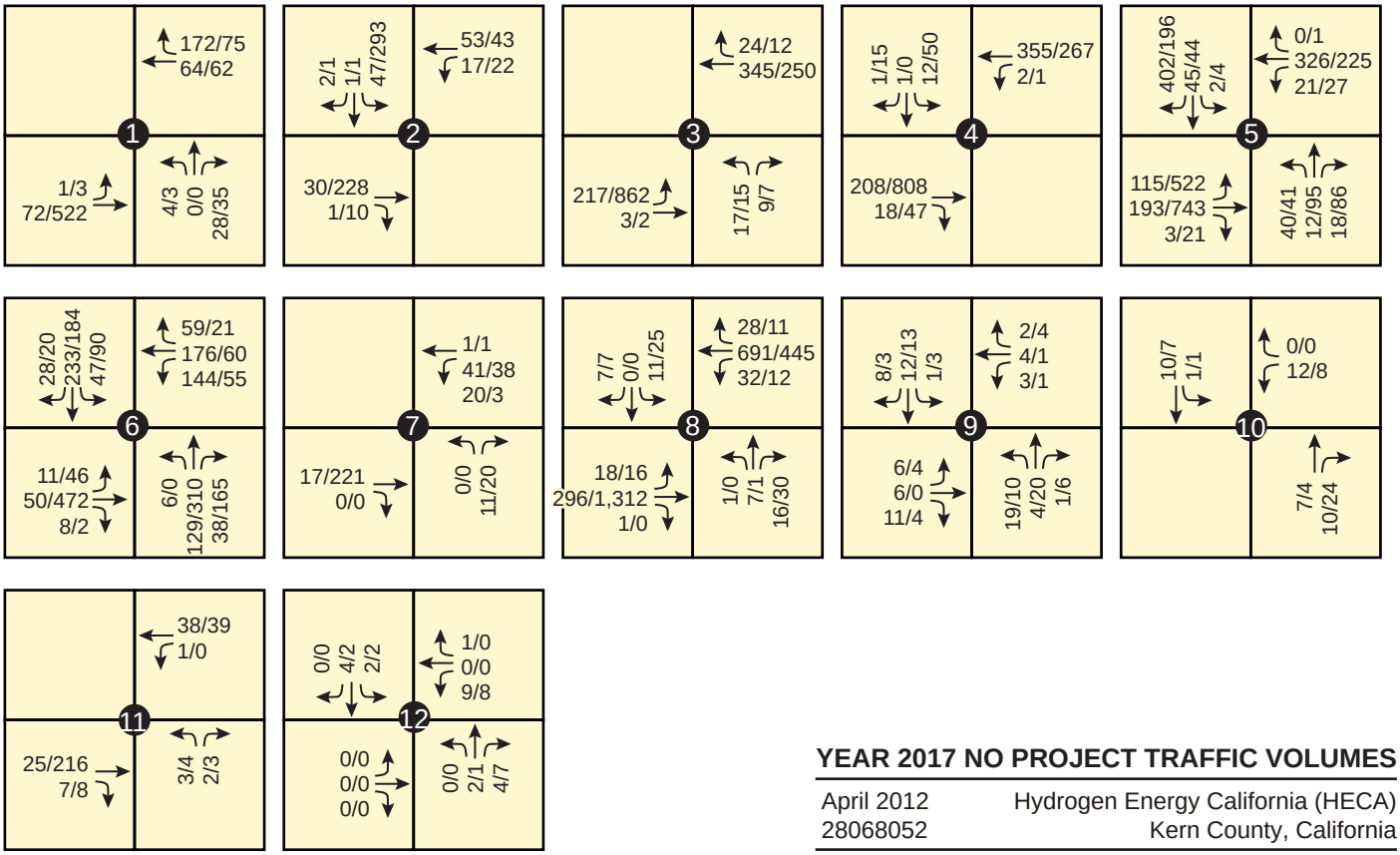
URS

FIGURE 5.10-6d

4/26/12 vsa/hk...T:\HECA-SCS 2012\GRAPHICS 2012\5.10_Traffic\Fig_5_10_6d.ai





YEAR 2017 NO PROJECT TRAFFIC VOLUMES

April 2012 — Hydrogen Energy California (HECA)
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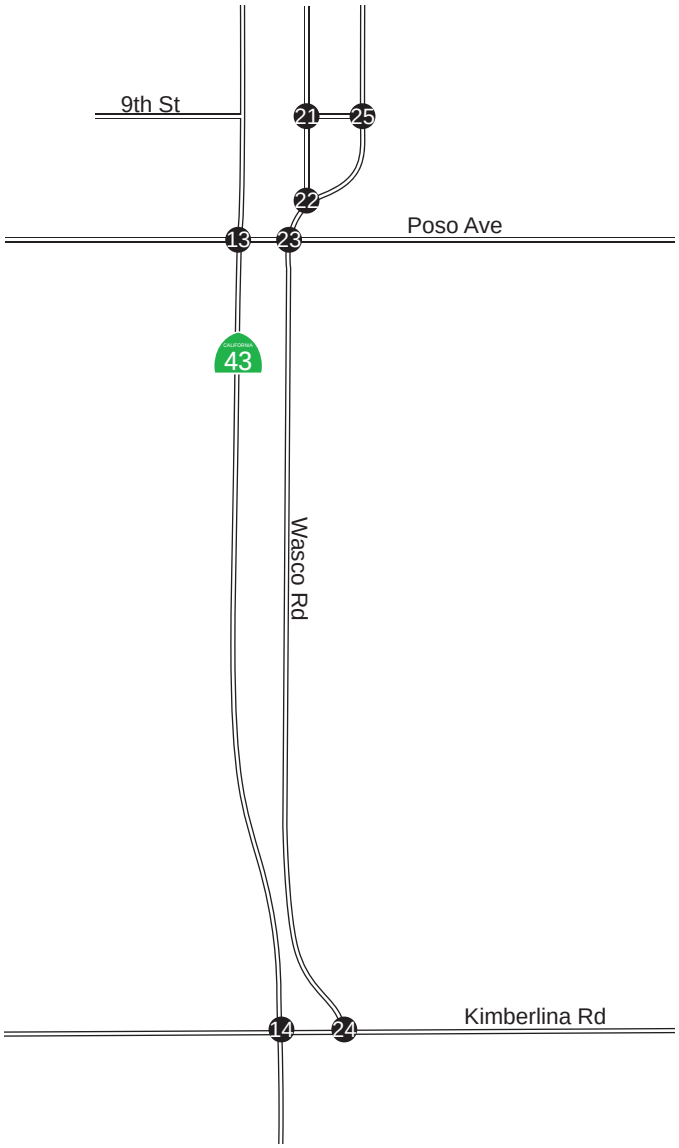
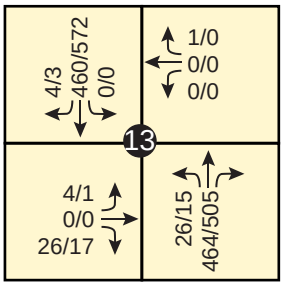
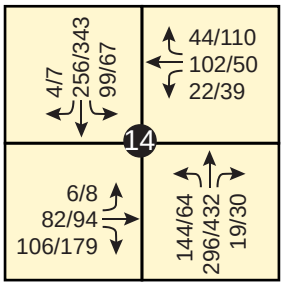
URS

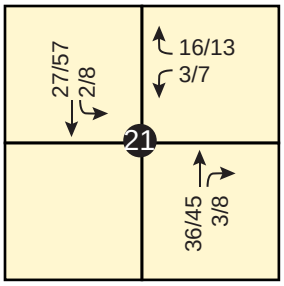
FIGURE 5.10-7a

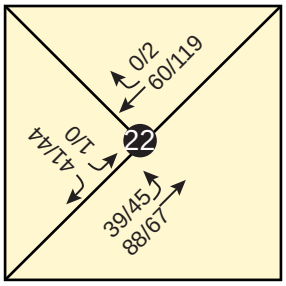
4/26/12 vsa/hk...T:\HECA-SCS 2012\GRAPHICS 2012\5.10_Traffic\Fig_5_10_7a_2017no.ai

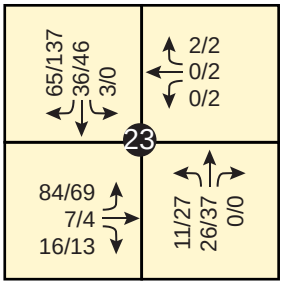


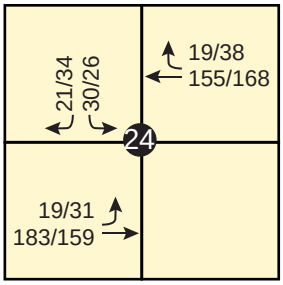


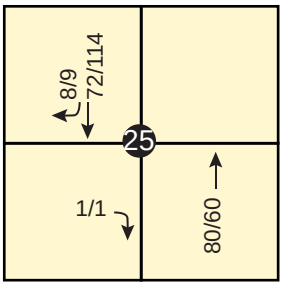


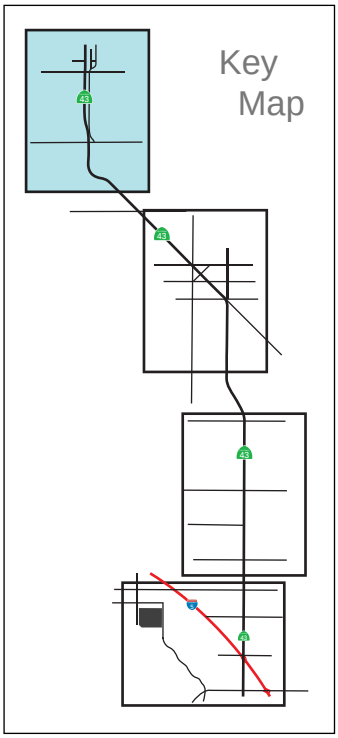












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YEAR 2017 NO PROJECT TRAFFIC VOLUMES

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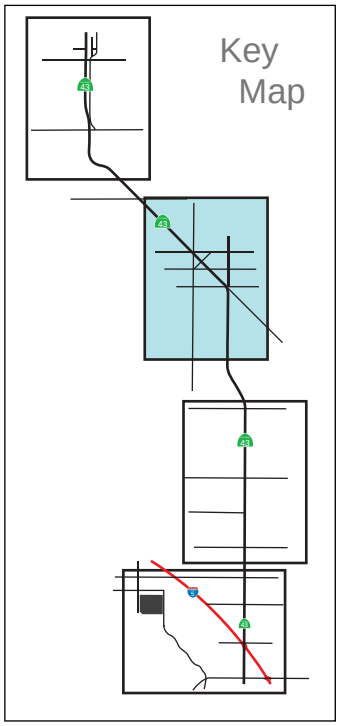
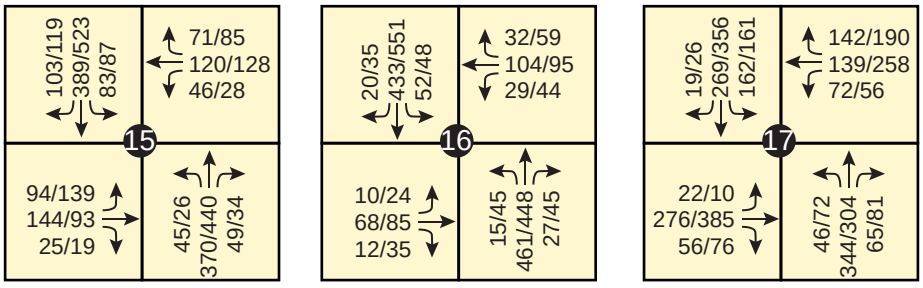
FIGURE 5.10-7b

4/26/12 vsa...T:\HECA-SCS 2012\GRAPHICS 2012\5.10_Traffic\Fig_5_10_7b.ai





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YEAR 2017 NO PROJECT TRAFFIC VOLUMES

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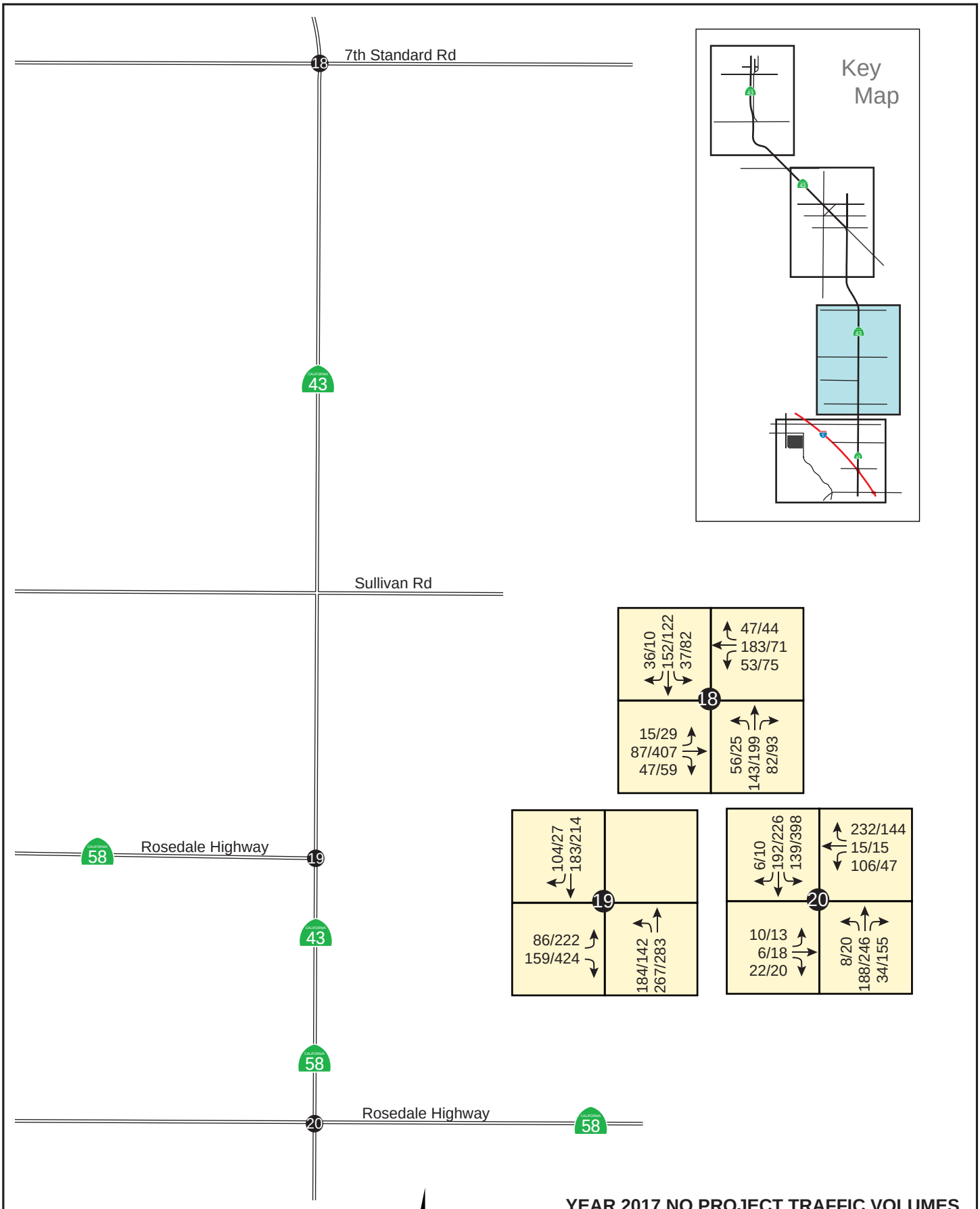
FIGURE 5.10-7c

4/26/12 vsa...T:\HECA-SCS 2012\GRAPHICS 2012\5.10_Traffic\Fig_5_10_7c.ai



YEAR 2017 NO PROJECT TRAFFIC VOLUMES

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28068052 — Kern County, California

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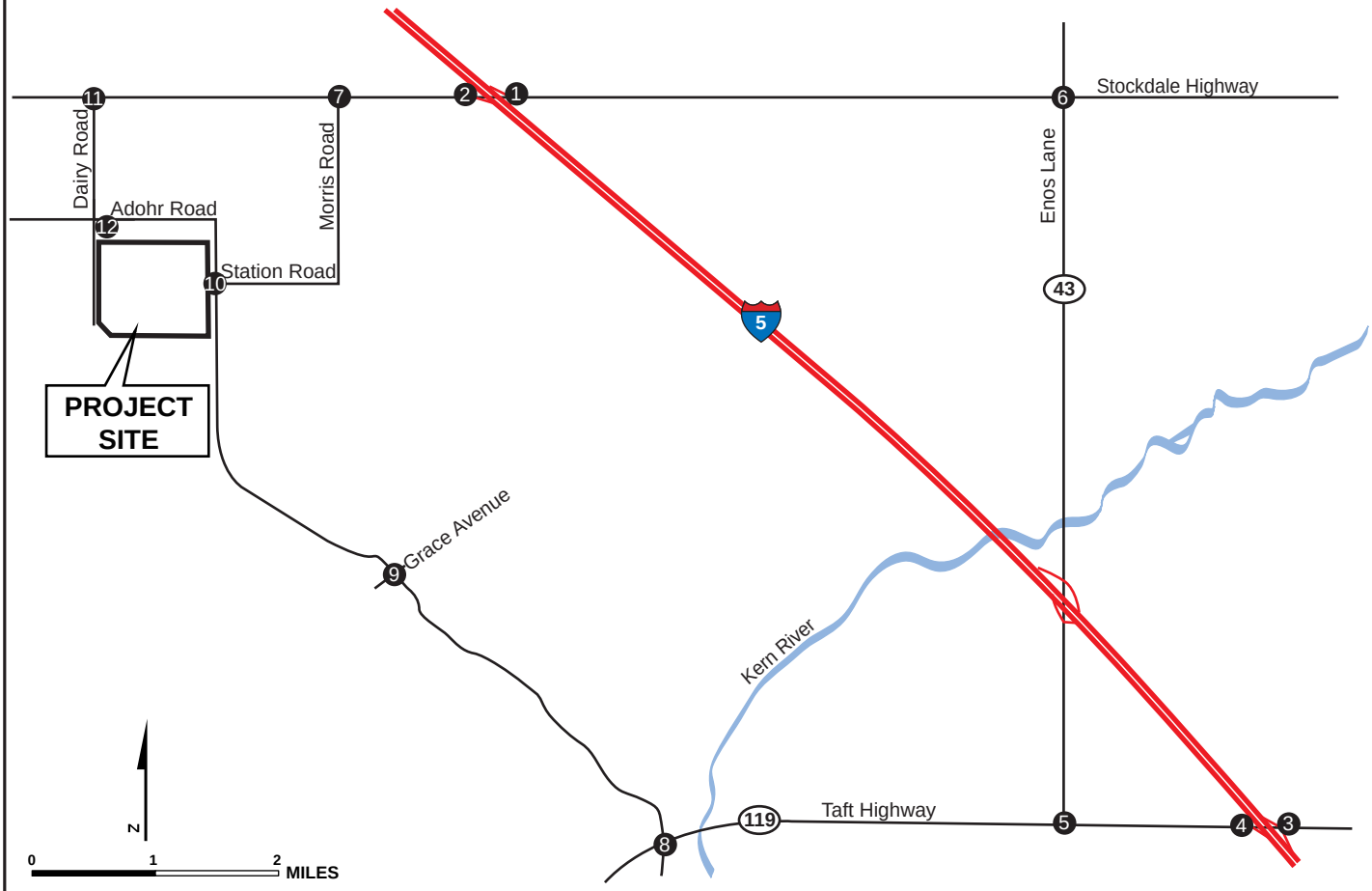
FIGURE 5.10-7d

4/26/12 vsa...T:\HECA-SCS 2012\GRAPHICS 2012\5.10_Traffic\Fig_5_10_7d.ai



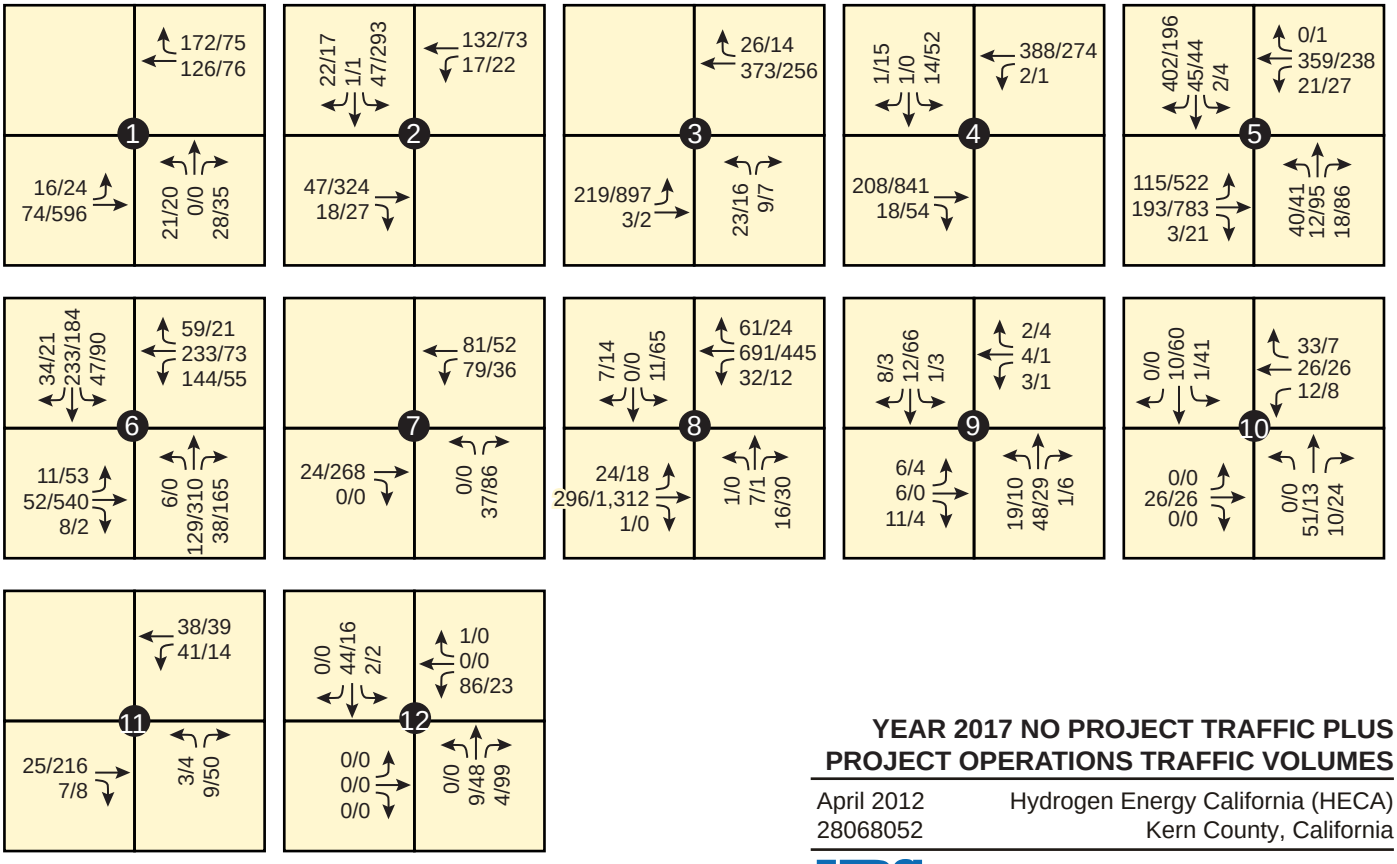


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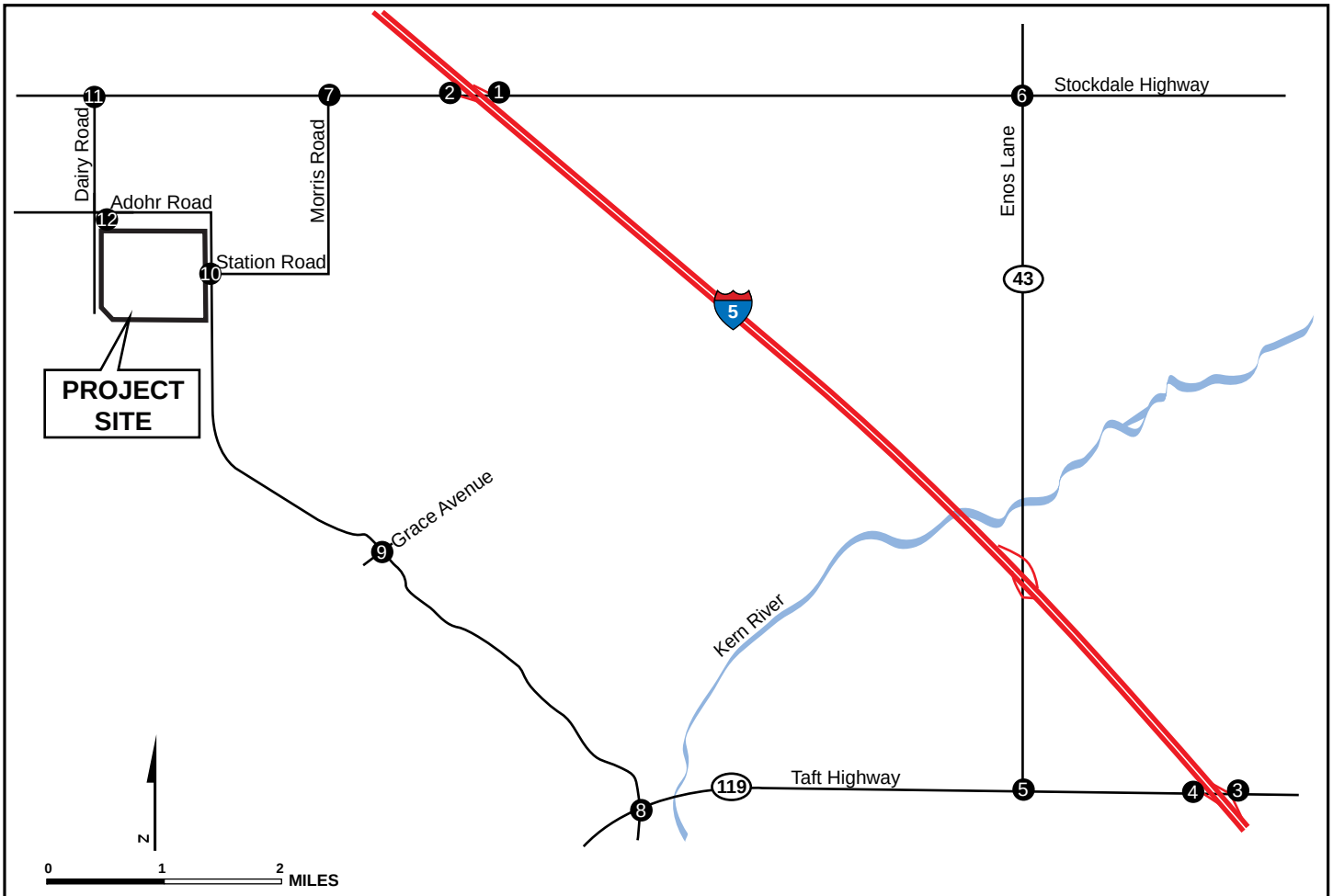
FIGURE 5.10-8

4/26/12 vsa/hk...T:\HECA-SCS 2012\GRAPHICS 2012\5.10_Traffic\Fig_5_10_8_2017no-plus.ai



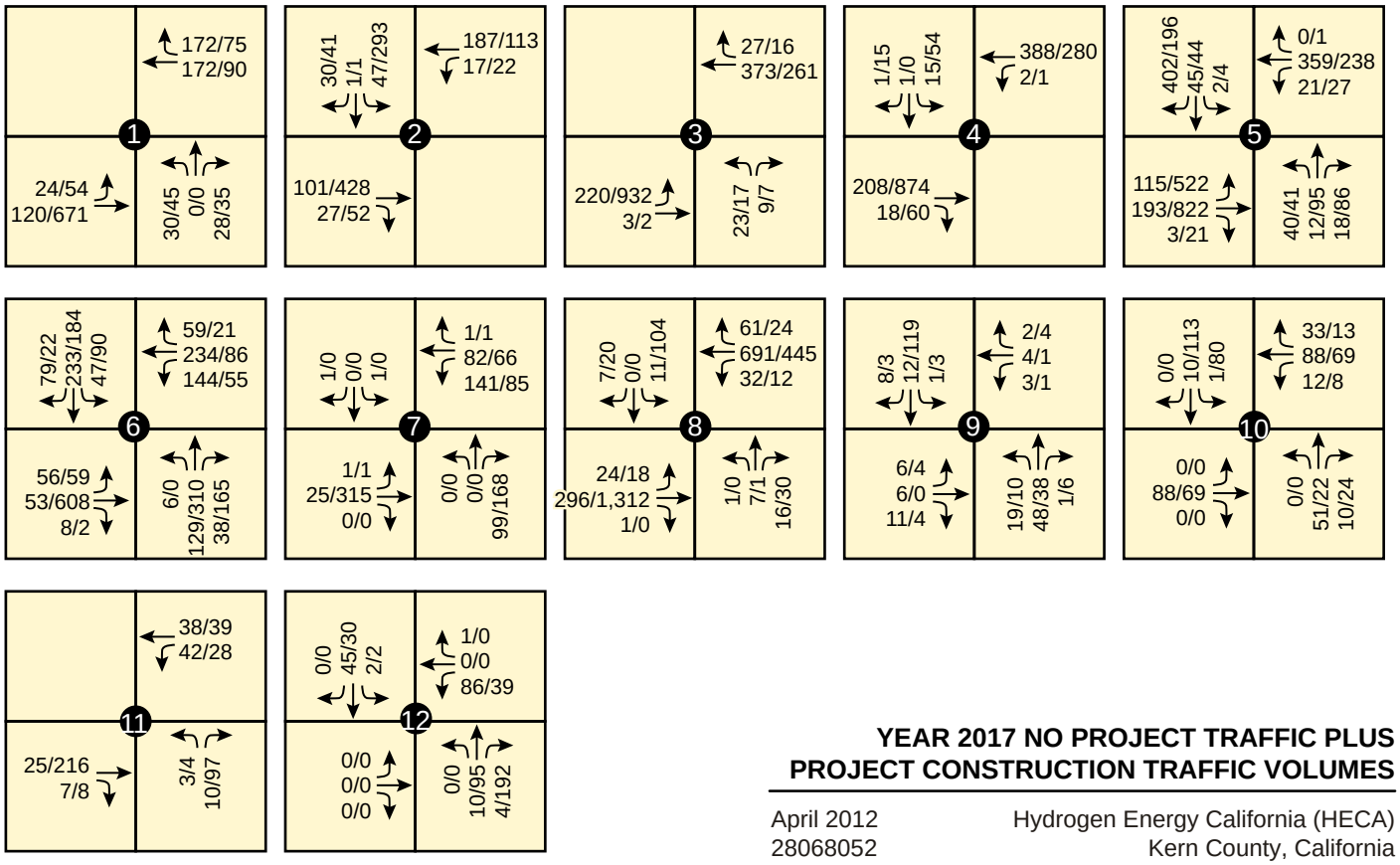


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FIGURE 5.10-9a

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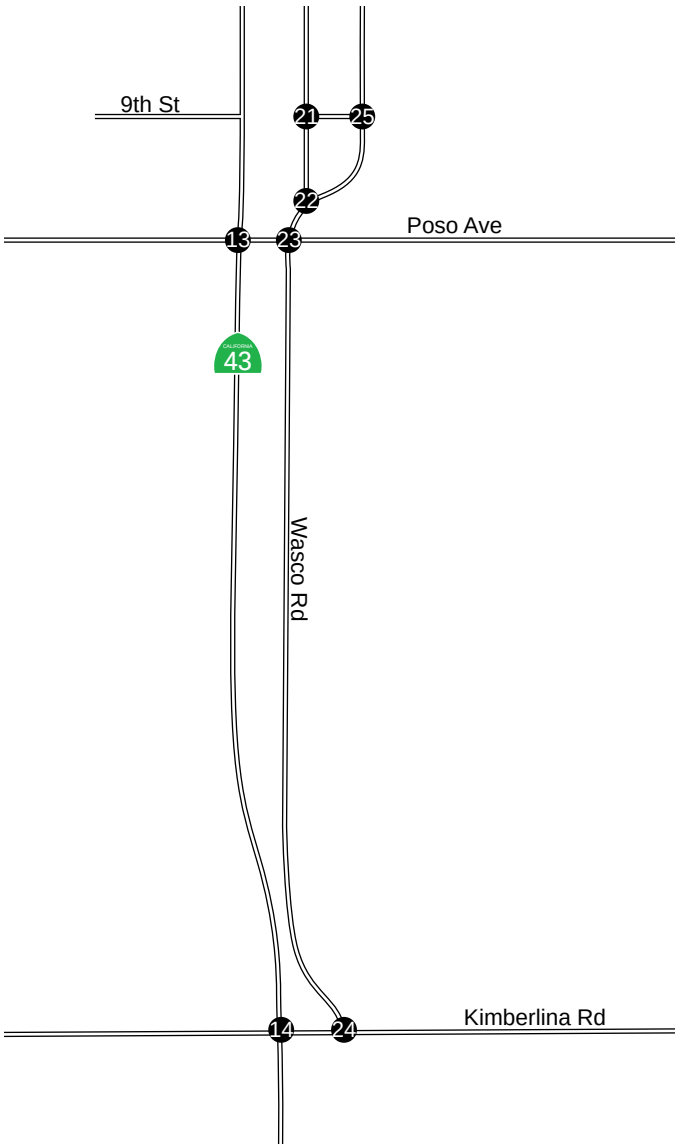

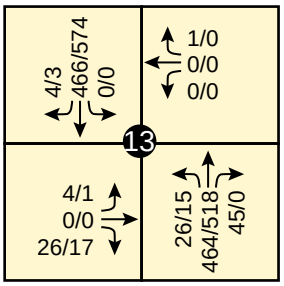

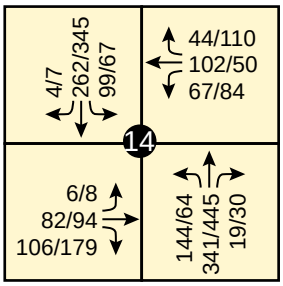

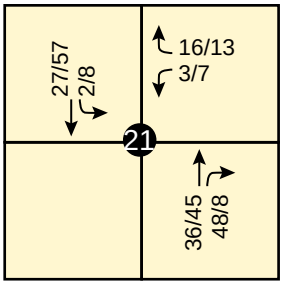

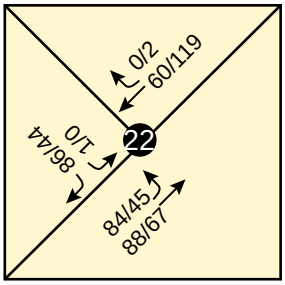

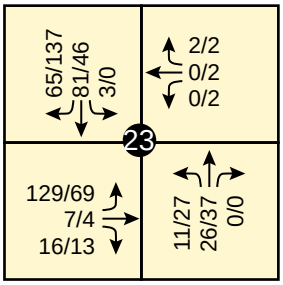

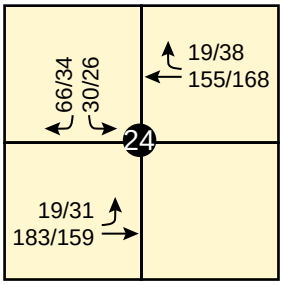

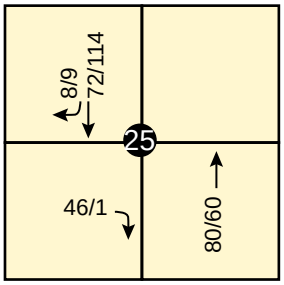

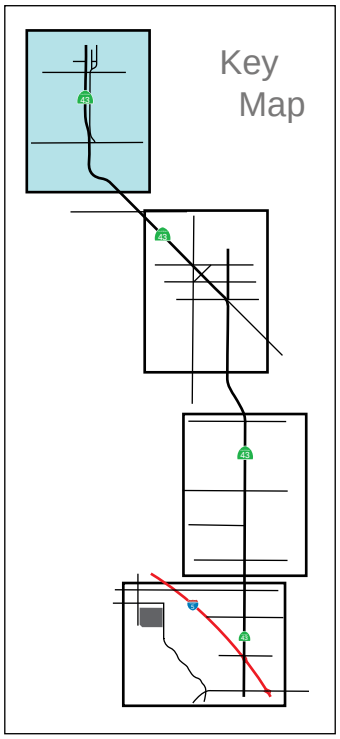

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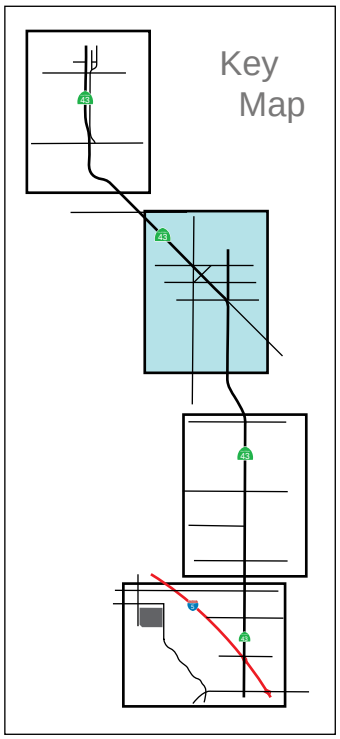
FIGURE 5.10-9b

4/2612 vsa/hk...T:\HECA-SCS 2012\GRAPHICS 2012\5.10_Traffic\Fig_5_10_9b.ai



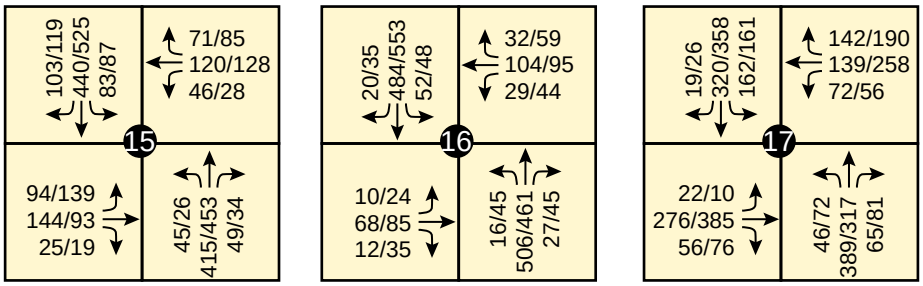


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FIGURE 5.10-9c

4/26/12 vsa/hk...T:\HECA-SCS 2012\GRAPHICS 20125.10_Traffic\Fig_5_10_9c.ai

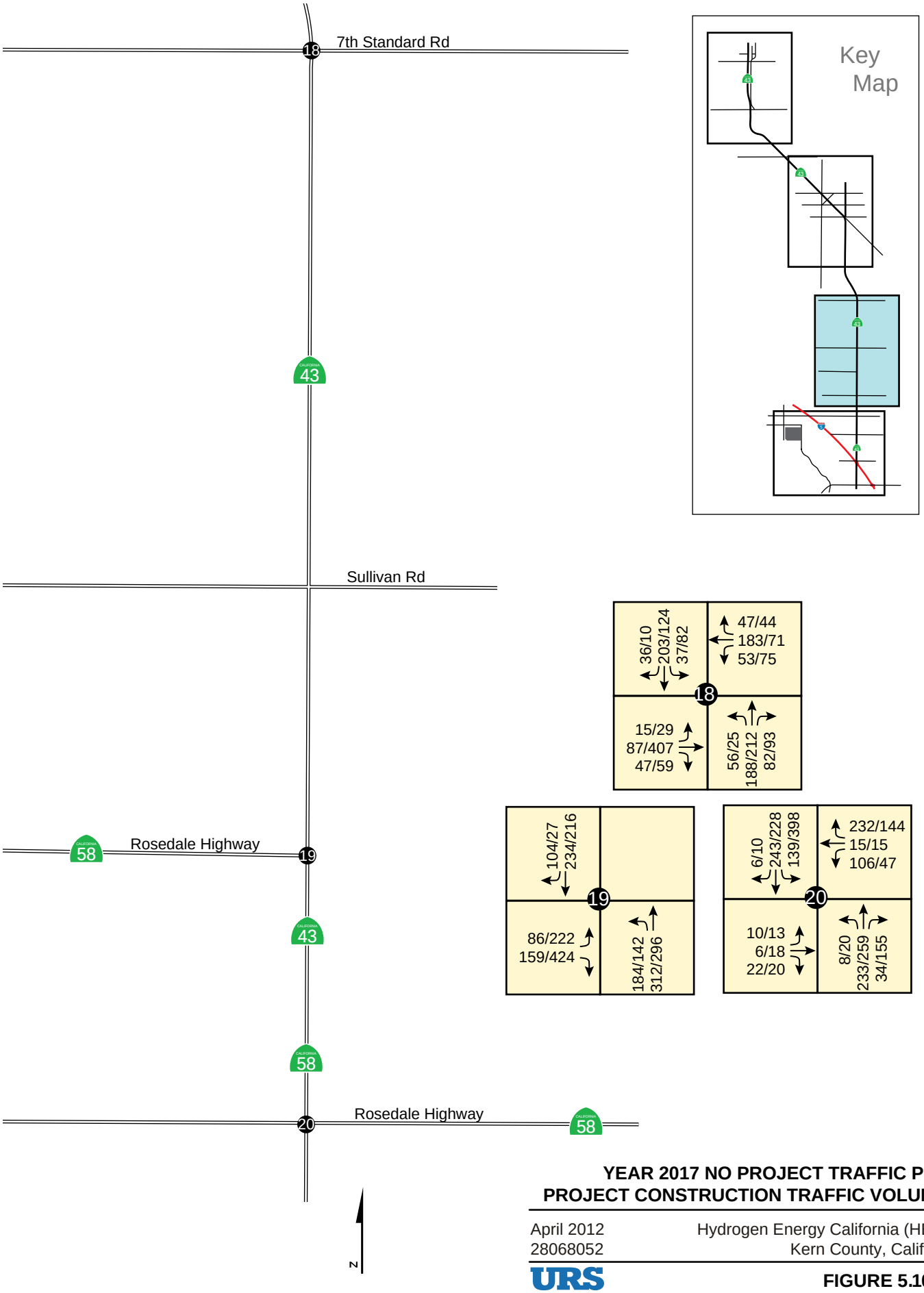

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FIGURE 5.10-9d

4/26/12 vsa/hk...T:\HECA-SCS 2012\GRAPHICS 2012\5.10_Traffic\Fig_5_10_9d.ai