Final
Report

Washington Street & Highway 111 TSM/TDM Corridor Study

June 9, 2010

VRPA Technologies, Inc.

Washington Street & Highway 111 TSM/TDM Corridor Study

Submitted to:

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Executive Summary

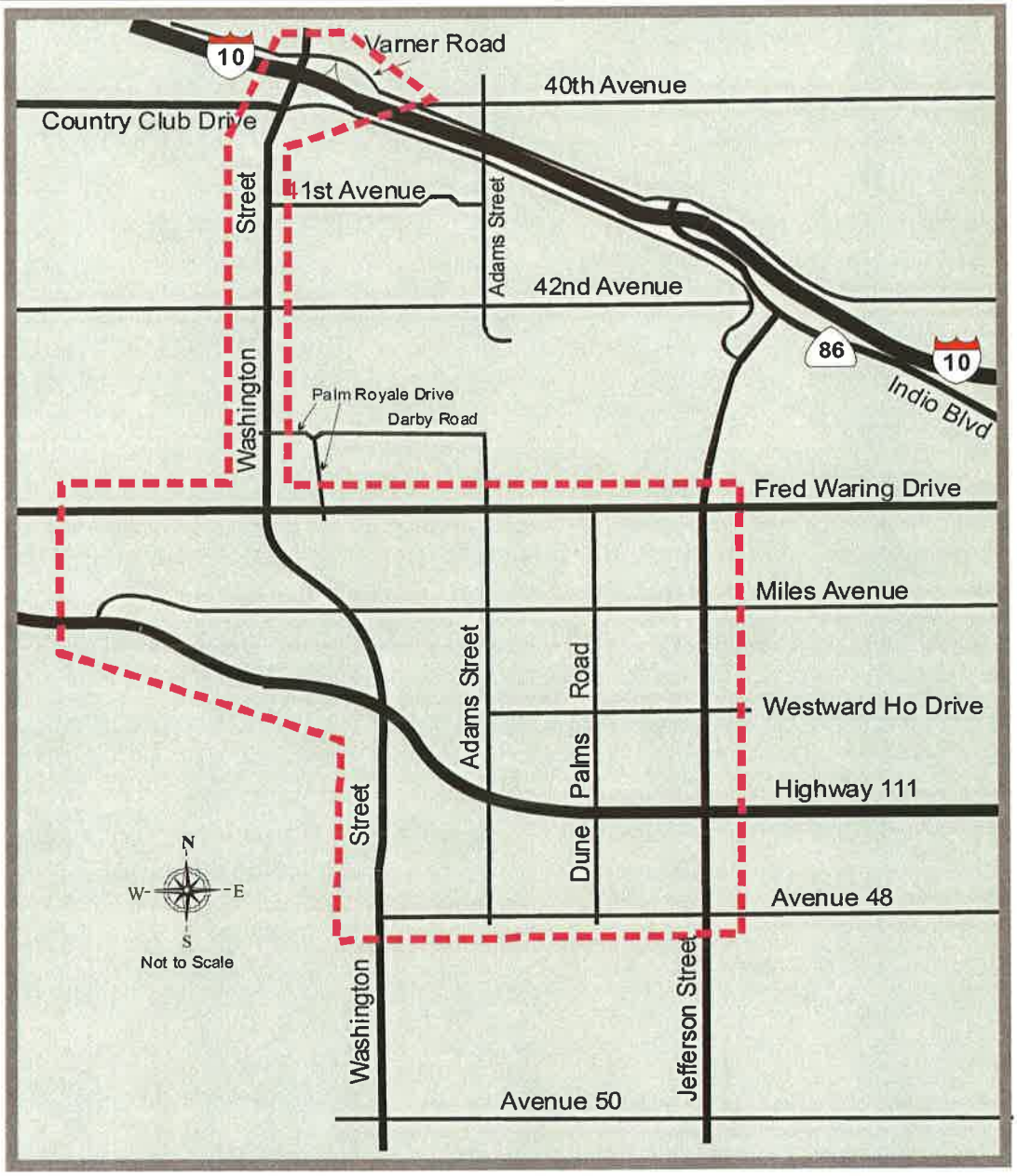
The Washington Street and Highway 111 corridors in the Study Area (reference Figure E-1) continue to experience significant growth in both population and employment. While this growth has brought with it many benefits, it has also dramatically increased travel demand along the corridors, particularly at the Highway 11/Washington Street intersection. To address the impacts of this growth, the City of La Quinta, in cooperation with other adjacent jurisdictions (Cities of Palm Desert, Indian Wells, and Indio, and the County of Riverside) and the Coachella Valley Association of Governments (CVAG), commissioned development of Transportation System Management/Transportation Demand Management (TSM/TDM) Solutions for the Washington Street and Highway 111 corridors.

Study Purpose

Traffic volumes along portions of the Highway 111 and Washington Street corridors have increased over the past few years, particularly along the north and east legs of the Washington Street and Highway 111 intersection. Retail developments, which tend to draw traffic from a much wider area including nearby cities, have also increased peak hour volumes within these corridors. Of particular concern are the intersections at Highway 111 at Washington Street and Washington Street at Fred Waring Drive. Additional widening of these intersections is less than desirable due to the acquisition of right-of-way that would impact adjacent businesses.

Because the population in the region is predicted to continue to increase, so will the congestion levels along the corridors and at it critical intersections. Transportation officials in each of the affected jurisdictions recognize that the congestion forecasted within the Study Area cannot be effectively managed by building additional highway lanes and other facility improvements alone. There is a growing awareness that new approaches are needed to manage congestion. The focus of this study is on providing reasonable mobility rather than continuing to serve auto trips. This study examines the need to "integrate" the Coachella Valley region's transportation facilities and services into a coordinated, multimodal system that includes innovative transportation technologies and applications. This approach is consistent with experiences and study findings in other high growth regions around the country. Many of these regions are grappling with the same issues as in the Coachella Valley. While congestion in this region may not be eliminated, or significantly reduced, it can be "better-managed".

There are many strategies that can be combined and coordinated to reduce the region's reliance on the single occupant vehicle. Some of these strategies can ensure a faster, more reliable trip time compared to travel in frequently congested travel lanes. There are also strategies that can lessen the inevitable deterioration of level of service and mobility on the highway system. This study explores those options. The overall approach to managing congestion must be multi-faceted to achieve a cumulative and synergistic effect with noticeable, positive impacts. An example of a synergistic system using coordinated congestion management tools is an incentives program offered by employers to encourage ridesharing combined with preferential parking to make ridesharing rapid and convenient. Each strategy (carpooling and parking) by itself would have limited impacts on congestion, but used in concert with each other and with multiple strategies, the impact can be much greater.



Study Area Boundary
Washington & Hwy 111 TSM/TDM Corridor Study

Figure E-1

Study Area

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There is a need to embrace the opportunity to manage existing and projected congestion levels along the corridors to meet the requirements set forth in Assembly Bill 32 and Senate Bill 375. These requirements may ultimately result in mandated improvements to improve air quality and reduce global warming. The opportunity to plan and implement a coordinated TSM/TDM program consistent with broader community goals is now. The option may be sanctions that limit certain types of transportation improvements and the opportunities for economic growth that depend on a good transportation system.

Study Goals

The overarching goal of the Washington Street/Highway 111 TSM/TDM Corridor Study is to evaluate the existing transportation network and to determine how future improvements may be developed to serve existing and future transportation needs. It will be especially important to accommodate the projected traffic volumes in the manner best suited for the corridor. The time is now to make decisions about these vital transportation corridors. This Study provides a base of data to make decisions about that future. The following set of goals and objectives were applied to develop the Study and will measure the overall success of the Study as it is implemented over time. Managing both the demand and existing supply of transportation infrastructure represents all of the actions that the affected agencies may take to complement major new infrastructure investments to achieve the goals of this Study.

Why TSM/TDM Is Important

The mobility and economic vitality of the Study Area is of critical importance to its communities, the Coachella Valley, and the State as a whole. In addition, because the corridor includes Highway 111, a majority of the Coachella Valley will be impacted by the transportation improvements proposed. The ability to move safely and efficiently through the corridors will influence the competitive position of businesses located in the area and in the region. Transportation improvement alternatives and TDM strategies must respond to a variety of regional and local needs including:

- Reduction in peak hour congestion along Washington Street and Highway 11, as well as other affected streets and roads
- Improved connectivity
- Enhanced access within the Coachella Valley to/from the Study Area
- Increased opportunities for alternative modes
- Expanded interregional transit service

In addition to these regional benefits, a variety of related local concerns must be addressed. Not the least among them is the need to carefully plan and design transportation solutions that thoughtfully accommodate pedestrian and bicycles along with automobiles, buses, trucks, and other vehicles. Other local concerns relate to coordination with economic development initiatives, local activity centers, and protection and enhancement of the neighborhood environment. With increasing traffic congestion, travel by private automobile is becoming increasingly time consuming and unpredictable, affecting our quality of life. Congestion on area roadways constrains the ability of people and goods to move easily, affecting the economic attractiveness of the Valley and the quality of life of its residents and workers.

The average commute along the corridors will lengthen over time. This increase will add to daily congestion costs. The root cause of traffic congestion – too many vehicles crowding available road space and a lack of travel options

giving people choices. Auto-oriented development has caused valuable funding resources to be allocated to roads and parking. Goods are also vulnerable to traffic delays, and congestion's growing effects are making the Valley's businesses increasingly concerned about their costs and their competitiveness. Changes in business activities have led to a need for more road space. Our current reliance on roads and highways is not sustainable. We need to reduce our reliance on the automobile and, with continued worsening of congestion levels; there is an increasing opportunity for alternative modes (and transit in particular) to play key roles in moving people in and around the Coachella Valley.

Alternative Mode Benefits

We have also come to understand that we cannot solve congestion in anything more than the short-term merely by building more roads. To effectively solve congestion in the long-term, we must promote a balanced transportation network that can work effectively for goods movement and for personal and business travel. To maximize this effectiveness, our transportation network must offer choice: a choice of routes for short and long trips, or for truck and neighborhood traffic; a choice of non-motorized travel and routes for recreation or for shorter trips; and a choice of modes for all trips as an alternative for those who cannot or choose not to drive a car for some or all of their daily travel needs. Transit can be a valuable complement to other travel options in the daily lives of Coachella Valley residents: pedestrians can hop on transit to save time and effort, cyclists can park their bikes at the stop or even bring them on board, and long-distance commuters can park and ride to work. Many people rely on a range of travel options, and will make different choices depending on trip purpose and length, weather, family needs or other factors.

This Study has taken a balanced approach to the development of the transportation network and the availability of alternative choices for commuters, for students, for seniors, for work trips, for shopping trips; for school trips and medical trips. When looking for alternatives to the personal automobile, it is important to present a range of options for personal choice but clearly, in terms of the impact on the overall network, transit, walking, and biking are and will be the most important alternatives for the broadest range of trips in, from and through the Study Area.

Existing and Future TSM Conditions

Chapter 2 provides an overview of existing and future TSM conditions within the Study Area. Transportation System Management (TSM) is defined as a program to reduce demand on, and increase capacity of, the existing transportation system through better and more efficient use. Specifically, TSM is an integrated program to optimize the performance of existing infrastructure through the implementation of systems, services, and projects designed to preserve capacity and improve security, safety, and reliability.

Existing Intersection Level of Service

A total of 40 intersections along the Washington Street and Highway 111 corridors were studied, as well as 48 street and highway segments. Study Area intersections and roadway segments are shown in Figures E-2 and E-3 and are further described in Chapter 2. The intersections and segments were identified in consultation with the PDT.

Key Intersections/Attached Segments
Washington Corridor Study Area
Ave 48 to Fred Waring Drive

Figure E-2

Legend

● Key Intersections

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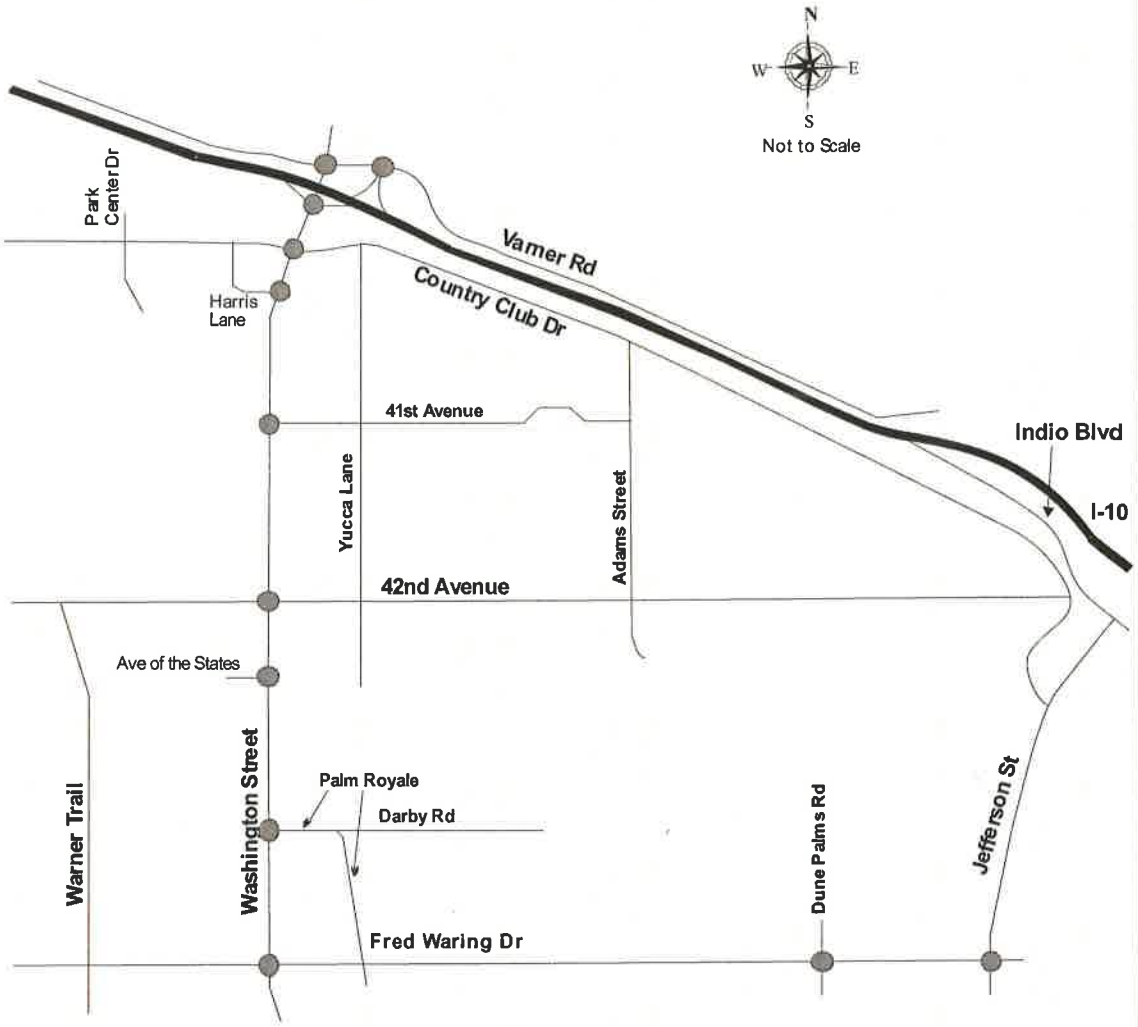

Key Intersections/Attached Segments
Along Washington Corridor
Fred Waring Drive to I-10 WB Ramps

Figure E-3

Legend

● Key Intersections

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Intersection level of service analysis was conducted using the Synchro Signal Timing Program. Levels of Service can be determined for both signalized and unsignalized intersections. Thirty nine (39) of the Study intersections are currently signalized and one (1) is unsignalized. Referencing Table 4 in Chapter 2, a majority of the intersections are operating at LOS A through C, and three (3) are operating at LOS D (Washington at 42nd, Washington at Country Club Drive, and Jefferson at Highway 111). The minimum LOS standard is LOS D. Only one (1) intersection (Washington at 41st) is operating below the minimum standard or at LOS F.

Existing Segment Level of Service Findings

Under existing conditions most of the segments in the Study Area are operating at acceptable Levels of Service (reference Figures 6 and 7 in Chapter 2. The following segments within the Study Area are currently operating at LOS E or below the minimum LOS standard of D:

- **LOS E**
  - ✓ Washington Street
    Varner Road to I-10 EB Ramps

Future (Year 2015) – TSM Analysis

Chapter 2 also provides a review of the intersections and segments studied in the future (Year 2015), a review of the same intersections and segments in the Year 2015 assuming that no additional street and road improvements will be made within the Study Area (No Build scenario), and a review of the same intersections and segments in the Year 2015 (Build scenario) assuming that additional street and road improvements will be made along the corridors. For the Build scenario, several street and road improvement alternatives were analyzed with the goal of reducing existing and projected LOS deficiencies and improving traffic flow in the Study Area. The alternatives included the following:

Future No Build (Year 2015 Without Improvements) Intersection Level of Service

Intersection LOS results are shown graphically in Figures 9a through 9d and displayed in Table 7 in Chapter 2. Intersection LOS results for the Washington Street and Highway 111 corridors is provided below. Intersection results for other Study Area corridors are provided in Chapter 2.

Washington Street Corridor

Fourteen intersections along the Washington Street north/south corridor were analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. Of the fourteen intersections studied, five intersections (see below) will operate at or below the LOS standard of D for the City of La Quinta. The intersections of Washington Street at Highway 111, 42nd Avenue, and Fred Waring Drive will operate at LOS E and exceed the City of La Quinta's LOS standard of D. Based on the 2000 HCM, LOS E describes operations at or near capacity. This level is considered by many agencies to be the limit of acceptable delay.

These high delay values generally indicate poor gaps for the minor street to cross and large queues. The intersections of Washington Street at Varner Avenue and 41st Avenue will operate at LOS F in the PM peak hour. Based on the 2000 HCM, LOS F describes operations that are at the failure point.

Highway 111 Corridor

Eleven intersections along the Highway 111 east/west corridor were analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. Of the eleven intersections studied, one intersection (see below) will operate at or below the LOS standard of D for the City of La Quinta. The intersection of Highway 111 at Washington Street is operating at LOS E in the PM peak hour. Based on the 2000 HCM, LOS E describes operations at or near capacity. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor gaps for the minor street to cross and large queues.

Future No Build (Year 2015 Without Improvements) Scenario Segment Level of Service Analysis

Segment LOS is important in order to understand whether the capacity of a roadway can accommodate future traffic volumes. Under Future No Build (no improvements to the street and highway segments) conditions most of the segments in the Study Area will operate at acceptable Levels of Service. The following segments will operate at LOS E or F:

- **LOS E**
  - ✓ Highway 111 – Mountain Cove Dr to Plaza La Quinta
  - ✓ Washington Street
  - ✓ Avenue 47 to Avenue 48
  - ✓ Miles Avenue to Fred Waring Drive
- **LOS F**
  - ✓ Highway 111 – West of Miles to Mountain Cove Dr
  - ✓ Washington Street
  - ✓ Varner Road to Country Club Drive

Future Build (Year 2015 With Improvements) TSM Alternatives

Three TSM alternatives that would address the Future Build (Year 2015 with improvements) scenario were developed and include the following:

- **Alternative 1 – TSM Future Build Conditions (Year 2015 With Improvements) - add NB left turn lane and WB right turn lane at Washington Street and Highway 111, Signalize Washington Street at 41st Avenue**

  With the addition of a northbound left turn lane and westbound right turn lane at Washington Street and Highway 111 and a signal at Washington Street and 41st Avenue (see Figures 12 & 13 in Chapter 2) these intersections would meet the LOS standard of D.

- **Alternative 2 – Future Build Conditions (Year 2015 With Improvements) - Washington Street Traffic Rerouting**

  Traffic rerouting was analyzed for purposes of relieving congestion at intersections already at or near capacity. The following reroute was included in the Synchro analysis. The resulting intersection levels of service are illustrated in Figure 14 and displayed in Table 10, both included in Chapter 2.

  ✓ Washington Street/Highway 111 Southbound Lefts
  Reroute SB lefts at Washington Street/Highway 111 to Miles Avenue

- **Alternative 3 – Future Build Conditions (Year 2015 With Improvements) - Washington Street Traffic Rerouting**

  Traffic rerouting was analyzed for purposes of relieving congestion at intersections already at or near capacity. The following reroute was included in the Synchro analysis. The resulting intersection levels of service are illustrated in Figure 15 and displayed in Table 11.

  ✓ Washington Street Northbound Thrus
  Reroute NB thrus at Washington Street/Avenue 48 to Adams Street

Recommended TSM Alternative

Alternative 1 is the preferred Alternative. Implementation of Alternative 1 (adding a northbound left and westbound right turn lane at Washington Street/Highway 111) would achieve LOS D without requiring travelers to go out of their way to reach their destination. In addition, it is recommended that the recommended improvements along Washington and Highway 111 be implemented and that future improvements be considered in the year 2015 or when the Washington /Highway 111 intersection reaches an average peak hour delay of 70 seconds or higher.

Other Future Year 2015 Recommended Intersection Improvements

A number of other recommended improvements are listed in Chapter 2 to address Future Year (2015) conditions including turn lanes, closing median breaks, deceleration lanes, signal coordination, and the installation of median islands.

Project Costs and Funding Sources

Table E-1 provides a list of project costs for each specific improvement included in the recommended alternative described above. According to the table, the total cost of all TSM improvements is $2.78 million in current dollars. Potential funding sources are also provided for each TSM improvement.

TABLE E-1
Recommended TSM Improvements
Cost Estimates and Potential Funding Sources

IMPROVEMENT	ESTIMATED COST (2010 DOLLARS)	POTENTIAL FUNDING SOURCES
Washington St/Highway 111 Intersection Improvements	$350,000	TUMF, City of La Quinta
Washington Street/41st Ave Traffic Signal	$200,000	City of Palm Desert
Washington St/Ave 48 Intersection Improvements	$200,000	City of La Quinta
Washington St/42nd Ave Intersection Improvements	$400,000	City of Palm Desert
Washington St/ViaSevilla Traffic Signal	$200,000	Private Development Impact Mitigation
Washington St/Woodhaven Dr Traffic Signal	$200,000	City of Palm Desert
Washington St/Highway 111 Intersection Improvements	$50,000	City of Palm Desert
Washington St/Emerald Crest Close Median	$50,000	City of Palm Desert
Washington St/Sunnybrook Close Median	$50,000	City of Palm Desert
Washington St/Whirling Wind Close Median	$50,000	City of Palm Desert
Washington St/Easthaven Road Close Median	$50,000	City of Palm Desert
Washington St/Tuscon Circle Close Median	$50,000	City of Palm Desert
Washington St/Desert Breezes Resort Close Median	$50,000	City of Palm Desert
Right Turn Decelaration Lane - NB Ralph's Shopping Center South of 42nd Ave	$100,000	City of Palm Desert
Right Turn Decelaration Lane - NB Ralph's Shopping Center South of Country Club Drive	$100,000	City of Palm Desert
Right Turn Decelaration Lane - SB Ralph's Shopping Center South of Country Club Drive	$100,000	City of Palm Desert
Right Turn Decelaration Lane - SB Ralph's Shopping Center South of 42nd Ave	$100,000	City of Palm Desert
Washington St/I-10 Interchange Area Signal Coordination	$180,000	CMAQ
Jefferson St, Westward Ho Dr to County Club Dr	$120,000	CMAQ
Adams St, Ave 48 to Fred Waring Dr	$90,000	CMAQ
Dune Palms Rd, Ave 48 to Fred Waring Dr	$90,000	CMAQ
Washington St/Hidden River Rd Install Median Island	$50,000	City of Palm Desert
Total	$2,780,000	

CMAQ

DELAY is measured in seconds

LOS = Level of Service

(1) Signalized Intersection. Delay results show the average delay for the entire intersection.

Source: VRPA conducted LOS analysis using Synchro 6.0

Existing and Future TDM Conditions

Development in the Study Area is regional in scale. The intersection at Washington Street and Highway 111 is the single largest destination in the Coachella Valley region as referenced in the CVAG O&D Study. This development generates and attracts significant volumes of auto trips from through the Coachella Valley and beyond. As a result, the demand for street and road and other enhanced modal improvements is needed to address congestion and delay along Washington and Highway 111. The scale of this issue requires the affected agencies to look at non-traditional methods to solve the congestion and delay problems. Such methods include changing the way people travel, the times that they travel, enhancing the existing environment to provide better connections between modes, and other innovative ideas. A shift in the way people travel will occur when they begin to understand that alternative transportation modes are viable, not just for others, but for themselves locally. They will begin to understand that alternative modes can be accommodated.

Existing TDM Strategies

In the 1990s, Coachella Valley cities and the County of Riverside adopted local TDM Ordinances. Table 13 in Chapter 3 provides a list of the TDMs included in those ordinances and the status of each TDM measure as it relates to the Study Area. Even though these ordinances have been on record for many years, many elements of the ordinances have not been actively applied or enforced. After extensive site visits throughout the Route 111 commercial corridor, the project team developed some ideas that may be effective at capturing more public acceptance of alternative transportation modes.

To develop a good sense of the conditions faced by transit users and pedestrians members of the project team drove and/or walked along the Route 111 corridor from Indio to Palm Springs. In addition to moving through the corridor time was spent observing the interactions between pedestrians and bicyclists and motor vehicles. One of the more interesting observations made on the site visits was the enormous size, or geographic scale, of the more recent commercial centers along the corridor, especially those in the Cities of La Quinta, Palm Desert, and Indio. The reality of the large scale projects may provide enhanced opportunities for implementing some TDM solutions.

The following pictures and photo descriptions provide an example of the conditions faced by pedestrians, transit riders, and bicyclists on a daily basis along the Highway 111 and Washington Street corridors.

This is the NW Corner of Washington Street and Route 111. Note the lack of connection between the transit stop location and the commercial activities.

This is the SW Corner of Washington Street and Route 111. Note the lack of connection between the commercial activities and the homes located immediately adjacent to the center.

This an example of pedestrian facilities that do not complete a connection with nearby trip attractions in La Quinta

Walking along the access driveway at the end of the sidewalk does not feel safe and tends to discourage walking and transit use.

This an example of pedestrian facilities that do not complete a connection with nearby trip attractions in La Quinta

Another view of transit shelter shows there is no direct connection to the commercial center.

This transit shelter (currently out of service) is conveniently located at the curb side with sidewalk.

This is the view just east of the shelter where the sidewalk ends at the vehicle access driveway.

Where the sidewalk ends at the driveway there is no safe pedestrian access to the shops and restaurants.

Future TDM Conditions and Recommendations

The solutions to contemporary transportation problems can no longer be found solely in the construction of new or even wider roadways. The TDM strategy recommendations presented in this section have been drafted with an understanding that any viable solution must include the participation of all available stakeholders in the community. The municipal agency, land developers, local employers and their employees, the regional transit agency, local and regional hotels and resorts, sporting and concert venues, as well as the general public all need to work together cooperatively to resolve the transportation related issues that are currently affecting and will continue to affect the Coachella Valley's economic viability and environmental health.

Traditional TDM Categories

The TDM recommendations have been organized under the following six categories:

- Transit System Improvements
- Enhanced Vehicle Occupancy
- Alternative Work Schedules and Telecommuting
- Non-Motorized Transportation
- Parking Management
- Land Use and Development Policies

Under each of these categories the specific recommendations are described as short-term, mid-term, or long-term. While some specific recommendations are completely different for each term, some mid and long term suggestions are enhancements or increased intensity of the short-term suggestions. Short-term recommendations are assumed to be implemented either immediately as funding is available to within five

years. The mid-term and long-term recommendations are assumed to involve an additional five year increment each. Therefore, this plan establishes a set of five, ten, and fifteen year implementation goals. Of course, if opportunities arise that make implementation possible ahead of these suggested priorities, that would clearly be desirable.

Tables 14 through 19 in Chapter 3 provide a detailed overview of the recommended list of TDM strategies and programs that should be applied by the Study Area agencies in the short-, mid-, and long-term.

Agency Coordination and Administrative Recommendations

As part of the initial assessment of conditions in the Coachella Valley, the project team conducted interviews with local agency staff along the corridor. Agency staff reported that they were aware that a local TDM Ordinances had been adopted, but they indicated that the ordinances were not actively enforced. There seemed to be a break in the site planning and review coordination process that allowed these requirements to go unaddressed. When members of the municipal development review team were brought together to discuss the issue, it became clear that while everyone was fulfilling their own part of the review process, there was no one clearinghouse process for an agency to determine if the pieces of development review work seamlessly and fulfill the intent of the current ordinances.

For example, local staff assigned to review preliminary site plans (to insure compliance with ADA regulations) might only be concerned with the placement of a sidewalk ramp at each side of a commercial center driveway entrance. A sidewalk continuing away from the ramp along the roadside or extending into the commercial center was not a part of that particular reviewer's task. There are examples all across the Valley of ADA compliant ramps that have been constructed next to driveways that lead into landscaping areas or barrier walls. This issue is also seen frequently at transit stops where the construction plans for a new bus stop and shelter is reviewed by local engineering department staff to insure the surface pad and structures meet local codes, but they may not be directed to make sure that the pad connects to the adjacent sidewalk or an adjacent commercial center or other workplace.

To address this issue, the designation of a staff coordinator is recommended. The coordinator would be responsible for coordinating and tracking the preliminary site plans or other construction plans as they pass through the affected agency departments. In addition to assigning a staff coordinator the affected agencies need to develop an education and training program for all plan review and building code inspectors to enhance the understanding of these issues.

Site Specific TDM Suggestions and Recommendations

Chapter 3 also provides an overview of site specific improvements that would facilitate mode shift in the Study Area. Most of these are made for implementation of potential physical improvements and programs that are most likely to be effective within the Study Area over the short-term or in some cases mid-term.

Specific suggestions presented in the figures contained in Appendix G also have application at any number of different locations along Washington Street or other Study Area corridors that may not be shown on the figures. The improvements shown in the Appendix focus on removing barriers to the use of alternative transportation modes. For example, installation of crosswalk striping with on demand flashing pedestrian warnings imbedded in the roadway pavement at key locations provides a sense of safety that may affect an

individual's decision to convert a vehicle trip to a walk trip. One of the frequent observations during the field reviews was that the sidewalk systems in the Valley seemed to be designed to take people past commercial centers rather than inviting them to enter. The absence of openings in landscaping and walls surrounding shopping centers serve as real barriers for the elderly and for people with physical limitations. Constructing paved direct access paths between the roadside and commercial centers and offices has not been a focus of local designers or reviewing municipal departments. That does appear to be changing as evidenced by the interest in this project and the attitude of cooperation offered to the project team by the Valley's local agencies.

As the TDM strategies presented here are implemented they will definitely serve to influence the public's attitude toward alternative travel modes, it is impossible to be certain which particular strategy affected their final decision. This is the reality of TDM efforts. Therefore, this project includes a number of suggestions for site specific improvements all along the corridor that focus on removing non-motorized travel barriers. Achieving success in shifting people into more efficient and healthier travel modes cannot be achieved by a single agency in the Valley, which is why the project team conducted field reviews and made suggestions and recommendations for improvements along most of the Highway 111 corridor.

Figure E-4 below provides an example of the other mapping developed and included in Appendix G. The aerial photos have been used to identify exactly where some of these TDM measures might be implemented as part of Study Area agencies' efforts to promote non-motorized transportation modes and reduce congestion. Of course these are suggestions made without the benefit of engineering analysis and are made as suggestions to begin a dialog of local agency staff from various departments to openly discuss these possibilities.

Chapter 1
Introduction

The City of La Quinta, in cooperation with other adjacent jurisdictions (Cities of Palm Desert, Indian Wells, and Indio, and the County of Riverside) and the Coachella Valley Association of Governments (CVAG), commissioned development of Transportation System Management/Transportation Demand Management (TSM/TDM) Solutions for the Washington Street and Highway 111 corridors. Traffic volumes along portions of the Highway 111 and Washington Street corridors have increased over the past few years, particularly along the north and east legs of the Washington Street and Highway 111 intersection. Retail developments, which tend to draw traffic from a much wider area including nearby cities, have also increased peak hour volumes within these corridors. Of particular concern are the intersections at Highway 111 at Washington Street and Washington Street at Fred Waring Drive. Additional widening of these intersections is less than desirable due to the acquisition of right-of-way that would impact adjacent businesses.

TSM/TDM alternatives were analyzed to determine if there are other cost effective ways of easing future congestion along the Washington/Highway 111 corridors. These alternatives may reduce travel delays either through a more effective use of existing capacity, adding capacity (if feasible), through traffic synchronization, encouraging motorists to use transit, car/van pooling, use of other alternative modes and TDM measures, encouraging motorists to travel at less congested times, and/or encouraging pedestrian and bicycle usage. The Study explored a number of transportation solutions and strategies for getting people where they need to go by auto, foot, bicycle or bus, and potentially provide a baseline of data and analysis for helping to make those decisions in the future.

Study Values

This Study is a multi-faceted, integrated plan of transportation policies, TSM and TDM measure effectiveness, and financial evaluation to address the needs along the Highway 111 and Washington Street corridors. The final Study, when implemented, will improve the long-term quality of life in the Study Area by:

- Providing enhanced travel mobility, safety, reliability, accessibility and choice of transportation modes for users whether public, private, or commercial and recognizing the varied requirements of local and intra-corridor movement
- Supporting a sound regional economy by addressing the need to move people and freight efficiently, reliably, and safely through the corridors
- Supporting a healthy and vibrant land use mix of residential, hospitality, commercial, industrial, recreational, cultural and historical area
- Respecting and protecting natural resources including air quality
- Supporting balanced achievement of community, neighborhood, and regional goals for growth management, livability, the environment, and a healthy economy with promise for all

- Distributing fairly the associated benefits and impacts for the region and the neighborhoods adjacent to or affected by the Corridors

Study results and recommendations included in this report provide the components for an implementation process that will protect the future of the corridors with an improved and equitable balance of: livability, mobility, access, public health, environmental stewardship, and economic vitality.

Study Goals and Objectives

The TSM/TDM Study explores potential options to achieve the values listed above. To insure that the values are realized over time, a list of goals and objectives have been developed that may serve to cost effectively address existing and anticipated congestion along the Highway 111 and Washington Street corridors. The overarching goal of the Washington Street/Highway 111 TSM/TDM Corridor Study is to evaluate the existing transportation network and to determine how future improvements may be developed to serve existing and future transportation needs. It will be especially important to accommodate the projected traffic volumes in the manner best suited for the corridor. The time is now to make decisions about these vital transportation corridors. This Study provides a base of data to make decisions about that future. The following set of goals and objectives were applied to develop the Study and will measure the overall success of the Study as it is implemented over time.

- GOAL 1 - Improve mobility, accessibility, and safety within the Study Area.
  Objectives
  - ✓ Improve roadway efficiency
  - ✓ Decrease travel time
  - ✓ Improve accessibility
  - ✓ Improve vehicle travel safety

- GOAL 2 – Conduct the Study with transportation corridor preservation in mind.
  Objectives
  - ✓ Proactively preserve the Study corridors
  - ✓ Minimize impact to existing properties
  - ✓ Minimize corridor preservation cost

- GOAL 3 - Provide a cost-effective transportation investment recommendation.
  Objectives
  - ✓ Minimize cost
  - ✓ Maximize cost-effectiveness

- GOAL 4 - Provide a transportation system that enhances economic development.
  Objectives
  - ✓ Promote a positive impact on property values
  - ✓ Promote economic development

- GOAL 5 - Provide a transportation system that promotes land use development patterns that support alternative modes of transportation.
  Objectives
  - ✓ Provide a transportation system that supports and accommodates alternative modes and TDM measures or strategies
  - ✓ Provide a transportation system that reduces trips associated with existing or proposed development

- GOAL 6 - Promote a balanced, multi-modal transportation system that promotes choices for travelers and influences the demand for limited transportation systems.
  - ✓ Build partnerships between all levels of the public and private sector using TDM
  - ✓ provide information and education about travel options
  - ✓ Offer incentives and programs that discourage Single Occupant Vehicle (SOV) travel

- GOAL 7 - Provide a transportation system that avoids, minimizes, and mitigates adverse environmental impacts and fosters positive environmental effects
  Objectives
  - ✓ Avoid/minimize, or if unavoidable, mitigate adverse impact on environmentally sensitive areas
  - ✓ Improve air quality
  - ✓ Reduce congestion
  - ✓ Minimize energy consumption

Whether one lives or works in the Study Area or travels through it, they recognize its importance to the Coachella Valley's overall transportation network. Over time, shopping, residential, hospitality, and office developments have expanded, and population demographics and economics have evolved. In addition to these local changes, advances in information and transportation technologies have created and shaped potential solutions that did not exist or were not viable even ten years ago. Finally, future growth and development in California, within the SCAG region, and within the CVAG subregion will be planned consistent with Senate Bill (SB) 375, which calls for the integration of transportation, land use and housing planning. SB 375 also establishes the reduction of greenhouse gas (GHG) emissions as one of the overarching goals for regional planning consistent with Assembly Bill (AB) 32. The transportation sector is the single largest source of GHG in California. The California Air Resources Board (CARB) estimates that approximately 40% of the GHG statewide is transportation related. The recommendations outlined in this Study support SB 375 and AB 32 objectives by improving traffic flow, reducing automobile trips, and enhancing the multi-modal opportunities for mobility in the Study Area.

Study Approach

An important objective of the Study was to set out a process that was acceptable to each of the cities, the County, CVAG and the public. The key objectives to successfully complete the Study included the following:

- Develop and conduct a credible Study process
- Coordinate with other key transportation and land use planning studies
- Involve the public in meaningful ways that bring good ideas to the forefront and lend credibility to, and acceptance of, the Study results
- Collect meaningful data on existing and future conditions that will help identify transportation needs and support Study conclusions
- Identify transportation problems and needs that should be resolved to improve accessibility, mobility, safety, and livability, and deal with congestion within the Study Area
- Develop screening criteria and performance measures to identify concepts that are the most cost effective, technically feasible, environmentally sound, and politically acceptable
- Develop a full-range of concepts for meeting the Study Area's transportation needs that consider all modal and demand management strategies
- Conduct sound transportation analysis in identifying problems and evaluating potential solutions
- Make recommendations that will fulfill long-range transportation and mobility needs within the Study Area

To address these Study objectives, the following major Study components were developed:

TSM Study

- *Existing and Future (Year 2015) TSM Conditions*
- *Development and Evaluation of Feasible Future (Year 2015) TSM Alternatives*
- *Recommended TSM Implementation Strategies, Cost, and Funding Sources*

TDM Study

- *Development and Research of Existing and Future TDM Measures*
- *Development and Evaluation of TDM Alternatives*
- *Recommended TDM Implementation Strategies, Cost, and Funding Sources*

Project Development Team (PDT)

To assist with development of the Study, a Project Development Team (PDT) was formed. Representatives on the PDT included the cities of La Quinta, Palm Desert, Indio, and Indian Wells, the County of Riverside, and CVAG. The PDT met five times over the duration of the Study to review Study products and provide guidance to consultant staff. Appendix A provides a list of PDT members and staff who were involved during development of the Study.

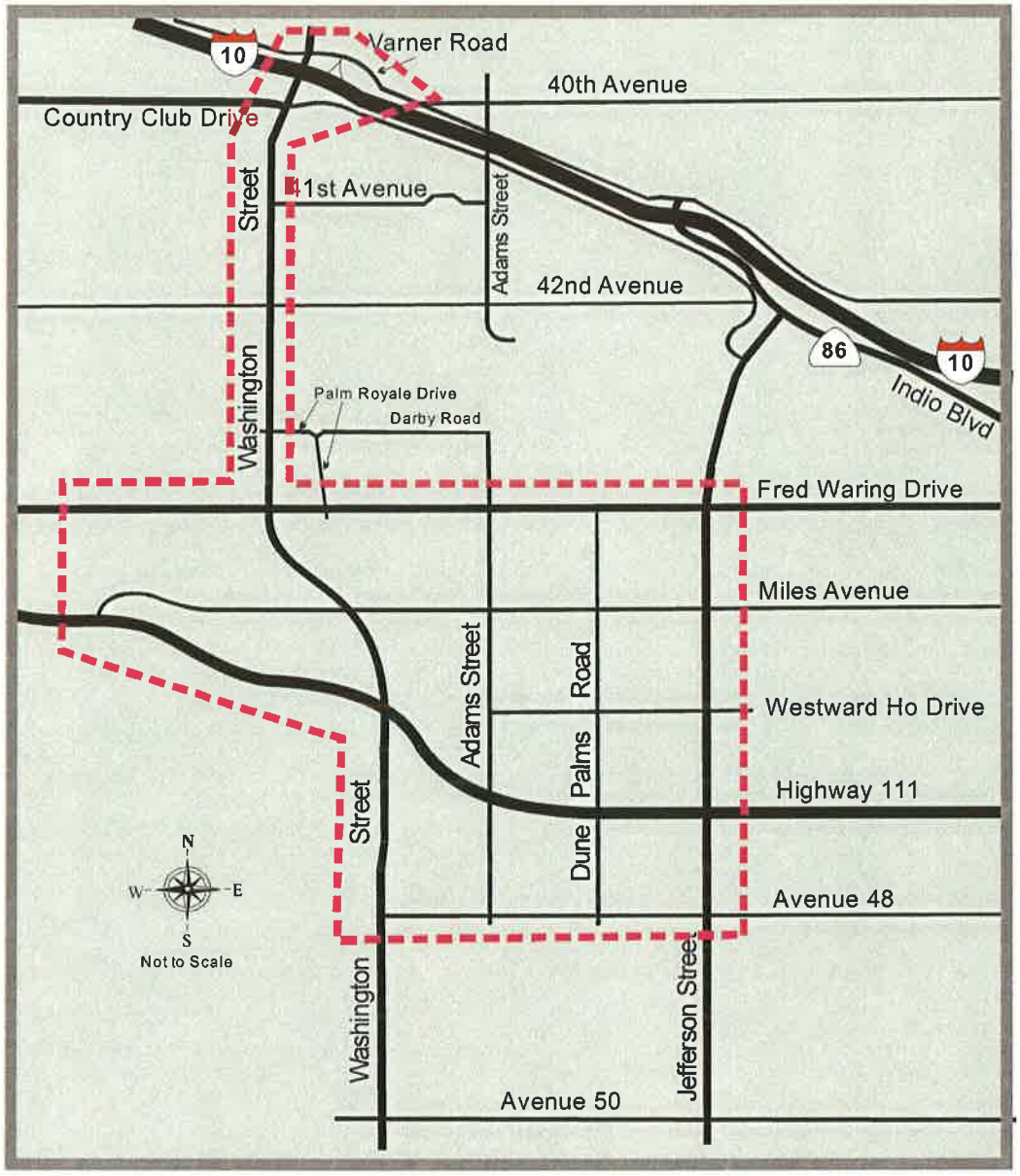
Study Area

In consultation with the County of Riverside, CVAG, and the cities of La Quinta, Indian Wells, Indio and Palm Desert, it was determined that the Study Area will include all signalized intersections in the area bounded by Fred Waring Drive on the north, Miles Avenue and Highway 111 on the west, Avenue 48 on the south, and Jefferson Avenue on the east. An exception is the Washington Street corridor between Fred Waring on the south and I-10 on the north. In addition, all signalized intersections along Washington Street from I-10 on the north to Avenue 48 on the south were included in the Study Area. The Study Area is shown in Figure 1.

Study Area Statistics

Table 1 provides an overview of the basic demographics of affected cities within the Study Area. The results indicate that a considerable population and employment base affects the Study Area on a daily basis. Overall the population potentially affecting the Study Area is 180,402, residing in 87,945 housing units, and traveling to 73,222 jobs. Specific details for each city are provided below.

- The City of La Quinta has a current population of 42,958 based upon the Riverside County Center for Demographic Research (Year 2008). Of the 42,958, currently 14,444 are employed within the City; 2,235 in retail services, 8,511 in the services industry, 1,765 in government, and 1,933 are self employed. The current number of housing units is 21,058 with 18,876 Single-Family units, 1925 Multi-Family units, and 257 other.
- According to the Riverside County Center for Demographic Research in the year 2008, the City of Indian Wells had a population of 5,025. The county also reported that total employment for the city is 3,827; 269 in retail services, 3,293 in the services industry, 59 in government, and 206 self employed. The current number of housing units is 4,973 with 4,257 Single-Family units, 708 Multi-Family units, and 8 other.
- The City of Indio has a current population of 81,512 based upon the Riverside County Center for Demographic Research (Year 2008). Of the 81,512, currently 19,298 are employed within the City; 3,256 in retail services, 11,078 in the services industry, 3,541 in government, and 1,423 are self employed. The current number of housing units is 27,794 with 19,190 Single-Family units, 5,344 Multi-Family units, and 3,260 other.
- The City of Palm Desert has a current population of 50,907 based upon the Riverside County Center for Demographic Research (Year 2008). Of the 50,907, currently 35,653 are employed within the City; 5,913 in retail services, 24,579 in the services industry, 2,484 in government, and 2,677 are self employed. The current number of housing units is 34,120 with 23,150 Single-Family units, 7,661 Multi-Family units, and 3,309 other.



Study Area Boundary
Washington & Hwy 111 TSM/TDM Corridor Study

Figure 1

Study Area

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TABLE 1
Adjacent City Demographics

City	Population	Employment / Jobs	Type of Employment				Housing	Type of Housing		
			Retail	Services	Government	Self Employed		SF	MF	Other
La Quinta	42958	14444	2235	8511	1765	1933	21058	18876	1925	257
Indian Wells	5025	3827	269	3293	59	206	4973	4257	708	8
Indio	81512	19298	3256	11078	3541	1423	27794	19190	5344	3260
Palm Desert	50907	35653	5913	24579	2484	2677	34120	23150	7661	3309
Totals:	180402	73222	11673	47461	7849	6239	87945	65473	15638	6834

Source: Riverside County Center for Demographic Research 2008 (http://www.rctlma.org/rcd/content/progress.aspx)

Data Collection Process

Through contact with the local jurisdictions mentioned previously, and VRPA's field review in the Study Area, a considerable amount of TSM and TDM related data was collected to analyze existing TSM and TDM conditions, including TDM Ordinances, traffic counts, transit routes, maps and statistics, origin and destination studies, traffic model data, traffic impact studies affecting the Study Area, General Plan Land Use and Circulation Elements, and other related data and information.

Chapter 2
Transportation Systems Management (TSM) Study

What is TSM?

Transportation System Management (TSM) is defined as a program to reduce demand on, and increase capacity of, the existing transportation system through better and more efficient use. Specifically, TSM is an integrated program to optimize the performance of existing infrastructure through the implementation of systems, services, and projects designed to preserve capacity and improve security, safety, and reliability. The term includes improvements to the transportation system such as:

- Traffic detection and surveillance
- Arterial management
- Freeway management
- Demand management
- Emergency management
- Automated enforcement
- Traffic incident management
- Traveler information services
- Commercial vehicle operations
- Traffic control
- Freight management
- Coordination of highway, rail, transit, bicycle, and pedestrian operations

Existing Study Area Intersections and Segments

Study Area intersections and roadway segments are shown in Figures 2 and 3 and are further described in the lists below. The intersections and segments were identified in consultation with the PDT.

Existing Intersections

- Washington St/Highway 111
- Washington St/Ave 48
- Washington St/Ave 47
- Washington St/Miles Ave
- Washington St/Fred Waring Dr
- Washington St/Palm Royale Dr
- Washington St/Ave of the States
- Washington St/42nd Ave
- Washington St/41st Ave
- Washington St/Harris Lane

- Washington St/Country Club Drive
- Washington St/I-10 EB Ramps
- Washington St/I-10 WB Ramps
- Washington St/Channel Drive
- Highway 111/Miles Dr
- Highway 111/Plaza La Quinta
- Highway 111/Simon Dr
- Highway 111/La Quinta Center
- Highway 111/La Quinta Dr
- Highway 111/Depot Dr
- Varner Rd/I-10 Ramps
- Adams St/ Ave 48
- Adams St/Highway 111
- Adams St/ Westward Ho Dr
- Adams St/Miles Ave
- Adams St/Fred Waring Dr
- Dune Palms Rd/Ave 48
- Dune Palms Rd/Highway 111
- Dune Palms Rd/Miles Ave
- Dune Palms Rd/Fred Waring Dr
- Jefferson St/Ave 48
- Jefferson St/Highway 111
- Jefferson St/Westward Ho Dr
- Jefferson St/ Pebble Beach Dr
- Jefferson St/Miles Ave
- Highway 111/Mountain Cove Dr
- Jefferson St/Fred Waring Dr
- Fred Waring Dr/Warner Trail
- Fred Waring Dr/Palm Royale Dr
- Miles Ave/Warner Trail

Existing Roadway Segments

- Washington Street:
  - ✓ Avenue 48 to Avenue 47
  - ✓ Avenue 47 to Highway 111
  - ✓ Highway 111 to Miles Avenue
  - ✓ Miles Avenue to Fred Waring Drive
  - ✓ Fred Waring Drive to Palm Royale Drive
  - ✓ Palm Royale Drive to Avenue of the States
  - ✓ Avenue of the States to 42nd Avenue
  - ✓ 42nd Avenue to Harris Lane
  - ✓ Harris Lane to Country Club Drive
  - ✓ Country Club Drive to I-10 EB Ramps
  - ✓ I-10 EB Ramps to Varner Road
  - ✓ North of Varner Road
- Highway 111:
  - ✓ Jefferson Street to Dune Palms Road
  - ✓ Dune Palms Road to Adams Street
  - ✓ Adams Street to Washington Street
  - ✓ Washington Street to Plaza La Quinta
  - ✓ Plaza La Quinta to Mountain Cove Drive
  - ✓ Mountain Cove Drive to Miles Avenue
- 42nd Avenue:
  - ✓ East of Washington Street
  - ✓ West of Washington Street
- 41st Avenue:
  - ✓ East of Washington Street
- Adams Street:
  - ✓ Avenue 48 to Highway111
  - ✓ Highway 111 to Westward Ho Drive
  - ✓ Westward Ho Drive to Miles Avenue
  - ✓ Miles Avenue to Fred Waring Drive
- Avenue 48:
  - ✓ Jefferson Street to Dune Palms
  - ✓ Dune Palms to Adams Street
  - ✓ Adams Street to Washington Street
- Country Club Drive:
  - ✓ East of Washington Street
  - ✓ West of Washington Street

- Dune Palms Road:
  - ✓ Avenue 48 to Highway 111
  - ✓ Highway 111 to Miles Avenue
  - ✓ Miles Avenue to Fred Waring Drive
- Fred Waring Drive:
  - ✓ Jefferson Street to Dune Palms Road
  - ✓ Dune Palms Road to Adams Street
  - ✓ Adams Street to Palm Royale Drive
  - ✓ Palm Royale Drive to Washington Street
  - ✓ Washington Street to Warner Trail
- Jefferson Street:
  - ✓ Avenue 48 to Highway 111
  - ✓ Highway 111 to Westward Ho Drive
  - ✓ Westward Ho Drive to Miles Avenue
  - ✓ Miles Avenue to Fred Waring Drive
- Miles Avenue:
  - ✓ Jefferson Street to Dune Palms Road
  - ✓ Dune Palms Road to Adams Street
  - ✓ Adams Street to Washington Street
  - ✓ Washington Street to Warner Trail
  - ✓ Warner Trail to Highway 111
- Palm Royale Drive/Mountain View:
  - ✓ East of Washington Street
  - ✓ West of Washington Street
- Varner Road:
  - ✓ West of Washington Street
  - ✓ Washington Street to I-10 WB Ramps
  - ✓ East of I-10 WB Ramps
- Warner Trail:
  - ✓ Miles Avenue to Fred Waring Drive
- Westward Ho Drive:
  - ✓ Jefferson Street to Adams Street

Key Intersections/Attached Segments
Washington Corridor Study Area
Ave 48 to Fred Waring Drive

Figure 2

Legend

● Key Intersections

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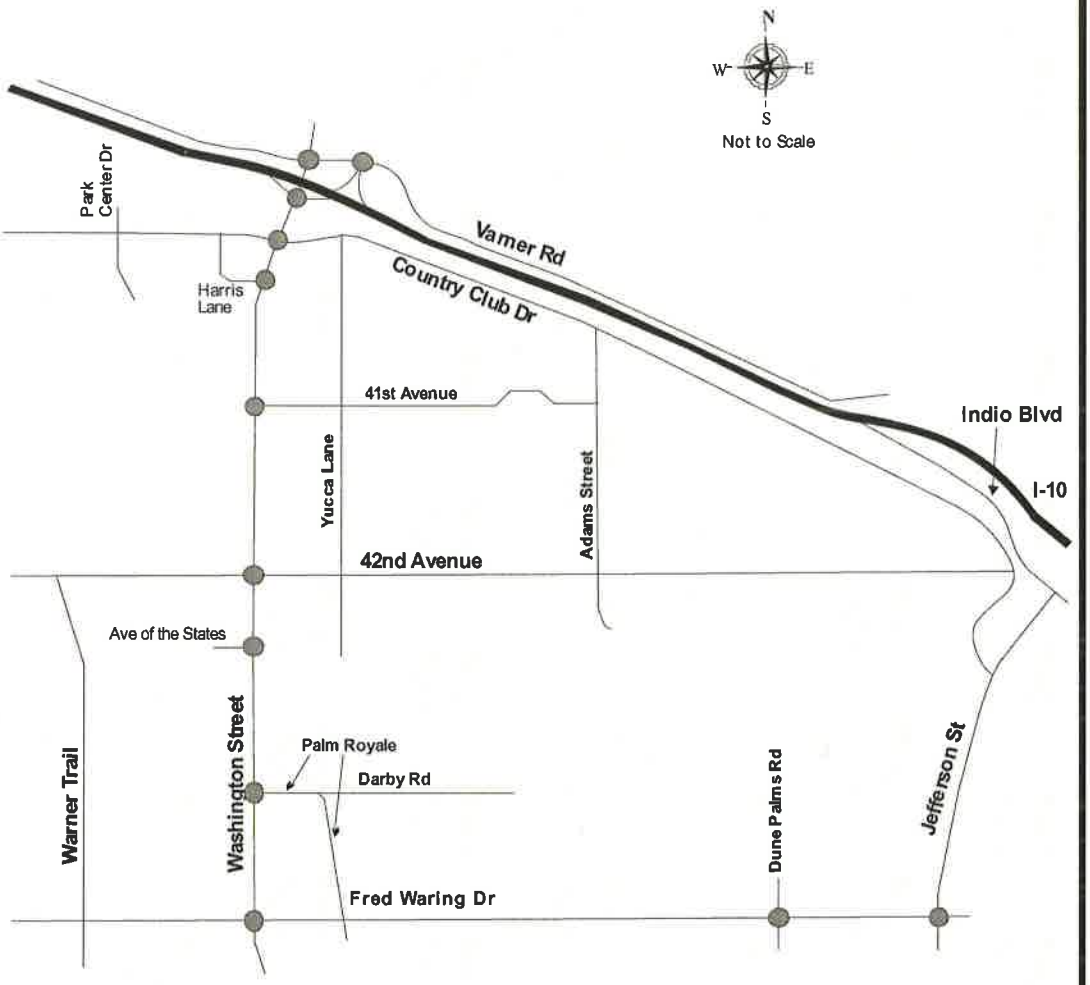

Key Intersections/Attached Segments
Along Washington Corridor
Fred Waring Drive to I-10 WB Ramps

Figure 3

Legend

● Key Intersections

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Existing Traffic and Pedestrian Counts

Historical segment traffic counts were used to determine the peak season (winter) percentage increase that was applied to off-peak season counts. Recent intersection, segment and pedestrian counts along with the lane geometry, signal phasing, existing signal timing data and recent Traffic Impact Assessments (TIA's) were used to assess existing intersection and segment levels of service. Other traffic-related data and studies collected and/or still being collected include Air Quality and Circulation Elements, historical and recent accident data, recent speed surveys, aerial photos, and programmed or recommended roadway improvements.

Specifically, existing intersection turning movement counts were collected for the Study Area in May 2009 for twenty eight (28) of the thirty nine (39) intersections. The remaining eleven intersections were collected from TIA's conducted in the peak season of 2007. The counts that were collected in May 2009 were increased 31% to reflect the peak season. This adjustment was determined by comparing several intersections counts from various TIA'S within the peak season and in the month of May. Also, two of the 39 intersections were recounted in September of 2009 to account for the opening of the Miles Avenue Bridge. Those intersections were also increased 31%. Finally, a new intersection was added along Washington Street just north of Hwy-111, it was also counted in September and increased by 31%. Appendix B provides count spreadsheets for the twenty eight (29) intersections and TIA intersection count graphics for the remaining eleven (11) intersections. Pedestrian counts were also increased by 31% for these intersections. Appendix C provides the adjusted pedestrian movements. Existing segment average daily traffic was obtained from the Coachella Valley Association of Governments (CVAG) 2009 Traffic Census Program. For segments not found within the CVAG 2009 Traffic Census Program, existing turning movements were used (increased 31%) to estimate the average daily traffic.

Existing Intersection and Segment Level of Service

When preparing the existing conditions report, guidelines provided by affected agencies were followed. In analyzing street and intersection capacities, Highway Capacity Manual (HCM) based Level of Service (LOS) methodologies were applied. Furthermore, minimum LOS standards adopted by affected jurisdictions were applied to quantitatively assess the street and highway system's performance.

Existing Intersection Level of Service Analysis

Intersection level of service analysis was conducted using the Synchro Signal Timing Program. Levels of Service can be determined for both signalized and unsignalized intersections. Thirty nine (39) of the Study intersections are currently signalized and one (1) is unsignalized. Intersection turning movement counts and roadway geometrics used to develop LOS calculations were obtained from field review findings and count data provided from the traffic count sources.

Tables 2 and 3 indicate the ranges in the amounts of average stop time delay for a vehicle at signalized and unsignalized intersections for the various levels of service ranging from LOS "A" to "F". Existing intersection geometrics are shown in Figure 4a through 4d. Intersection LOS results are displayed in Table 4 and shown graphically in Figures 5a through 5d. Appendix D provides a set of SYNCHRO worksheets for all Study Area intersections and identifies results of the intersection LOS analysis.

TABLE 2
Signalized Intersections
Level of Service Definitions
(2000 Highway Capacity Manual)

LEVEL OF SERVICE	DEFINITION	AVERAGE TOTAL DELAY (sec/veh)
A	Describes operations with very low delay. This level of service occurs when there is no conflicting traffic for a minor street.	≤ 10.0
B	Describes operations with moderately low delay. This level generally occurs with a small amount of conflicting traffic causing higher levels of average delay.	≥ 10.0 and ≤ 20.0
C	Describes operations with average delays. These higher delays may result from a moderate amount of minor street traffic. Queues begin to get longer.	≥ 20.0 and ≤ 35.0
D	Describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable. Longer delays may result from shorter gaps on the mainline and an increase of minor street traffic. The queues of vehicles are increasing.	≥ 35.0 and ≤ 55.0
E	Describes operations at or near capacity. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor gaps for the minor street to cross and large queues.	≥ 55.0 and ≤ 80.0
F	Describes operations that are at the failure point. This level, considered to be unacceptable to most drivers, often occurs with over- saturation, that is, when arrival flow rates exceed the capacity of the intersection. Insufficient gaps of suitable size exist to allow minor traffic to cross the intersection safely.	≥ 80.0

TABLE 3
Unsignalized Intersections
Level of Service Definitions
(2000 Highway Capacity Manual)

LEVEL OF SERVICE	DEFINITION	AVERAGE TOTAL DELAY (sec/veh)
A	No delay for stop-controlled approaches.	≤ 10.0
B	Describes operations with minor delay.	≥ 10.0 and ≤ 15.0
C	Describes operations with moderate delays.	≥ 15.0 and ≤ 25.0
D	Describes operations with some delays.	≥ 25.0 and ≤ 35.0
E	Describes operations with high delays and long queues.	≥ 35.0 and ≤ 50.0
F	Describes operations with extreme congestion, with very high delays and long queues unacceptable to most drivers.	≥ 50.0

TABLE 4
Washington Street/Highway 111 TSM/TDM Corridor Study
Existing Intersection LOS

INTERSECTION	PEAK HOUR	EXISTING	
		DELAY	LOS
1. Washington Street / Hwy-111 [1]	PM	34.9	C
2. Washington Street / Avenue 48 [1]	PM	25.2	C
3. Washington Street / Avenue 47 [1]	PM	11.7	B
4. Washington Street / Miles Avenue [1]	PM	16.9	B
5. Washington Street / Fred Waring Drive [1]	PM	27.4	C
6. Washington Street / Palm Royale Drive [1]	PM	10.0	A
7. Washington Street / Avenue of the States [1]	PM	17.3	B
8. Washington Street / 42nd Avenue [1]	PM	49.9	D
9. Washington Street / 41st Avenue [2]	PM	N/A	F
10. Washington Street / Harris Lane [1]	PM	16.5	B
11. Washington Street / Country Club Drive [1]	PM	36.2	D
12. Washington Street / I-10 EB Ramps [1]	PM	16.7	B
13. Varner Road / I-10 WB Ramps [1]	PM	19.4	C
14. Hwy-111 / Miles Avenue [1]	PM	12.1	B
15. Hwy-111 / Mountain Cove [1]	PM	13.1	B
16. Hwy-111 / Plaza La Quinta [1]	PM	11.9	B
17. Hwy-111 / Simon Drive [1]	PM	9.7	A
18. Hwy-111 / La Quinta Center [1]	PM	13.1	B
19. Hwy-111 / La Quinta Drive [1]	PM	28.7	C
20. Hwy-111 / Depot Drive [1]	PM	16.1	B
21. Adams Street / Avenue 48 [1]	PM	21.7	C
22. Adams Street / Hwy-111 [1]	PM	19.6	B
23. Adams Street / Westward Ho Drive [1]	PM	10.4	B
24. Adams Street / Miles Avenue [1]	PM	18.3	B
25. Adams Street / Fred Waring Drive [1]	PM	24.5	C
26. Dune Palms Road / Avenue 48 [1]	PM	10.5	B
27. Dune Palms Road / Hwy-111 [1]	PM	18.6	B
28. Dune Palms Road / Miles Avenue [1]	PM	17.1	B
29. Dune Palms Road / Fred Waring Drive [1]	PM	16.7	B
30. Jefferson Street / Avenue 48 [1]	PM	23.1	C
31. Jefferson Street / Hwy-111 [1]	PM	39.7	D
32. Jefferson Street / Westward Ho Drive [1]	PM	5.4	A
33. Jefferson Street / Pebble Beach Drive [1]	PM	5.5	A
34. Jefferson Street / Miles Avenue [1]	PM	22.0	C
35. Jefferson Street / Fred Waring Drive [1]	PM	22.2	C
36. Fred Waring Drive / Warner Trail [1]	PM	31.1	C
37. Fred Waring Drive / Palm Royale Drive [1]	PM	15.7	B
38. Varner Road / Washington Street [1]	PM	27.1	C
39. Miles Avenue / Warner Trail [1]	PM	8.5	A
40. Channel Drive / Washington Street [1]	PM	15.4	B

DELAY is measured in seconds

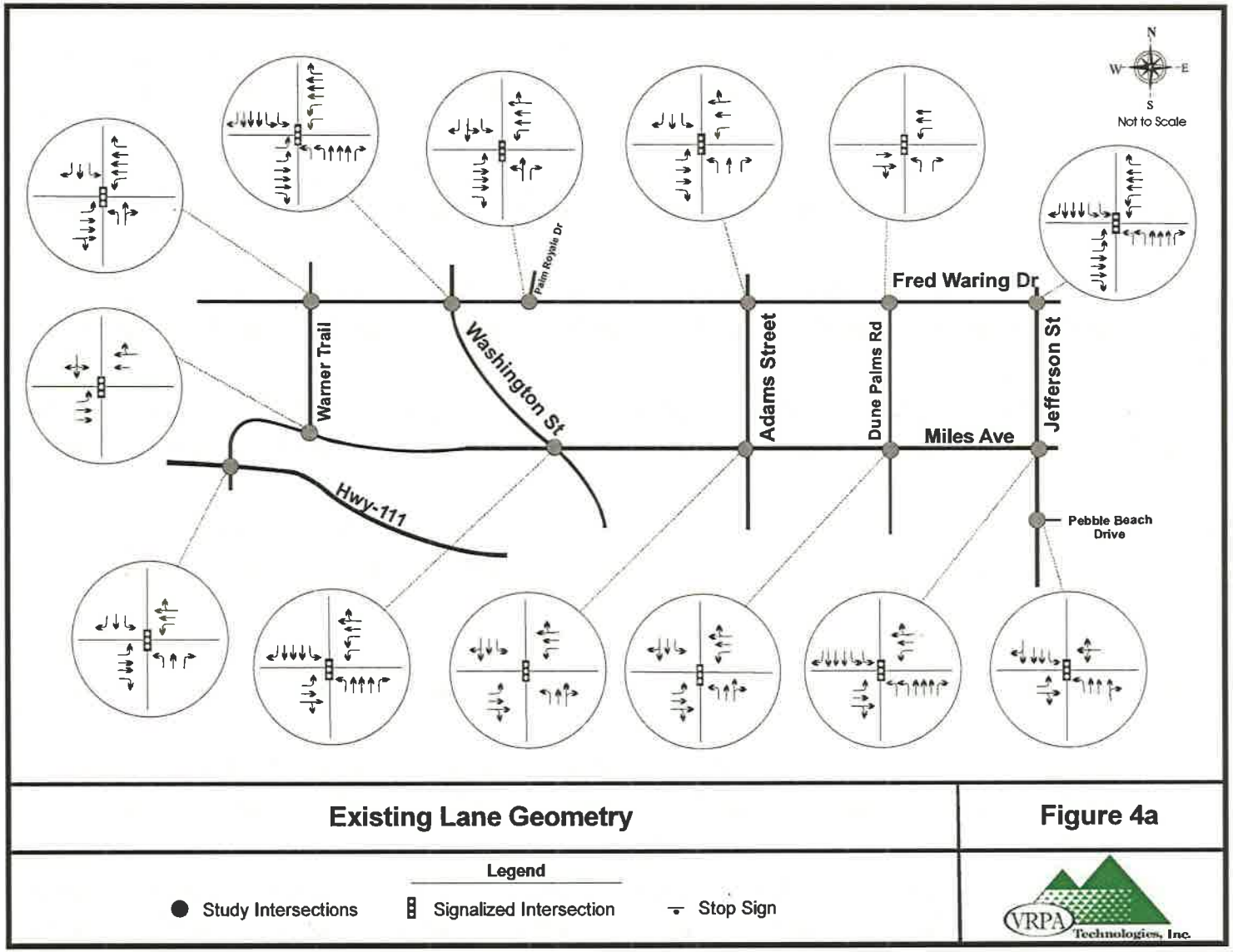
LOS = Level of Service

N/A = LOS for One and Two-way stop controlled intersection is shown for worst turning movement

(1) Signalized Intersection. Delay results show the average delay for the entire intersection.

(2) One-way Stop Controlled Intersection. Delay results not applicable. The LOS is shown for the worst movement.

Source: VRPA conducted LOS analysis using Synchro 6.0



Existing Lane Geometry | **Figure 4a**

Legend

● Study Intersections ▯ Signalized Intersection ⊸ Stop Sign

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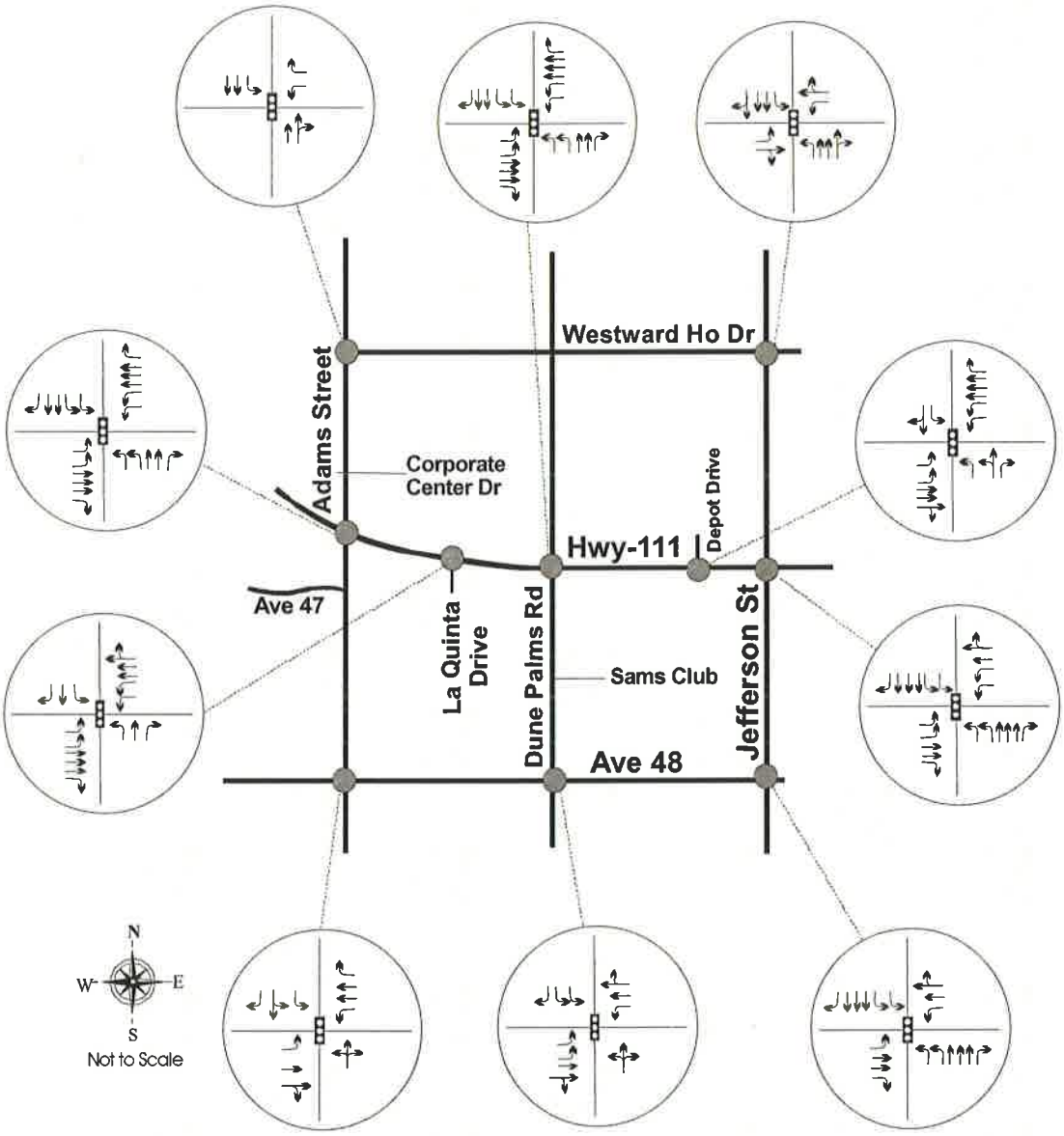

Existing Lane Geometry

Figure 4b

Legend

Stop Sign

Study Intersections

Signalized Intersection

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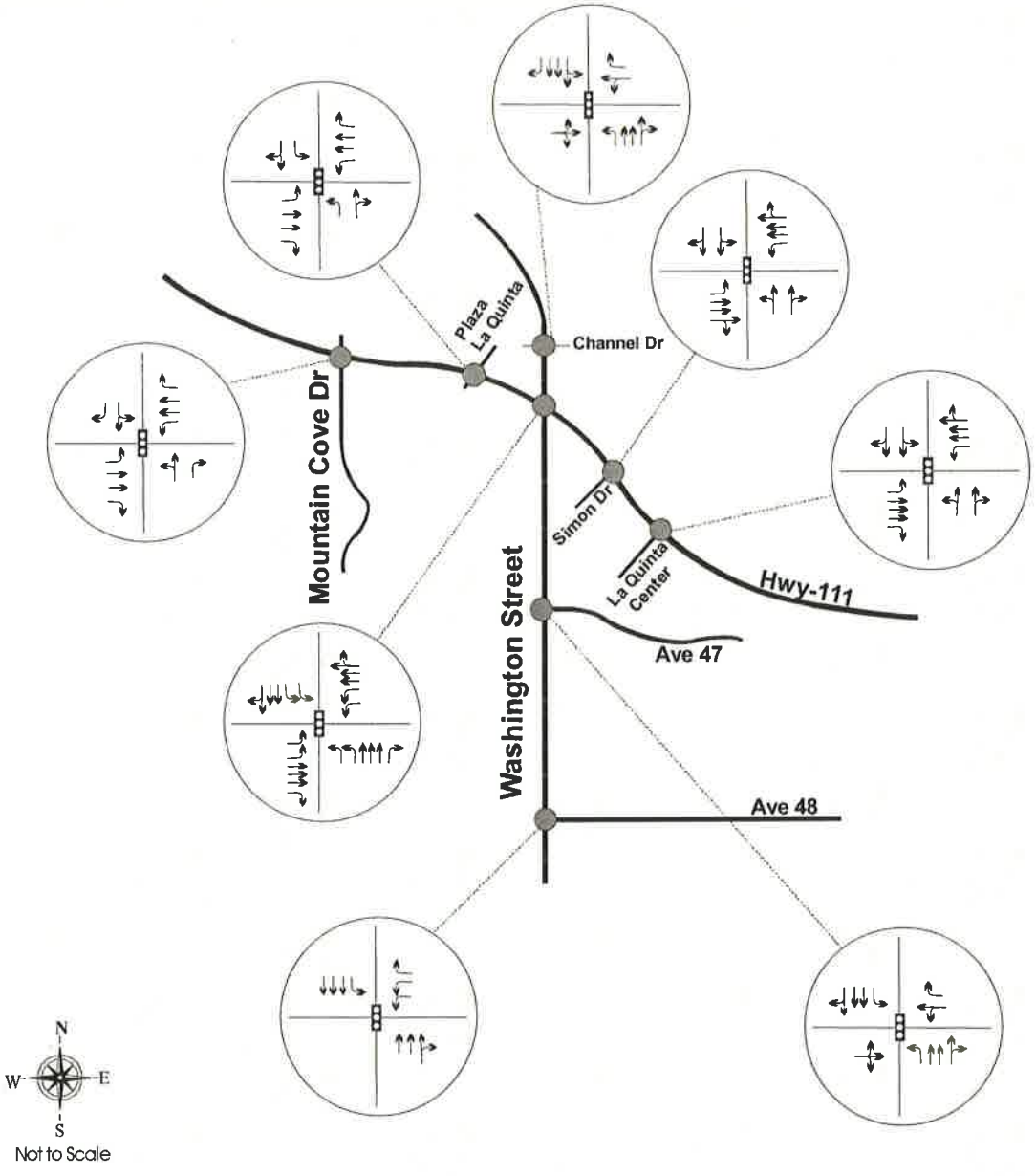

Existing Lane Geometry

Figure 4c

Legend

Stop Sign

Study Intersections

Signalized Intersection

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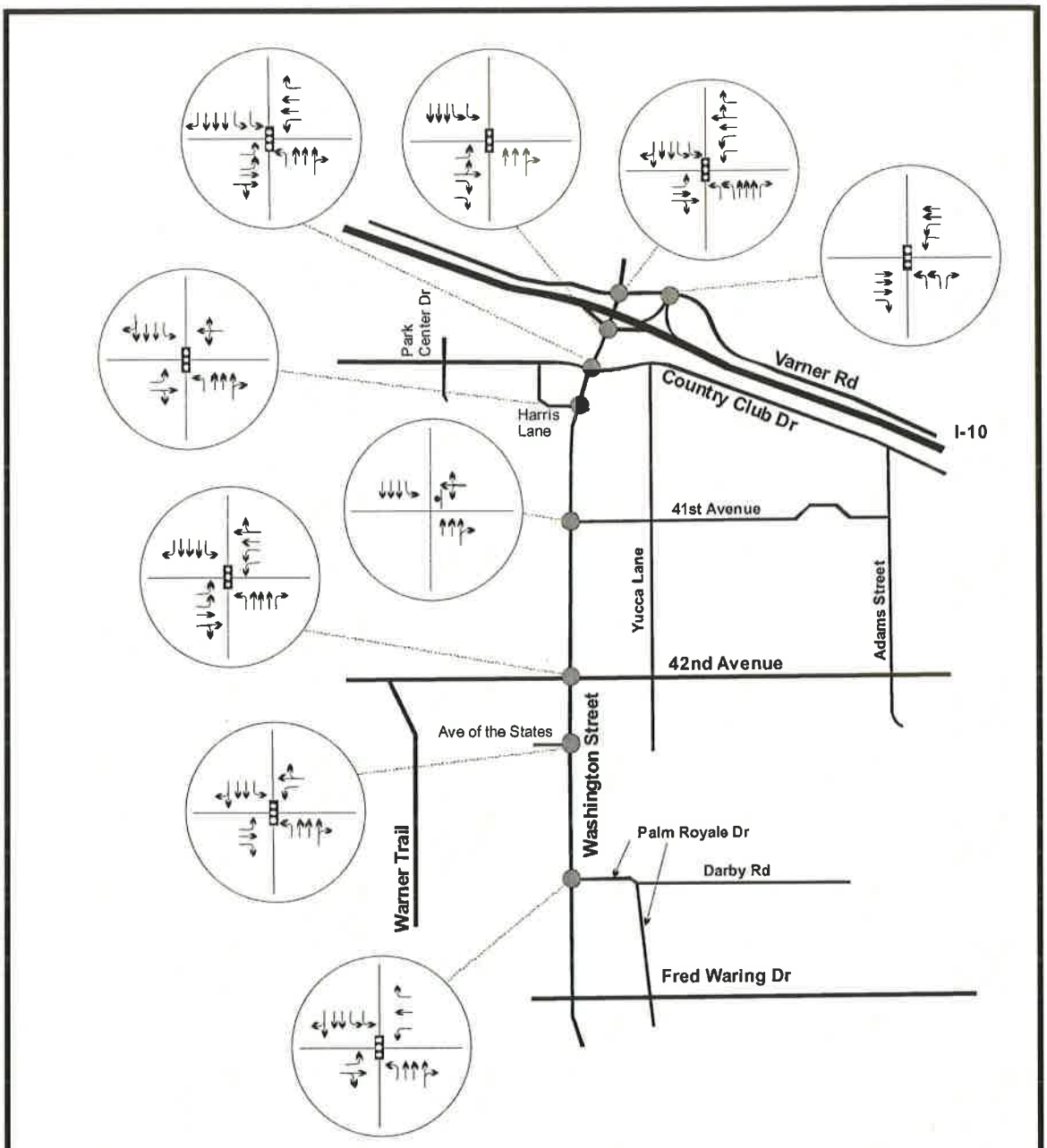

Existing Lane Geometry

Figure 4d

Legend

Stop Sign

Study Intersections

Signalized Intersection

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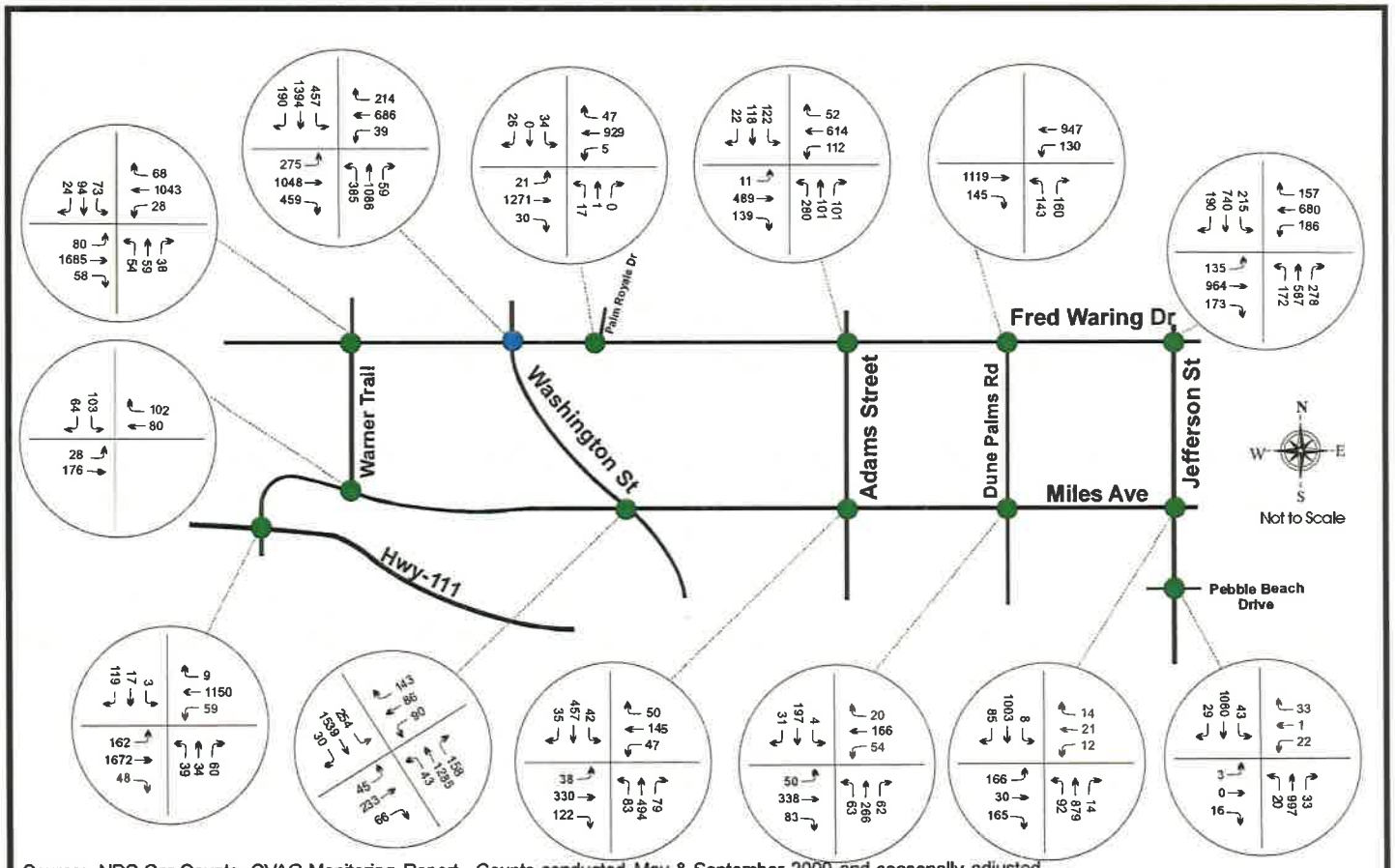

Source: NDS Car Counts, CVAG Monitoring Report. Counts conducted May & September 2009 and seasonally adjusted.

Existing (2009) PM Peak Hour Counts/LOS | **Figure 5a**

Legend

XXX PM Peak Hour Traffic

LOS C or Better | LOS E | LOS D | LOS F

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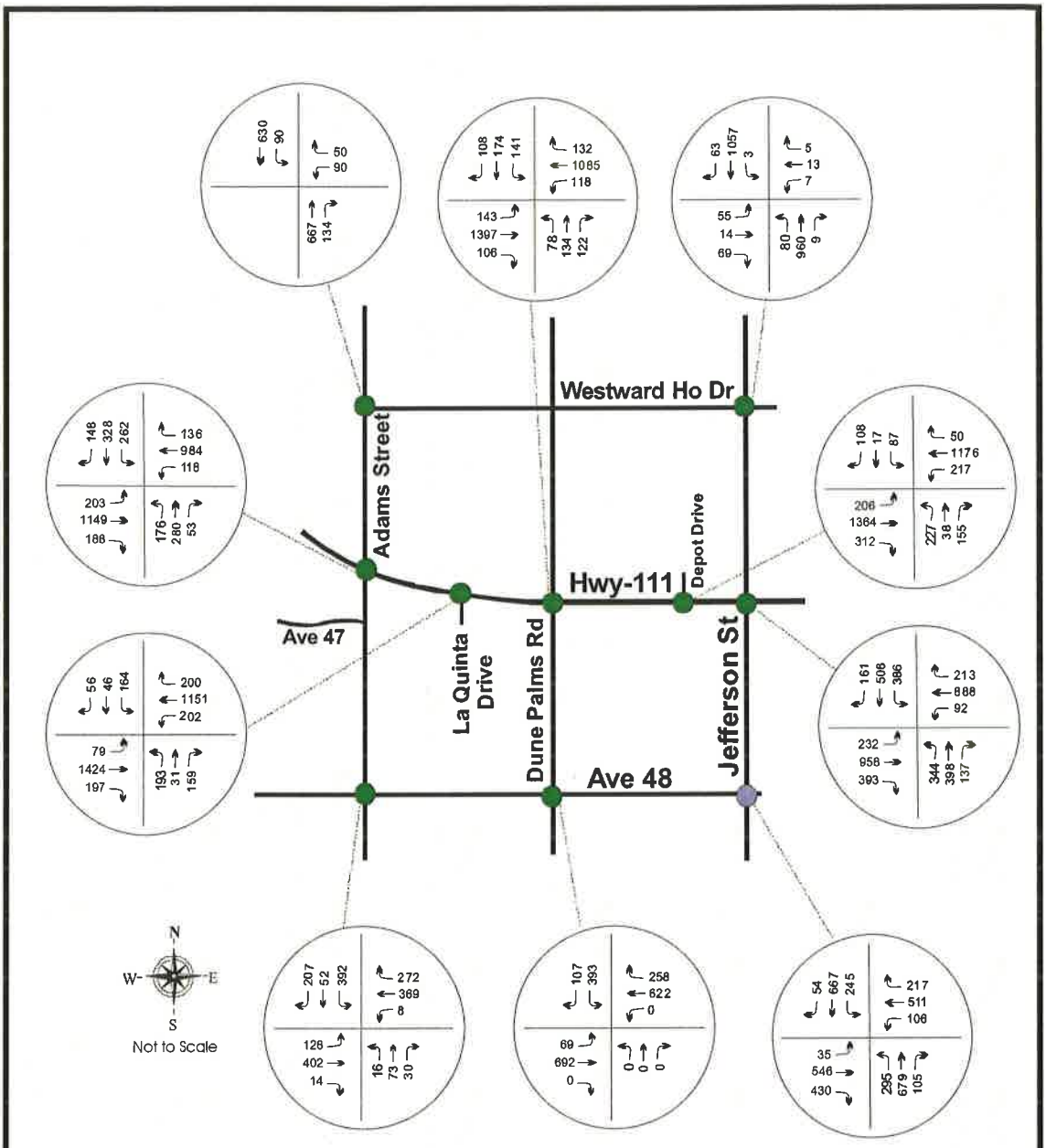

Existing (2009) PM Peak Hour Counts/LOS

Figure 5b

Legend

XXX PM Peak Hour Traffic

LOS C or Better
LOS D
LOS E
LOS F

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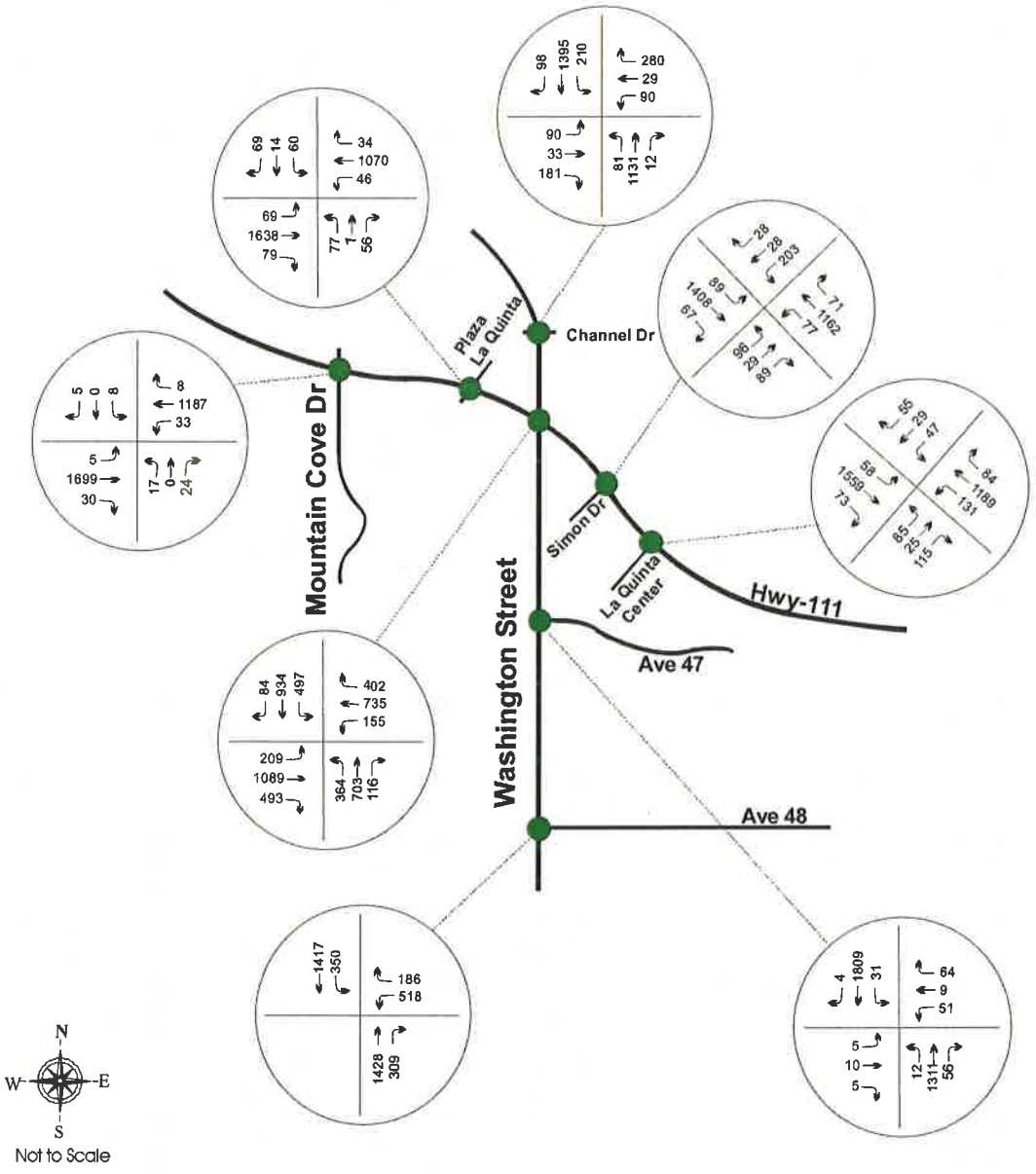

Source: NDS Car Counts, CVAG Monitoring Report. Counts conducted May 2009 and seasonally adjusted.

Existing (2009) PM Peak Hour Counts/LOS

Figure 5c

Legend

XXX PM Peak Hour Traffic

LOS C or Better
LOS D
LOS E
LOS F

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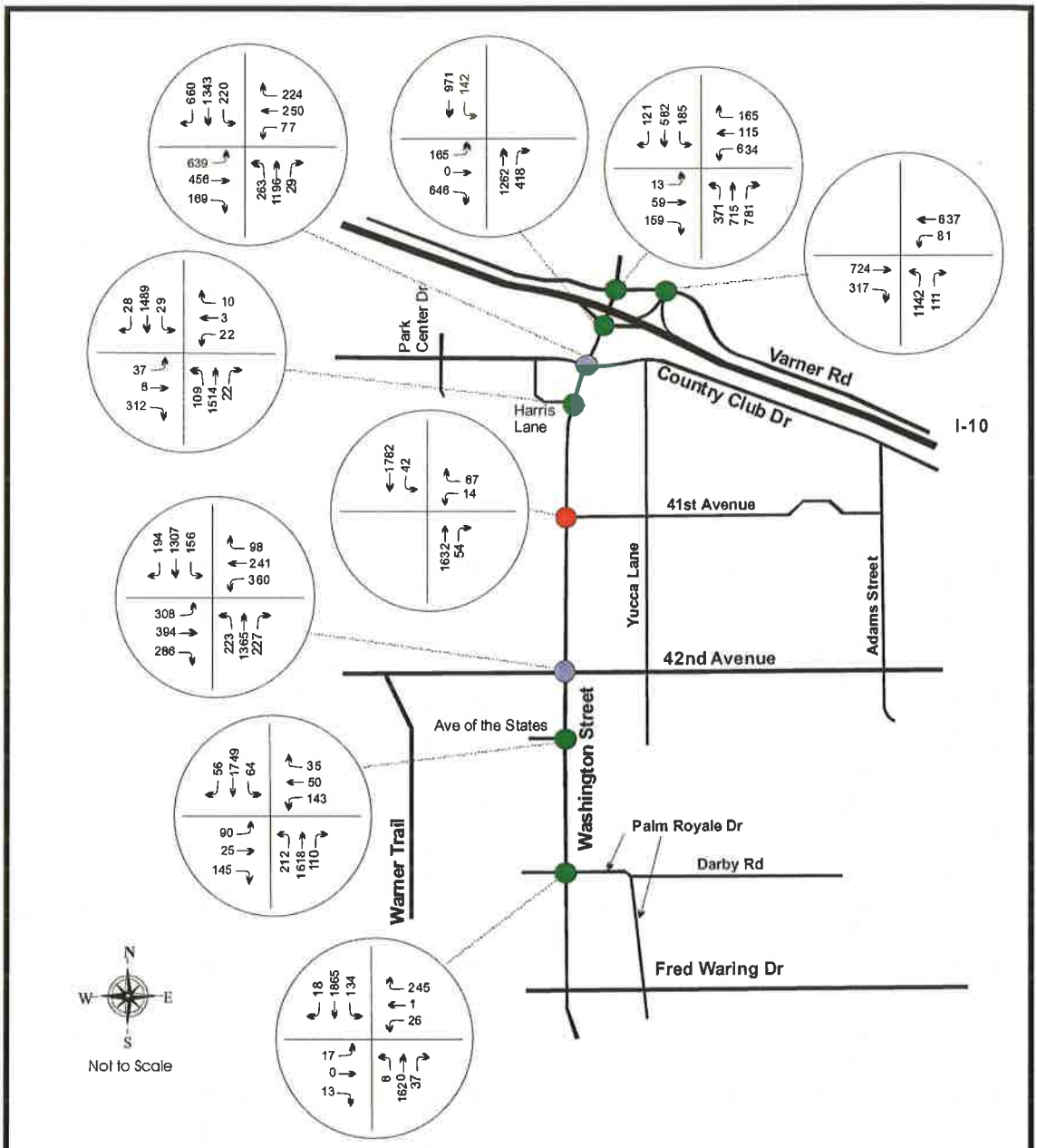

Existing (2009) PM Peak Hour Counts/LOS

Figure 5d

Legend

XXX PM Peak Hour Traffic

LOS C or Better
LOS D
LOS E
LOS F

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Existing Intersection Capacity Analysis – Findings and Conclusions

All intersection LOS analyses were estimated using Synchro 6 Software. Various roadway geometrics, traffic volumes, and properties (signal timing, peak hour factors, etc) were input into the Synchro 6 Software program in order to accurately determine the travel delay and LOS.

Washington Street Corridor

Fourteen intersections along the Washington Street north/south corridor were analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. Of the fourteen intersections studied, thirteen intersections (see below) are operating at the LOS standard of D or better for the City of La Quinta. The intersection of Washington Street at 41st Avenue is currently operating at LOS F in the PM peak hour. Based on the 2000 HCM, LOS F describes operations that are at the failure point.

Intersections Operating at LOS D or better:

- Washington St/Highway 111
- Washington St/Country Club Drive
- Washington St/Ave 48
- Washington St/Miles Ave
- Washington St/Fred Waring Dr
- Washington St/Palm Royale Dr
- Washington St/Ave of the States
- Washington St/42nd Ave
- Washington St/Harris Lane
- Washington St/I-10 EB Ramps
- Washington St/Varner Road
- Washington St/Channel Dr
- Washington St/Ave 47

Intersections Operating at LOS E or worse:

- Washington St/41st Ave

Highway 111 Corridor

Eleven intersections along the Highway 111 east/west corridor were analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. All eleven intersections studied (see below) are operating at the LOS standard of D or better for the City of La Quinta.

Intersections Operating at LOS D or better:

- Highway 111/ Washington St
- Highway 111/Mountain Cove Rd
- Highway 111/Plaza La Quinta
- Highway 111/Simon Dr

- Highway 111/La Quinta Center
- Highway 111/La Quinta Dr
- Highway 111/Depot Dr
- Highway 111/Adams St
- Highway 111/ Dune Palms Rd
- Highway 111/Jefferson St
- Highway 111/Miles Avenue

Fred Waring Drive Corridor

Six intersections along the Fred Waring Drive east/west corridor were analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. All six intersections studied (see below) are operating at the LOS standard of D or better for the City of La Quinta. Based on the 2000 HCM, LOS D describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable.

Intersections Operating at LOS D or better:

- Fred Waring Dr/Washington St
- Fred Waring Dr/Adams St
- Fred Waring Dr/Dune Palms Rd
- Fred Waring Dr/Jefferson St
- Fred Waring Dr/Warner Trail
- Fred Waring Dr/Palm Royale Dr

Jefferson Street Corridor

Six intersections along the Jefferson Street north/south corridor were analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. All six intersections studied (see below) are operating at the LOS standard of D or better for the City of La Quinta. Based on the 2000 HCM, LOS D describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable.

Intersections Operating at LOS D or better:

- Jefferson St/Ave 48
- Jefferson St/Highway 111
- Jefferson St/Westward Ho Dr
- Jefferson St/Pebble Beach Dr
- Jefferson St/Miles Ave
- Jefferson St/Fred Waring Dr

Adams Street Corridor

Five intersections along the Adams Street north/south corridor were analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. All five intersections studied (see below) are operating at the LOS standard of D or better for the City of La Quinta. Based on the 2000 HCM, LOS D describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable.

Intersections Operating at LOS D or better:

- Adams St/Ave 48
- Adams St/Highway 111
- Adams St/Westward Ho Dr
- Adams St/Miles Ave
- Adams St/Fred Waring Dr

Miles Avenue Corridor

Six intersections along the Miles Avenue east/west corridor were analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. All five intersections studied (see below) are operating at the LOS standard of D or better for the City of La Quinta. Based on the 2000 HCM, LOS D describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable.

Intersections Operating at LOS D or better:

- Miles Ave/Washington St
- Miles Ave/Adams St
- Miles Ave/Dune Palms Rd
- Miles Ave/Jefferson St
- Miles Ave/Warner Trail
- Highway 111/Miles Dr

Dune Palms Road Corridor

Four intersections along the Dune Palms Road north/south corridor were analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. All four intersections studied (see below) are operating at the LOS standard of D or better for the City of La Quinta. Based on the 2000 HCM, LOS D describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable.

Intersections Operating at LOS D or better:

- Dune Palms Rd/Ave 48
- Dune Palms Rd/Highway 111

- Dune Palms Rd/Miles Ave
- Dune Palms Rd/Fred Waring Dr

Avenue 48 Corridor

Four intersections along the Avenue 48 east/west corridor were analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. All four intersections studied (see below) are operating at the LOS standard of D or better for the City of La Quinta. Based on the 2000 HCM, LOS D describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable.

Intersections Operating at LOS D or better:

- Ave 48/Washington St
- Ave 48/Adams St
- Ave 48/Dune Palms Rd
- Ave 48/Jefferson St

Westward Ho Drive Corridor

Two intersections along the Westward Ho Drive east/west corridor were analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. Both intersections studied (see below) are operating at the LOS standard of D or better for the City of La Quinta. Based on the 2000 HCM, LOS D describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable.

Intersections Operating at LOS D or better:

- Westward Ho Dr/Adams St
- Westward Ho Dr/Jefferson St

Varner Road Corridor

One intersection along the Varner Road east/west corridor was analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. The intersection of Varner Road at I-10 WB Ramps is currently operating at LOS C, which is better than the LOS standard of D for the City of La Quinta. Based on the 2000 HCM, LOS C describes operations with average delays.

Existing Segment Level of Service Analysis

According to the HCM, LOS is categorized by two parameters of traffic: uninterrupted and interrupted flow. Uninterrupted flow facilities do not have fixed elements such as traffic signals that cause interruptions in traffic flow. Interrupted flow facilities do have fixed elements that cause an interruption in the flow of traffic, such as stop signs and signalized intersections along arterial roads. A roadway segment is defined as a stretch of roadway generally located between signalized or controlled intersections.

Segment LOS is important in order to understand whether the capacity of a roadway can accommodate future traffic volumes. Table 5 provides a definition of segment LOS. The performance criteria used for evaluating volumes and capacities on the road and highway system for this Study were estimated using the County of Riverside Roadway Capacity Table. The table considers the capacity of individual road and highway segments based on roadway variables (design speed, passing opportunities, signalized intersections per mile, number of lanes, saturation flow, etc.). The capacity table is provided in Appendix E and existing segment LOS results are displayed in Figures 6 and 7 and Table 6.

Existing Segment Level of Service Findings

Under existing conditions most of the segments in the Study Area are operating at acceptable Levels of Service. The following segments are currently operating at LOS E:

- LOS E
  - ✓ Washington Street
    Varner Road to I-10 EB Ramps

TABLE 5
Segment Level of Service Definitions
(2000 Highway Capacity Manual)

LEVEL OF SERVICE	DEFINITION
A	Represents free flow. Individual vehicles are virtually unaffected by the presence of others in the traffic stream.
B	Is in the range of stable flow, but the presence of other vehicles in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver.
C	Is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual vehicles becomes significantly affected by interactions with other vehicles in the traffic stream.
D	Is a crowded segment of roadway with a large number of vehicles restricting mobility and a stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.
E	Represents operating conditions at or near the level capacity. All speeds are reduced to a low, but relatively uniform value. Small increases in flow will cause breakdowns in traffic movement.
F	Is used to define forced or breakdown flow (stop-and-go gridlock). This condition exists when the amount of traffic approaches a point where the amount of traffic exceeds the amount that can travel to a destination. Operations within the queues are characterized by stop and go waves, and they are extremely unstable.

TABLE 6
Washington/Hwy 111 Commercial Corridor
Existing Segment Capacity Analysis

Roadway	Segment	Number of Lanes	Roadway Classification	LOS[1]	ADT
41st Ave	East of Washington St	2	Arterial	C	1000*
42nd Ave	West of Washington St	4	Urban Arterial	C	15600*
42nd Ave	East of Washington St	4	Urban Arterial	C	16400*
Adams St	Fred Waring Dr to Miles Ave	4	Urban Arterial	C	11100*
Adams St	Miles Ave to Westward Ho Dr	4	Urban Arterial	C	11500*
Adams St	Westward Ho Dr to Highway 111	4	Urban Arterial	C	13700
Adams St	Highway 111 to Ave 48	4	Urban Arterial	C	11200
Ave 48	Washington St to Adams St	4	Arterial	C	12700
Ave 48	Adams St to Dune Palms Rd	4	Arterial	C	13300*
Ave 48	Dune Palms Rd to Jefferson St	4	Arterial	C	17500*
Ave of the States	West of Washington St	2	Arterial	C	6700*
Highway 111	West of Warner Trail	4	Urban Arterial	D	31900*
Highway 111	Warner Trail to Mountain Cove Dr	4	Urban Arterial	D	31600
Highway 111	Mountain Cove Dr to Plaza La Quinta	4	Urban Arterial	D	30000*
Highway 111	Plaza La Quinta to Washington St	6	Urban Arterial	C	29000
Highway 111	Washington St to Adams St	6	Urban Arterial	C	31700
Highway 111	Adams St to Dune Palms Rd	6	Urban Arterial	D	31500
Highway 111	Dune Palms Rd to Jefferson St	6	Urban Arterial	C	37500
Country Club Drive	Park Center Dr to Washington St	4	Urban Arterial	C	22600
Country Club Drive	Washington St to Adams St	4	Urban Arterial	C	15700
Dune Palms Rd	Fred Waring Dr to Miles Ave	4	Urban Arterial	C	5100*
Dune Palms Rd	Miles Ave to Westward Ho Dr	4	Urban Arterial	C	7200*
Dune Palms Rd	Westward Ho Dr to Highway 111	4	Urban Arterial	C	9100
Dune Palms Rd	Highway 111 to Ave 48	4	Urban Arterial	C	7700
Fred Waring Dr	West of Warner Trail	6	Urban Arterial	C	24000
Fred Waring Dr	Warner Trail to Washington St	6	Urban Arterial	C	26000
Fred Waring Dr	Washington St to Palm Royale Dr	6	Urban Arterial	C	20900
Fred Waring Dr	Palm Royale Dr to Adams St	5	Urban Arterial	C	20600*
Fred Waring Dr	Adams St to Dune Palms Rd	4	Urban Arterial	C	21700
Fred Waring Dr	Dune Palms Rd to Jefferson St	6	Urban Arterial	C	21700
Harris Lane	Country Club Dr to Washington St	2	Arterial	C	4700*
Jefferson St	Fred Waring Dr to Miles Ave	6	Urban Arterial	C	22300
Jefferson St	Miles Ave to Westward Ho Dr	6	Urban Arterial	C	23100
Jefferson St	Westward Ho Dr to Highway 111	6	Urban Arterial	C	26000
Jefferson St	Highway 111 to Ave 48	6	Urban Arterial	D	28800
Miles Ave	Highway 111 to Warner Trail	2	Arterial	C	5200
Miles Ave	Warner Trail to Washington St	4	Urban Arterial	C	5700
Miles Ave	Washington St to Adams St	4	Urban Arterial	C	8700
Miles Ave	Adams St to Dune Palms Rd	4	Urban Arterial	C	6900*
Miles Ave	Dune Palms Rd to Jefferson St	4	Urban Arterial	C	6400*
Mountain Cove Dr	South of Highway 111	2	Arterial	C	1000*
Mountain View	West of Washington St	2	Arterial	C	600*
Palm Royale Dr/Darby Rd	East of Washington St	2	Arterial	C	6800*
Varner Rd	West of Washington St	4	Arterial	C	6700*
Varner Rd	Washington St to I-10 WB Ramp	4	Arterial	C	22900
Varner Rd	East of I-10 WB Ramp	4	Arterial	C	15500
Warner Trail	Fred Waring Dr to Miles Ave	2	Arterial	C	3000*
Washington St	North of Varner Rd	6	Urban Arterial	C	18700
Washington St	Varner Rd to I-10 EB Ramps	6	Urban Arterial	E	50400
Washington St	I-10 EB Ramps to Country Club Dr	6	Urban Arterial	D	43700
Washington St	Country Club Dr to 41st Avenue	6	Urban Arterial	D	32300
Washington St	41st Ave to 42nd Ave	6	Urban Arterial	C	32900
Washington St	42nd Ave to Ave of the States	6	Urban Arterial	C	34600
Washington St	Ave of the States to Palm Royale Dr	6	Urban Arterial	C	35100*
Washington St	Palm Royale Dr to Fred Waring Dr	6	Urban Arterial	C	36100
Washington St	Fred Waring Dr to Miles Ave	6	Urban Arterial	C	35400
Washington St	Miles Ave to Highway 111	6	Urban Arterial	C	29600
Washington St	Highway 111 to Ave 47	6	Urban Arterial	C	40500
Washington St	Ave 47 to Ave 48	6	Urban Arterial	C	32400*
Westward Ho Dr	Adams St to Jefferson St	2	Arterial	C	3600*

* Average Daily Traffic was estimated using peak hour counts
1. C indicates LOS C or better.

*** Average Daily Traffic was estimated using peak hour counts (peak hour movements multiplied by 10) .**

Existing (2009) Average Daily Traffic/Level of Service (LOS)
Washington Corridor Study Area
Ave 48 to Fred Waring Drive

Figure 6

Legend:

XX,XXX	Average Daily Traffic		LOS E
	LOS C or Better		LOS F
	LOS D	(6)	Number of Lanes

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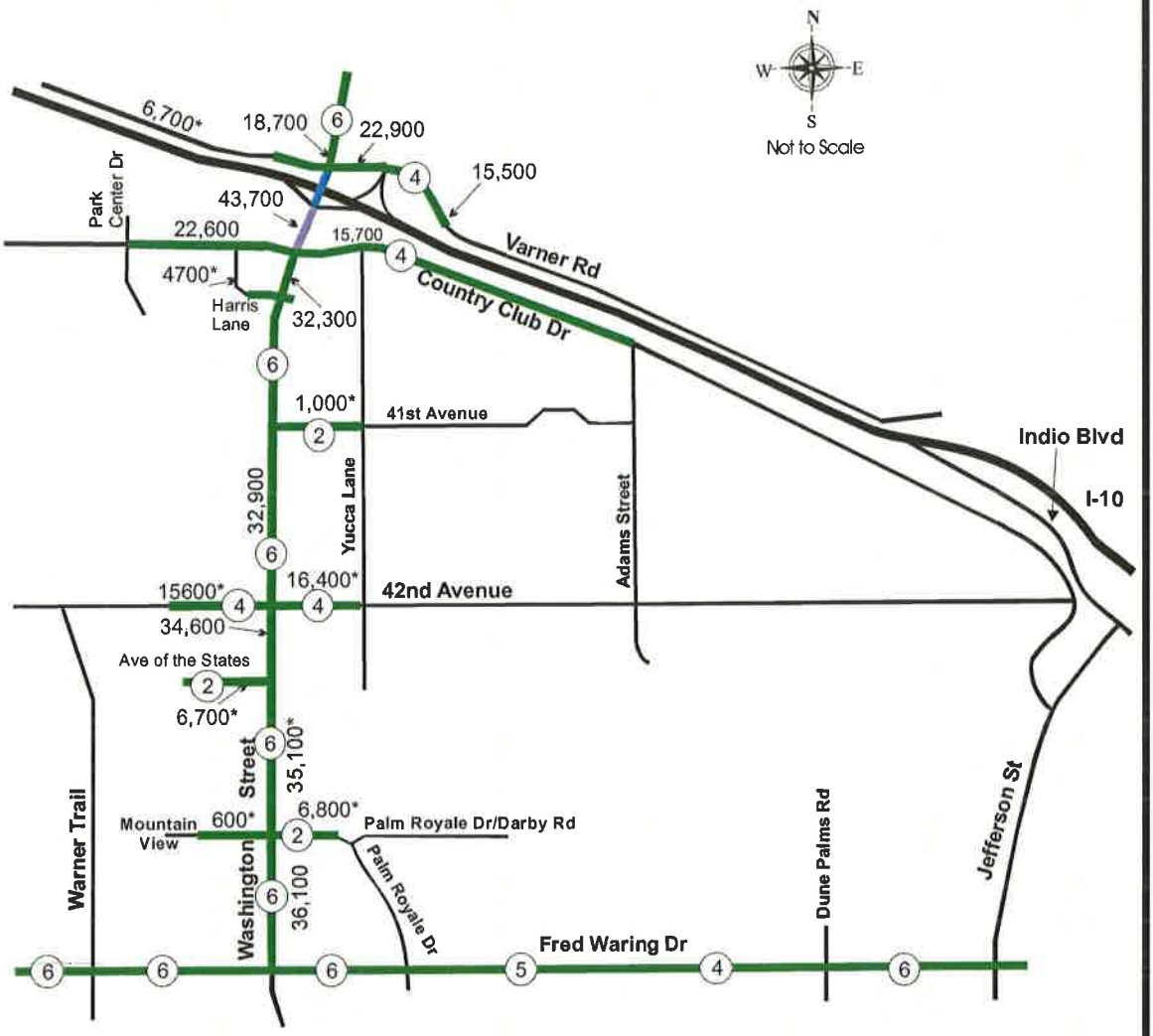

*** Average Daily Traffic was estimated using peak hour counts (peak hour movements multiplied by 10) .**

Existing (2009) Average Daily Traffic/Level of Service (LOS)
Along Washington Corridor
Fred Waring to I-10 WB Ramps

Figure 7

Legend:

XX,XXX Average Daily Traffic
LOS C or Better
LOS D
LOS E
LOS F

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Future (Year 2015) – TSM Analysis

This section provides a review of the intersections and segments studied in the future (Year 2015), a review of the same intersections and segments in the Year 2015 assuming that no additional street and road improvements will be made within the Study Area (No Build scenario), and a review of the same intersections and segments in the Year 2015 (Build scenario) assuming that additional street and road improvements will be made along the corridors. For the Build scenario, several street and road improvement alternatives were analyzed with the goal of reducing existing and projected LOS deficiencies and improving traffic flow in the Study Area. This analysis led to a recommended set of alternative street and road improvements, which are included at the end of this chapter.

Future Year Study Area Intersections and Segments

Future Study Area intersections and roadway segments are shown in Figures 2 and 3 and further described in the lists below. As documented in the Existing Conditions Report the intersections and segments were identified in consultation with the PDT. The PDT requested that further intersections be analyzed after school began in September of 2009. The intersection at Washington Street/Channel Drive was counted and the intersections at Washington Street/Miles Drive and Washington Street/Fred Waring Drive were recounted to insure accuracy of the counts due to the opening of the Miles Avenue Bridge.

Future Year Intersections

- Washington St/Highway 111
- Washington St/Ave 48
- Washington St/Ave 47
- Washington St/Miles Ave
- Washington St/Fred Waring Dr
- Washington St/Palm Royale Dr
- Washington St/Ave of the States
- Washington St/42nd Ave
- Washington St/41st Ave
- Washington St/Harris Lane
- Washington St/Country Club Drive
- Washington St/I-10 EB Ramps
- Washington St/I-10 WB Ramps
- Washington St/Channel Dr
- Highway 111/Miles Dr
- Highway 111/Channel Dr
- Highway 111/Simon Dr
- Highway 111/La Quinta Center
- Highway 111/La Quinta Dr
- Highway 111/Depot Dr
- Varner Rd/I-10 Ramps

- Adams St/ Ave 48
- Adams St/Highway 111
- Adams St/ Westward Ho Dr
- Adams St/Miles Ave
- Adams St/Fred Waring Dr
- Dune Palms Rd/Ave 48
- Dune Palms Rd/Highway 111
- Dune Palms Rd/Miles Ave
- Dune Palms Rd/Fred Waring Dr
- Jefferson St/Ave 48
- Jefferson St/Highway 111
- Jefferson St/Westward Ho Dr
- Jefferson St/ Pebble Beach Dr
- Jefferson St/Miles Ave
- 111/Mountain Cove Dr
- Jefferson St/Fred Waring Dr
- Fred Waring Dr/Warner Trail
- Fred Waring Dr/Palm Royale Dr
- Miles Ave/Warner Trail

Future Year Roadway Segments

- Washington Street:
  - ✓ Avenue 48 to Avenue 47
  - ✓ Avenue 47 to Highway 111
  - ✓ Highway 111 to Miles Avenue
  - ✓ Miles Avenue to Fred Waring Drive
  - ✓ Fred Waring Drive to Palm Royale (Darby Rd)
  - ✓ Palm Royale Drive (Darby Rd) to Avenue of the States
  - ✓ Avenue of the States to 42nd Avenue
  - ✓ 42nd Avenue to Harris Lane
  - ✓ Harris Lane to Country Club Drive
  - ✓ Country Club Drive to I-10 EB Ramps
  - ✓ I-10 EB Ramps to Varner Road
  - ✓ North of Varner Road
- Highway 111:
  - ✓ Jefferson Street to Dune Palms Road
  - ✓ Dune Palms Road to Adams Street
  - ✓ Adams Street to Washington Street
  - ✓ Washington Street to Channel Drive
  - ✓ Channel Drive to Mountain Cove Drive
  - ✓ Mountain Cove Drive to Miles Avenue
- 42nd Avenue:
  - ✓ East of Washington Street
  - ✓ West of Washington Street

- 41st Avenue:
  - ✓ East of Washington Street
- Adams Street:
  - ✓ Avenue 48 to Highway111
  - ✓ Highway 111 to Westward Ho Drive
  - ✓ Westward Ho Drive to Miles Avenue
  - ✓ Miles Avenue to Fred Waring Drive
- Avenue 48:
  - ✓ Jefferson Street to Dune Palms
  - ✓ Dune Palms to Adams Street
  - ✓ Adams Street to Washington Street
- Country Club Drive:
  - ✓ East of Washington Street
  - ✓ West of Washington Street
- Dune Palms Road:
  - ✓ Avenue 48 to Highway 111
  - ✓ Highway 111 to Miles Avenue
  - ✓ Miles Avenue to Fred Waring Drive
- Fred Waring Drive:
  - ✓ Jefferson Street to Dune Palms Road
  - ✓ Dune Palms Road to Adams Street
  - ✓ Adams Street to Palm Royale Drive
  - ✓ Palm Royale Drive to Washington Street
  - ✓ Washington Street to Warner Trail
- Jefferson Street:
  - ✓ Avenue 48 to Highway 111
  - ✓ Highway 111 to Westward Ho Drive
  - ✓ Westward Ho Drive to Miles Avenue
  - ✓ Miles Avenue to Fred Waring Drive
- Miles Avenue:
  - ✓ Jefferson Street to Dune Palms Road
  - ✓ Dune Palms Road to Adams Street
  - ✓ Adams Street to Washington Street
  - ✓ Washington Street to Warner Trail
  - ✓ Warner Trail to Highway 111
- Palm Royale Drive/Mountain View:
  - ✓ East of Washington Street
  - ✓ West of Washington Street
- Varner Road:
  - ✓ West of Washington Street
  - ✓ Washington Street to I-10 WB Ramps
  - ✓ East of I-10 WB Ramps
- Warner Trail:
  - ✓ Miles Avenue to Fred Waring Drive
- Westward Ho Drive:
  - ✓ Jefferson Street to Adams Street

Future No Build (Year 2015 Without Improvements) Traffic Volumes

Future No Build (Year 2015 without improvement projects) intersection turning movement and segment counts were derived using the existing counts. Cumulative projects, specifically Mirasera Specific Plan, 2007, Garden of Champions/Towne Center, 2008 and Villa Capri, 2009 were added to existing counts and then a 2.5% per year increase from Year 2009 to Year 2015 was applied to account for expected growth, the eventual upturn in the existing down economy and to be consistent with historical growth trends for the Study Area. The future Year 2015 was agreed upon in consultation with the City Engineer as was the 2.5% per year increase from Year 2009 to Year 2015.

Future No Build (Year 2015 Without Improvements) Intersection and Segment Level of Service

When preparing the No Build (Year 2015 without improvement projects) conditions report, guidelines provided by affected agencies were followed. In analyzing street and intersection capacities, Highway Capacity Manual (HCM) based Level of Service (LOS) methodologies were applied. Furthermore, minimum LOS standards adopted by affected jurisdictions were applied to quantitatively assess the street and highway system's performance.

Future No Build (Year 2015 Without Improvements) Intersection Level of Service Analysis

Intersection level of service analysis was conducted using the Synchro Signal Timing Program. Intersection turning movement counts as previously stated were derived from the existing counts. Roadway geometrics used to develop LOS calculations were obtained from field review findings and Information provided by affected agencies. Intersection LOS results are shown graphically in Figures 9a through 9d and displayed in Table 7.

Future No Build (Year 2015 Without Improvements) Intersection Capacity Analysis – Findings and Conclusions

All intersection LOS analyses were estimated using Synchro 6 Software. Various roadway geometrics, traffic volumes, and properties (signal timing, peak hour factors, etc) were input into the Synchro 6 Software program in order to accurately determine the travel delay and LOS.

Washington Street Corridor

Fourteen intersections along the Washington Street north/south corridor were analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. Of the fourteen intersections studied,

five intersections (see below) will operate at or below the LOS standard of D for the City of La Quinta. The intersections of Washington Street at Highway 111, 42nd Avenue, and Fred Waring Drive will operate at LOS E and exceed the City of La Quinta's LOS standard of D. Based on the 2000 HCM, LOS E describes operations at or near capacity. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor gaps for the minor street to cross and large queues. The intersections of Washington Street at Varner Avenue and 41st Avenue will operate at LOS F in the PM peak hour. Based on the 2000 HCM, LOS F describes operations that are at the failure point.

Intersections Operating at LOS D or better:

- Washington St/Ave 48
- Washington St/Ave 47
- Washington St/Miles Ave
- Washington St/Mountain View-Palm Royale Dr
- Washington St/Ave of the States
- Washington St/Country Club Dr
- Washington St/Harris Lane
- Washington St/I-10 EB Ramps

Intersections Operating at LOS E or worse:

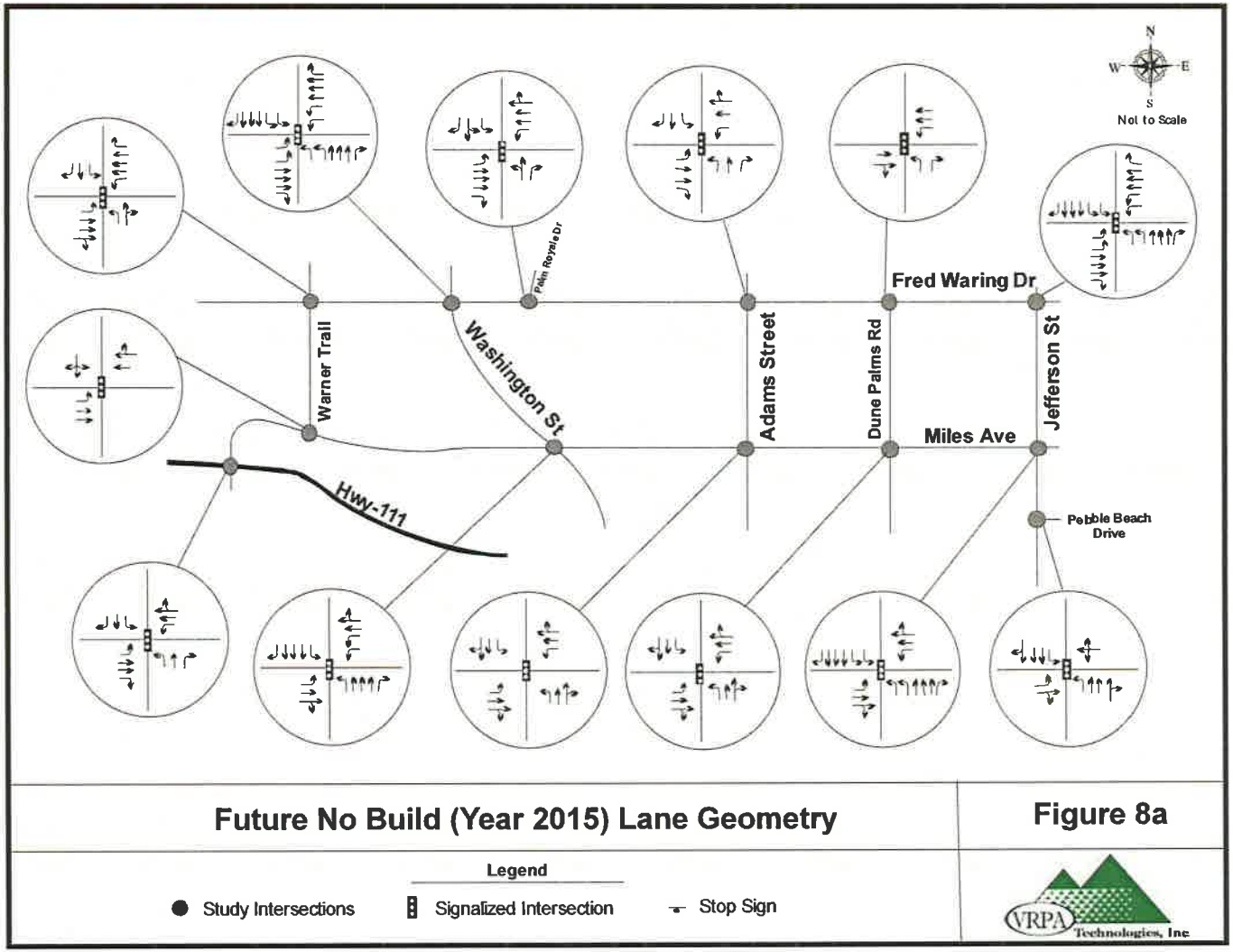
- Washington St/Highway 111
- Washington St/Fred Waring Drive
- Washington St/42nd Ave
- Washington St/41st Ave
- Washington St/ Varner Rd

Highway 111 Corridor

Eleven intersections along the Highway 111 east/west corridor were analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. Of the eleven intersections studied, one intersection (see below) will operate at or below the LOS standard of D for the City of La Quinta. The intersection of Highway 111 at Washington Street is operating at LOS E in the PM peak hour. Based on the 2000 HCM, LOS E describes operations at or near capacity. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor gaps for the minor street to cross and large queues.

Intersections Operating at LOS D or better:

- Highway 111/Mountain Cove Rd
- Highway 111/Channel Dr
- Highway 111/Simon Dr



Future No Build (Year 2015) Lane Geometry

Figure 8a

Legend

● Study Intersections ▮ Signalized Intersection — Stop Sign

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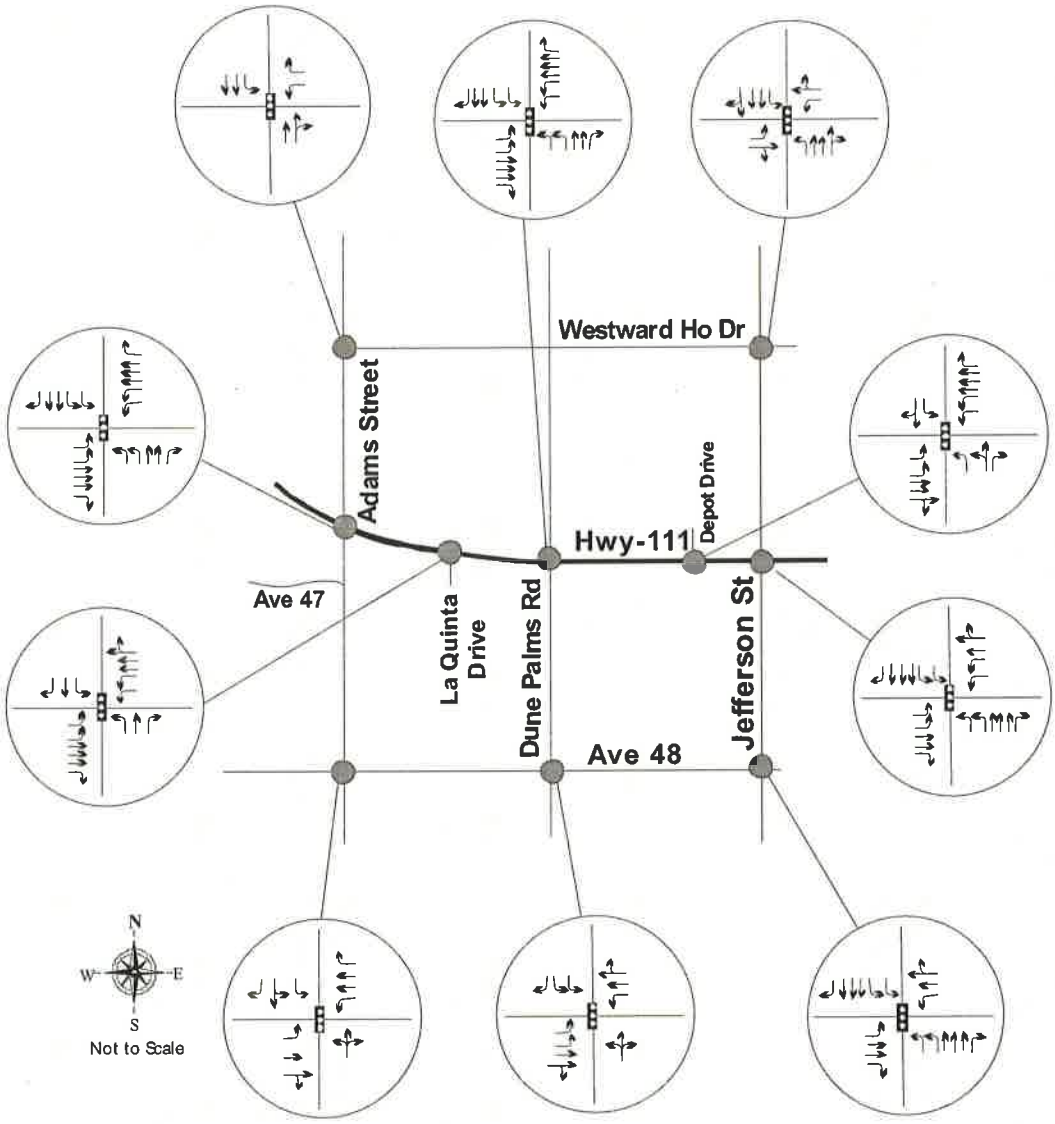

Future No Build (Year 2015) Lane Geometry | **Figure 8b**

Legend

Stop Sign

Study Intersections Signalized Intersection

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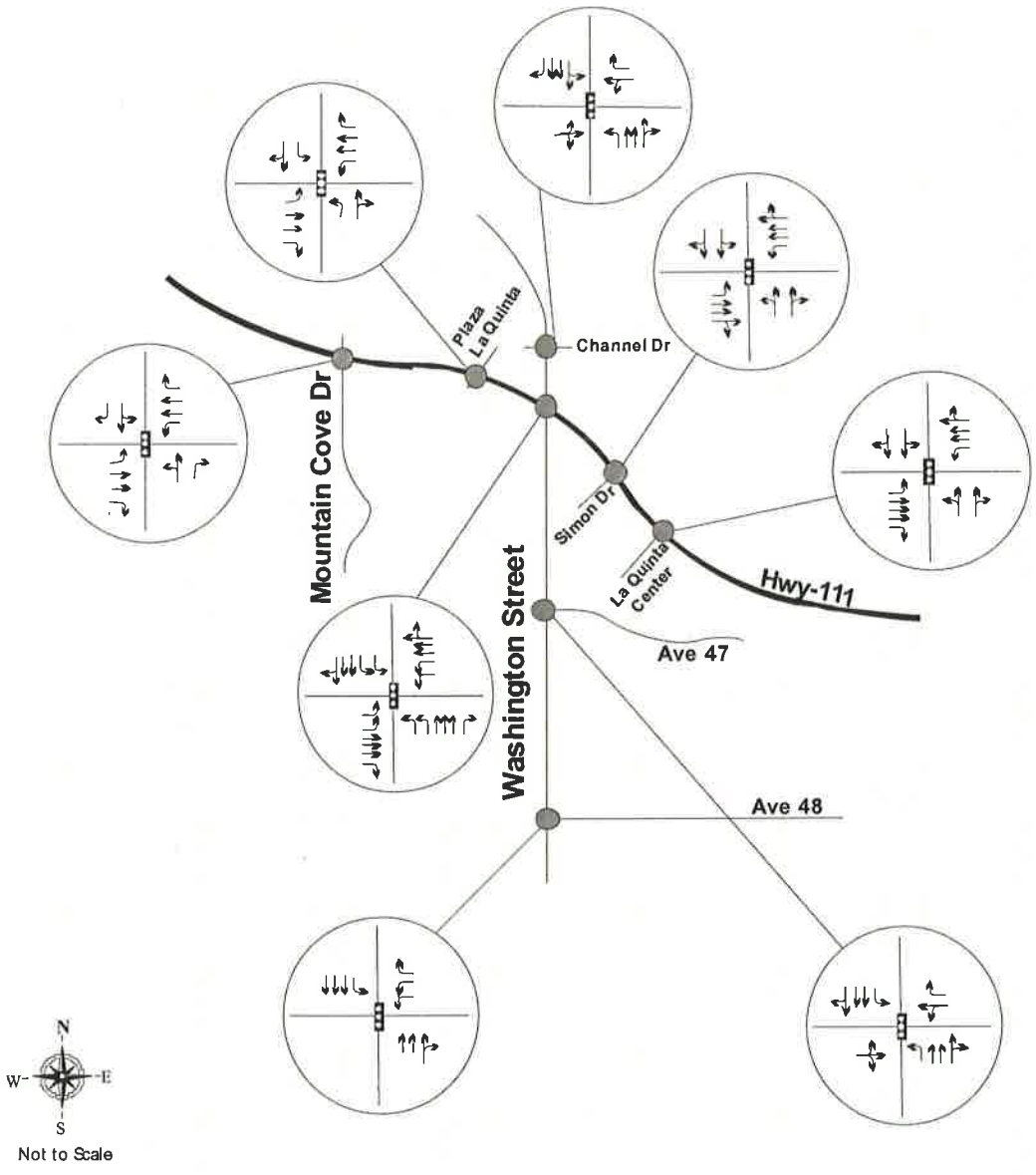

Future No Build (Year 2015) Lane Geometry | **Figure 8c**

Legend

Stop Sign

Study Intersections Signalized Intersection

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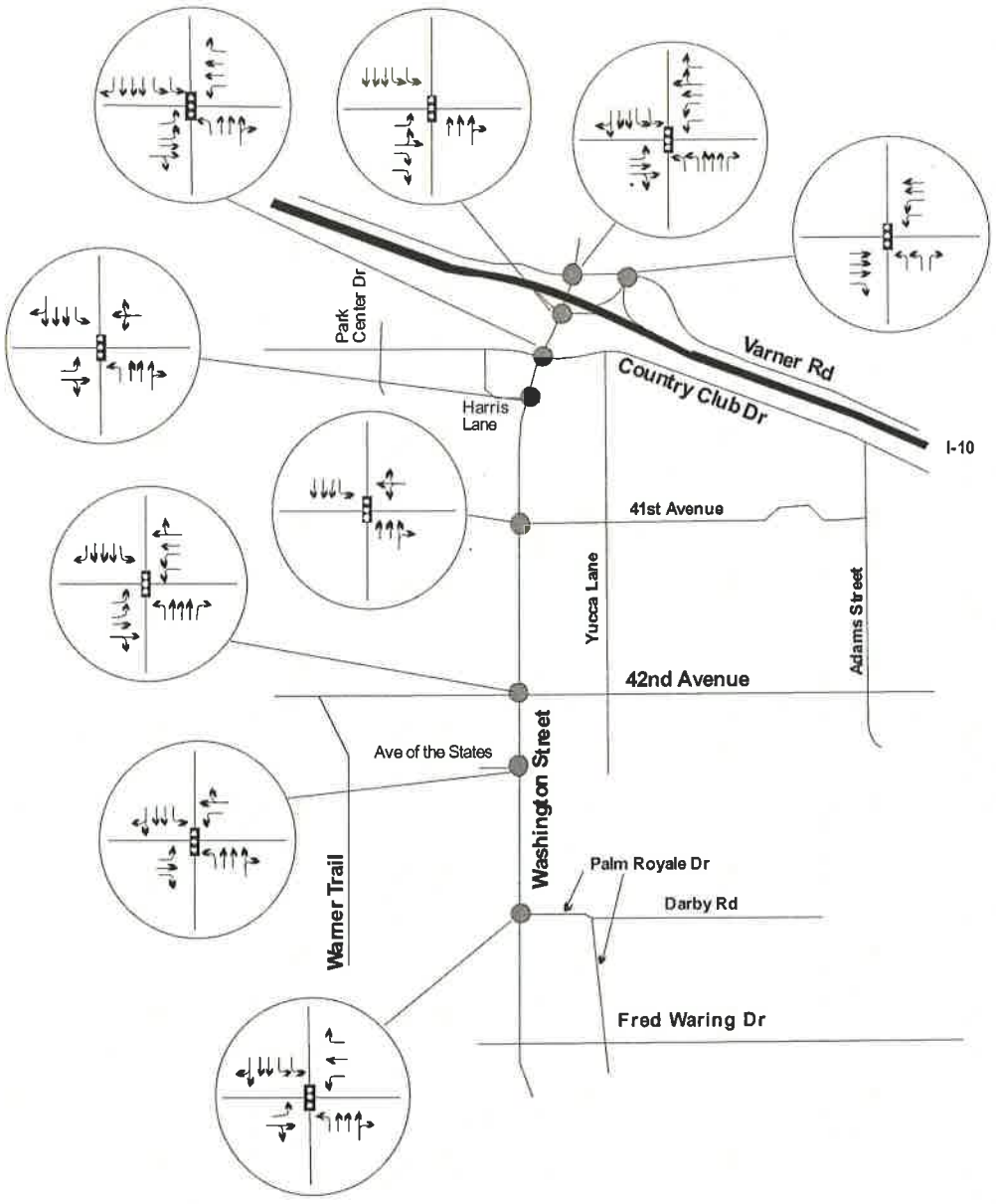

Future No Build (Year 2015) Lane Geometry

Figure 8d

Legend

● Study Intersections ▯ Signalized Intersection

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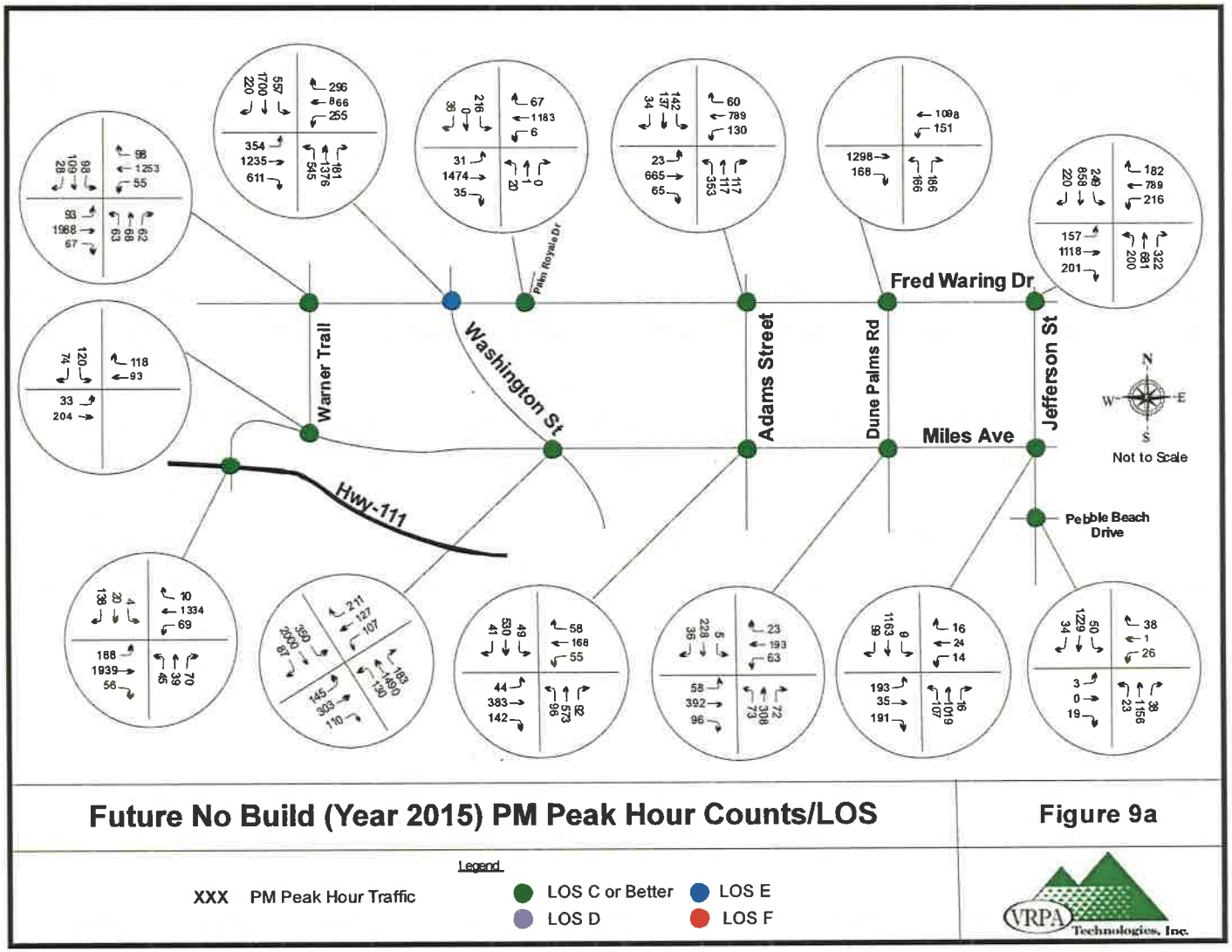


Future No Build (Year 2015) PM Peak Hour Counts/LOS

Figure 9a

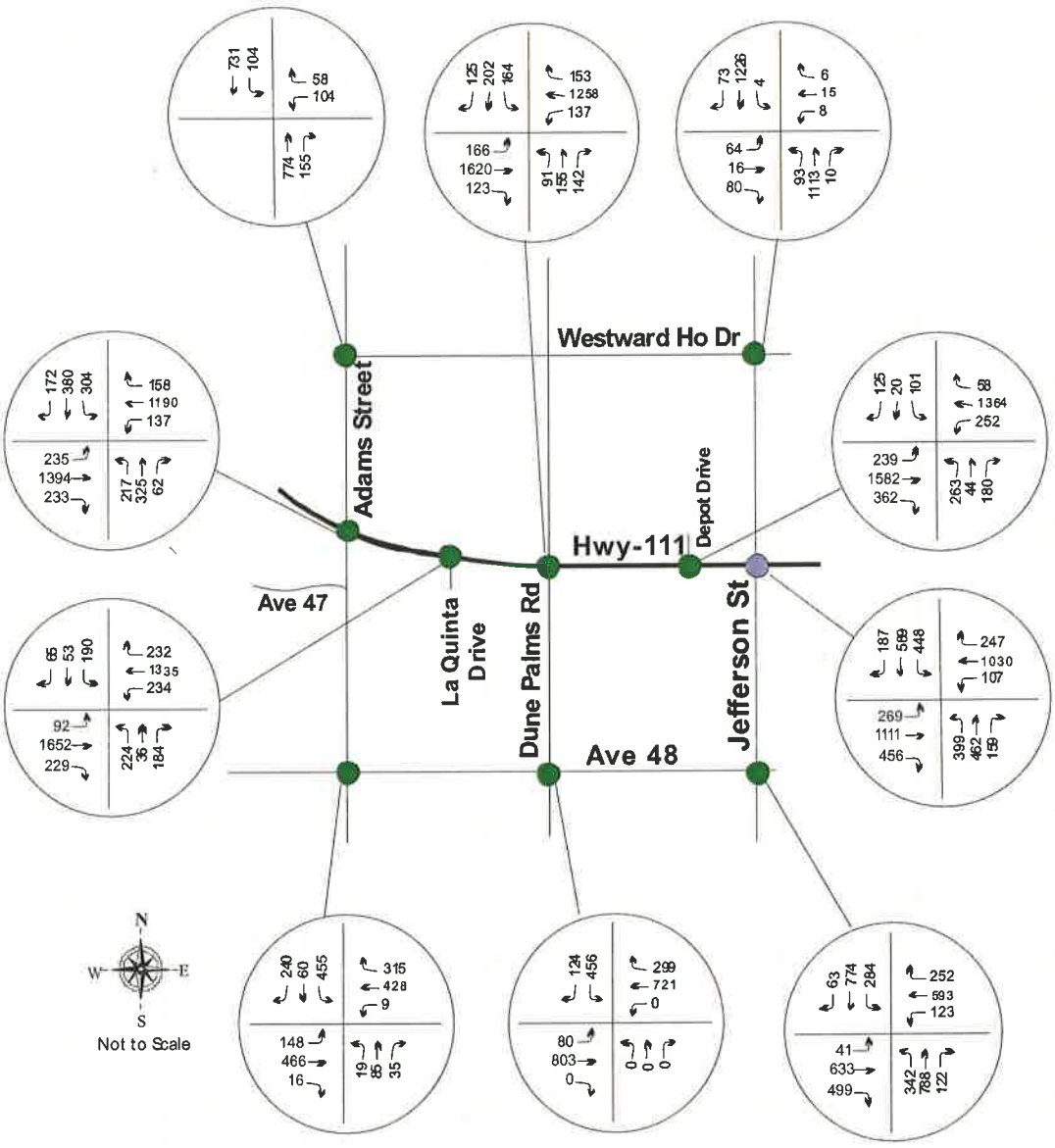
Legend

XXX PM Peak Hour Traffic

LOS C or Better
LOS D
LOS E
LOS F

VRPA Technologies, Inc.

VRPA Technologies, Inc.



Future No Build (Year 2015) PM Peak Hour Counts/LOS

Figure 9b

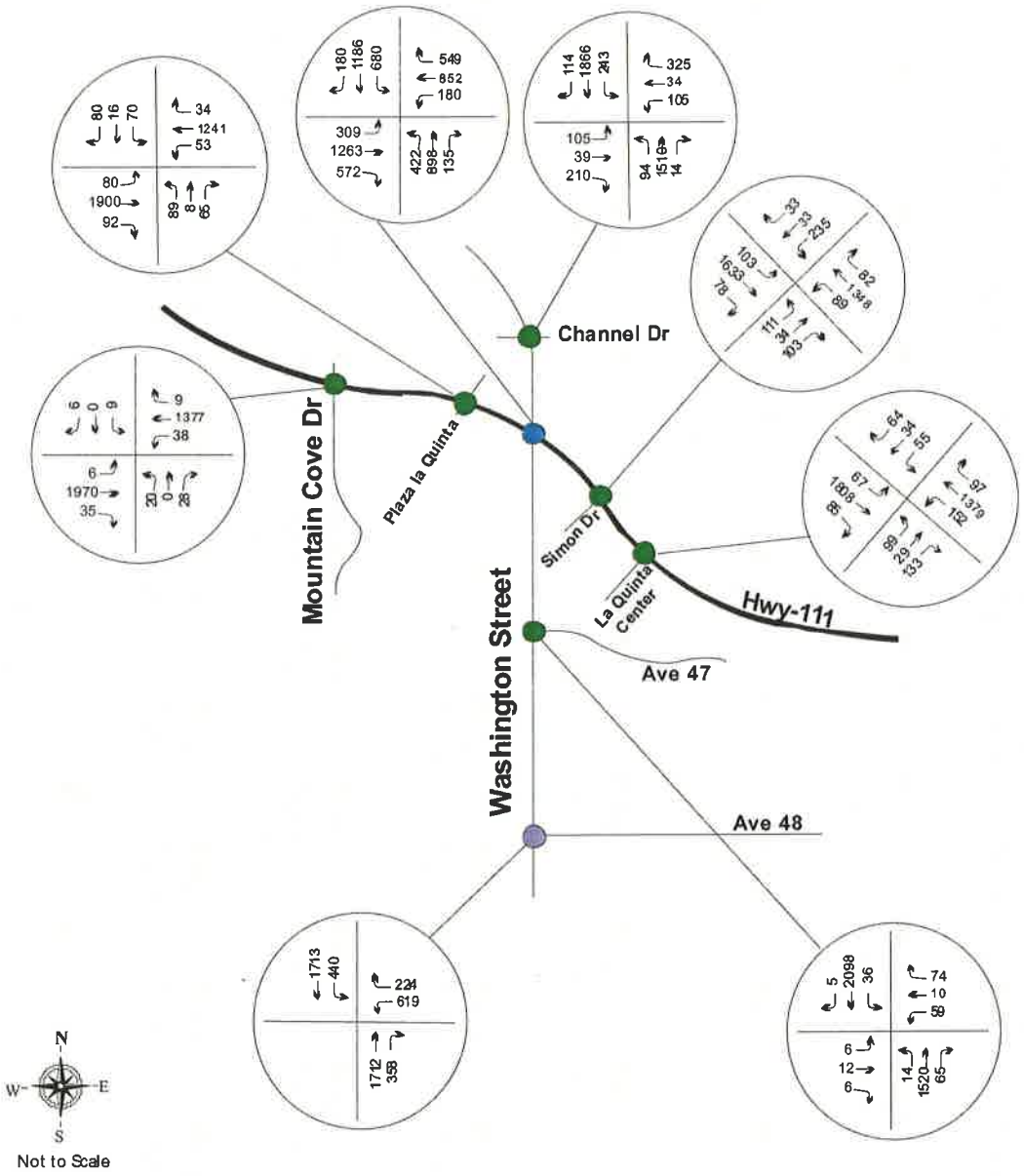
Legend

XXX PM Peak Hour Traffic

LOS C or Better
LOS D
LOS E
LOS F

VRPA Technologies, Inc.

VRPA Technologies, Inc.



Future No Build (Year 2015) PM Peak Hour Counts/LOS

Figure 9c

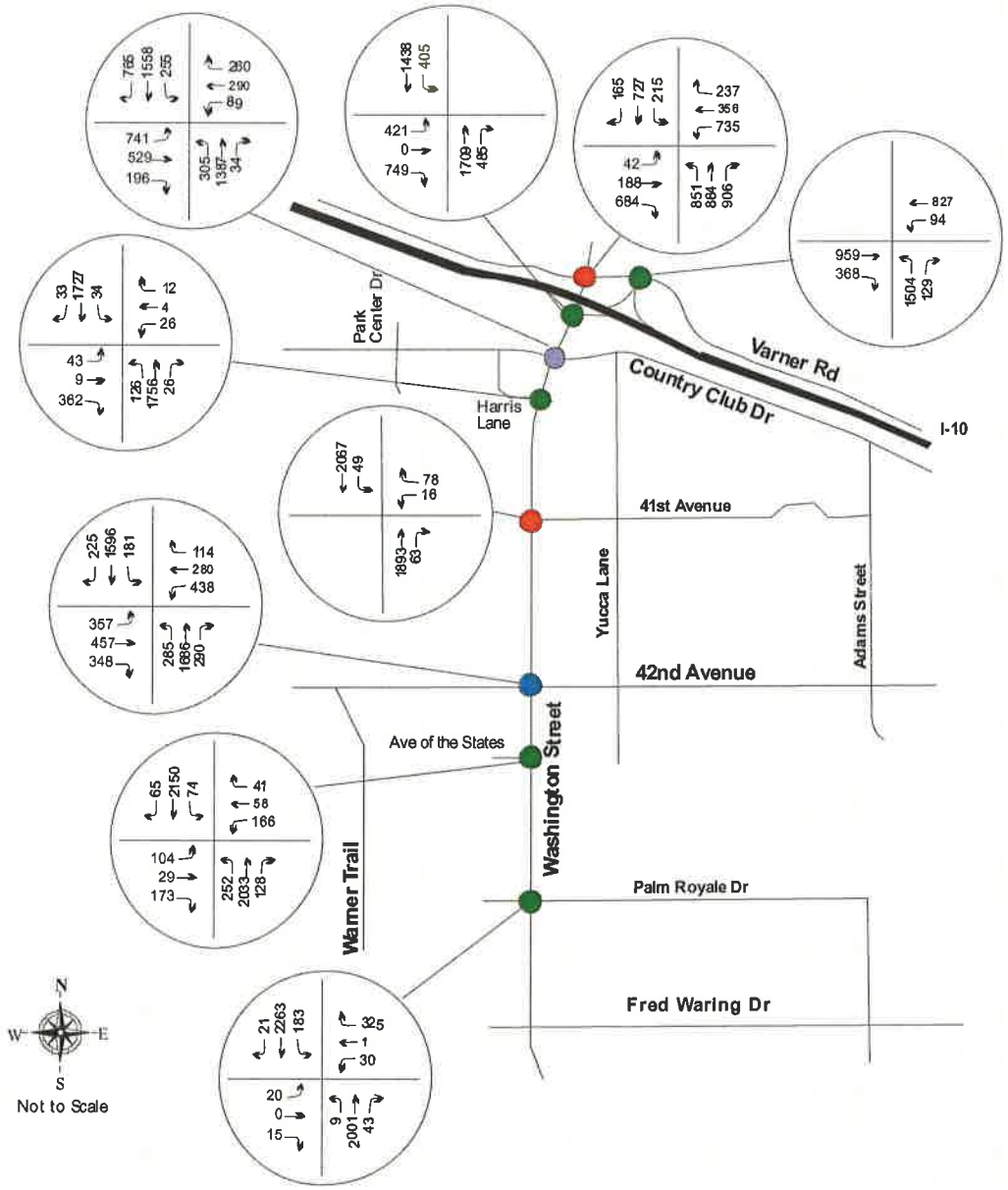
Legend

XXX PM Peak Hour Traffic

LOS C or Better
LOS D
LOS E
LOS F

VRPA Technologies, Inc.

VRPA Technologies, Inc.



Future No Build (Year 2015) PM Peak Hour Counts/LOS

Figure 9d

Legend

XXX PM Peak Hour Traffic

LOS C or Better
LOS D
LOS E
LOS F

VRPA Technologies, Inc

VRPA Technologies, Inc.

TABLE 7
Washington Street/Highway 111 TSM/TDM Corridor Study
No Build Intersection LOS

INTERSECTION	PEAK HOUR	NO BUILD	
		DELAY	LOS
1. Washington Street / Hwy-111 (1)	PM	55.6	E
2. Washington Street / Avenue 48 (1)	PM	44.6	D
3. Washington Street / Avenue 47 (1)	PM	15.0	B
4. Washington Street / Miles Avenue (1)	PM	31.0	C
5. Washington Street / Fred Waring Drive (1)	PM	56.6	E
6. Washington Street / Palm Royale Drive (1)	PM	16.7	B
7. Washington Street / Avenue of the States (1)	PM	23.1	C
8. Washington Street / 42nd Avenue (1)	PM	63.0	E
9. Washington Street / 41st Avenue (2)	PM	N/A	F
10. Washington Street / Harris Lane (1)	PM	15.1	B
11. Washington Street / Country Club Drive (1)	PM	45.5	D
12. Washington Street / I-10 EB Ramps (1)	PM	28.5	C
13. Varner Road / I-10 WB Ramps (1)	PM	27.7	C
14. Hwy-111 / Miles Avenue (1)	PM	13.9	B
15. Hwy-111 / Mountain Cove (1)	PM	15.7	B
16. Hwy-111 / Plaza La Quinta (1)	PM	14.6	B
17. Hwy-111 / Simon Drive (1)	PM	13.6	B
18. Hwy-111 / La Quinta Center (1)	PM	15.4	B
19. Hwy-111 / La Quinta Drive (1)	PM	31.1	C
20. Hwy-111 / Depot Drive (1)	PM	25.8	C
21. Adams Street / Avenue 48 (1)	PM	22.0	C
22. Adams Street / Hwy-111 (1)	PM	28.4	C
23. Adams Street / Westward Ho Drive (1)	PM	10.6	B
24. Adams Street / Miles Avenue (1)	PM	19.7	B
25. Adams Street / Fred Waring Drive (1)	PM	31.0	C
26. Dune Palms Road / Avenue 48 (1)	PM	11.5	B
27. Dune Palms Road / Hwy-111 (1)	PM	25.4	C
28. Dune Palms Road / Miles Avenue (1)	PM	19.0	B
29. Dune Palms Road / Fred Waring Drive (1)	PM	21.0	C
30. Jefferson Street / Avenue 48 (1)	PM	29.4	C
31. Jefferson Street / Hwy-111 (1)	PM	42.3	D
32. Jefferson Street / Westward Ho Drive (1)	PM	4.8	A
33. Jefferson Street / Pebble Beach Drive (1)	PM	5.1	A
34. Jefferson Street / Miles Avenue (1)	PM	32.3	C
35. Jefferson Street / Fred Waring Drive (1)	PM	26.4	C
36. Fred Waring Drive / Warner Trail (1)	PM	32.9	C
37. Fred Waring Drive / Palm Royale Drive (1)	PM	15.4	B
38. Varner Road / Washington Street (1)	PM	>80.0	F
39. Miles Avenue / Warner Trail (1)	PM	9.0	A
40. Channel Drive / Washington Street (1)	PM	23.2	C

DELAY is measured in seconds

LOS = Level of Service

N/A = LOS for One and Two-way stop controlled Intersection is shown for worst turning movement.

(1) Signalized Intersection. Delay results show the average delay for the entire intersection.

(2) One-way Stop Controlled Intersection. Delay results not applicable. The LOS is shown for the worst movement.

Source: VRPA conducted LOS analysis using Synchro 6.0

- Highway 111/La Quinta Center
- Highway 111/La Quinta Dr
- Highway 111/Depot Dr
- Highway 111/Adams St
- Highway 111/ Dune Palms Rd
- Highway 111/Jefferson St
- Highway 111/Miles Dr

Intersections Operating at LOS E or worse:

- Highway 111/ Washington St

Fred Waring Drive Corridor

Six intersections along the Fred Waring Drive east/west corridor were analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. Five intersections studied (see below) will operate at LOS D or better for the City of La Quinta. Based on the 2000 HCM, LOS D describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable. The intersection of Fred Waring Drive at Washington Street is operating at LOS E in the PM peak hour. Based on the 2000 HCM, LOS E describes operations at or near capacity. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor gaps for the minor street to cross and large queues.

Intersections Operating at LOS D or better:

- Fred Waring Dr/Adams St
- Fred Waring Dr/Dune Palms Rd
- Fred Waring Dr/Jefferson St
- Fred Waring Dr/Warner Trail
- Fred Waring Dr/Palm Royale Dr

Intersections Operating at LOS E or worse:

- Fred Waring Dr/Washington St

Jefferson Street Corridor

Six intersections along the Jefferson Street north/south corridor were analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. All six intersections studied (see below) will operate at LOS D or better for the City of La Quinta. Based on the 2000 HCM, LOS D describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable.

Intersections Operating at LOS D or better:

- Jefferson St/Ave 48
- Jefferson St/Highway 111

- Jefferson St/Westward Ho Dr
- Jefferson St/Pebble Beach Dr
- Jefferson St/Miles Ave
- Jefferson St/Fred Waring Dr

Adams Street Corridor

Five intersections along the Adams Street north/south corridor were analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. All five intersections studied (see below) will operate at LOS D or better for the City of La Quinta. Based on the 2000 HCM, LOS D describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable.

Intersections Operating at LOS D or better:

- Adams St/Ave 48
- Adams St/Highway 111
- Adams St/Westward Ho Dr
- Adams St/Miles Ave
- Adams St/Fred Waring Dr

Miles Avenue Corridor

Six intersections along the Miles Avenue east/west corridor were analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. All six intersections studied (see below) will operate at LOS D or better for the City of La Quinta. Based on the 2000 HCM, LOS D describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable.

Intersections Operating at LOS D or better:

- Miles Ave/Washington St
- Miles Ave/Adams St
- Miles Ave/Dune Palms Rd
- Miles Ave/Jefferson St
- Miles Ave/Warner Trail
- Miles Ave/Highway 111

Dune Palms Road Corridor

Four intersections along the Dune Palms Road north/south corridor were analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. All four intersections studied (see below) will operate at LOS D or better for the City of La Quinta. Based on the 2000 HCM, LOS D describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable.

Intersections Operating at LOS D or better:

- Dune Palms Rd/Ave 48
- Dune Palms Rd/Highway 111
- Dune Palms Rd/Miles Ave
- Dune Palms Rd/Fred Waring Dr

Avenue 48 Corridor

Four intersections along the Avenue 48 east/west corridor were analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. All four intersections studied (see below) will operate at LOS D or better for the City of La Quinta. Based on the 2000 HCM, LOS D describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable.

Intersections Operating at LOS D or better:

- Ave 48/Washington St
- Ave 48/Adams St
- Ave 48/Dune Palms Rd
- Ave 48/Jefferson St

Westward Ho Drive Corridor

Two intersections along the Westward Ho Drive east/west corridor were analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. Both intersections studied (see below) will operate at LOS D or better for the City of La Quinta. Based on the 2000 HCM, LOS D describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable.

Intersections Operating at LOS D or better:

- Westward Ho Dr/Adams St
- Westward Ho Dr/Jefferson St

Varner Road Corridor

Two intersections along the Varner Road east/west corridor were analyzed in order to identify the average delay experienced by vehicles during the PM peak hour. One intersection studied (see below) will operate at LOS D or better for the City of La Quinta. Based on the 2000 HCM, LOS D describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable. The intersection of Washington Street at Varner Avenue will operate at LOS F in the PM peak hour. Based on the 2000 HCM, LOS F describes operations that are at the failure point.

Intersections Operating at LOS D or better:

- Varner Ave/I-10 WB ramps

Intersections Operating at LOS E or worse:

- Varner Ave/Washington St

Future No Build (Year 2015 Without Improvements) Scenario Segment Level of Service Analysis

Segment LOS is important in order to understand whether the capacity of a roadway can accommodate future traffic volumes. Table 9 provides a definition of segment LOS. The performance criteria used for evaluating volumes and capacities on the road and highway system for this Study were estimated using the County of Riverside Roadway Capacity Table. The table considers the capacity of individual road and highway segments based on roadway variables (design speed, passing opportunities, signalized intersections per mile, number of lanes, saturation flow, etc.). The capacity table is provided in Appendix E and existing segment LOS results are displayed in Figures 6 and 7 and Table 6.

Future No Build (Year 2015 Without Improvements) Scenario Segment Level of Service Findings

Under No Build conditions most of the segments in the Study Area will operate at acceptable Levels of Service. The following segments will operate at LOS E or F:

- **LOS E**
  - ✓ Highway 111 – Mountain Cove Dr to Plaza La Quinta
  - ✓ Washington Street
  - ✓ Avenue 47 to Avenue 48
  - ✓ Miles Avenue to Fred Waring Drive
- **LOS F**
  - ✓ Highway 111 – West of Miles to Mountain Cove Dr
  - ✓ Washington Street
  - ✓ Varner Road to Country Club Drive

TABLE 8
Washington/Hwy 111 Commercial Corridors
No Build Segment Capacity Analysis

Roadway	Segment	Number of Lanes	Roadway Classification	LOS[1]	ADT
41st Ave	East of Washington St	2	Arterial	C	1200*
42nd Ave	West of Washington St	4	Urban Arterial	C	18600*
42nd Ave	East of Washington St	4	Urban Arterial	C	19500*
Adams St	Fred Waring Dr to Miles Ave	4	Urban Arterial	C	12900*
Adams St	Miles Ave to Westward Ho Dr	4	Urban Arterial	C	13300*
Adams St	Westward Ho Dr to Highway 111	4	Urban Arterial	C	15900
Adams St	Highway 111 to Ave 48	4	Urban Arterial	C	13300
Ave 48	Washington St to Adams St	4	Arterial	C	15200
Ave 48	Adams St to Dune Palms Rd	4	Arterial	C	15400*
Ave 48	Dune Palms Rd to Jefferson St	4	Arterial	C	20300
Ave of the States	West of Washington St	2	Arterial	C	7800*
Highway 111	West of Miles Ave	4	Urban Arterial	F	36700*
Highway 111	Miles Ave to Mountain Cove Dr	4	Urban Arterial	F	36700
Highway 111	Mountain Cove Dr to Plaza La Quinta	4	Urban Arterial	E	34800*
Highway 111	Plaza La Quinta to Washington St	6	Urban Arterial	C	35300
Highway 111	Washington St to Adams St	6	Urban Arterial	C	38900
Highway 111	Adams St to Dune Palms Rd	6	Urban Arterial	C	37100
Highway 111	Dune Palms Rd to Jefferson St	6	Urban Arterial	D	43500
Country Club Drive	Park Center Dr to Washington St	4	Urban Arterial	C	26200
Country Club Drive	Washington St to Adams St	4	Urban Arterial	C	18200
Dune Palms Rd	Fred Waring Dr to Miles Ave	4	Urban Arterial	C	5900*
Dune Palms Rd	Miles Ave to Westward Ho Dr	4	Urban Arterial	C	8400*
Dune Palms Rd	Westward Ho Dr to Highway 111	4	Urban Arterial	C	10600
Dune Palms Rd	Highway 111 to Ave 48	4	Urban Arterial	C	8900
Fred Waring Dr	West of Warner Trail	6	Urban Arterial	C	27900
Fred Waring Dr	Warner Trail to Washington St	6	Urban Arterial	C	34100
Fred Waring Dr	Washington St to Palm Royale Dr	6	Urban Arterial	C	30900
Fred Waring Dr	Palm Royale Dr to Adams St	5	Urban Arterial	C	26800*
Fred Waring Dr	Adams St to Dune Palms Rd	4	Urban Arterial	C	25200
Fred Waring Dr	Dune Palms Rd to Jefferson St	6	Urban Arterial	C	25200
Harris Lane	Country Club Dr to Washington St	2	Arterial	C	5500*
Jefferson St	Fred Waring Dr to Miles Ave	6	Urban Arterial	C	25900
Jefferson St	Miles Ave to Westward Ho Dr	6	Urban Arterial	C	26800
Jefferson St	Westward Ho Dr to Highway 111	6	Urban Arterial	C	30200
Jefferson St	Highway 111 to Ave 48	6	Urban Arterial	D	33400
Miles Ave	Highway 111 to Warner Trail	2	Arterial	C	6100
Miles Ave	Warner Trail to Washington St	4	Urban Arterial	C	8800
Miles Ave	Washington St to Adams St	4	Urban Arterial	C	12700
Miles Ave	Adams St to Dune Palms Rd	4	Urban Arterial	C	8000*
Miles Ave	Dune Palms Rd to Jefferson St	4	Urban Arterial	C	7400*
Mountain Cove Dr	South of Highway 111	2	Arterial	C	1200*
Mountain View	West of Washington St	2	Arterial	C	700*
Palm Royale Dr	East of Washington St	2	Arterial	C	8700*
Varner Rd	West of Washington St	4	Arterial	C	22100
Varner Rd	Washington St to I-10 WB Ramp	4	Arterial	D	31100
Varner Rd	East of I-10 WB Ramp	4	Arterial	D	20200
Warner Trail	Fred Waring Dr to Miles Ave	2	Arterial	C	3500*
Washington St	North of Varner Rd	6	Urban Arterial	C	23700
Washington St	Varner Rd to I-10 EB Ramps	6	Urban Arterial	F	69500
Washington St	I-10 EB Ramps to Country Club Dr	6	Urban Arterial	F	56600
Washington St	Country Club Dr to 41st Avenue	6	Urban Arterial	C	37500
Washington St	41st Ave to 42nd Ave	6	Urban Arterial	C	40000
Washington St	42nd Ave to Ave of the States	6	Urban Arterial	C	42900
Washington St	Ave of the States to Palm Royale Dr	6	Urban Arterial	D	43600*
Washington St	Palm Royale Dr to Fred Waring Dr	6	Urban Arterial	D	45400
Washington St	Fred Waring Dr to Miles Ave	6	Urban Arterial	E	48800
Washington St	Miles Ave to Highway 111	6	Urban Arterial	C	40600
Washington St	Highway 111 to Ave 47	6	Urban Arterial	E	49000
Washington St	Ave 47 to Ave 48	6	Urban Arterial	C	39600*
Westward Ho Dr	Adams St to Jefferson St	2	Arterial	C	4200*

* Average Daily Traffic was estimated using peak hour counts
1. C indicates LOS C or better.

* Average Daily Traffic was estimated using peak hour counts.

Future No Build (Year 2015) ADT
Washington Corridor Study Area
Ave 48 to Fred Waring Drive

Figure 10

Legend:

XX,XXX Average Daily Traffic
LOS C or Better
LOS D
LOS E
LOS F
(6) Number of Lanes

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* Average Daily Traffic was estimated using peak hour counts.

Future No Build (Year 2015) ADT
Along Washington Corridor
Fred Waring to I-10 WB Ramps

Figure 11

Legend:

XX,XXX Average Daily Traffic
LOS C or Better
LOS D
LOS E
LOS F

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Future Build (Year 2015 With Improvements) TSM Alternatives

Alternative 1 – TSM Future Build Conditions (Year 2015 With Improvements) - add NB left turn lane and WB right turn lane at Washington Street and Highway 111, Signalize Washington Street at 41st Avenue

With the addition of a northbound left turn lane and westbound right turn lane at Washington Street and Highway 111 and a signal at Washington Street and 41st Avenue (see Figures 12 & 13 below) these intersections would meet the LOS standard of D as documented in Table 9.

Figure 12
Washington Street/Highway 111
Northbound Left and Westbound Right Lanes Added

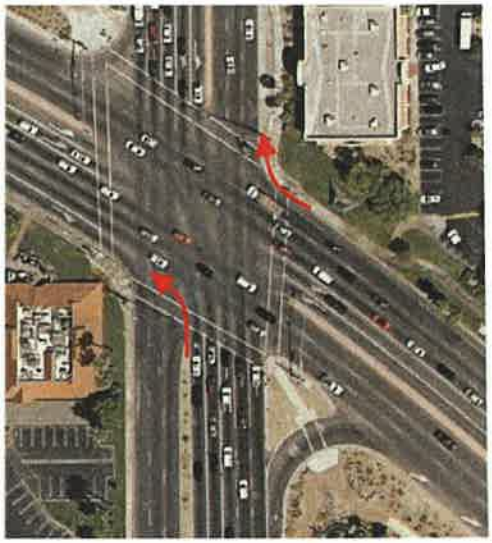

Figure 13
Washington Street/41st Avenue
Install Signal

TABLE 9
Washington Street/Highway 111 TSM/TDM Corridor Study
Alternative 1 – Future Year (2015) Build Intersection LOS

INTERSECTION	PEAK HOUR	BUILD	
		DELAY	LOS
1. Washington Street / Hwy-111 (1)	PM	**49.4**	**D**
2. Washington Street / Avenue 48 (1)	PM	44.6	D
3. Washington Street / Avenue 47 (1)	PM	15.0	B
4. Washington Street / Miles Avenue (1)	PM	31.9	C
5. Washington Street / Fred Waring Drive (1)	PM	56.7	E
6. Washington Street / Palm Royale Drive (1)	PM	16.7	B
7. Washington Street / Avenue of the States (1)	PM	22.5	C
8. Washington Street / 42nd Avenue (1)	PM	69.5	E
9. Washington Street / 41st Avenue (1)	PM	**7.6**	**A**
10. Washington Street / Harris Lane (1)	PM	22.5	C
11. Washington Street / Country Club Drive (1)	PM	45.4	D
12. Washington Street / I-10 EB Ramps (1)	PM	28.4	C
13. Varner Road / I-10 WB Ramps (1)	PM	27.7	C
14. Hwy-111 / Miles Avenue (1)	PM	13.9	B
15. Hwy-111 / Mountain Cove (1)	PM	15.4	B
16. Hwy-111 / Plaza La Quinta (1)	PM	16.1	B
17. Hwy-111 / Simon Drive (1)	PM	14.0	B
18. Hwy-111 / La Quinta Center (1)	PM	15.7	B
19. Hwy-111 / La Quinta Drive (1)	PM	30.3	C
20. Hwy-111 / Depot Drive (1)	PM	25.8	C
21. Adams Street / Avenue 48 (1)	PM	22.0	C
22. Adams Street / Hwy-111 (1)	PM	28.3	C
23. Adams Street / Westward Ho Drive (1)	PM	10.5	B
24. Adams Street / Miles Avenue (1)	PM	19.7	B
25. Adams Street / Fred Waring Drive (1)	PM	31.0	C
26. Dune Palms Road / Avenue 48 (1)	PM	11.5	B
27. Dune Palms Road / Hwy-111 (1)	PM	26.5	C
28. Dune Palms Road / Miles Avenue (1)	PM	19.0	B
29. Dune Palms Road / Fred Waring Drive (1)	PM	21.0	C
30. Jefferson Street / Avenue 48 (1)	PM	29.4	C
31. Jefferson Street / Hwy-111 (1)	PM	42.3	D
32. Jefferson Street / Westward Ho Drive (1)	PM	5.1	A
33. Jefferson Street / Pebble Beach Drive (1)	PM	5.0	A
34. Jefferson Street / Miles Avenue (1)	PM	32.3	C
35. Jefferson Street / Fred Waring Drive (1)	PM	26.4	C
36. Fred Waring Drive / Warner Trail (1)	PM	32.9	C
37. Fred Waring Drive / Palm Royale Drive (1)	PM	15.4	B
38. Varner Road / Washington Street (1)	PM	>80	F
39. Miles Avenue / Warner Trail (1)	PM	9.0	A
40. Channel Drive / Washington Street (1)	PM	24.2	C

DELAY is measured in seconds

LOS = Level of Service

(1) Signalized Intersection. Delay results show the average delay for the entire intersection.

Source: VRPA conducted LOS analysis using Synchro 6.0

Alternative 2 – Future Build Conditions (Year 2015 With Improvements) - Washington Street Traffic Rerouting

Traffic rerouting was analyzed for purposes of relieving congestion at intersections already at or near capacity. The following reroute was included in the Synchro analysis. The resulting intersection levels of service are illustrated in Figure 14 and displayed in Table 10.

- Washington Street/Highway 111 Southbound Lefts
  Reroute SB lefts at Washington Street/Highway 111 to Miles Avenue

Figure 14
Reroute Washington Street/Highway 111 SB Lefts

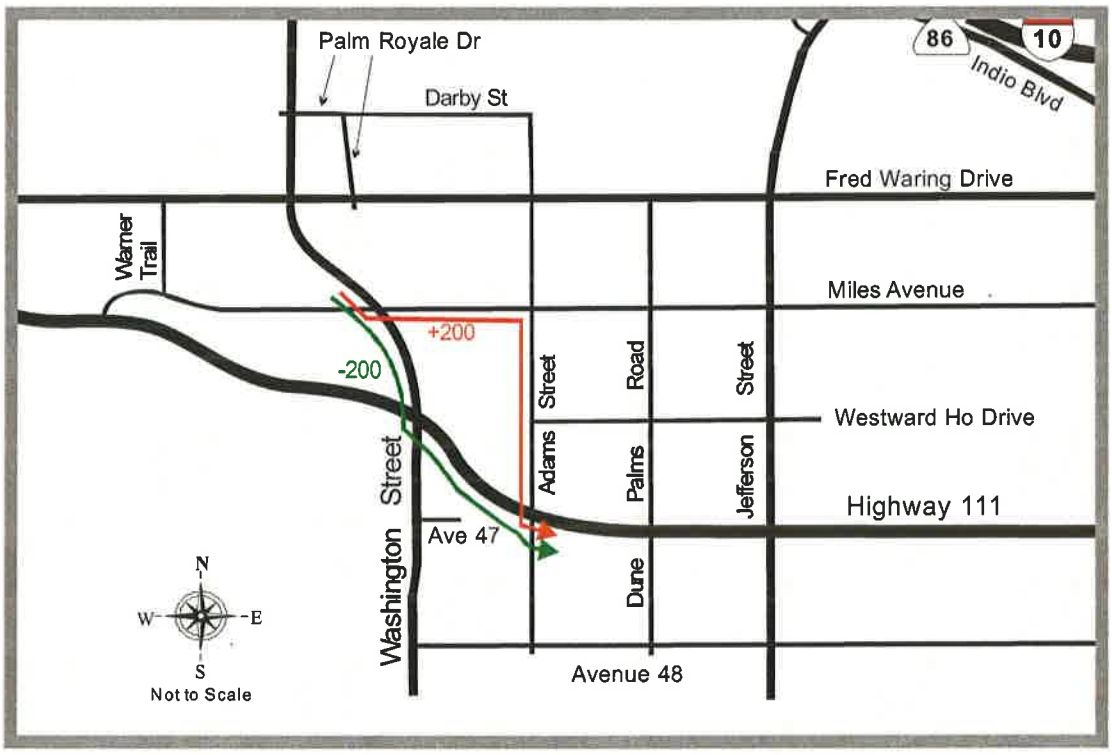

TABLE 10
Washington Street/Highway 111 TSM/TDM Corridor Study
Alternative 2 – Future Year (2015) Build Intersection LOS (Reroute Washington SB Lefts)

INTERSECTION	PEAK HOUR	NO BUILD	
		DELAY	LOS
1. Washington Street / Hwy-111 (1)	PM	54.0	D
2. Washington Street / Avenue 48 (1)	PM	44.6	D
3. Washington Street / Avenue 47 (1)	PM	15.0	B
4. Washington Street / Miles Avenue (1)	PM	41.3	D
5. Washington Street / Fred Waring Drive (1)	PM	55.4	E
6. Washington Street / Palm Royale Drive (1)	PM	16.6	B
7. Washington Street / Avenue of the States (1)	PM	22.8	C
8. Washington Street / 42nd Avenue (1)	PM	63.5	E
9. Washington Street / 41st Avenue (1)	PM	7.6	A
10. Washington Street / Harris Lane (1)	PM	15.5	B
11. Washington Street / Country Club Drive (1)	PM	45.1	D
12. Washington Street / I-10 EB Ramps (1)	PM	28.4	C
13. Varner Road / I-10 WB Ramps (1)	PM	27.7	C
14. Hwy-111 / Miles Avenue (1)	PM	13.9	B
15. Hwy-111 / Mountain Cove (1)	PM	15.3	B
16. Hwy-111 / Plaza La Quinta (1)	PM	14.7	B
17. Hwy-111 / Simon Drive (1)	PM	14.9	B
18. Hwy-111 / La Quinta Center (1)	PM	15.9	B
19. Hwy-111 / La Quinta Drive (1)	PM	29.9	C
20. Hwy-111 / Depot Drive (1)	PM	26.2	C
21. Adams Street / Avenue 48 (1)	PM	22.0	C
22. Adams Street / Hwy-111 (1)	PM	30.0	C
23. Adams Street / Westward Ho Drive (1)	PM	10.1	B
24. Adams Street / Miles Avenue (1)	PM	18.9	B
25. Adams Street / Fred Waring Drive (1)	PM	31.0	C
26. Dune Palms Road / Avenue 48 (1)	PM	11.5	B
27. Dune Palms Road / Hwy-111 (1)	PM	25.6	C
28. Dune Palms Road / Miles Avenue (1)	PM	19.0	B
29. Dune Palms Road / Fred Waring Drive (1)	PM	21.0	C
30. Jefferson Street / Avenue 48 (1)	PM	29.4	C
31. Jefferson Street / Hwy-111 (1)	PM	42.2	D
32. Jefferson Street / Westward Ho Drive (1)	PM	4.6	A
33. Jefferson Street / Pebble Beach Drive (1)	PM	5.3	A
34. Jefferson Street / Miles Avenue (1)	PM	32.3	C
35. Jefferson Street / Fred Waring Drive (1)	PM	26.4	C
36. Fred Waring Drive / Warner Trail (1)	PM	32.9	C
37. Fred Waring Drive / Palm Royale Drive (1)	PM	15.7	B
38. Varner Road / Washington Street (1)	PM	>80.0	F
39. Miles Avenue / Warner Trail (1)	PM	9.0	A
40. Channel Drive / Washington Street (1)	PM	25.8	C

DELAY is measured in seconds

LOS = Level of Service

(1) Signalized Intersection. Delay results show the average delay for the entire intersection.

Source: VRPA conducted LOS analysis using Synchro 6.0

Alternative 3 – Future Build Conditions (Year 2015 With Improvements) - Washington Street Traffic Rerouting

Traffic rerouting was analyzed for purposes of relieving congestion at intersections already at or near capacity. The following reroute was included in the Synchro analysis. The resulting intersection levels of service are illustrated in Figure 15 and displayed in Table 11.

- Washington Street Northbound Thrus
  Reroute NB thrus at Washington Street/Avenue 48 to Adams Street

Figure 15
Reroute Washington Street/Avenue 48 NB Thrus

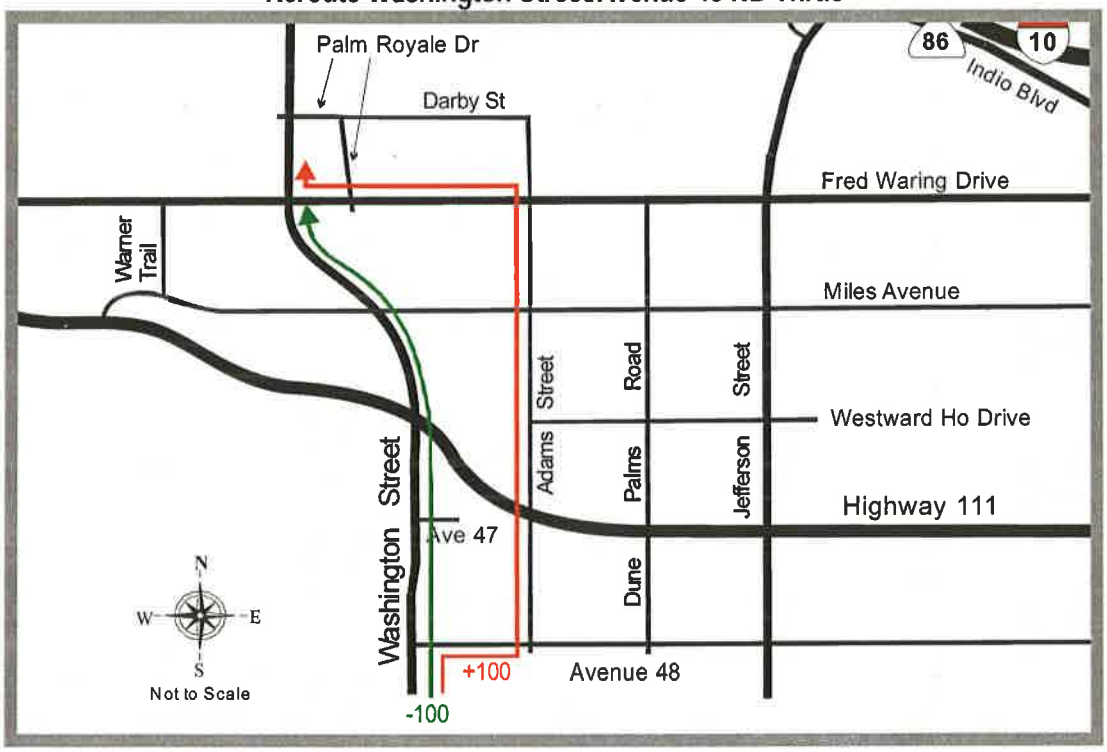

TABLE 11

Washington Street/Highway 111 TSM/TDM Corridor Study

Alternative 3 – Future Year (2015) Build Intersection LOS (Reroute Washington NB Thrus)

INTERSECTION	PEAK HOUR	NO BUILD	
		DELAY	LOS
1. Washington Street / Hwy-111 (1)	PM	54.9	D
2. Washington Street / Avenue 48 (1)	PM	44.5	D
3. Washington Street / Avenue 47 (1)	PM	15.2	B
4. Washington Street / Miles Avenue (1)	PM	30.8	C
5. Washington Street / Fred Waring Drive (1)	PM	56.6	E
6. Washington Street / Palm Royale Drive (1)	PM	17.6	B
7. Washington Street / Avenue of the States (1)	PM	23.2	C
8. Washington Street / 42nd Avenue (1)	PM	63.0	E
9. Washington Street / 41st Avenue (1)	PM	7.6	A
10. Washington Street / Harris Lane (1)	PM	15.1	B
11. Washington Street / Country Club Drive (1)	PM	45.5	D
12. Washington Street / I-10 EB Ramps (1)	PM	28.5	C
13. Varner Road / I-10 WB Ramps (1)	PM	27.7	C
14. Hwy-111 / Miles Avenue (1)	PM	13.9	B
15. Hwy-111 / Mountain Cove (1)	PM	15.7	B
16. Hwy-111 / Plaza La Quinta (1)	PM	14.7	B
17. Hwy-111 / Simon Drive (1)	PM	13.4	B
18. Hwy-111 / La Quinta Center (1)	PM	14.7	B
19. Hwy-111 / La Quinta Drive (1)	PM	30.1	C
20. Hwy-111 / Depot Drive (1)	PM	26.2	C
21. Adams Street / Avenue 48 (1)	PM	25.1	C
22. Adams Street / Hwy-111 (1)	PM	30.3	C
23. Adams Street / Westward Ho Drive (1)	PM	10.5	B
24. Adams Street / Miles Avenue (1)	PM	20.5	B
25. Adams Street / Fred Waring Drive (1)	PM	38.1	D
26. Dune Palms Road / Avenue 48 (1)	PM	11.5	B
27. Dune Palms Road / Hwy-111 (1)	PM	25.9	C
28. Dune Palms Road / Miles Avenue (1)	PM	19.0	B
29. Dune Palms Road / Fred Waring Drive (1)	PM	21.0	C
30. Jefferson Street / Avenue 48 (1)	PM	29.4	C
31. Jefferson Street / Hwy-111 (1)	PM	42.2	D
32. Jefferson Street / Westward Ho Drive (1)	PM	4.8	A
33. Jefferson Street / Pebble Beach Drive (1)	PM	5.3	A
34. Jefferson Street / Miles Avenue (1)	PM	32.3	C
35. Jefferson Street / Fred Waring Drive (1)	PM	26.4	C
36. Fred Waring Drive / Warner Trail (1)	PM	32.9	C
37. Fred Waring Drive / Palm Royale Drive (1)	PM	15.6	B
38. Varner Road / Washington Street (1)	PM	>80.0	F
39. Miles Avenue / Warner Trail (1)	PM	9.0	A
40. Channel Drive / Washington Street (1)	PM	22.4	C

DELAY is measured in seconds

LOS = Level of Service

(1) Signalized Intersection. Delay results show the average delay for the entire intersection.

Source: VRPA conducted LOS analysis using Synchro 6.0

Recommended TSM Alternative

Alternative 1 is the preferred Alternative. Implementation of Alternative 1 (adding a northbound left and westbound right turn lane at Washington Street/Highway 111) would achieve LOS D without requiring travelers to go out of their way to reach their destination. In addition, it is recommended that the recommended improvements along Washington and Highway 111 be implemented and that future improvements be considered in the year 2015 or when the Washington /Highway 111 intersection reaches an average peak hour delay of 70 seconds or higher.

Other Future Year 2015 Recommended Intersection Improvements

The following intersection improvements are recommendations for intersections other than Washington Street/Highway 111 and Washington Street/41st Avenue. Aerial locations are shown in Appendix F.

- Washington Street/Avenue 48 Southbound Dual Left
- Washington Street/42nd Avenue Southbound Dual Left
- Washington Street/Country Club Drive Add NB & EB Right Turn Lanes
- Washington Street/Via Sevilla Install Signal
- Washington Street/Woodhaven Country Club Install Signal

Close Median Breaks on Washington Street

Closure of the following median breaks is recommended. Aerial locations are shown in Appendix F.

- Washington Street at Emerald Crest
  Close median along Washington Street resulting in a right turn only at Emerald Crest
- Washington Street at Sunnybrook
  Close median along Washington Street resulting in a right turn only eastbound and westbound
- Washington Street at Whirling Wind
  Close median along Washington Street resulting in a right turn only at Whirling Wind
- Washington Street at Easthaven Road
  Close median along Washington Street resulting in a right turn only at Easthaven Road
- Washington Street at Tucson Circle
  Close median along Washington Street resulting in a right turn only at Tucson Circle
- Washington Street at Desert Breezes Resort
  Close median along Washington Street resulting in a right turn only at Desert Breezes Resort

Right Turn Deceleration Lanes on Washington Street

The installation of the following right turn deceleration lanes is recommended. Aerial locations are shown in Appendix F.

- Northbound at Ralph's Shopping Center South of 42nd Avenue

- Northbound at Shopping Center South of Country Club Drive
- Southbound at Shopping Center South of Country Club Drive
- Southbound at Albertson's Shopping Center South of 42nd Avenue

Other Improvements (Recommended)

- Improved Signal Coordination:
  - ✓ Washington Street/I-10 Interchange Area

- Implement Signal Coordination:
  - ✓ Jefferson Street, Westward Ho Drive to Country Club Drive
  - ✓ Adams Street, Avenue 48 to Fred Waring Drive
  - ✓ Dune Palms Road, Avenue 48 to Fred Waring Drive

- Remove Delineators, Install Median Island:
  - ✓ Washington Street/Hidden River Road

Other Improvements (Not Recommended at This Time, but to Consider in the Future)

The following are improvements that could be considered in the future, but are not recommended at this time. It is recommended that these improvements be reconsidered periodically in the future, as warranted by traffic conditions. Reconsideration would be recommended in the year 2015 or when the peak hour intersection of Washington Street/Highway 111 increases to a delay of 70 seconds or greater.

- Route Advisory Signing:
  - ✓ Static Guide Signs
  - ✓ Changeable Message Signs

- Adaptive Traffic Signal Timing:
  - ✓ Real-time adjustment of cycle lengths and phase times based on traffic detectors
  - ✓ SCOOT/SCAT Systems
  - ✓ Traffic Management Center

Project Costs and Funding Sources

Table 12 provides a list of project costs for each specific improvement included in the recommended alternative described above. According to the table, the total cost of all TSM improvements is $2.78 million in current dollars. Potential funding sources are also provided for each TSM improvement.

TABLE 12
Recommended TSM Improvements
Cost Estimates and Potential Funding Sources

IMPROVEMENT	ESTIMATED COST (2010 DOLLARS)	POTENTIAL FUNDING SOURCES
Washington St/Highway 111 Intersection Improvements	$350,000	TUMF, City of La Quinta
Washington Street/41st Ave Traffic Signal	$200,000	City of Palm Desert
Washington St/Ave 48 Intersection Improvements	$200,000	City of La Quinta
Washington St/42nd Ave Intersection Improvements	$400,000	City of Palm Desert
Washington St/ViaSevilla Traffic Signal	$200,000	Private Development Impact Mitigiation
Washington St/Woodhaven Dr Traffic Signal	$200,000	City of Palm Desert
Washington St/Highway 111 Intersection Improvements	$50,000	City of Palm Desert
Washington St/Emerald Crest Close Median	$50,000	City of Palm Desert
Washington St/Sunnybrook Close Median	$50,000	City of Palm Desert
Washington St/Whirling Wind Close Median	$50,000	City of Palm Desert
Washington St/Easthaven Road Close Median	$50,000	City of Palm Desert
Washington St/Tuscon Circle Close Median	$50,000	City of Palm Desert
Washington St/Desert Breezes Resort Close Median	$50,000	City of Palm Desert
Right Turn Decelaration Lane - NB Ralph's Shopping Center South of 42nd Ave	$100,000	City of Palm Desert
Right Turn Decelaration Lane - NB Ralph's Shopping Center South of Country Club Drive	$100,000	City of Palm Desert
Right Turn Decelaration Lane - SB Ralph's Shopping Center South of Country Club Drive	$100,000	City of Palm Desert
Right Turn Decelaration Lane - SB Ralph's Shopping Center South of 42nd Ave	$100,000	City of Palm Desert
Washington St/I-10 Interchange Area Signal Coordination	$180,000	CMAQ
Jefferson St, Westward Ho Dr to County Club Dr	$120,000	CMAQ
Adams St, Ave 48 to Fred Waring Dr	$90,000	CMAQ
Dune Palms Rd, Ave 48 to Fred Waring Dr	$90,000	CMAQ
Washington St/Hidden River Rd Install Median Island	$50,000	City of Palm Desert
Total	$2,780,000	

DELAY is measured in seconds

LOS = Level of Service

(1) Signalized Intersection. Delay results show the average delay for the entire intersection.

Source: VRPA conducted LOS analysis using Synchro 6.0

Chapter 3
Transportation Demand Management (TDM) Study

What is TDM?

Since TDM began to develop in the early 1970's, TDM measures have continued to evolve in response to the changing nature of transportation challenges and individual travel preferences. Today, as the number of commuters and vehicle emissions steadily increase, while the land available for capacity improvements decreases, TDM emerges as a critical component of any regional or local transportation strategy.

As TDM has evolved, the concept has increasingly emphasized the establishment and maintenance of strategic partnerships between the public and private sectors. TDM partners aim to improve the efficiency of the transportation system and to maximize the use of existing transportation investments by:

- Increasing the number of people per vehicle (including transit vehicles, vanpools and carpools)
- Maximizing the use of underutilized travel times (by time-of-day and day-of-week) and travel routes – including transit routes and pedestrian / bicycle paths
- Reducing trip frequency and distance, and eliminating some trips altogether

Benefits of TDM policies and strategies include:

- Reduced auto-related emissions and improved air quality
- Decreased traffic congestion
- Increased travel options for residents and commuters
- Reduced personal transportation costs and energy consumption
- Improved quality of life for communities
- Delayed/reduced roadway related infrastructure expansion
- Improved access for employers
- Support of smart growth strategies

Until now, it has been possible to meet the increasing travel demand through new roads and road widenings. However, such "supply side" solutions will not be enough in the future. Exclusive dependence on roads is not feasible, sustainable or desirable. It is necessary to look at the demand side also, through the development of TDM measures. While TDM alone cannot be expected to meet the future growth in demand, it is an important component among a range of solutions.

Successful implementation of TDM requires cooperation, coordination, and commitment of all of the organizations responsible for transportation. To successfully implement the strategies ultimately recommended in this Study, it is necessary that the most appropriate organization(s) take the lead for each strategy and work in collaboration with others as required. Based on best practices, it is clear that a number of complementary

TDM strategies will need to be implemented in a coordinated manner to achieve a significant level of success. TDM implementation is like a tool box. There is no single magic bullet in the tool box, but if a number of tools are deployed in well planned and coordinated manner, TDM can help make a difference. Leadership, commitment, cooperation, coordination, collaboration and perseverance will be the key to success in implementing TDM.

Existing TDM Conditions

As pointed out in the 2004 CVAG Origin and Destination Survey (O&D), 92% of all household trips in the Coachella Valley are made by personal vehicles and only 1% was made by public transit. The report also indicated that trip making by household is increasing due to rapid development throughout the area which enhances trip making opportunities and in the increased in household size which simply means that more trips are necessary for each household unit. In addition to a low percentage of trips made by transit versus personal vehicles and the realities of more people living in typical households, the CVAG report also identified the Washington Street and Route 111 commercial corridor as the highest trip making location in the valley. Together, these issues provide the basis for a positive outlook when considering alternative transportation and TDM strategies in the area.

The CVAG O&D report also revealed that a typical resident spent between 48 and 62 minutes per day traveling between destinations. However, transit users are reported to spend nearly 2 hours (108 minutes) traveling between destinations per day. In addition, almost 45% of the trips made by the region's households are less than 10 minutes long, with 21.6% being less than five minutes. These statistics and other observations indicate that we can make significant improvements for the transit dependant population and at the same time encourage and accommodate alternative transportation choices for the entire population.

Development in the Study Area is regional in scale. The intersection at Washington Street and Highway 111 is the single largest destination in the Coachella Valley region as referenced in the CVAG O&D Study. This development generates and attracts significant volumes of auto trips from through the Coachella Valley and beyond. As a result, the demand for street and road and other enhanced modal improvements is needed to address congestion and delay along Washington and Highway 111. The scale of this issue requires the affected agencies to look at non-traditional methods to solve the congestion and delay problems. Such methods include changing the way people travel, the times that they travel, enhancing the existing environment to provide better connections between modes, and other innovative ideas. A shift in the way people travel will occur when they begin to understand that alternative transportation modes are viable, not just for others, but for themselves locally. They will begin to understand that alternative modes can be accommodated.

Observations

In the 1990s, Coachella Valley cities and the County of Riverside adopted local TDM Ordinances. Table 13 provides a list of the TDMs included in those ordinances and the status of each TDM measure as it relates to the Study Area. Even though these ordinances have been on record for many years, many elements of the ordinances have not been actively applied or enforced. After extensive site visits throughout the Route 111 commercial corridor, the project team developed some ideas that may be effective at capturing more public acceptance of alternative transportation modes.

To develop a good sense of the conditions faced by transit users and pedestrians members of the project team drove and/or walked along the Route 111 corridor from Indio to Palm Springs. In addition to moving through the corridor time was spent observing the interactions between pedestrians and bicyclists and motor vehicles. One of the more interesting observations made on the site visits was the enormous size, or geographic scale, of the more recent commercial centers along the corridor, especially those in the Cities of La Quinta, Palm Desert, and Indio. The reality of the large scale projects may provide enhanced opportunities for implementing some TDM solutions.

This is an aerial view of the immediate study centered on the Intersection of Washington Street and Route 111. This area also includes the number one trip destination in the CVAG Region.

This is the NW Corner of Washington Street and Route 111. Note the lack of connection between the transit stop location and the commercial activities.

This is the SW Corner of Washington Street and Route 111. Note the lack of connection between the commercial activities and the homes located immediately adjacent to the center.

This an example of pedestrian facilities that do not complete a connection with nearby trip attractions in La Quinta

Walking along the access driveway at the end of the sidewalk does not feel safe and tends to discourage walking and transit use.

This an example of pedestrian facilities that do not complete a connection with nearby trip attractions in La Quinta

Another view of transit shelter shows there is no direct connection to the commercial center.

This transit shelter (currently out of service) is conveniently located at the curb side with sidewalk.

This is the view just east of the shelter where the sidewalk ends at the vehicle access driveway.

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Where the sidewalk ends at the driveway there is no safe pedestrian access to the shops and restaurants.

TABLE 13
Washington/Hwy 111 TSM/TDM Corridor Study – Existing TDM Conditions

TDM Measures	Existing Conditions	Details
Alternate Work Schedule	• The compressed work week has been widely implemented, notably by government agencies. • High potential for future enhancement.	• Perhaps the most popular of these TDMs is called Flex-Time, where employees are allowed to adjust their workdays and times to avoid peak travel times. • Compressed work week reduces the number of days the employee travels to the work location.
Telecommuting	• Not widely used. • High potential for future enhancement.	• Establish telecommuting or work at home programs to allow employees to work at home or at a satellite work center one or more days per week. • The overall effectiveness of this TDM in reducing VMT has been questioned as some users report making other trips that could not be made if they were at the work site. • The measure may be effective at reducing peak hour traffic congestion. • This TDM can only be implemented where the employees physical presence is not required such as research and heavy computer applications.
Bicycle Facilities	• No indication that this TDM is being applied currently. • High potential for future enhancement.	• Provide bicycle parking facilities equal to 5% of total required automobile parking spaces; and preserve 2% of the gross floor area for employee locker and shower facilities. • Aggressive compliance with this measure is thought to result in reduced vehicle use between 4% and 9%.

TDM Measures	Existing Conditions	Details
Bicycle Facilities Maps and Guides	• Most cities and CVAG have adopted bicycle and trail maps. • Low potential for enhancement.	• Implementation cost is relatively low and effectiveness is fair. • This measure can be used as a marketing method for private firms and Bicycle Users Groups.
On-site Employee Housing and Shuttles	• No implementation has been found. • Low potential for enhancement.	• Provide on-site housing and shuttles to and from the housing areas and the work areas. • This is more common in the very rural areas such as farming activities or Indian Gaming centers on reservation lands.
Preferential Parking for Carpool Vehicles	• This measure is used at most government offices. • More research is needed. • High potential for future enhancement.	• This measure is not considered highly effective for smaller industrial sites, businesses with fluctuating hours, or small retail operations. • This measure is effective where there are well defined shifts/hours and consistent work activities such as farming, manufacturing, large office complexes, and hospitals.
Information Center for Transportation Alternatives	• Bicycle and transit information is readily available in government offices. • High potential for future enhancement.	• Many employers have an employee break room where the alternative transportation information can be made available alongside other state mandated employment information. • This can also be implemented as a stand-alone kiosk in large shopping centers, convention centers and other large activity centers.
Rideshare Vehicle Loading Areas	• No current example • Low potential for enhancement	• This measure supports a functional rideshare program. • Effectiveness depends on a variety of conditions at each specific location.

TDM Measures	Existing Conditions	Details
Vanpool Vehicle Accessibility	• No current example • Low potential for enhancement	• To be effective this measure requires a large worksite and is only implemented with a functional Vanpool program.
Bus Stop Improvements	• Partially implemented along Route 111. • High potential for future enhancement.	• Transit stop amenities such as seating, overhead and/or side shelter, lighting, route information access, information as to unscheduled delays.
On-Site Child Care Facilities	• No current example. • High potential for future enhancement.	• Employers provide (or contract for) child care at the work location. • This measure can be effective in most locations but is cost prohibitive in small to mid-sized employment centers.
Electrical recharging outlets for electric vehicles	• The City Hall in Palm Desert currently has a charging facility for electric vehicles. • High potential for future enhancement. • More research is needed.	• The demand for this measure is defined by the manufacturer of electric powered vehicles. • If the availability of these recharge facilities increases, this may be a significant element in the individual's decision to purchase a specific vehicle.
On-Site Amenities such as food services, ATMs, and other services that would eliminate the need for additional trips	• This feature can be found at many home improvement centers, Wal-Mart stores, supermarkets, and other similar locations. • High potential for future enhancement.	• This measure can be effective in reducing mid-day trips, but may be cost prohibitive to medium and small employers. • Note: Pre-work and post-work trips to secondary locations are often made in route to work or home destinations and do not significantly add to an individual's VMT.

TDM Measures	Existing Conditions	Details
Contributions to Funds providing Regional Facilities such as Park and Ride Lots, Multi-Modal Transportation Centers and Transit Alternatives in the area	• This measure is currently implemented in the Valley by TDM Ordinances and other development fee programs.	• This measure allows for the mitigation of trips for developments that cannot make significant reductions through other site specific means. • This is a TDM supportive measure that helps provide the infrastructure needed to make TDM successful.
Incentives to encourage employees to use mass transit	• No current example. • High potential for future enhancement.	• This measure is considered low cost and moderately effective and can be used for small medium or large employers. • Implementation consists of provision of a bus subsidy or pass, additional pay for transit or bicycle users, allowing employees to use flex-time or other incentives. • Note: It may require the flexibility of employers regarding possible unscheduled delays in employee arrivals.
Implementation of a Parking Fee	• No example of this measure has been found • Low potential for enhancement.	• Employees (or customers) can be assessed a fee for parking to encourage the use of alternative modes of travel. • This measure is effective in support of other TDM strategies such as transit use, bicycling, or ridesharing. • Typically this measure is implemented at large employer sites such as hospitals or large office complexes.
Restriction of Business Hours	• No example of this measure has been found. • Low potential for enhancement.	• This measure forces businesses to operate all or some functions, during off peak times as a means to reduce vehicle trips and/or congestion. • This is a very restrictive TDM and can only be considered in rare cases.

TDM Measures	Existing Conditions	Details
Restrict Delivery Hours	• No example of this measure has been found • Low potential for enhancement.	• This is a highly effective method of reducing the number of delivery vehicles in a specific geographic area during the heaviest traffic congestion. • Restricting delivery hours should be made with the cooperation of any affected business and their suppliers.
Provide Pedestrian Path from the closest Transit Stop into the facility	• This is currently not being implemented in many areas of the Route 11 Corridor. • High potential for future enhancement.	• This measure is effective in supporting and encouraging transit use. • Adequate pedestrian facilities from the primary roadway access to work sites and retail activities also supports other TDMs related to pedestrian and transit travel.
Contribute to a housing subsidy fund	• No example of this measure has been found. • Low potential for enhancement.	• Contribute up to $1.00/square foot to a housing subsidy fund so that affordable housing can be created closer to the employer.
Resort / Hotel areas develop a rideshare and shuttle programs;	• Further Research is Needed - Outreach	
Create Golf Cart Circulations Systems	• Palm Springs, Rancho Mirage, Palm Desert, La Quinta, and the County of Riverside are currently implementing this measure. • High potential for future enhancement.	• Golf Cart Ordinances have been helpful in providing the acceptable and safe operation of these electric clean air vehicles. • Adding Golf Cart paths/facilities may also encourage and accommodate pedestrian and bicycle usage.

TDM Measures	Existing Conditions	Details
Provide transit stops and amenities (Developments along major corridors)	• This TDM is currently being applied to new developments along major corridors as part of the development review process. • High potential for future enhancement.	• If an applicable development is on a current transit route, provide a transit stop, shelter, trash barrels, benches, shade and wind protection, and bus turnouts.
Provide transit stops and amenities (Developments NOT along major corridors)	• No example of this measure has been found. • Low potential for enhancement.	• If an applicable development is NOT on a current transit route, contribute to a fee program that provides funding for transit stops, shelters, trash barrels, benches, shade and wind protection, and bus turnouts in locations where they are needed.
Provision of a Bicycle Lane	• Bicycle lanes are present throughout the Route 111 Corridor. • High potential for future enhancement.	• This measure is considered highly effective in enhancing bicycle use for commuting and other purposes.
Provide other creative or innovative strategies to reduce vehicle trips.		

Future TDM Conditions

The traditional transportation planning process involves many people with the responsibility for making countless decisions concerning the allocation of public resources and the creation and management of public transportation facilities. These decisions are made based on the best information available and even with volumes of clear information it seems there is always more than one viewpoint as to what constitutes the best answer. It might be reasonable to think of the accomplishments of these planners and engineers as small miracles that result in the financing and construction of roadways, rail lines, bus systems, and other transportation facilities. When the traditional process also includes planning for Transportation Demand Management (TDM) it is certainly no less complex and seems equally miraculous when successes are realized. In spite of the magnitude of all this, success does occur and therefore we continue working toward finding appropriate answers for specific problems. Sometimes the chosen solution does not completely resolve the social or engineering problems, but the hope must be that we are working toward achieving the best transportation services we can, while at the same time protect our environment and the future of our communities.

As indicated in the Existing Conditions Report, the solutions to contemporary transportation problems can no longer be found solely in the construction of new or even wider roadways. The TDM strategy recommendations presented in this section have been drafted with an understanding that any viable solution must include the participation of all available stakeholders in the community. The municipal agency, land developers, local employers and their employees, the regional transit agency, local and regional hotels and resorts, sporting and concert venues, as well as the general public all need to work together cooperatively to resolve the transportation related issues that are currently affecting and will continue to affect the Coachella Valley's economic viability and environmental health.

The TDM recommendations have been organized under the following six categories:

- Transit System Improvements
- Enhanced Vehicle Occupancy
- Alternative Work Schedules and Telecommuting
- Non-Motorized Transportation
- Parking Management
- Land Use and Development Policies

Under each of these categories the specific recommendations are described as short-term, mid-term, or long-term. While some specific recommendations are completely different for each term, some mid and long term suggestions are enhancements or increased intensity of the short-term suggestions. Short-term recommendations are assumed to be implemented either immediately as funding is available to within five years. The mid-term and long-term recommendations are assumed to involve an additional five year increment each. Therefore, this plan establishes a set of five, ten, and fifteen year implementation goals. Of course, if opportunities arise that make implementation possible ahead of these suggested priorities, that would clearly be desirable.

Recommended strategies within any of these categories should be used as individual TDM methods where appropriate, but will have the most significant impact when they are used in combination with other strategies from the same and other categories. As an architectural design, an effective TDM program appears like a spider web, or information network, in that each element can be effective for some level of benefit, but when the elements are connected and combined the result is powerful beyond the sum of its parts. One example of this reality is when a company offers a flex time work schedule to its employees who live within moderate distances they may feel able to change their commute travel mode from single occupant vehicle to walking or bicycling due the increased flexibility of starting times. The research suggests that for shorter commute distances, the vehicle trips for the employment site may be reduced by 1% to 9%. However, when that same employer also provides lockers and shower facilities (as required in the TDM Ordinance (9.180) employees that begin their work commute an even further distance may feel comfortable with a walking or bicycling commute. The "TDM web or net" becomes much wider in terms of capturing more mode shifting employees based on wider geographic scope. The actual trip reduction under the right conditions may be increased to as high as 30%.

TDM Recommendations

The following TDM recommendation have been developed focusing on agency coordination and administration, recommended strategies by TDM category, and site specific TDM recommendations.

Agency Coordination and Administrative Recommendations

As part of the initial assessment of conditions in the Coachella Valley, the project team conducted interviews with local agency staff along the corridor. Agency staff reported that they were aware that a local TDM Ordinances had been adopted, but they indicated that the ordinances were not actively enforced. There seemed to be a break in the site planning and review coordination process that allowed these requirements to go unaddressed. When members of the municipal development review team were brought together to discuss the issue, it became clear that while everyone was fulfilling their own part of the review process, there was no one clearinghouse process for an agency to determine if the pieces of development review work seamlessly and fulfill the intent of the current ordinances.

For example, local staff assigned to review preliminary site plans (to insure compliance with ADA regulations) might only be concerned with the placement of a sidewalk ramp at each side of a commercial center driveway entrance. A

sidewalk continuing away from the ramp along the roadside or extending into the commercial center was not a part of that particular reviewer's task. There are examples all across the Valley of ADA compliant ramps that have been constructed next to driveways that lead into landscaping areas or barrier walls. This issue is also seen frequently at transit stops where the construction plans for a new bus stop and shelter is reviewed by local engineering department staff to insure the surface pad and structures meet local codes, but they may not be directed to make sure that the pad connects to the adjacent sidewalk or an adjacent commercial center or other workplace. In addition, another department reviews the preliminary site plan to insure the plan is in compliance with the local building codes related to perimeter landscape set back areas. Often these linear landscape features are placed between the transit stops or sidewalks and the adjacent land uses. The landscape creates a significant barrier to the transit passenger, the pedestrian, and the bicyclist.

To address this issue, the designation of a staff coordinator is recommended. This coordinator is responsible for coordinating and tracking the preliminary site plans or other construction plans as they pass through the affected agency departments. In addition to assigning a staff coordinator the affected agencies need to develop an education and training program for all plan review and building code inspectors to enhance the understanding of these issues.

Transit System Improvements

Local agencies in the Study Area are not unique among the Coachella Valley's cities and communities in that every local agency and the County share a common goal of insuring transportation services are available for its residents. The presence of viable and sustainable transportation services is critical for economic viability and the region's general well being.

As described in SunLine Transit Agency's Comprehensive Operational Analysis (COA), the Coachella Valley has grown at an accelerated rate of 22% over the past five years. The report continues to describe the growth as being conducted in an unfriendly manner as it relates to transit. The focus of the Valley's housing growth is the presence of low-density housing, often within gated communities. The reality is that these types of developments present significant barriers to free and easy use of transit services, as well as other more efficient travel modes, and favors the use of low occupancy motorized vehicles. These unique characteristics and realities have been considered in the development of Transit Recommendations for this project, which are presented in Table 14. Some of the recommendations were taken directly from SunLine's COA, while others were based on outside research and field observations. Even though SunLine Transit is not controlled by the local agencies in the Study Area, they do need to be responsive to local needs and issues and to make every attempt to satisfy reasonable demands for services.

In the short-term, these recommendations suggest the development of an aware and organized local transit advocacy within each municipal agency. Specifically they call for an enhanced relationship through increasing the direct communication with SunLine's management. There are many suggested transit system improvements outlined in the agency's COA that should be actively encouraged by the affected local agencies in the Study Area. To address transit needs for the short- to mid-terms, each affected agency should develop an internal Task Force to carry out a focused approach for organizing and achieving local transit service. The agencies also need to develop a current inventory of local transit

facilities, which also includes the non-motorized connections that feed the transit services. The recommendations also increase attention on the bus stop locations, bus shelters, and other amenities over the short- to long-term time periods.

One of the unique characteristics of the Coachella Valley is the physical layout of the local agencies along the Highway 111 corridor. This geographic form provides a unique opportunity to serve the residents of all the cities with Express Bus Services which is included here as a mid-term improvement and then rolls into a Bus Rapid Transit (BRT) system in the long-term.

Enhancing Vehicle Occupancy

For purposes of this Study, the TDM strategies with the primary purpose of increasing vehicle occupancy (including casual and organized ridesharing and carpooling) have been categorized under the concept of Enhancing Vehicle Occupancy. It is interesting that when non-rideshare participants are questioned about why they do not consider ridesharing they often indicate that they think it would be inconvenient. However, when participants of carpools are asked about their experience, they indicate that it is more convenient than driving alone. In any case, the issue of rideshare requires a match of people that reside in the same general area and work at the same location or in close proximity. In addition to supporting opportunities for municipal staff to carpool the agency should be prepared to enhance the local culture related to these activities. The affected local agencies in the Study Area can promote the activity through marketing the services of ride matching firms and encouraging local companies to make the carpool or rideshare a part of their TDM Plan. If a group of employees are interested in forming a formal carpool or vanpool the agency should assist them in applying for funding or in connecting them to another appropriate agency.

Perhaps the most significant deterrent to using a carpool of vanpool is the fear of not having your own automobile in case an emergency arises while you are at work. Study Area agencies should develop a guaranteed ride home program for municipal employees that participate in any alternative transportation including walking or bicycling.

Under the current TDM Ordinances, each development that results in 100 or more employees is required to develop a TDM Plan with trip reduction strategies that result in a specified level of vehicle occupancy rates. Through this plan, the local agencies can require that the development support the use of carpools or vanpools to achieve the stated goals. Also, during the annual review of the TDM Plan, if the current strategies are not achieving the goals, a local agency can require the developer to modify the specific strategies in an effort to realize the specified vehicle occupancy rates. The recommendations under the category of Enhancing Vehicle Occupancy are presented in Table 15 below.

TABLE 14 – TRANSIT SYSTEM IMPROVEMENTS

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Bus Service Improvements	• These strategies were developed based on the information gathered through field observation and the recommendations and conclusions in the SunLine Transit Agency's COA.	<u>Short-term:</u> • Study Area agencies should actively encourage the following improvements as outlined in the current COA through both, direct discussions with SunLine Transit, and by actively participating in CVAG's regional transit planning activities. o Increase the reach, frequency, and expand service along Line 111. o Pursue 20 minute headways along Line 111. o Extend Line 111 to downtown Coachella. o Encourage the establishment of Line 111 service directly to the College of the Desert (COA). o Support a deviation of Line 70 along Avenue 48, Adams, and Hwy 111 (avoids transfer activities at Washington/Hwy 111). • The following recommendations were based on field observations and research studies available from a variety of professional resources. o Encourage SunLine Transit to accommodate passengers carrying food products on a case by case basis. This was identified as an issue for some passengers in SunLine's COA. This may require a floating maintenance activity to address the occasional spills that might occur and placement of trash receptacles on the vehicles in addition to bus stop locations. o Establish nearside and far side bus stops on line Hwy 111 at Washington Street in both directions, and at other key locations. This will reduce pedestrian signal activation. (See Maps). • Develop a short-term Task Force to address the issue of identifying specific locations where there is potential to move roadside transit stop to within the commercial centers in the area surrounding Washington Street and Highway 111.	• The benefits of additional transit services depends on how much the additional service is used, how well the service responds to users' needs and preferences, and the amount of automobile travel that is displaced. (VPTI). • Providing transit service is labor intensive and as such additional subsidy and passenger revenue results in more additional jobs than do other traditional road construction activities. • Transportation cost savings for an individual or family that does not need to purchase an automobile (or a second/third vehicle) is spent on other items which is more productive and returns benefits to the local economy.

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Bus Service Improvements (continued)	• These strategies were developed based on the information gathered through field observation and the recommendations and conclusions in the SunLine Transit Agency's COA.	Mid-term: • Establish an Express Commuter Service serving key transfer point and key destinations only along Hwy 111. • Establish Express Commuter Service along Interstate 10 from Desert Hot Springs to Coachella. • In general continue to expand the frequency and range of bus routes that feed Line 111 and any Express Services. • Pursue 15 minute headways or less along line Hwy 111 (COA). • Extend line Hwy 111 express service to Desert Hot Springs. • Increase the commute period frequency of Line 14 and with direct linkage to Line 111 fixed-route and express bus services. • Assess the possibility of queue jumpers at key intersections throughout the Hwy 111 corridor. Long-term: • As suggested in SunLine's COA: o Develop bus rapid transit (BRT) service along line Hwy 111. o Operate line Hwy 111 with 15 minute frequencies during peak periods on all days.	• According to the SunLine COA, the long headways and lack of feeder route connections discourages many people from using transit especially those that have access to alternative methods of travel.

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Improve Access and Connectivity between bus stops and adjacent businesses.	• This strategy provides for non-circuitous pedestrian access from the roadside bus stop to the adjacent destinations. • See pedestrian measures.	<u>Short-term</u>: • Conduct a field review of all bus stop locations within the Study Area to determine if safe pedestrian access can be made more direct from the roadside bus stop or shelter to the entrances to the shops and offices at the destination. • In addition to noting the connectivity between the roadway and the commercial destinations, the Study Area agencies should also aggressively pursue the opening of access between adjacent centers (See aerial photos for examples of this concept). <u>Mid-term</u>: • Revise Study Area agencies' TDM Ordinance to prohibit the construction of unbroken walls, landscaping, and other barriers that limit access by transit users, cyclists, and pedestrians. This is a design issue and does not constitute a wholesale prohibition to developers using these site perimeter landscape features. <u>Long-term</u>: • Continue to encourage developers in making their sites accessible and friendly to non-motorized transportation modes. The specific features may include the landscaping or other shading of walkways and paths used in internal site circulation.	• Observations made during earlier elements of this project revealed a systemic issue with transit-commercial site access along Hwy 111 throughout the valley. • Access improvements made at any location has a positive effect on the choices made by users of alternative travel modes including walking. • Many walk trips are made as a linking part of other alternative modes of transport. For example, most transit trips to an employment site are really walk-transit-walk trips linked to make the commute. This also occurs in some rideshare or carpool trips. •

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Bus Shelters and Other Amenities	• Improvements may include physical features such as bike lockers, trash receptacles, seating, or information such as route maps, schedules, transfer points and times.	<u>Short-term:</u> • Review the placement of all existing bus shelters within the Study Area and encourage Sunline Transit to review all bus stop locations along the Washington Street and Highway 111 corridors. • Conduct an inventory of bus stops and shelter amenities. Work with Sunline Transit to ensure consistency for stops and shelters located in the Study Area. • Develop a local standard that defines what amenities should be available at bus stops and shelters throughout the Study Area. • Encourage Sunline Transit to make route and schedule information available at every bus stop. This may range from static placards to timetables at every interactive kiosk. • Provide applications for special fares at high activity bus stops and on all transit vehicles. • Work with Sunline Transit to provide adequate lighting at all transit stops (solar powered lighting). • Consider installation of "Panic" alarm devices at selected bus stop locations. <u>Mid-term</u>: • Provide transit shelters at all route transfer locations. • Revise Study Area agencies' TDM Ordinance (9.180) to require the placement of bus stops/shelters within major developments nearer entrances. • This provision should apply to existing developments when they are under annual TDM Plan review as well as new developments and/or worksites. • Work with SunLine Transit, local law enforcement, and engineering toward a program to install security cameras and other monitoring devices at selected bus stops and shelters. <u>Long-term</u>: • Construct bus shelters at all bus stop locations along Hwy 111 and at all stop locations within shopping centers and other major destinations. • Provide electronic arrival and wait times for primary routes and transfer connections. • Install electronic advance fare equipment at selected bus stops and other major attraction centers. • Install security cameras and other monitoring devices at all bus stops and shelters.	• Passenger amenities, both at transit stops and on vehicles, play an integral role in building transit ridership. • Transit agencies have shown that investing in amenities to build ridership can be a cost-effective alternative to reducing service due to increased ridership. • Agencies that have undertaken amenity programs believe that the benefits to passengers, to adjacent communities, people with disabilities and the agency itself far outweigh the costs. • Some of these amenities, such as lighting, and landscape reviews can enhance safety which is critical for some riders.

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Bus Rapid Transit (BRT)	• BRT systems use technology and modified infrastructure to provide a higher quality service than a typical bus line. • Some BRTs use advance ticket vending and open boarding from a controlled access platform much like with light rail systems. • Typically the BRT operates with express services.	**Short-term:** • No short-term activity recommended. **Mid-term:** • Work with CVAG and SunLine Transit to assess the potential for converting line Hwy 111 express services to BRT. • Begin to identify opportunities for right of way and potential funding sources. **Long-term:** • If the need is determined and grants and other funding resources become available begin to advance preliminary engineering for the BRT system.	• Combine the advantages of a metro system (*exclusive right-of-way to improve punctuality and frequency*) with the advantages of a bus system (*low construction and maintenance costs, does not require exclusive right-of-way for entire length, at least at the beginning*). • Compared to standard bus service BRT systems with dedicated right-of-way and thus an increased average transport speed can provide more passenger-miles with the same number of rolling stock and personnel. They also offer the prospect of a more fluent ride than a normal bus immersed in stop-and-go traffic.

TABLE 15 -ENHANCING VEHICLE OCCUPANCY

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Casual Rideshare	• This strategy includes a range of casual rideshare arrangements including occasionally sharing rides to work, shop, or for other types of activities.	Short-term: • Investigate methods of disseminating information about potential rideshare partners through a variety of means including the municipal web site and distributing flyers with information about public and private rideshare assistance programs. Mid-term: • Market casual ridesharing as a demonstration of the potential for organized rideshare or carpool programs in public service and public outreach marketing campaigns. Long-term: • Continue to develop these casual rideshare activities into more organized programs wherever opportunities arise.	• Casual ridesharing can be practiced by almost everyone at some time. The trip reduction benefits are difficult to measure but if the activity is promoted it can assist in enhancing participation in a more organized carpooling program. • While the new trip reduction benefits of this approach may be limited, the positive impact on community livability is a more visible benefit.
• Organized Rideshare and Carpooling	• Carpooling programs are typically developed and funded as part of corporate policy. • Carpool vehicles may be employee or employer owned.	Short-term: • Continue to support carpooling by Study Area agency employees. • Encourage and assist local employers in creating and maintaining carpool groups. Study Area agencies can provide enhanced credit toward satisfaction of trip reduction goals as stated in the TDM plan. Mid-term: • Continue efforts to support carpooling and explore expansion of carpooling activities. Long-term: • Continue efforts to support carpooling and explore expansion of carpooling activities.	• Job satisfaction levels are reportedly better for employees that carpool rather than drive their own vehicles with long commutes.

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Organized Vanpooling	• A vanpool is a group of people who live some minimum distance from the workplace that share their commute typically in a multiple passenger van. The vehicle may be privately owned or owned by a contracting firm or public agency. • Typically vanpoolers pay a low monthly fare based on daily travel distance and number of riders in the group.	**Short-term:** • Investigate the resources available to establish local vanpools that either corporate based, industry based, or are geographically based. • The benefits of a vanpool program will be determined by the availability of participants with long commutes that begin and end in close proximity. The institutional and financial elements of an official vanpool program make it especially effective for a large employer such as a manufacturing activity, such as automobile manufacturing, large agricultural interests, or for large employment centers or significant central business districts. **Mid-term:** • Develop a policy of support for any enterprise in the local area that expresses a desire to institute a vanpool program for a specific employer of group of employers. **Long-term:** • Continue to assess the local transportation conditions for signs of vanpool opportunities.	• Reduced the financial, mental, and physical stress associated with long commutes • An individual's daily commute costs are shared with a number of other travelers. • The trip reduction benefits of participation in a vanpool program are significant. A single commute vanpool trip replaces 5 to 15 single occupant vehicle trips. Vanpools can significantly increase the average vehicle occupancy of an employer or other destination.
• Guaranteed Ride Home Program (GRH)	• This strategy provides commuters who vanpool, carpool, bike, walk, or take transit, with a reliable ride home or to an emergency location when one of life's unexpected emergencies arises.	**Short-term:** • Adopt a Guaranteed Ride Home program for municipal employees. • Encourage local businesses and developers to adopt a GRH program in support of the trip reduction requirements in their development TDM Plan or as part of their TDM Plan's annual review. **Mid-term:** • Investigate a method of providing and managing a regional GRH program that would cover smaller local employers that do not have the capacity to manage an internal program. **Long-term:** • Continue to assess the successes of municipal and corporate GRH programs. Data collected through the existing efforts should be continually updated and made available.	• It has been shown that offering a GRH program encourages employees to use alternative forms of commuting, such as carpooling and vanpooling, by giving them the peace of mind of knowing they have a way to get home if an emergency situation arises. • GRH programs reduce an employee's anxiety related to unforeseen conditions.

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Shuttles	• This strategy uses a variety of higher occupancy vehicles (preferably electric or other low emissions) to move people between hotels, resorts, shopping venues, and sporting events.	<u>Short-term</u>: • Continue to encourage the use of shuttles by hotels and resorts in response to their client demands for transport to airport terminals, passenger rail services, and special event sites. • Investigate the use of low emissions and fuel efficient shuttle vehicles to move people between local shopping plazas and other destinations during peak business hours. • Provide enhanced trip reduction credit in the TDM Plans of developments that specifically use highly efficient vehicles <u>Mid-term</u>: • Consider modifying the local TDM Ordinance to require that shuttle vehicles be electrically powered or otherwise highly efficient vehicles. <u>Long-term</u>: • Assess the potential for connecting the shuttle services with any new mass transit elements such as Express Bus Service and/or a Bus Rapid Transit System.	• The air quality and trip reduction benefits of shuttles can vary widely. Perhaps the main benefit of these services is that they can eliminate the need for visitors to arrange use personal and single occupant vehicles to shop or attend events in the local area. • The use of shuttle vehicles can reduce the number of personal vehicles entering and exiting driveways within a short span like the commercial centers near Washington St. and Highway 111.

Alternative Work Schedules

Implementation of flextime, staggered work hours, and compressed work weeks may vary from day-to-day or week-to-week, depending on circumstances at that a specific site. While not all jobs are suitable for alternative schedules (such as positions that require employees to provide a specific service at a particular time and place), some are suitable such as research activities, writing, and some technical activities. The additional schedule flexibility could have a negative impact on vanpools and other rideshare activities. As mentioned earlier, all TDM strategies are not effective for all employment situations, but they are typically more beneficial when combined so that they can work to generate multiple benefits. For example, offering staggered work hours can make the use of transit available for some employees that may not be able to use transit with the regular workday schedule for any number of personal reasons. On the negative side, participants of an organized rideshare group may lose participants due to the changes in start and end times. Alternative work schedules may also require changes in management practices that reduce the need to have employees physically together at one time, including more outcome-oriented management practices and increased use of electronic communication to replace typical face-to-face interaction.

In general, alternative work schedule strategies reduce peak period congestion directly, and can make ridesharing and transit use more feasible. One study found that employees with flexible work schedules save an average of 7 minutes per day in commute. Also, variable start times can reduce peak-period trips, particularly around large employment centers and when combined flextime and telecommuting can reduce peak-hour vehicle commute trips by 20-50%. While these programs are employer based, a local agency can encourage or even require employers to participate as specified in the TDM Ordinance. The recommendations presented in Table 16 below, include an increasing level of encouragement leading to active enforcement of the TDM Plans that are submitted by new developments. In addition, Study Area agencies need to begin to establish and enforce the annual reviews of TDM Plans for existing developments over time. Initially, the recommendations are for Study Area agencies to enhance their offer of these alternative work schedules for agency employees and to use the TDM Ordinances as tools for promoting the participation by local businesses. Since these strategies are very job specific, Study Area agencies should remain diligent in encouraging these types of strategies where appropriate.

Study Area agencies should also develop a program to organize the enforcement of the TDM Plans that are submitted by new developments and begin to establish and enforce the annual reviews of TDM Plans for developments that had not submitted a plan or for those activities not in full compliance.

TABLE 16 - ALTERNATIVE WORK SCHEDULES AND TELECOMMUTING

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Flex-Time	• Employees are allowed to adjust their workdays and times to avoid peak travel times. • Participating in a Flextime Program may vary from day-to-day or week-to-week, depending on circumstances. • Not all jobs are suitable for alternative schedules.	<u>Short-term:</u> • Support additional and enhanced alternative work schedules for municipal employees. Often it is government agencies that establish the workforce culture within the region and create a demand for these benefits. • Encourage local businesses to use flexible work schedules and other TDM strategies with marketing programs such as TDM event celebrations, production of TDM brochures, and participation in other local event venues. • Encourage or require new developments to promote flextime and other TDM strategies as part of the initial TDM Plan and during the required annual TDM Plan reviews/assessments for businesses already in operation. • Study Area agencies should enforce the TDM Plans submitted by new developments and enforce the annual review of TDM Plans for legacy developments. <u>Mid-term</u>: • Establish a system that notifies the agencies and the businesses of approaching TDM Plan reviews. <u>Long-term</u>: • Continue to be diligent in enforcing and maintaining compliance with TDM Plans. As stated in the TDM Ordinance the plan should be revised if the TDM strategies are determined to be ineffective.	• This TDM causes a shift in the time of travel away from peak use hours which has been shown to reduce peak hour congestion. • This feature will be more effective during the high destination season. • Flexible work schedules work to enhance the effectiveness of other TDMs such as transit use, bicycling and walking.
• Staggered Hours	• This means that shifts are staggered to reduce the number of employees arriving and leaving a worksite at one time. • Example, some shifts may be 8:00 to 4:30, others 8:30 to 5:00, and others 9:00 to 5:30.	<u>Short-term:</u> • Study Area agencies should not discourage these programs but should place emphasis on promotion of other alternative work schedule strategies that support trip reductions, such as with bicycling and walking. <u>Mid-term</u>: • Same as discussed in Flexible Work Schedules <u>Long-term</u>: • Same as discussed in Flexible Work Schedules	• The staggering of employee arrivals and departures can reduce congestion on-site and within short distances around the workplace, but has little impact on the overall congestion levels along major highways. • This can serve as a deterrent to ridesharing and vanpooling. •

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Telecommute	• Involves working from a site other than the main business location, generally in the home or a satellite work location that is nearer the home. • Telecommuting is generally used one or two days per week but can be instituted on a full-time basis. • Many organizational tasks can be completed from a home office one to five days per week, such as: • Claims processing • Clerical and data processing •Reading, research, writing, editing, analysis, and planning • Computer programming • Customer service • Drafting and design • Finance, accounting	**Short-term:** • Local and regional agencies should actively support part-time telecommuting for qualifying employees. Often it is government agencies that establish the workforce culture within the region and create a demand for these benefits. • Local and regional agencies should promote the benefits of telecommuting as part of a marketing program such as TDM event celebrations, production of brochures, and participation in other local event venues. • Local agencies should encourage new developments to promote telecommuting and other TDM strategies as part of the initial development TDM Plan and during the required annual TDM Plan reviews/assessments. • Government agencies can promote telecommuting options for their employees but the typical implementation is made by private enterprise. **Mid-term:** • Continue to monitor the TDM Plans with a focus on maintaining the intended trip reductions. During the annual review process, revisit the developments compliance and enforce as needed. **Long-term:** • Continue to monitor the TDM Plans under the annual review of TDM Plans and enforce as needed.	• Nearly 50% of all jobs produce information-related goods that may have potential for off-site work. • Telecommuting can reduce an employee's work travel by as much as 40%. • Working from home is especially attractive to employees with long distance commutes and therefore can actually reduce the VMT more than vehicle trips. • Some employees may not agree to work off-site even if they are given the choice. • Telecommuting contributes to reduced congestion but may require a significant investment to equip the off-site work place, and may require a modification to the firm's management structure.

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Compressed Work Hours and/or Days	• Employees might work fewer days in the week, but longer hours on those days. Common examples are four 10-hour days each week (4/40), or 9-hour days with one day off every two weeks (9/80).	**Short-term**: • Actively support additional and consider enhancing existing alternative work schedules for their employees. Often it is government agencies that establish the workforce culture within the region and create a demand for these benefits. • Local and regional agencies should promote the use of flexible work schedules and other TDM strategies with marketing programs such as TDM event celebrations, production of brochures, and participation in other local event venues. • Encourage new developments to promote compressed work schedules and other TDM strategies as part of the initial TDM Plan and during the required annual TDM Plan reviews/assessments. **Mid-term**: • Same as discussed in Flexible Work Schedules **Long-term**: • Same as discussed in Flexible Work Schedules	• 4/40 or 9/80 schedules have been reported to reduce an employee's commute trips by as much as 20%. • Some positions are better suited for this strategy than others. Many hospitals, government agencies and technology and research activities are using these programs successfully. • Some employees may not wish to participate when given the choice.

Non-Motorized Transportation

Non-Motorized transportation is traditionally undervalued by municipal planners and engineers as most travel surveys generally count the "primary" mode used between a trip origin and destination. Non-motorized trips that are made to access motorized modes are often ignored in databases, even though they involve travel on public roads and trails. In the Coachella Valley, this is clearly a public perception problem. SunLine Transit reports that more than 40% of bus riders are traveling to or from work. The Origin and Destination (O&D) survey developed by CVAG suggested that more than 92% of work trips are made by a private vehicle. These statistics indicate that there is significant potential in making improvements to non-motorized travel facilities as a means of reducing the number of personal vehicle trips.

Research conducted by the Victoria Transport Policy Institute has outlined four important factors to consider when evaluating barriers and gaps in bicycle and pedestrian facilities including, the level of demand, the degree of the barrier, the potential benefits, and the cost and ease of implementing an improvement.

The level of demand for the facility (path, sidewalk, bike lane, etc.) includes an assessment of the enhanced demand if the facility were extended or corrected. Increased demand is especially apparent in high density environments such as central business districts, high-density residential areas, and around other destinations such as schools and universities. Removal of these barriers can be assumed to increase bicycle ridership and walking by capturing commuter and recreational trips. This demand is often called "latent demand" that is difficult to quantify but results in additional non-motorized travel.

The degree of barriers is understood as their effects on the individual person that is making the trip. A barrier that severely affects one traveler may not have the same level of effect on another. For example, an area of landscaping that separates a bus stop from an adjacent commercial center can be easily overcome by a young healthy person but can be a significant issue for a wheelchair bound traveler or even a mother with children in tow or in rolling strollers.

The potential benefits factor involves an assessment of increased use of an improved facility. This factor can enhance the priority of a public expenditure on a bikeway project where there may be high potential for replacing automobile commute trips to cycling or walking. This factor assists municipal staff in the prioritizing the scarce funding for non-motorized facilities and programs. From a trip reduction viewpoint, improving facilities that serve commuters may be more productive in replacing vehicle trips with non-motorized trips than a recreational facility. This is not to suggest that all funding should be allocated to commute facilities, but it does need to be considered to comply with the requirements of some funding sources.

The cost and ease of improvement factor involves an assessment of the incremental financial cost of a project including the ongoing future maintenance costs. Prioritization of a specific improvement may occur for projects that are highly visible and have the support of the local community. Of course, there is a co-relationship between community support and financial and institutional costs of moving a project forward.

The TDM recommendations for non-motorized transportation facilities are presented in Table 17 below and include an element relating to the issue of bus stops and their connections to adjacent commercial or institutional land uses. This discussion is also addressed under the Transit Recommendations. The reason for the crossover of recommendations is that in reality most transit trips are walk-transit-walk trips or bike-transit-bike trips. The issue of connectivity and access is equally as important for transit users as with non-motorized transportation travelers.

The short-term recommendations include establishing one specific new bikeway and pedestrian facility to complete a connection of the Point Happy commercial areas at Washington Street and Highway 111 with the Cliff House restaurant, the City of Indian Wells, and points west. This facility is necessary due to the presence of a geographic feature that prevents any roadside bicycle or pedestrian right-of-way along the north side of Highway 111. This lack of connectivity is a critical deterrent for safe east and west non-motorized travel. The other short-term recommendations are focused on institutional activities to develop a higher level of focus on issues related to non-motorized transportation and the development of a local inventory of facilities and an enhanced cooperative relationship with bike clubs and other community organizations. These suggestions also include a marketing program, which places a new and higher profile for these issues.

Concept of Walkability

The recommendations in Table 17 above include a field review of the Study Area's pedestrian facilities. One specific and intense form of this type of review is sometimes referred to as a walkability assessment. This involves consideration of the overall support for pedestrian travel in an area taking into account the quality of pedestrian facilities, roadway conditions, land use patterns, community support, security and comfort for walking. Walkability can be evaluated in various ways and at various scales (Nabors, et al., 2007). At a site scale, walkability is affected by the quality of pathways, building access paths and related facilities. At a street or neighborhood level, it is affected by the existence of sidewalks and crosswalks, and roadway conditions (road widths, traffic volumes and speeds). At the community level it is also affected by land use accessibility, roadway connectivity, such as the relative location of common destinations and the quality of connections between them.

For example, a busy suburban arterial can have a high pedestrian LOS rating, provided it has sidewalks and pedestrian crossings at intersections, although walking is actually quite difficult and impractical as a form of transportation due to the wide road widths and dispersed land use patterns. Walkability can be enhanced by increasing clustering and land use mix, by creating pedestrian shortcuts and mid-block pedestrian connections, and by locating commercial buildings close to the sidewalk, rather than being set back behind large parking lots. Walkability is also concerned with the ability to stop in the public right-of-way, for example, to rest, enjoy a viewpoint or shop window, and have a conversation or play. Typically pedestrian level of service standards do not encompass these factors, although they are critical to the overall utility of walking as a form of transport.

TABLE 17 - NON-MOTORIZED AND MODE SHIFT

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Bikeways	• This includes Class I, II, III bikeways and trails.	Short-term: • Assign a staff person with responsibility for coordinating and managing of all local bikeway facilities, including roadway striping and signage. This person should be involved in new development review and in the annual assessment of TDM plans. • Provide a bikeway and pedestrian connection between the Point Happy commercial center at Highway 111 and Washington Street intersection and the Cliff House Restaurant to the west. • Continue participation in all regional bikeway and trail planning activities. • Adopt the Study Area agencies' bicycle facilities plan currently under development by CVAG. • Conduct a field review of all existing local bikeways to identify physical or institutional barriers to bike travel. This assessment should also identify any circuitous routing that may be corrected. • Develop an Adopt-a-Bikeway program similar to state and federal Adopt-a-Highway programs. Allow developers and businesses to receive credit for trip reduction requirements in addition to public commendation for cleaning, maintaining, and monitoring bikeways. Mid-term: • Continue to pursue completion of the regional bikeways and trails identified in the CVAG Non-Motorized Transportation Plan. • Continue to reassess and respond to changing conditions and demands for additional bikeway facilities as conditions arise. • Increase the number of bike parking spaces from 5% to 10% of the total number of vehicle spaces (TDM Ordinance 9.180). Long-term: • Assess the possibility of allowing Segways, ENVs or other small personal transportation vehicles to share bike lanes and trails.	• Local bikeway management reduces redundant expenditures and increases efficiency of all bikeway facilities. • Each 10 miles of new bikeway increase bicycle commuting by about 1%. • The Adopt-a-Bikeway program develops a sense of community pride and can enhance the community's acceptance of bicycling.

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Bicycle Parking and Other Amenities	• This includes secure bike racks and bike lockers at commuting and transfer centers.	**Short-term:** • Enforce the existing requirements of TDM Ordinance (9.180), including sub-section of TDM Ordinance 9.180.050 B, 2 D-3-9. • Bike parking equal to 5% of total number of auto spaces. • Preserve 2% of gross floor area for lockers and showers. • Continue to participate in the development of a regional non-motorized transportation plan through the Coachella Valley Association of Governments. • Encourage SunLine Transit to accommodate bicycles in busses when the bike racks are full on a case by case basis. **Mid-term:** • Modify the TDM Ordinance (9.180). to require employee lockers and shower facilities at each employment site that accumulates more than 100 employees. **Long-term:** • Continue the enforcement of Study Area agencies' TDM plan and increase the parking requirements as demand increases (increase percentage of parking).	• Aggressive compliance has been shown to reduce vehicle use in some cases up to 9%. • Adopting these recommendations fulfils requirements for competitive Bicycle Transportation Account Funding. • These recommendations are consistent with regional transportation goals as described by RCTC and SCAG. • Efforts that result in enhanced non-motorized transportation reduces energy consumption improve air quality, and is good for the community's well-being.

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Bicycle Safety and Education	• This increases the public's awareness of bicycle safety issues in the community. The most common users are students ranging from primary grades to college. • Generally speaking, most bicycle trips are 5 miles or less in length. • Another purpose of these programs is to provide information for educators and other interested professionals in planning and developing bicycle facilities and programs.	**Short-term:** • Organize a local bicycle safety education program that includes outreach to elementary and secondary schools, appropriate for all ages and experience levels. o Coordinate with local schools and existing bike organizations. o Participate in community events where information can be distributed. • Coordinate bicycle safety education efforts with local law enforcement as opportunities arise. • Coordinate with bike clubs in collecting data on safety issues such as helmet use and proper use of bike facilities and other safety equipment. • Produce local bikeway maps and guides and make them available at employment sites, key transit locations, major retail centers, schools, libraries and other community locations. **Mid-term**: • Continue and enhance the efforts presented as Short-term activities **Long-term**: • Conduct a re-evaluation of the continuing need for bike-pedestrian-transit linkages. At some point the technologies that become available may eliminate some of the strategies and establish the need to support new unknown elements.	• Private firms may assist in financing maps, guides, and educational material through strategic advertising.

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Walking	• This strategy includes the walk trip as a means of transportation which could usually be made with a variety of non-motorized vehicles and/or powered human transporters (Segway). • Walking as a primary commute mode has been diminished by decentralized employment centers and similar effects have occurred diminishing the potential walk trips for other purposes.	Short-term: • Conduct an inventory of all sidewalks, paths, and other pedestrian facilities. This should include some focus on how effective pedestrian facilities are at connecting trip origins and destinations. This is an assessment of the walkability of the area. • Actively enforce the internal circulation requirements of a new developer's TDM Plan and during annual review. Mid-term: • Encourage developers to include adequate shading through landscaping or other features to protect pedestrians moving from shop to shop. Long-term: • Reassess the needs for retrofitting existing developments with pedestrian facilities.	• Walking promotes improved health and environmental benefits. • Community and quality of life benefits are reported with increases in non-motorized transportation. • There are also other economic benefits of bicycling and walking that are more difficult to measure, such as the increased economic vitality of communities that have emphasized bicycle and pedestrian mobility. • Economic rewards both to the individual and to society are also realized through reduced health care costs and reduced dependency on auto ownership. • Sometimes a short walking trip to a nearby alternative location replaces a longer vehicle trip to another location.

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Improve access and connectivity between bus stops and adjacent businesses.	• This strategy provides for non-circuitous pedestrian access from the roadside bus stop to the adjacent destinations. • See aerial maps. •	Short-term: • Conduct a field review of all bus stop locations within the Study Area to determine if safe pedestrian access can be made more direct from the roadside bus stop or shelter to the entrances to the shops and offices at the destination. • In addition to noting the connectivity between the roadway and the commercial destinations, Study Area agencies should also aggressively pursue the opening of access between adjacent centers (See aerial photos for examples of this concept). Mid-term: • Revise Study Area agencies' TDM Ordinance to prohibit the construction of unbroken walls, landscaping, and other barriers that limit access by transit users, cyclists, and pedestrians. This is a design issue and does not constitute a wholesale prohibition to developers using these site perimeter landscape features. Long-term: • Continue to encourage developers in making their sites accessible and friendly to non-motorized transportation modes. The specific features may include the landscaping or other shading of walkways and paths used in internal site circulation.	• Observations made during earlier elements of this project revealed a systemic issue with transit-commercial site access along Hwy 111 throughout the valley. • Access improvements made at any location has a positive effect on the choices made by users of alternative travel modes including walking. • Many walk trips are made as a linking part of other alternative modes of transport. For example, most transit trips to an employment site are really walk-transit-walk trips linked to make the commute. This also occurs in some rideshare or carpool trips. • Research shows that walking 10,000 steps a day could keep oneself healthy due to reduced blood pressure, heart disease and stroke.
• Develop a local Adopt-A-Bikeway program.	• The strategy is modeled from the state wide Adopt-A-Highway program	Short term: • Begin the process of establishing a Adopt-A-highway that allows businesses or individuals to receive public commendation for actually cleaning, maintaining, and monitoring bikeways.	• This program develops a sense of community pride and can enhance the community's acceptance of bicycling.
• Review placement of street furniture	• This strategy involves a field review of pedestrian with a focus on the placement of street furniture, lighting, and other features.	Short term: • Begin the process of establishing an Adopt-A-highway that allows businesses or individuals to receive public commendation for actually cleaning, maintaining, and monitoring bikeways. Mid term: • Modify street furniture, as necessary, based on the field review and observation.	• A field review will provide insight to the engineers and planners which will be enlightening as they review new site development plans in the future.

Parking Management

Parking management is arguably the most effective method of encouraging people to shift to alternative modes of travel. A study of the effectiveness of parking management programs in Los Angeles found that charging for parking can decrease the number of individuals driving alone to work by as much as eighty percent (80%). Programs reaching that level of success may be rare but a more typical reduction is assumed at closer to thirty percent (30%). Another study of parking costs in the Portland, Oregon area found that parking charges of just $40 per month could increase transit use by twenty percent (20%) in both suburban and central business districts. When the charges for parking were increased to $80 per month, transit use was increased by 35 to 40 percent (Peng, Zhongren, Kenneth J. Dueker, and James G. Strathman. 1996). It is clear however, that the Coachella Valley is unique in its characteristics that appear to demonstrate an unlimited amount of space to place parking and that space is available at a relatively low cost. Even though parking charges are not likely to produce changes in travel behavior at the same level with Los Angeles, or Portland, Oregon, the management of parking can alter behavior and result in reducing vehicle trips.

Parking management techniques include a range of practices such as preferred parking spaces for high occupancy vehicles and alternative fuel vehicles, reduced parking charges for carpools and vanpools, shared parking facilities, daily rather than monthly parking charges, establishing parking maximums for new developments, and the taxing of parking facilities. As is the case with most other TDM strategies, parking management can be even more effective when combined with other TDM techniques such as free transit passes, cash-incentive programs, and the availability of high-quality transit service.

Most of the recommendations presented in Table 18 below will require some lead time but should be started as soon as possible. For example, in the short-term, Study Area agencies will need to modify their local TDM Ordinances and other ordinances, to establish requirements for placing a variety of preferential parking spaces for carpools, vanpools, alternative fuel vehicles, and even charging stations for electric vehicles. These municipal actions will begin to modify the culture of the Study Area agencies' businesses and the general public.

Also in the short-term, Study Area agencies should establish a parking Task Force to assign specific areas that may be defined as Special Planning Districts or overlay zones for approaching the management of parking supply and other elements or regulations. The intent of these recommendations is to establish a regulatory basis for development standards early and then aggressively apply the new standards in the mid-term and reassess the impacts of these actions and refocus these efforts in the long-term.

TABLE 18 - PARKING MANAGEMENT

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Preferential Parking for Carpools, Vanpools, and Ridesharing Vehicles	• The strategy allows the designation of parking spaces located near entrances to buildings or event centers.	Short-term: • For all new developments that meet the standards outlined in the local TDM Ordinance, require preferential parking spaces for low emission and low fuel vehicles, including efficient hybrid vehicles, carpool vehicles, and vanpools. The specific number of spaces should be at least 5% of the total number of parking spaces. • During the review of previously adopted TDM Plans require the assignment of preferential parking for low emission and low fuel vehicles, including hybrid vehicles, carpool vehicles, and vanpools. The specific number of spaces should be at least 5% of the total number of parking spaces. • For new developments, require preferential parking and charging stations for electric vehicles. The required number of electric vehicle parking spaces and charging stations should be no less than two (2) but no more than the market share of the vehicles as determined by field observation or DMV statistics indicate. Mid-term: • Continue to monitor the types of low fuel and low emissions vehicles that are available in the contemporary marketplace and modify local ordinances and policies to accommodate and encourage their use. Long-term: • Continue to monitor.	• Employer benefits include reduced capital costs due to building additional employee parking facilities, enhanced employee job satisfaction which lowers the cost of staff turnover, and improved community relations. • Employees save money on their commute costs, arrive at work less stressed and more rested, and may save commute time where there are HOV facilities along the commute route. • Presence of charging stations encourages the public to make investments in electric powered vehicles.
• Parking Market Incentives	• Use of market forces to encourage alternative transportation modes and highly efficient vehicles.	Short-term: • Encourage retail, restaurant, and event centers to offer alternative travel incentives such as discounts on tickets prices or other purchases for transit riders, carpoolers, electric vehicle owners, etc. • Allow the use of these market incentives to satisfy some of the trip reduction goals required in the development's TDM Plan. Mid-term: • Actively promote the businesses that support these financial and market incentives through the Study Area agency's website and other venues. Long-term: • Explore market conditions and re-assess the market programs.	• Businesses may be able to use these market incentives as part of their own overall marketing programs to set their businesses apart from their competition. • Small businesses within a single development that may not be able to participate in an employee trip reduction plan might be able to satisfy their requirements with this strategy.

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Parking Taxes	• Special parking taxes can be used to reduce total parking demand, create a disincentive to drive, and raise revenue.	Short-term: • Institute a special or increased property tax on parking facilities. Mid-term: • Reassess the parking tax program and adjust the amount of taxes or the criteria for assessment. Long-term: • Re-assess this strategy and respond as local conditions evolve.	• These taxes can be effective as part of an overall strategy to reduce total parking supply and manage vehicle use.
• Electric Vehicle Parking and Recharging Outlets.	• This requires the assignment of preferentially located parking spaces specifically for electric powered vehicles including mainstream electric automobiles, golf carts, and electric powered neighborhood vehicles.	Short-term: • For all new developments that meet the standards for the local TDM Ordinance provide preferential parking and electricity charging stations for electric vehicles. Mid-term: • As TDM Plans are reviewed require the site to provide either free, or fee based electric vehicle charging stations. These stations should also constitute preferred parking locations near building or event entrances. The required number of electric vehicle parking spaces and charging stations should be no less than two (2) but no more than the market share of the vehicles as determined by field observation or DMV statistics indicate Long-term: • Continue to monitor the contemporary marketplace for electric powered vehicles and modify local ordinances and policies to accommodate and encourage their use.	• One of the most significant deterrents to making an investment in these vehicles is the lack of recharging opportunities away from the home or work location which limits their effectiveness as viable transportation sources. The presence of the preferred parking sites and available recharge facilities may be a precursor to any positive impacts of this technology.

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Parking fees and charges	• This strategy involves the concept of charging for SOV parking. Currently the cost of parking is paid indirectly through taxes or in the price of goods and services. • High occupancy vehicles should be allowed to park free or at a reduced rate.	Short-term: • Draft a parking fee structure for specific overlay zones similar to Special Business Districts. The draft fees should be market based and might vary by time of day, day of week, etc. • Encourage developers and businesses to implement fee based parking for vehicles at commercial centers and office parks. The fees should be used to offset the costs of providing other TDM strategies such as electric vehicle parking and charging stations, shaded walkways, shuttles and even discounts given to drivers of high efficiency vehicles. • Begin working with the private sector to collect data on the actual number of parking spaces their employees and customers use on a daily basis and investigate the potential to share parking facilities with other nearby businesses to satisfy peak use periods. Mid-term: • Require local developers and businesses to provide appropriate financial incentives, such as Parking Cash Out, for employees that use alternative transportation (or telecommute) rather than park SOVs on site. The funding for this element would be offset from the parking fees collected and from savings to the developers from not building as many parking spaces. Long-term: • Explore the market conditions and periodically re-assess the basic need and the effectiveness of these market based programs.	• This concept allows the consumer to choose to pay for the convenience of SOV travel or to avoid the charges by carpooling, ridesharing, or using public transportation. • The elimination or reduction of the fees for highly efficient or electric vehicles promotes the public's acceptance of these vehicles and with other forms of public transportation. • Parking fees reduce parking demand, address parking congestion and actively support other TDM strategies. CAUTION: Where free parking is common, it is difficult for an individual property owner to price parking, since motorists might park at other parking facilities, causing spillover problems and competitive disadvantage

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Develop a local Parking Plan and Parking Task Force	• This is a comprehensive assessment that includes an existing parking inventory, a set of objectives and strategies for affecting modifications to local parking policies. • The Task Force brings the local business community to the table early in the management of problems and development of solutions.	**Short-term:** • Establish a local policy for the development of a local Parking Plan that includes inventory, resources, problems, objectives, and management strategies. • Begin the integration of the parking inventory into the local GIS database. • Consider establishing a local Parking Task Force that meets two to four times a year to assess the plan and to manage the review and update process. **Mid-term:** • Establish a periodic review schedule for the plan. For example, the schedule might require a brief review annually and a more extensive update every five years. **Long-term:** • Continue to periodically assess the plan and review schedule.	• An organized planning process will reveal a number of related issues and opportunities that might not otherwise be known. • The development of a GIS layer can be useful for developers in their planning and preliminary engineering process. • The development of a Parking Task Force that includes members of the local business community can be used to generate ideas and identify potential issues.

Land Use and Development Policies

The purpose of this section is to outline ways in which TDM strategies can be implemented through the local development process. The development process is complex and includes at least some element of negotiation. The negotiation may be enhanced by developers gaining an increased comprehension of the issues and needs of the local and regional agency. For the Study Area agencies to gain a cooperative partner in the land development process, they should become aware of the many alternative land development possibilities that can benefit the local area and the developer.

One example of the need to educate the area's land developers can be made in the issue of grade separated pedestrian crossovers at a major intersection in Las Vegas, Nevada. In an effort to resolve some serious traffic issues, the municipal agency wanted developers to construct an overcrossing for pedestrians at all four legs of the intersection. After years of resistance, the project was built and achieved great success at resolving the traffic issues. The project has made such an improvement that more recently the area's developers are requesting these overcrossing be built at many other locations along the tourist access roadways. Such clear successes are not always seen. Local governments are sometimes highly resistant to implementing TDM strategies through land development requirements.

Recognizing the escalating costs involved in building new roads and widening existing roads, in addition to the noise, air pollution, traffic congestion, and other automobile related problems, government agencies need to encourage the use of TDM strategies by local governments and private land developers.

In the short-term, Study Area agencies should develop a set of overlay zones that carry the highest potential to reduce personal vehicle use and begin to encourage developers to design mixed use projects. Some of the most successful developments in Southern California in recent years are those that either began as mixed use projects or that were redeveloped with higher intensity of mixed uses including housing units within commercial sites. Also, within these potential trip reduction overlay zones, developments of some minimum size perhaps in partnership with Study Area agencies or the regional transportation agencies should establish a shuttle service that allows employees and or guests of commercial centers to move around the core area without using their personal vehicles. This recommendation is similar to the people mover concept operating at *The River* development in the City of Rancho Mirage.

Most of the short-term recommendations included in this section relate to the institutional aspects of the development process, which will require some modifications to local ordinances. For the mid-term recommendations, there is an emphasis on the establishment of review panels or Task Forces to assess the impacts of the specific strategies and to modify the new rules as needed to continue making positive changes in the reduction of personal vehicle trips and vehicle miles travelled. Long-term strategies should be implemented as soon as funding is available and growth and development warrant.

Table 19 provides an overview of the TDM strategies related to land use and development improvements.

TABLE 19 - LAND USE AND DEVELOPMENT POLICIES

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Transit Oriented Development (TOD)	• This strategy encourages joint and mixed use developments that are typically located near mass transit services.	Short-term: • Begin the development of a TOD overlay zone that identifies the highest potential for reduced personal vehicle use and financial success. • Encourage local developers to consider the use of joint developments or those that mix land uses. Mid-term: • Modify the local land use and tax policies to favor mixed use development with significant savings in the TOD zones. • Provide tax relief or other financial assistance for TOD projects as demonstration or seed investments. Long-term: • Continue to assess the potential for local mixed use developments that show promise in reducing vehicle trips, VMT and reduce emissions.	• Improves accessibility for employees and customers. • Improves air quality by reducing the number of vehicle trips made. • Supports the financial success and efficiency of the community's transit services. • Refocuses development sprawl resulting in more efficient delivery of municipal services which reduces costs.
• Employee housing	• An employer provides or subsidizes full or part-time housing units for their employees, at or adjacent to the workplace.	Short-term: • Continue to encourage these on-site housing arrangements for appropriate businesses and seek new opportunities to model the strategy and include this as part of mixed use developments in other areas. • Provide enhanced credit towards traffic impact fees and TDM Plan trip reduction goals. Mid-term: • Develop an information program that speaks to a variety of large employers encouraging them to provide housing units on or near the worksite in addition to remote Indian Gaming Centers. This activity becomes similar to the mixed use development that is outlined in another section of this report. Long-term: • Continue to assess the changing conditions and demand related to employee housing for large employers. • Consider the addition of an "employee housing for trip reductions" criteria for local development standards and checklists.	• This arrangement is more common in rural agricultural production and Indian Reservation areas and has the potential to significantly reduce commute trips for these destinations. • Employee housing can be a strong employee retention benefit.

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Develop a shuttle program for resorts and hotels	• A shuttle vehicle can be used as localized transport for employees from nearby mass transit transfer locations. • Shuttles can provide local area circulation to events and other attractions.	Short-term: • Develop information guides to educate local hotels and other businesses that might be interested in participating in this type of shuttle service. The parameters of the programs that are adopted should be associated with a graduated series of tax credits or other incentives for the participating organizations. • Consider the potential for local shuttle services that are established and operated by Study Area agencies, SunLine Transit, private event promoters, or other business interests. Mid-term: • If a municipal shuttle service is desired, private resort and shopping attraction businesses may be required to contribute to the cost of operation through an increase in hotel and resort taxes, a fee for service concept, and /or advertising. Long-term: • Continue to assess the benefits of these services and modify the programs over time. Tax credits or other incentives may need to be adjusted in the future.	• Guests of resorts may be able to avoid contracting a full time personal vehicle thereby reducing the cost of their stay. • Typically a portion of resort employees represent low-paying positions, so the coordination of shuttles and transits can help retain good employees. • The greatest trip reduction benefits may occur during the peak tourist season.
• Provide internal circulation for major commercial developments	• Small trams, trolleys, or vans can be used to provide easy access from distant parking areas to store fronts and between shopping and other commercial centers.	Short-term: • Develop a plan to provide a local shuttle tram or van within and between the major shopping venues surrounding Washington Street and Hwy 111. This service can be planned for peak season or year round. Mid-term: • Initiate internal circulation for patrons of major commercial and office developments. An example of this has been implemented at the River commercial center in Rancho Mirage. Long-term: • Encourage developments that accommodate the movement of people between parking and shopping areas efficiently. • This strategy becomes supportive of mixed use developments that allow people to link trips in close proximity.	• This strategy reduces the number of private vehicles that are moving from one commercial center to another. The shopper can arrive at the site via public transit or park once in the area and move from parking space to storefronts or other centers by this circulating vehicle rather than take their own vehicle back on to the roadways multiple times in a single shopping trip.

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Provide Information Centers for Transportation Alternatives at major employers and other trip destinations including concert and sporting event sites and, malls.	• These are localized sites where information can be distributed about transit services and rideshare and carpool information. • The local TDM Ordinance is designed facilitate the employee's use of TDM measures.	Short-term: • Contract with the local mall developers and operators to include transportation related information such as bus and shuttle schedules at their "Information Desks." In addition SunLine Transit should consider placing a kiosk or vending devise for ticket and discounted pass sales at these and other locations. • Modify the local TDM Ordinance to require employers to include and maintain an information center where employees can receive information about alternative transportation resources, rideshare matching and carpools. Mid-term: • Continue to provide contemporary information that is appropriate for the local and regional conditions. Information should keep the public aware of any new TDM strategies and of those that have become outdated or abandoned. Long-term: • Continue to review and revise information as conditions change.	• Employees are more encouraged to use the available alternative transportation modes when the employing firm demonstrates a supportive culture.
• Restriction of delivery hours away from the peak use periods.	• This is a very restrictive measure and is only appropriate in the most severe or unique situations. (For example, in Central London trucked deliveries can only be made at night or during off peak times.)	Short-term: • Conduct an observation and/or survey of businesses to determine what hours most deliveries are made and solicit ideas from the businesses about this issue. Businesses will need to define what types of deliveries can be shifted and which type cannot. Mid-term: • Define a Task Force to review the information that is collected and the suggestions made to determine the potential for using this strategy. Long-term: • Periodically review changing conditions to determine the potential value of these restrictions in the future.	• This measure can shift trips away from the peak use periods, which reduce congestion and improve air quality. • This measure may require significant modification to business operations and to the logistics firm's responsible for making deliveries.

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Establish parking fees at some employment sites.	• Employees are assessed a fee for parking to encourage use of alternative transportation.	Short-term: • Review the current development standards to determine if the minimum number of parking spaces might be reduced as an incentive to participation. This review should also address the creation of a "maximum" number of spaces for any specific development. Mid-term: • Charging employees for parking single occupant vehicles can reduce the demand for spaces. This strategy can open opportunities for additional shared or mixed use additions to existing projects. • Providing a parking cash out program for employees can reduce the number of work trips, especially those with shorter commute. Long-term: • Periodically review and update the parking fee programs and adjust the amounts charged or other elements in response to changes in demand.	• In addition to encouraging alternative transportation for work trips, this strategy can generate funding to subsidize the alternative mode. • Typically this measure is implemented at employers' site such as hospitals and other large employment centers where carpooling, ridesharing, and transit are likely available.
• Golf cart circulation systems and charging facilities	• This strategy promotes the use of golf carts and neighborhood electric vehicles establishing a golf cart plan that may allow the use of wide sidewalks and other trails as a means of connecting the residences to commercial centers.	Short-term: • Continue to expand the existing golf cart systems. • Investigate how the golf cart usage can be integrated into the sidewalk or bikeway systems along key roadways where speed limits are over 25 miles per hour. • Develop a program of placing visible signs along local roads that permit golf carts. Mid-term: • Modify the TDM ordinance to require provision for golf cart charging outlets at commercial, government, and institutional developments that are located within golf cart zones. The charging stations may be free or fee based. Long-term: • Continue to assess the changing conditions of golf cart transportation demand. Assessments should provide recommendations for updating these policies.	• Golf cart ordinances have been helpful in establishing conditions for the safe operations of these clean air vehicles. • The development of a Golf Cart system can generate interest in other types of Neighborhood Electric Vehicles.

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Provision of bicycle lanes within commercial centers.	• This includes bike lane stripping and signage within major commercial centers.	**Short-term:** • Modify the local **Commercial Precise Grading Plan Review Checklist** to include a requirement for bike lane stripping and signage that extends from the primary roadway access to the bike rack location near building entrances. • Begin to require retrofit of bike lane stripping and signage within existing centers during permitting events. • Identify and remove any barriers to bicycle and pedestrian movement through commercial centers between roadway entrances or transit stops and building entrances. **Mid-term:** • Continue to pursue the proper use of bike lane stripping and signing according to industry standards. **Long-term:** • Periodically assess the various development standards for their impacts on non-motorized transportation modes.	• Any measure that adds dedicated bike way facilities is considered effective in enhancing bicycle use for commuting or for pleasure.
• Preferential parking for ridesharing and carpool vehicles and other multiple occupant vehicles	• Provides preferential parking for rideshare / carpooling vehicles near entrances.	**Short-term:** • Modify the local TDM Ordinance (9.180) to require the placement of rideshare / carpool parking facilities for employees of all businesses or developments qualifying under the TDM Ordinance. The requirement should require a minimum of 2.5% of the total number of parking spaces. • Modify the TDM Ordinance to require office parks and retail centers to provide preferential parking for multiple occupant vehicles in a fashion similar to the ADA spaces and electric vehicle spaces. The minimum number of spaces should be 2.5% of the total number of regular spaces. **Mid-term:** • Assess the effectiveness of the preferred parking spaces for multiple occupant vehicles and adjust the number of spaces required in response to the current demand. **Long-term:** • Continue to assess and modify the program as conditions change.	• This strategy is not typically considered for small retail operations or small industrial sites where staff hours fluctuate. • This measure is effective where there are consistent ridesharing activities including farming, manufacturing and hospitals

TDM STRATEGIES		RECOMMENDATIONS	BENEFITS
• Onsite childcare facilities	• Employer provides or contracts for childcare operations at the work site.	Short-term: • Investigate opportunities for developers to provide priority to child care facilities located within large commercial, manufacturing, or office park developments. The rents paid by these services might be assessed at a reduced rate to encourage these investments. This may include the use of tax credits and enhanced trip reduction credits for developers. Mid-term: • Search out a potential child care provider and developer to initiate this program as a means of gathering data on the effectiveness and public acceptance of this strategy. Long-term: • Periodically assess the demand for continuing or the need for modification to the strategy.	• This measure can be effective in for large employers or institutions but maybe cost-prohibitive for small employers. • Onsite childcare facilities are being seen at higher education campuses, hospitals, and other very large employers.
• Encourage pedestrian -oriented land use in development layout and building designs	• Developers are required to demonstrate how pedestrians move about any development.	Short-term: • Modify the TDM Ordinance (9.180) to require the development of a pedestrian circulation plan at the design review stage. • Encourage developers to adopt Universal Design for all pedestrian facilities within the site. This insures the compliance with ADA requirements and offers higher value pedestrian experiences. Mid-term: • Periodically review and update this strategy as conditions change. Long-term: • Periodically review and update this strategy as conditions change.	• The presence of safe pedestrian facilities encourages people to replace some vehicle trips with a walk trip especially for short distances. Pedestrian may decide to walk to a nearby store rather than drive to a more distant location. • Pedestrian facilities enhance a community's quality of life.
• Mixed Use Development	• This strategy supports land use and community designs that focus on the placement of residences and commercial activities in the same development or in close proximity.	Short-term: • Encourage local developers to include mixed use design elements in any new development. Some of these developments are born from a collaborative partnership of developers. • Reduce building set-backs, the number of parking spaces required and allow a higher level of development within the mixed use project. New development projects should cluster buildings to encourage pedestrian access Mid-term: • Develop a series of educational materials for local developers that promotes the advantages and benefits of Mixed Use designs. Long-term: • Periodically review and modify the program as conditions change.	• Mixed use developments have been very successful in many areas of Southern California. They have resulted in the revitalization of outdated and underutilized commercial sites as well as entire communities and carry lower municipal costs due to the shared use of services. One example of this is the Paseo Colorado in Old Town Pasadena.

Site Specific TDM Suggestions and Recommendations

The previous section included generalized TDM recommendations organized under six TDM categories (i.e., Transit System Improvements). In this section, some of these suggestions will be presented for a specific location on the aerial photos. Most of these are made for implementation of potential physical improvements and programs that are most likely to be effective within the Study Area over the short-term or in some cases mid-term.

The suggestions and recommendations included in the preceding section under the six TDM categories are all candidates for implementation but will also depend on conditions such as economic fluctuations, technology advances, and even cultural attitude shifts regarding vehicle travel. The specific suggestions presented on the figures below also have application at any number of different locations that may not be shown on the figures. Here the improvements focus on removing barriers to the use of alternative transportation modes. For example, installation of crosswalk striping with on demand flashing pedestrian warnings imbedded in the roadway pavement at key locations provides a sense of safety that may affect an individual's decision to convert a vehicle trip to a walk trip. One of the frequent observations during the field reviews was that the sidewalk systems in the Valley seemed to be designed to take people past commercial centers rather than inviting them to enter. The absence of openings in landscaping and walls surrounding shopping centers serve as real barriers for the elderly and for people with physical limitations. Constructing paved direct access paths between the roadside and commercial centers and offices has not been a focus of local designers or reviewing municipal departments. That does appear to be changing as evidenced by the interest in this project and the attitude of cooperation offered to the project team by the Valley's local agencies.

Measuring the success of TDM strategies is a difficult if not impossible process. TDM by nature requires the shifting of personal choices made by different people with different ideas and concepts, political views, economic abilities, and sometimes cultural concepts. For example:

> An employee drives their own vehicle to work each day, but notices that the transit stop nearby is has new solar powered lighting and there are new pathways being constructed between the bus stop and the workplaces. At about the same time the employee receives a notice that discounted bus passes are available from their employer. This employee is facing a series of stimulus that when combined over time may shift their attitude toward using transit. Perhaps the regional transit agency initiates a marketing program encouraging people to "try transit for free" program for some specific time period. The person may make the decision to try taking a bus to work as an alternative to driving personal vehicle.

As the TDM strategies presented here are implemented they will definitely serve to influence the public's attitude toward alternative travel modes, it is impossible to be certain which particular strategy affected their final decision. This is the reality of TDM efforts. Therefore, this project includes a number of suggestions for site specific improvements all along the corridor that focus on removing non-motorized travel barriers. Achieving success in shifting people into more efficient and healthier travel modes cannot be achieved by a

single agency in the Valley, which is why the project team conducted field reviews and made suggestions and recommendations for improvements along most of the Highway 111 corridor.

Figures 3-1, 3-2, and 3-3 below are aerial photos, used as maps of Highway 111 and the immediate area within the Study Area. The aerial photos have been used to identify exactly where some of these TDM measures might be implemented as part of Study Area agencies' efforts to promote non-motorized transportation modes and reduce congestion. Of course these are suggestions made without the benefit of engineering analysis and are made as suggestions to begin a dialog of local agency staff from various departments to openly discuss these possibilities.

Appendix G includes similar graphically suggested site specific improvements based on field observations and research for the area surrounding Highway 111 from Palm Springs in the west to Indio in the east. The aerial photos may be of particular interest to each specific jurisdiction along the corridor and therefore the portions of the highway within each of the aerial photos will largely be broken at city limit boundaries as shown below in Table 20.

TABLE 20
Aerial Photo Mapping by Local Agency

AGENCY	FIGURES
City of Palm Springs	A-3-1, A-3-2, A-3-3
City of Cathedral City	A-3-4, A-3-5
City of Rancho Mirage	A-3-6, A-3-7, A-3-8, A-3-9
City of Palm Desert	A-3-10, A-3-11, A-3-12
City of Indian Wells	A-3-13
City of Indio	A-3-14, A-3-15, A-3-16 A-3-17

La Quinta

Legend

- Proposed Sidewalk
- Develop Internal Circulation
- No Amenities Transit Stop
- Transit Stop
- Add Bike Racks/Lockers
- Internal Pedestrian Striping
- Potential Bike Routes
- Potential Offsite Parking Site w/Shuttle
- Secure Gate Access
- Provide Direct Access
- Potential Pedestrian Lighting
- Electric Vehicle Charging

Figure 16

VRPA Technologies, Inc.

VRPA Technologies, Inc.

La Quinta

Legend

- Proposed Sidewalk
- Develop Internal Circulation
- No Amenities Transit Stop
- Transit Stop
- Add Bike Racks/Lockers
- Internal Pedestrian Striping
- Potential Bike Routes
- Potential Offsite Parking Site w/Shuttle
- Secure Gate Access
- Provide Direct Access
- Potential Pedestrian Lighting
- Electric Vehicle Charging

Figure 17

VRPA Technologies, Inc.

VRPA Technologies, Inc.

La Quinta

Legend

- Proposed Sidewalk
- Develop Internal Circulation
- No Amenities Transit Stop
- Transit Stop
- Add Bike Racks/Lockers
- Internal Pedestrian Striping
- Potential Bike Routes
- Potential Offsite Parking Site w/Shuttle
- Secure Gate Access
- Provide Direct Access
- Potential Pedestrian Lighting
- Electric Vehicle Charging

Figure 18

VRPA Technologies, Inc.

VRPA Technologies, Inc.

Appendix A

Project Development Team Membership
Project Team Staff

Project Development Team

Tim Jonasson, City of La Quinta
Bryan McKinney, City of La Quinta
Nick Nickerson, City of La Quinta
Mark Greenwood, City of Palm Desert
Mark Diercks, City of Palm Desert
Lawrence Tai, County of Riverside
Mojahed Salama, County of Riverside
Alan Waggle, CVAG
Tim Wassil, City of Indian Wells
Tom Rafferty, City of Indio
J. Smith, City of Indio

Project Team Staff

Georgiena Vivian, VRPA Project Manager
Kerry Colvin, VRPA Team Member, TDM
Erik Ruehr, VRPA Team member, TSM
Jeff Stine, VRPA Support Staff
Jason Ellard, VRPA Support Staff
Matt Adolph, VRPA Support Staff
David Gallagher, VRPA Technician

Appendix B

Existing Traffic Count Data

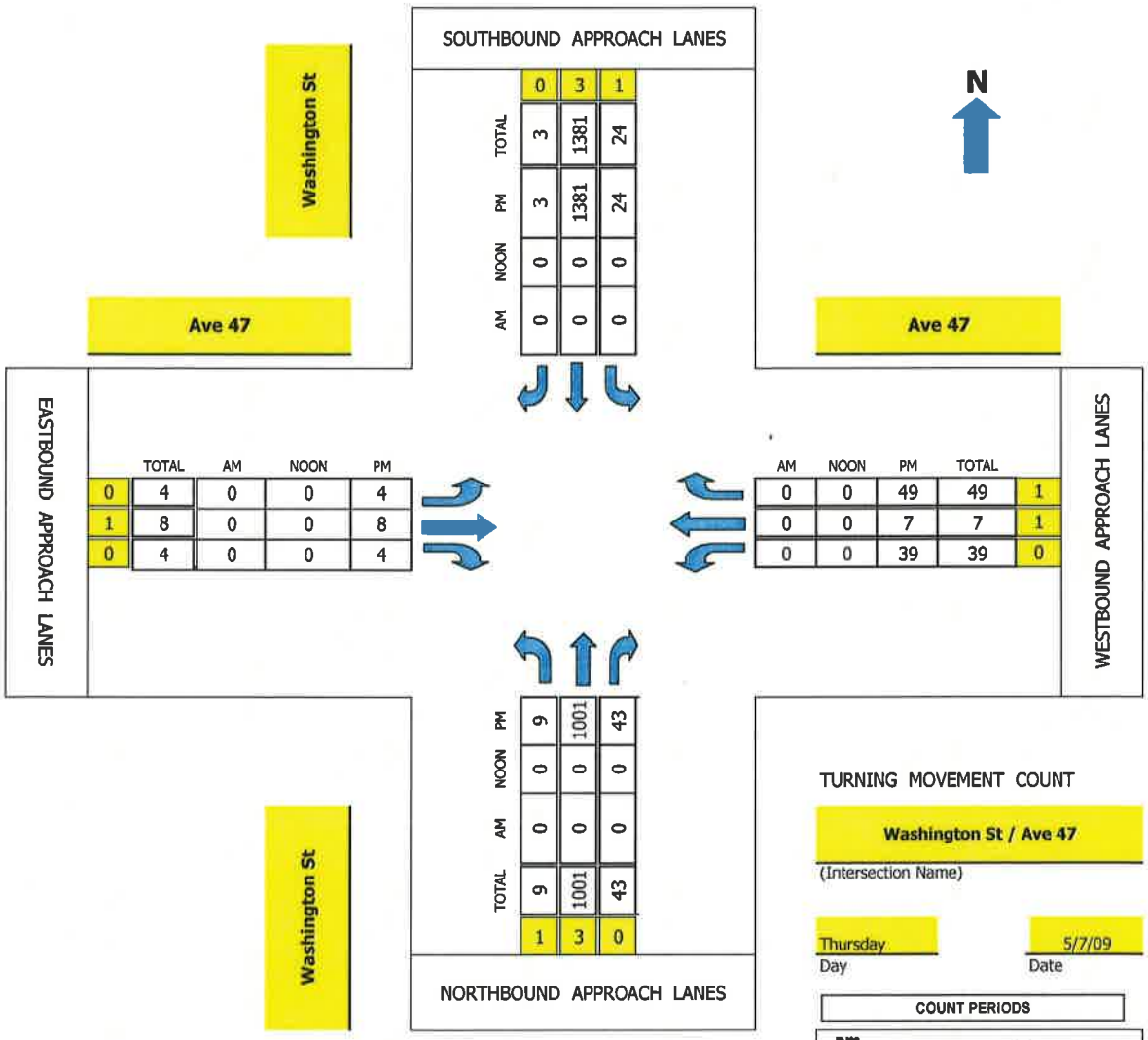
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Washington St/Ave 47

Project #: 09-6021-003



TURNING MOVEMENT COUNT

Washington St / Ave 47
(Intersection Name)

Thursday
Day

5/7/09
Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	430 PM

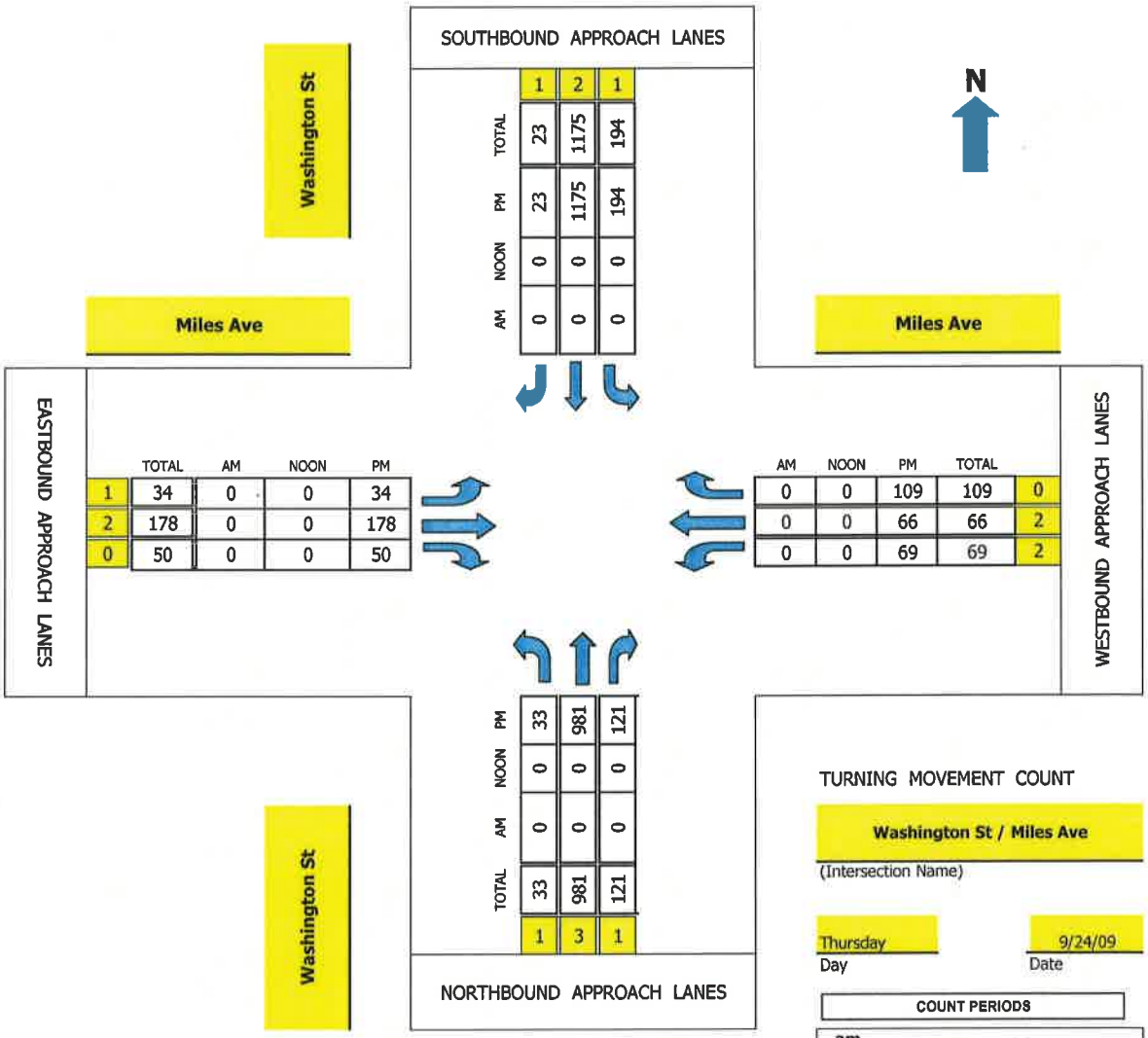
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Washington St/Miles Ave

Project #: 09-6040-002



TURNING MOVEMENT COUNT

Washington St / Miles Ave
(Intersection Name)

Thursday
Day

9/24/09
Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	430 PM

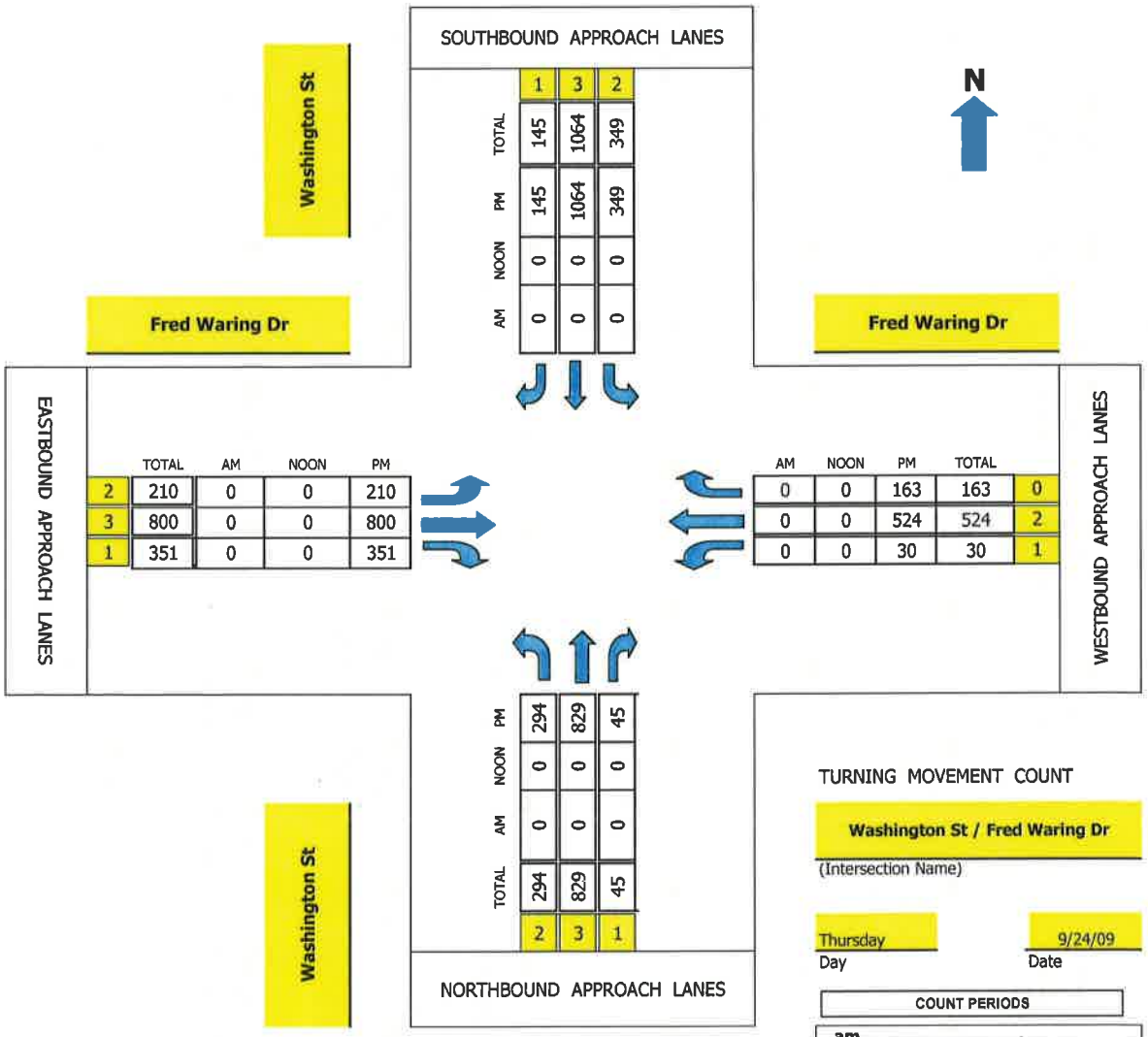
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Washington St/Fred Waring Dr

Project #: 09-6040-001



TURNING MOVEMENT COUNT

Washington St / Fred Waring Dr

(Intersection Name)

Thursday — Day

9/24/09 — Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	430 PM

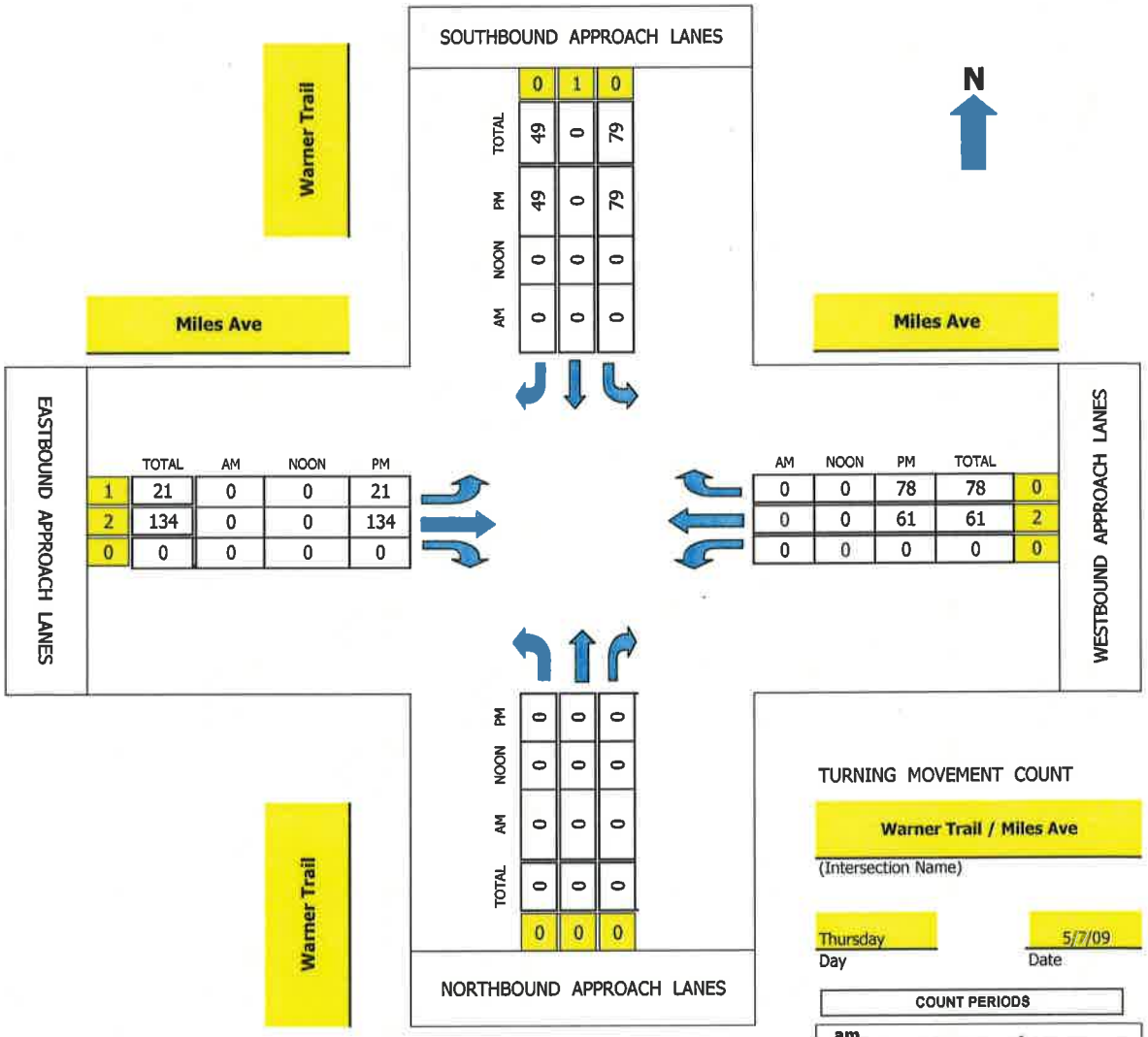
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Warner Trail/Miles Ave

Project #: 09-6021-039



TURNING MOVEMENT COUNT

Warner Trail / Miles Ave
(Intersection Name)

Thursday — Day

5/7/09 — Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	330 PM

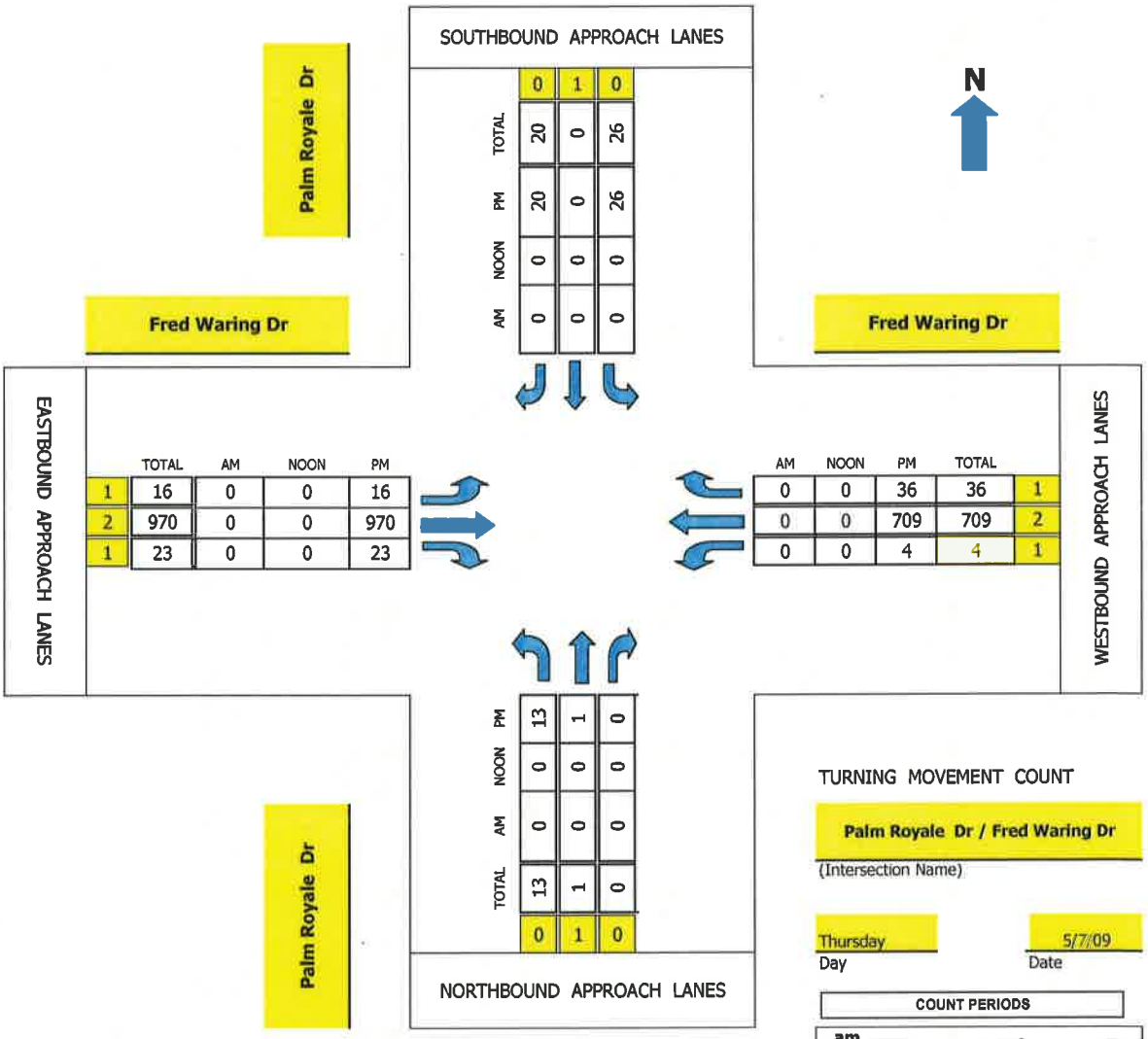
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Palm Royale Dr/Fred Waring Dr

Project #: 09-6021-038



	TOTAL	AM	NOON	PM
1	16	0	0	16
2	970	0	0	970
1	23	0	0	23

AM	NOON	PM	TOTAL	
0	0	36	36	1
0	0	709	709	2
0	0	4	4	1

TOTAL	0	1	0
	20	0	26
PM	20	0	26
NOON	0	0	0
AM	0	0	0

PM	13	1	0
NOON	0	0	0
AM	0	0	0
TOTAL	13	1	0
	0	1	0

TURNING MOVEMENT COUNT

Palm Royale Dr / Fred Waring Dr
(Intersection Name)

Thursday — Day

5/7/09 — Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	330 PM

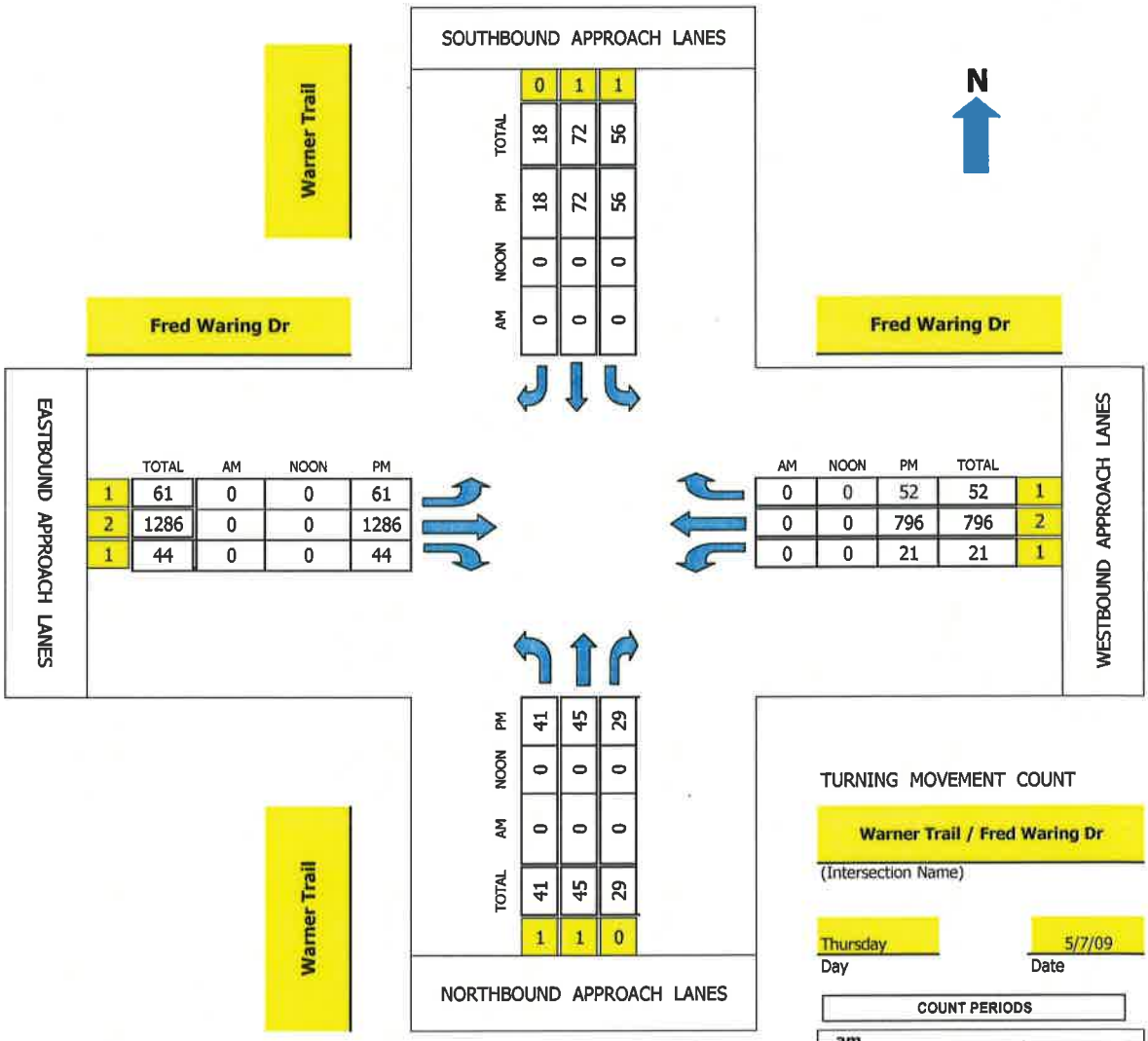
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Warner Trail/Fred Waring Dr

Project #: 09-6021-037



TURNING MOVEMENT COUNT

Warner Trail / Fred Waring Dr

(Intersection Name)

Thursday — Day

5/7/09 — Date

COUNT PERIODS		
am		-
noon		-
pm	3:30 PM	- 5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	430 PM

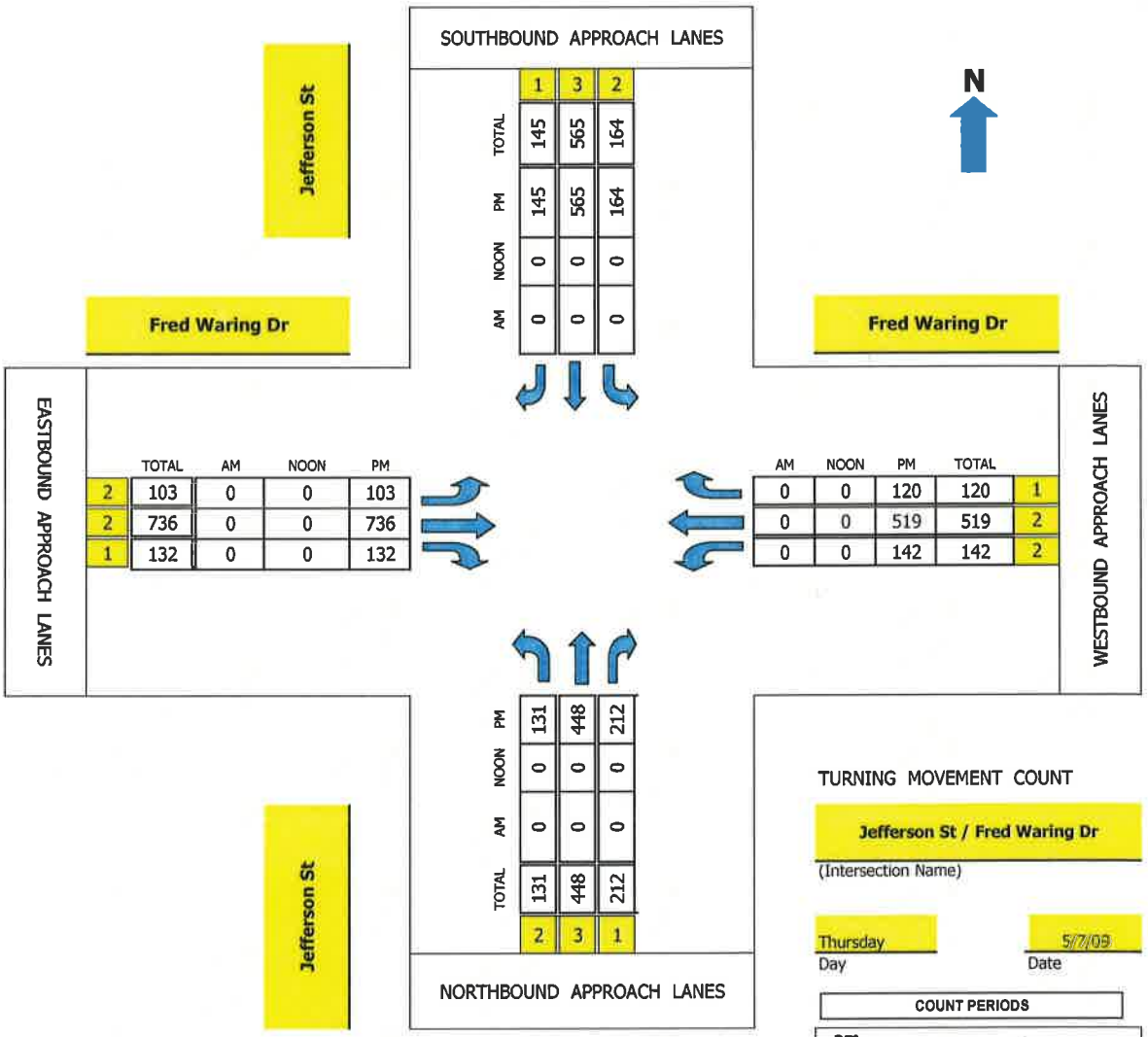
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Jefferson St/Fred Waring Dr

Project #: 09-6021-036



TURNING MOVEMENT COUNT

Jefferson St / Fred Waring Dr
(Intersection Name)

Thursday
Day

5/7/09
Date

COUNT PERIODS		
am		-
noon		-
pm	3:30 PM	- 5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	430 PM

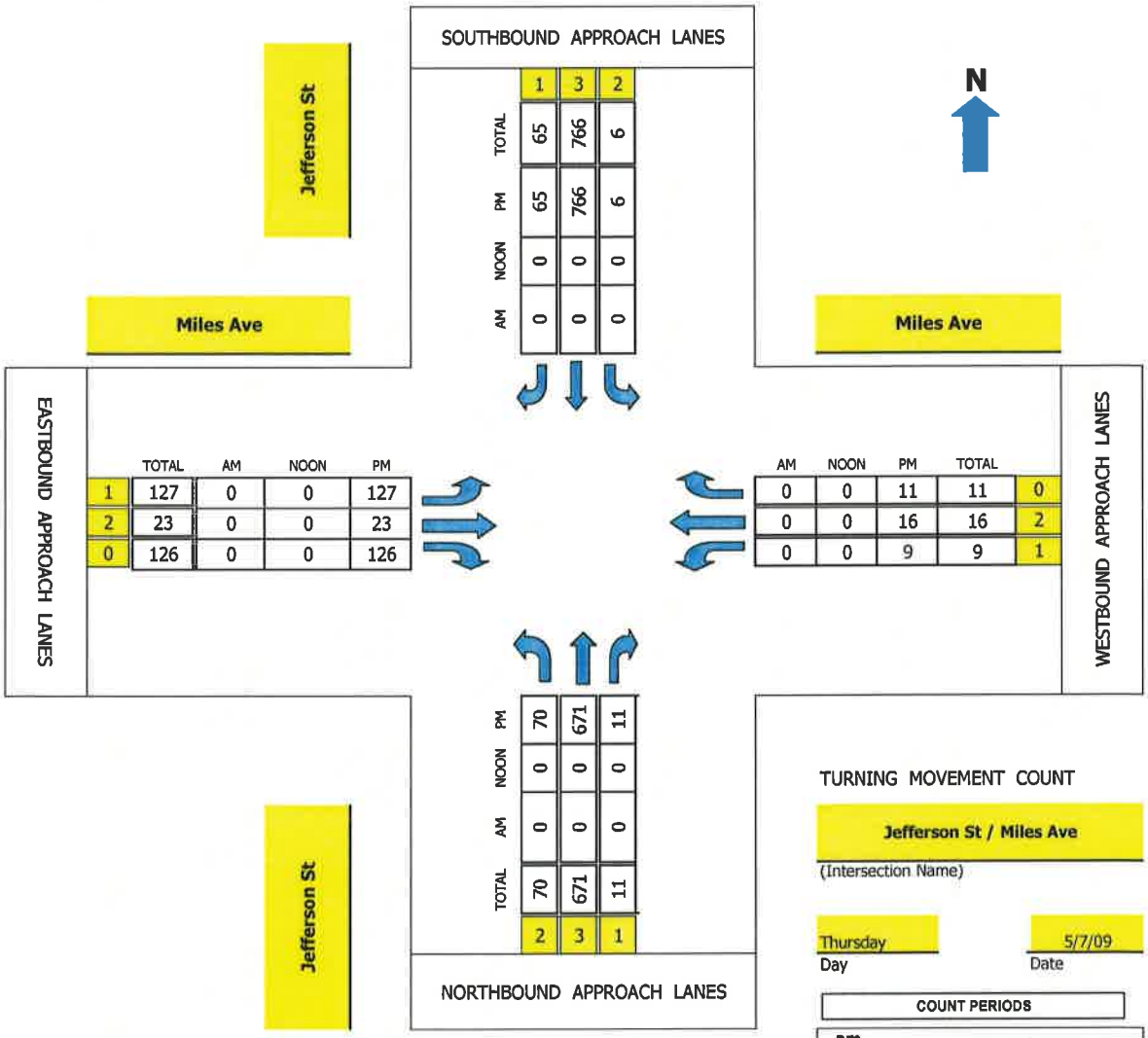
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Jefferson St/Miles Ave

Project #: 09-6021-035



TURNING MOVEMENT COUNT

Jefferson St / Miles Ave

(Intersection Name)

Thursday — Day

5/7/09 — Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	430 PM

Intersection Turning Movement

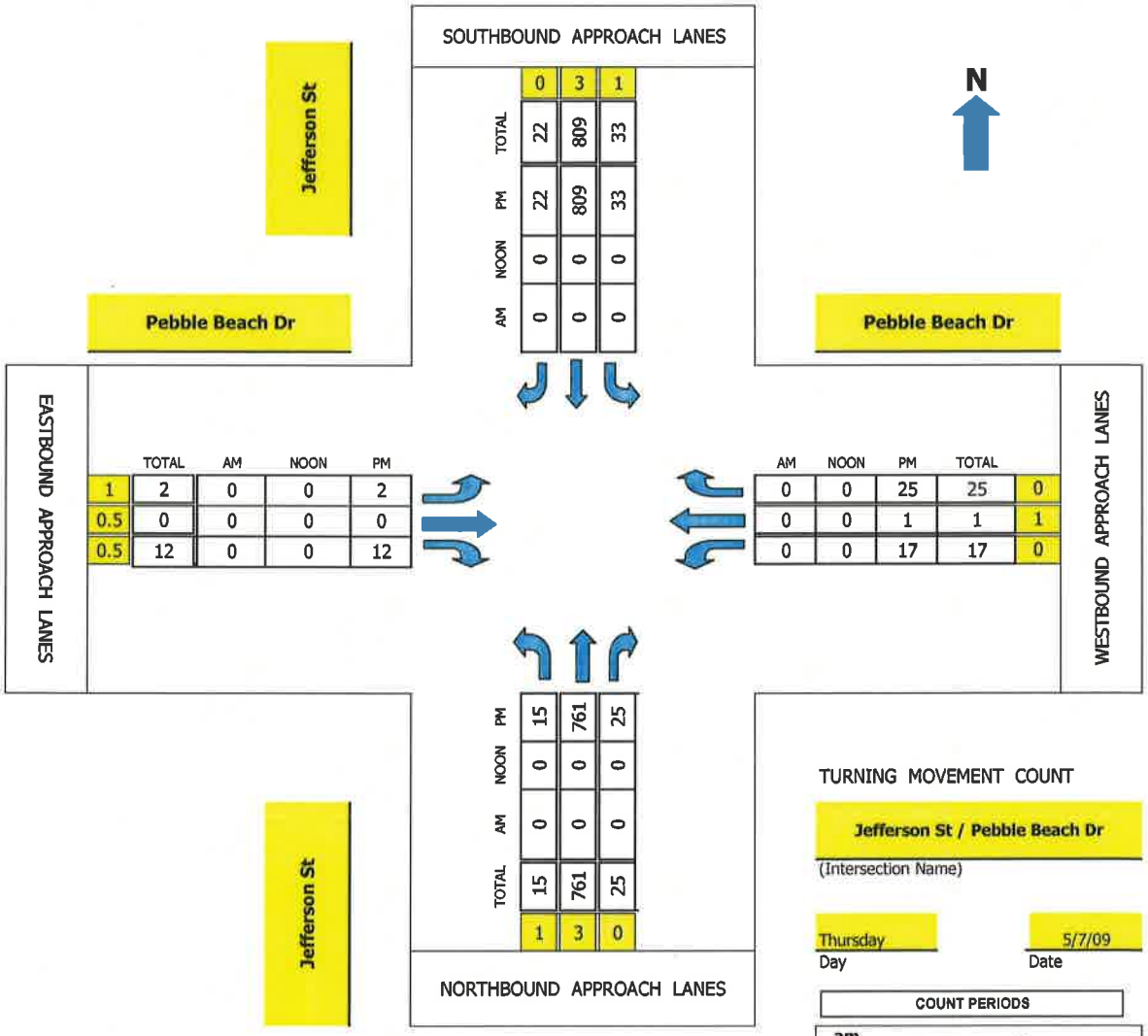
Prepared by:

NDS

National Data & Surveying Services

TMC Summary of Jefferson St/Pebble Beach Dr

Project #: 09-6021-034



	TOTAL	AM	NOON	PM
1	2	0	0	2
0.5	0	0	0	0
0.5	12	0	0	12

AM	NOON	PM	TOTAL	
0	0	25	25	0
0	0	1	1	1
0	0	17	17	0

TOTAL	22	809	33
PM	22	809	33
NOON	0	0	0
AM	0	0	0

0	3	1	
TOTAL	15	761	25
PM	15	761	25
NOON	0	0	0
AM	0	0	0
1	3	0	

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	330 PM

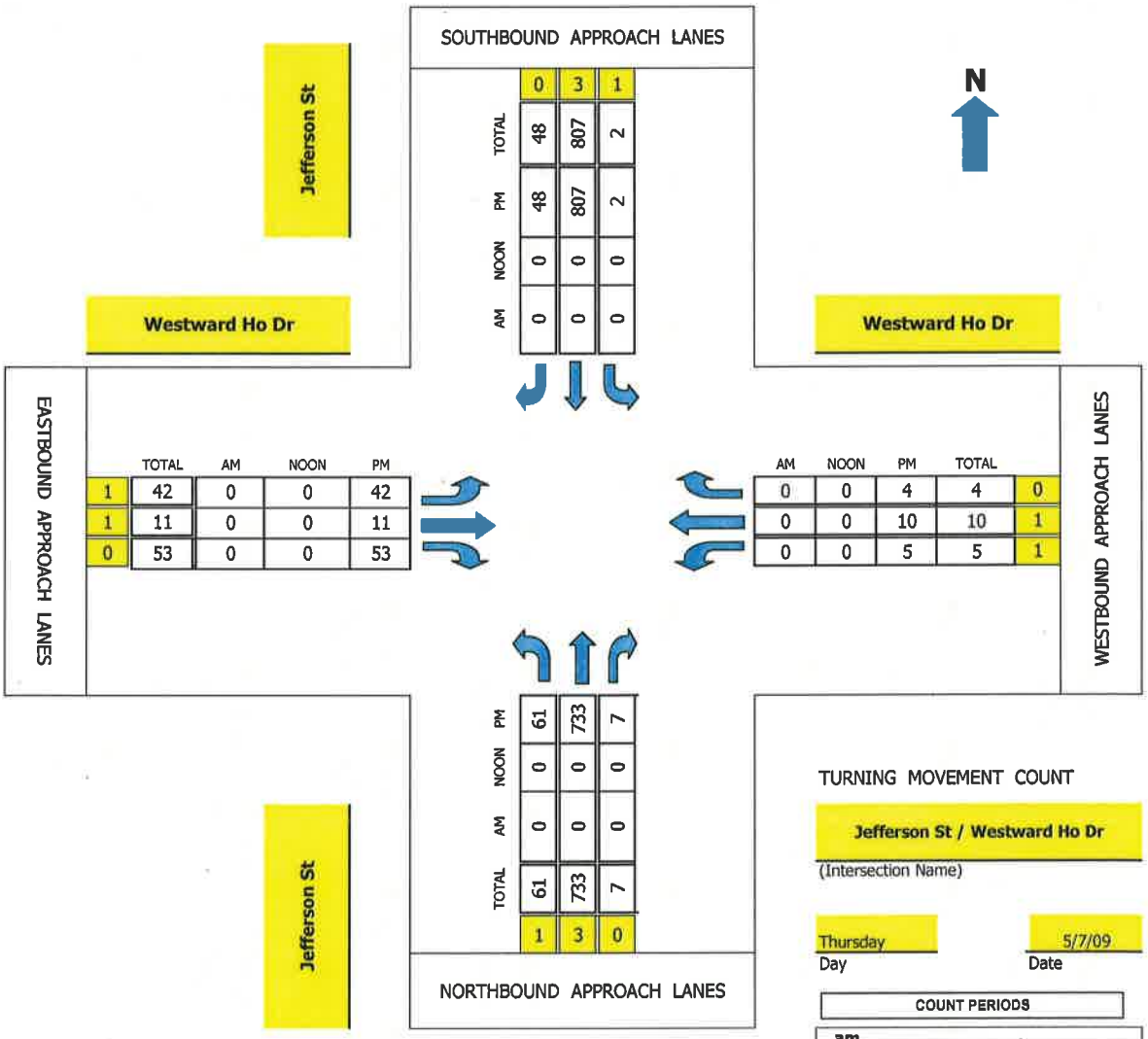
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Jefferson St/Westward Ho Dr

Project #: 09-6021-033



TURNING MOVEMENT COUNT

Jefferson St / Westward Ho Dr
(Intersection Name)

Thursday — Day

5/7/09 — Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

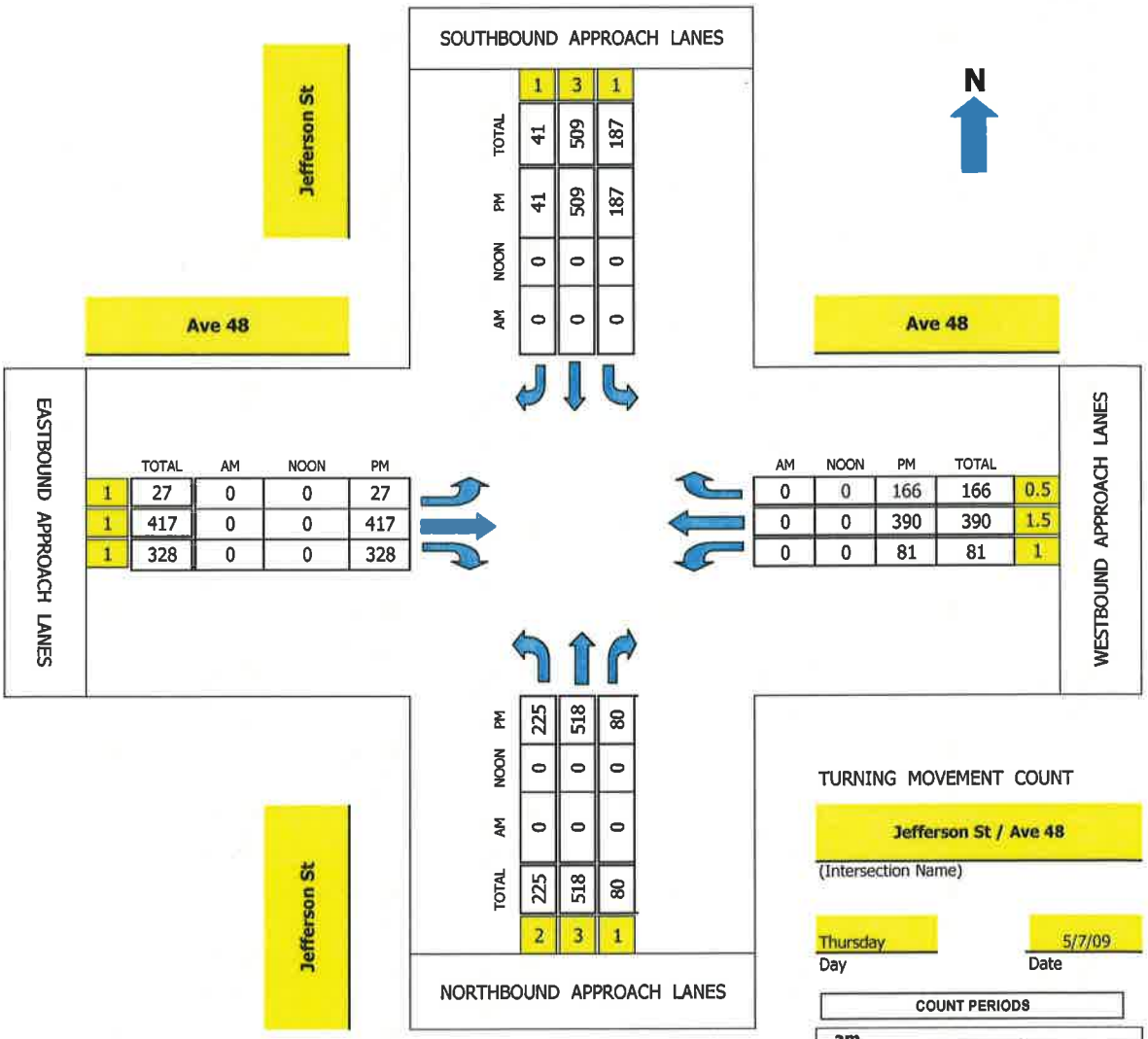
AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	430 PM

Intersection Turning Movement

Prepared by:
NDS
National Data & Surveying Services

TMC Summary of Jefferson St/Ave 48

Project #: 09-6021-031



TURNING MOVEMENT COUNT

Jefferson St / Ave 48
(Intersection Name)

Thursday — Day
5/7/09 — Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	330 PM

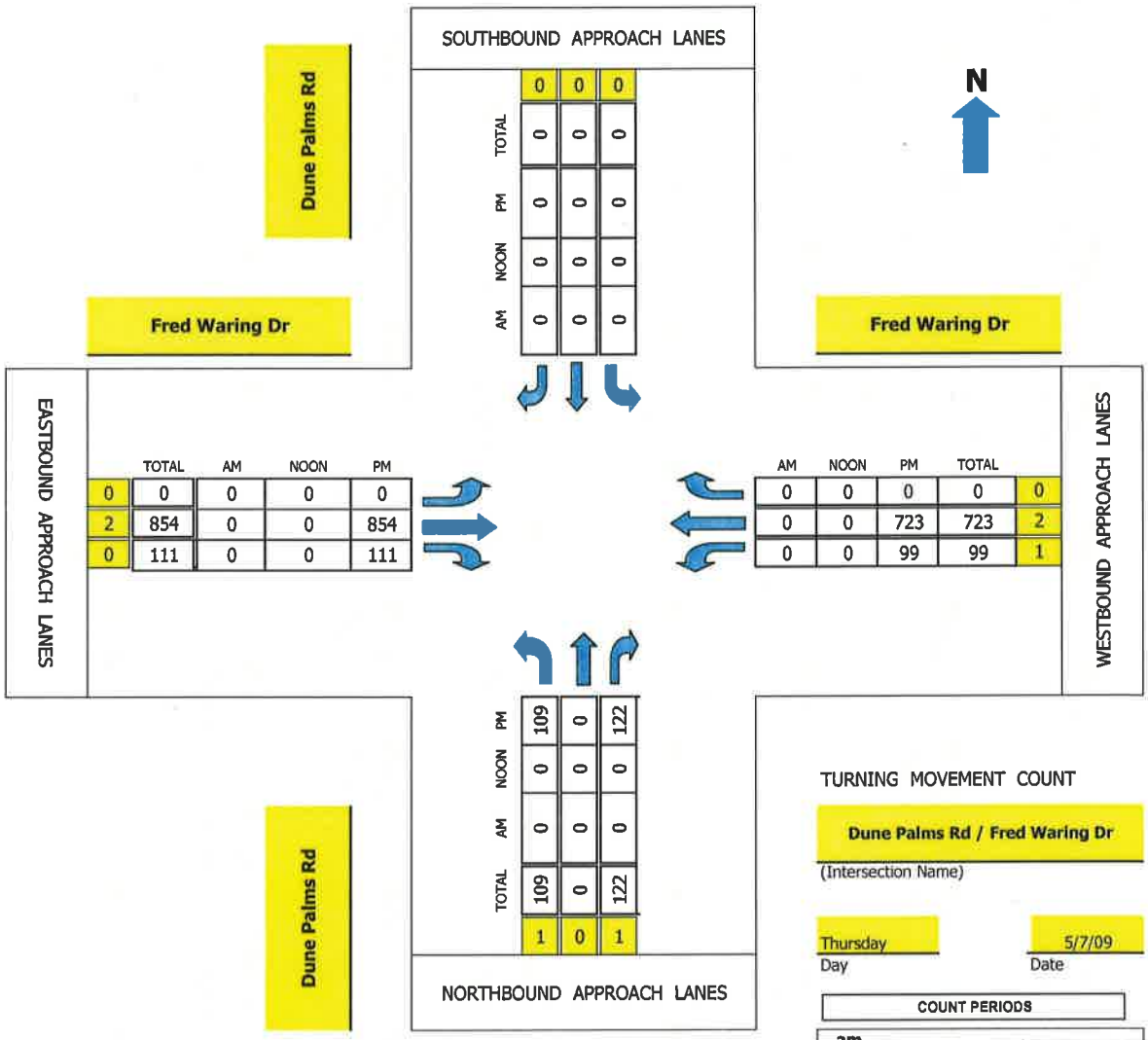
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Dune Palms Rd/Fred Waring Dr

Project #: 09-6021-030



	TOTAL	AM	NOON	PM
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

	AM	NOON	PM	TOTAL
0	0	0	0	0
2	854	0	0	854
0	111	0	0	111

	AM	NOON	PM	TOTAL
0	0	0	0	0
2	0	0	723	723
1	0	0	99	99

	TOTAL	AM	NOON	PM
0	109	0	0	109
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1	122	0	0	122

TURNING MOVEMENT COUNT

Dune Palms Rd / Fred Waring Dr
(Intersection Name)

Thursday
Day

5/7/09
Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	430 PM

Intersection Turning Movement

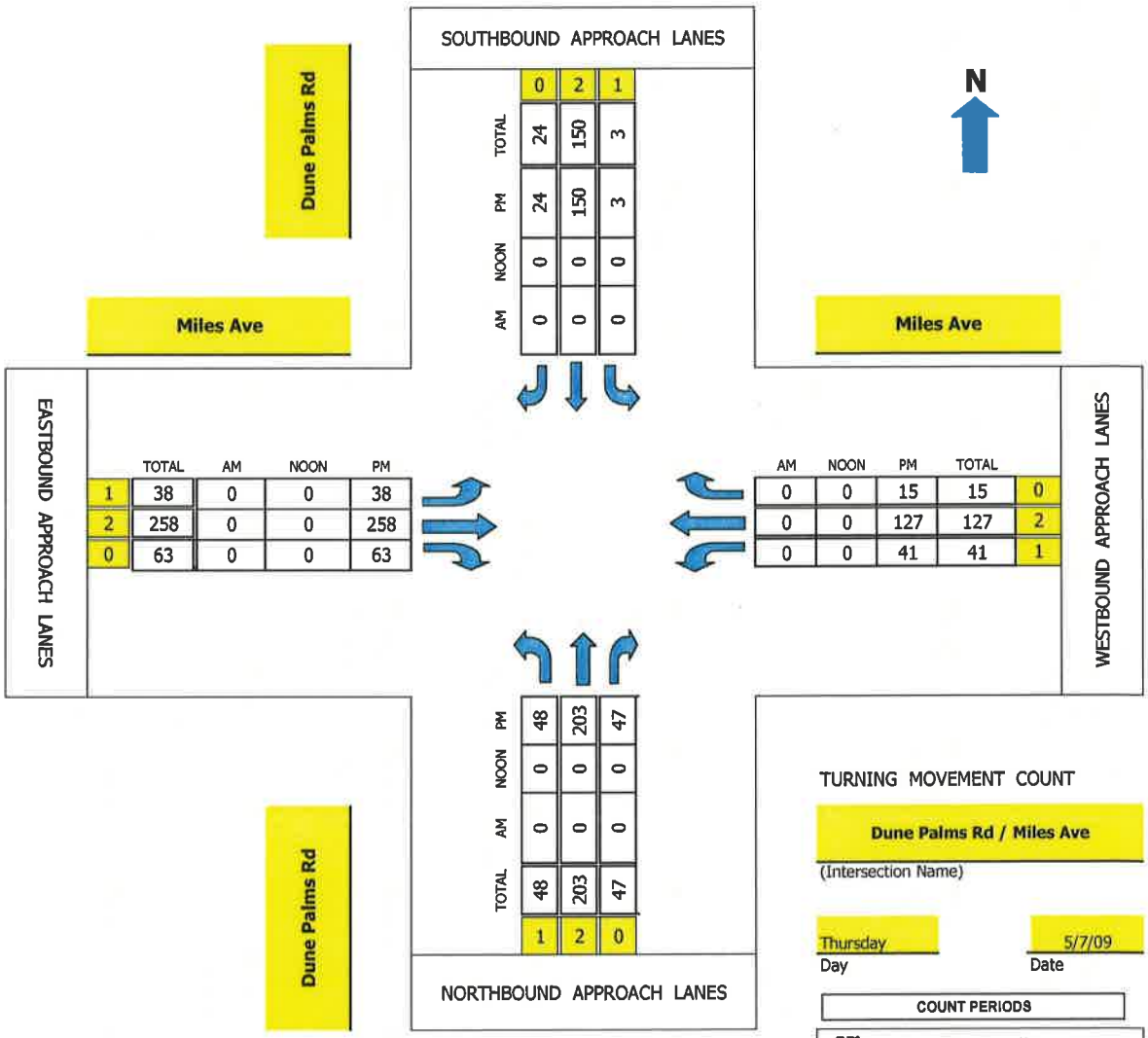
Prepared by:

NDS

National Data & Surveying Services

TMC Summary of Dune Palms Rd/Miles Ave

Project #: 09-6021-029



	TOTAL	AM	NOON	PM
0	24	0	0	24
2	150	0	0	150
1	3	0	0	3

	TOTAL	AM	NOON	PM
1	38	0	0	38
2	258	0	0	258
0	63	0	0	63

	AM	NOON	PM	TOTAL
0	0	0	15	15
2	0	0	127	127
1	0	0	41	41

	TOTAL	AM	NOON	PM
1	48	0	0	48
2	203	0	0	203
0	47	0	0	47

TURNING MOVEMENT COUNT

Dune Palms Rd / Miles Ave

(Intersection Name)

Thursday — Day

5/7/09 — Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	430 PM

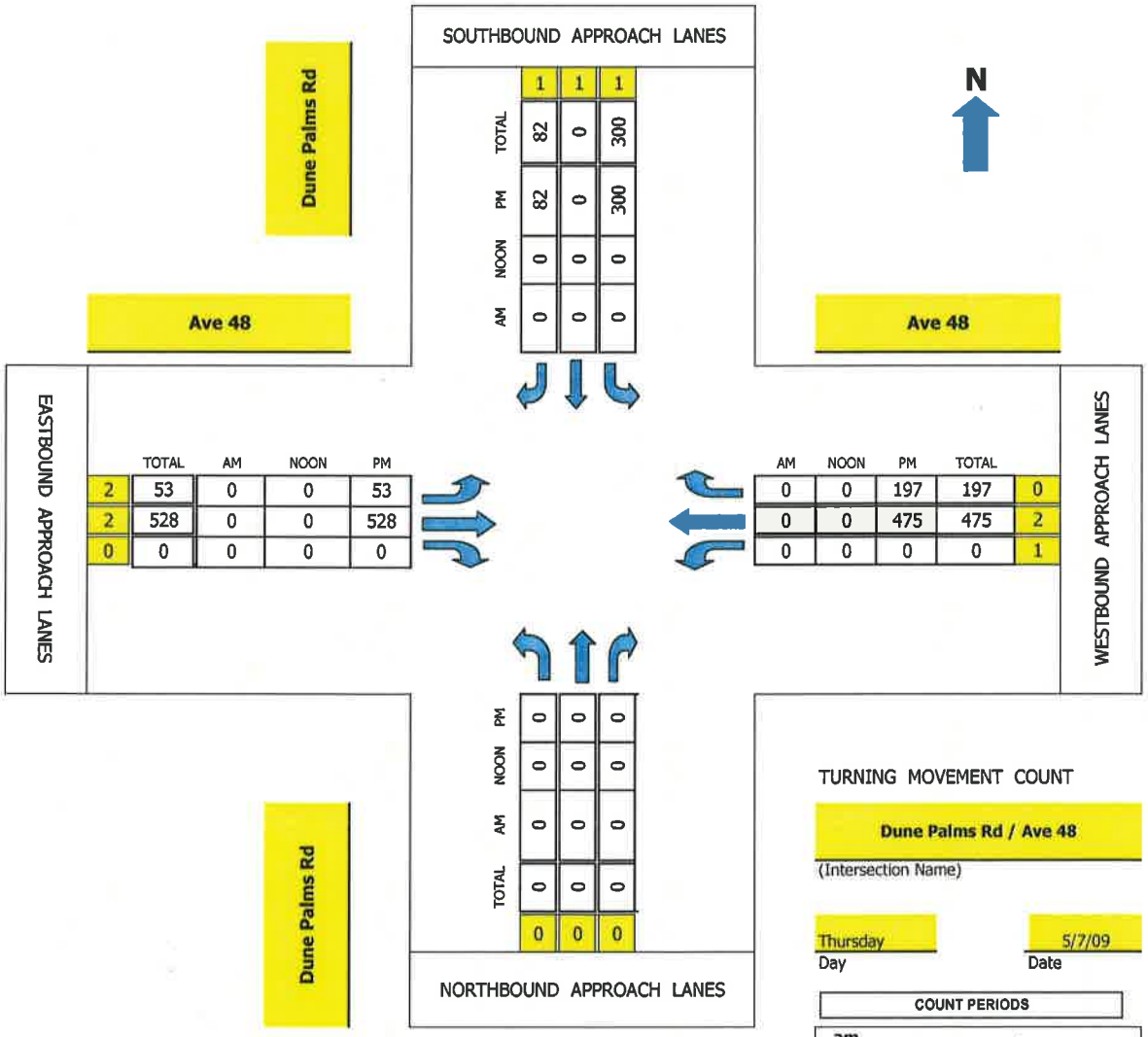
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Dune Palms Rd/Ave 48

Project #: 09-6021-027



	TOTAL	AM	NOON	PM
2	53	0	0	53
2	528	0	0	528
0	0	0	0	0

	AM	NOON	PM	TOTAL	
0	0	0	197	197	0
0	0	0	475	475	2
0	0	0	0	0	1

	1	1	1
TOTAL	82	0	300
PM	82	0	300
NOON	0	0	0
AM	0	0	0

PM	0	0	0
NOON	0	0	0
AM	0	0	0
TOTAL	0	0	0
	0	0	0

TURNING MOVEMENT COUNT

Dune Palms Rd / Ave 48
(Intersection Name)

Thursday — Day

5/7/09 — Date

COUNT PERIODS			
am		-	
noon		-	
pm	3:30 PM	-	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	430 PM

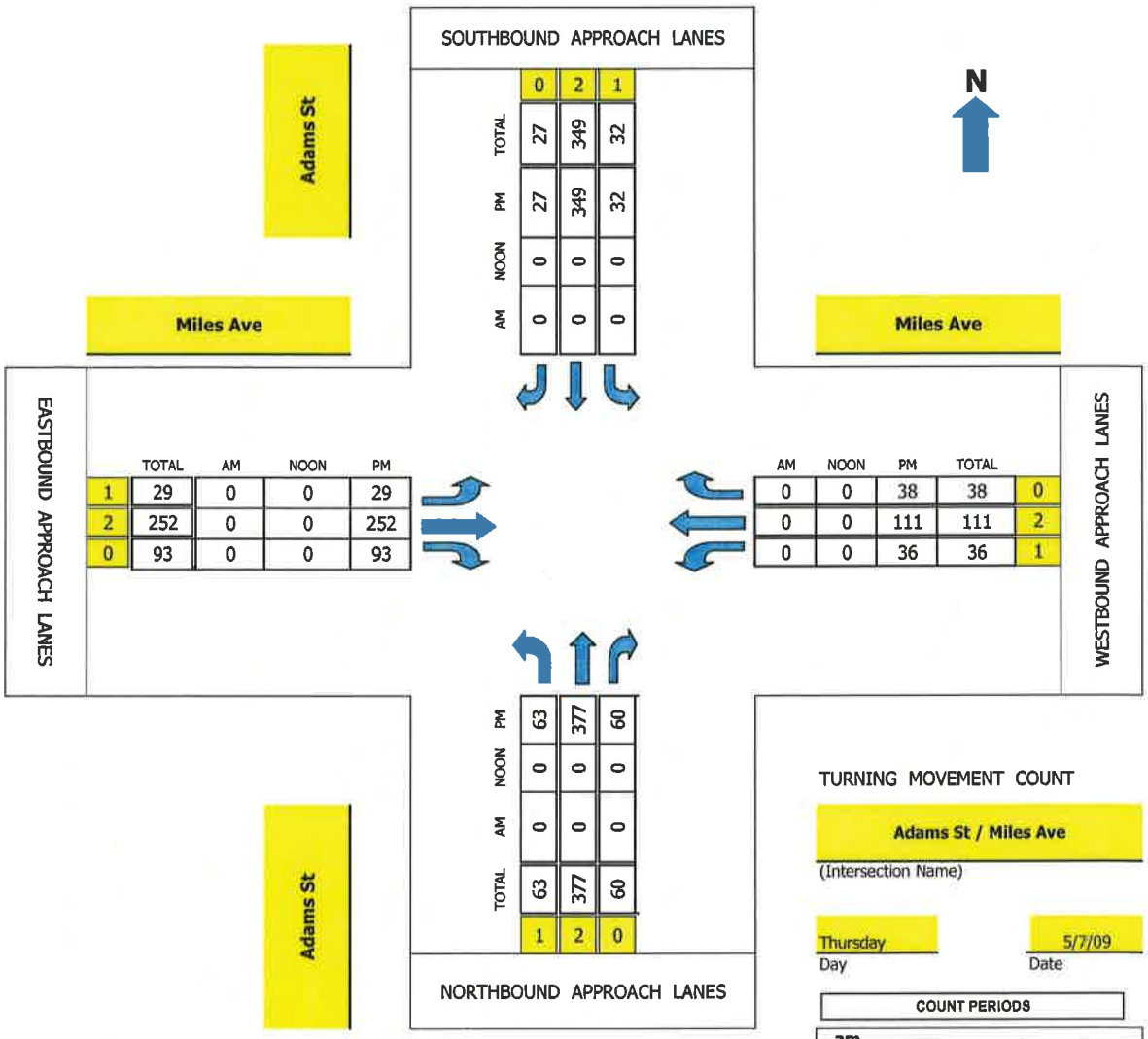
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Adams St/Miles Ave

Project #: 09-6021-025



TURNING MOVEMENT COUNT

Adams St / Miles Ave
(Intersection Name)

Thursday
Day

5/7/09
Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	330 PM

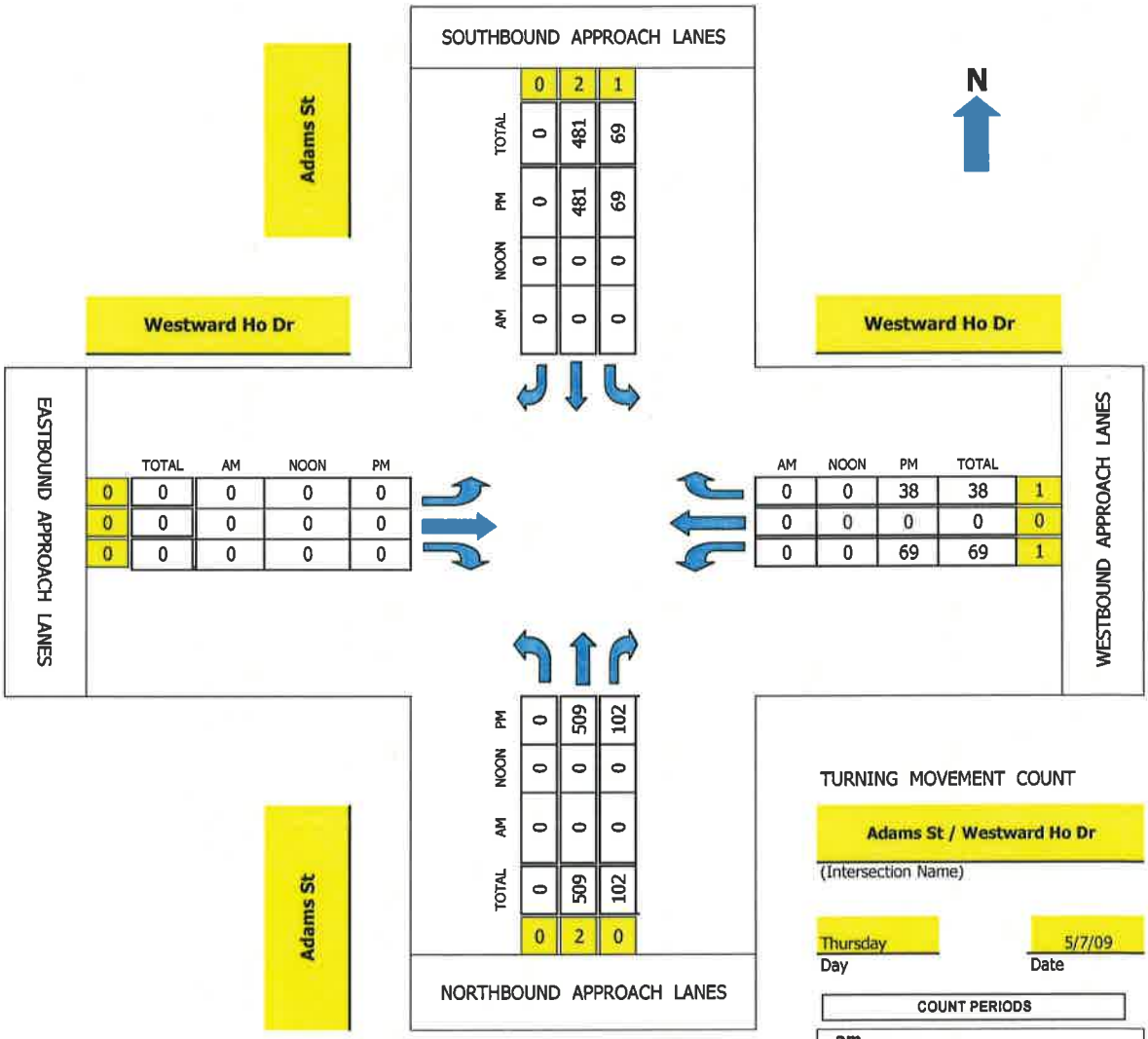
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Adams St/Westward Ho Dr

Project #: 09-6021-024



	TOTAL	AM	NOON	PM
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

	AM	NOON	PM	TOTAL	
	0	0	38	38	1
	0	0	0	0	0
	0	0	69	69	1

TOTAL	0	481	69
PM	0	481	69
NOON	0	0	0
AM	0	0	0
	0	2	1

PM	0	509	102
NOON	0	0	0
AM	0	0	0
TOTAL	0	509	102
	0	2	0

TURNING MOVEMENT COUNT

Adams St / Westward Ho Dr

(Intersection Name)

Thursday — Day

5/7/09 — Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	430 PM

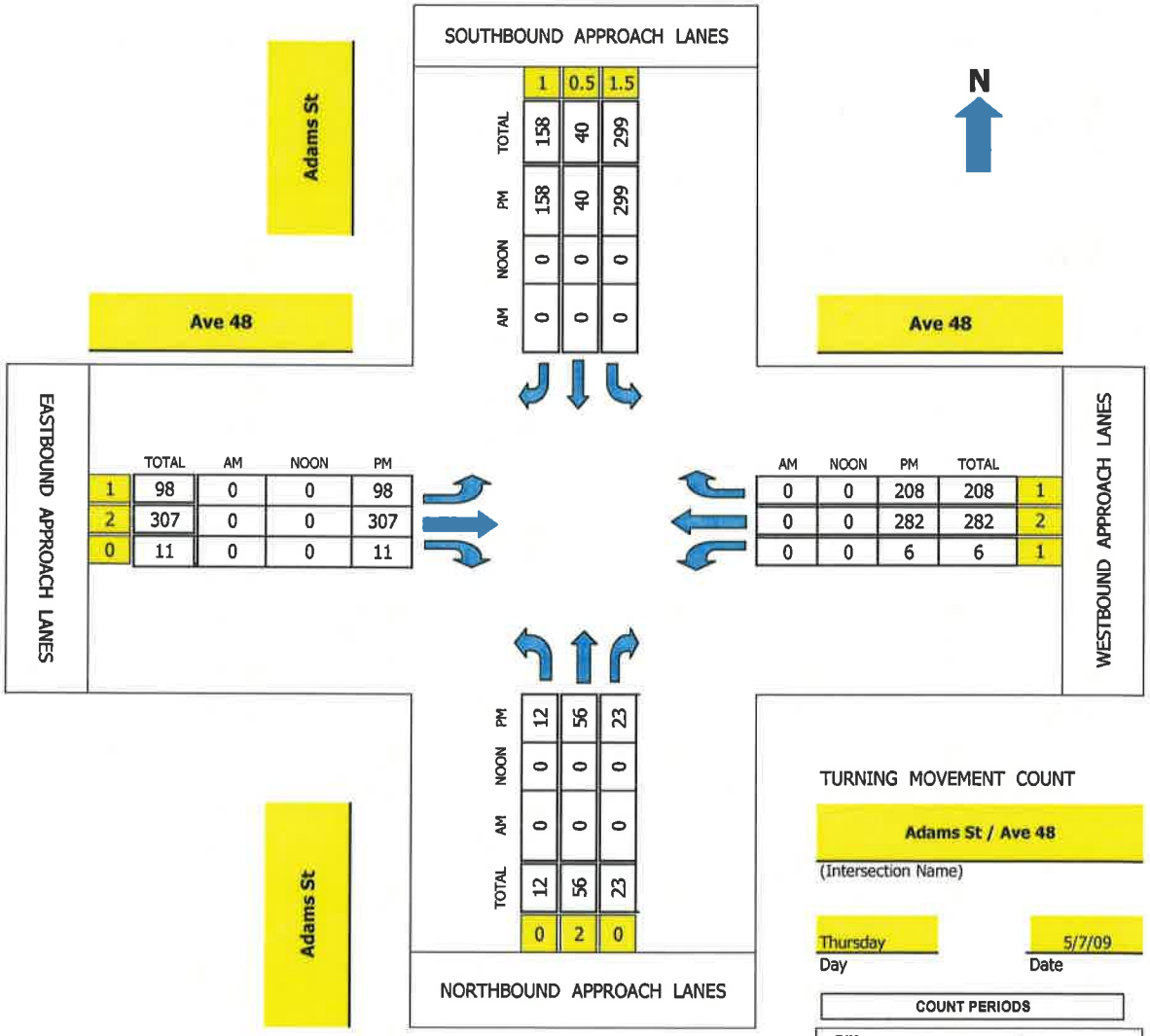
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Adams St/Ave 48

Project #: 09-6021-022



TURNING MOVEMENT COUNT

Adams St / Ave 48

(Intersection Name)

Thursday — Day

5/7/09 — Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	330 PM

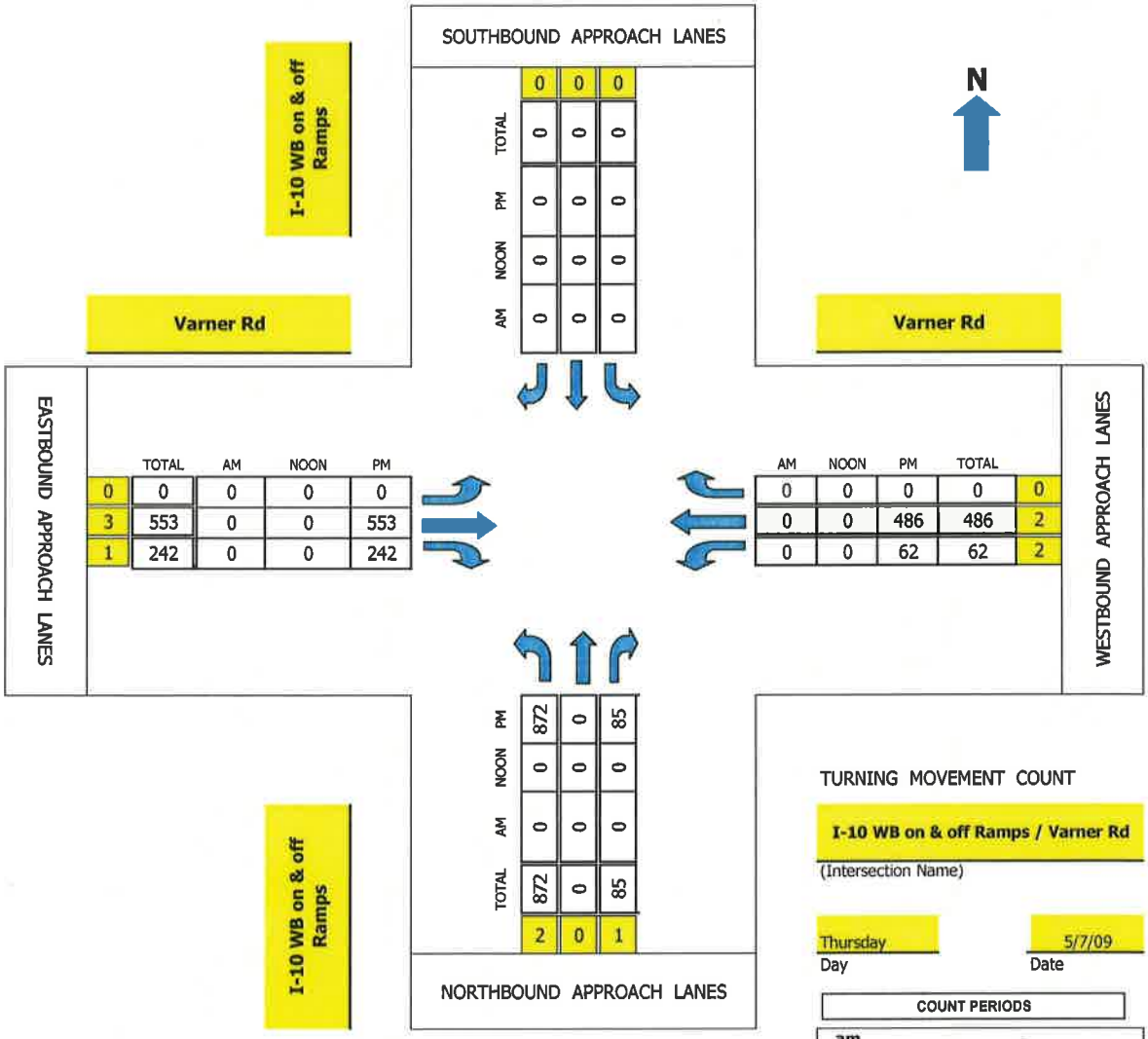
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of I-10 WB on & off Ramps/Varner Rd

Project #: 09-6021-021



	TOTAL	AM	NOON	PM
0	0	0	0	0
3	553	0	0	553
1	242	0	0	242

	AM	NOON	PM	TOTAL	
	0	0	0	0	0
	0	0	486	486	2
	0	0	62	62	2

	TOTAL	AM	NOON	PM
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

	TOTAL	AM	NOON	PM
85	85	0	0	85
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1	1	0	0	1

TURNING MOVEMENT COUNT

I-10 WB on & off Ramps / Varner Rd
(Intersection Name)

Thursday — Day

5/7/09 — Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	430 PM

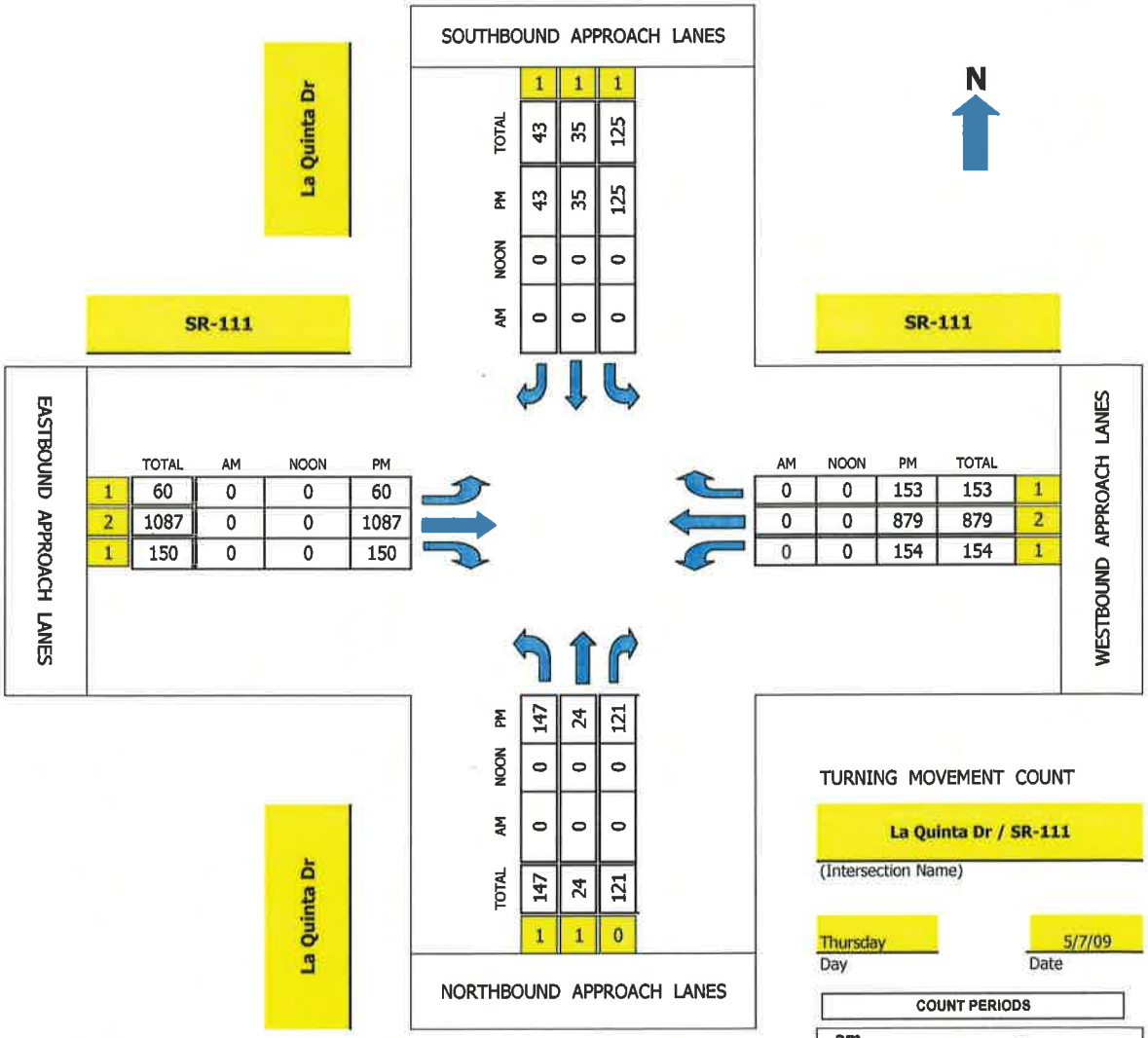
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of La Quinta Dr/SR-111

Project #: 09-6021-019



TURNING MOVEMENT COUNT

La Quinta Dr / SR-111
(Intersection Name)

Thursday
Day

5/7/09
Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	330 PM

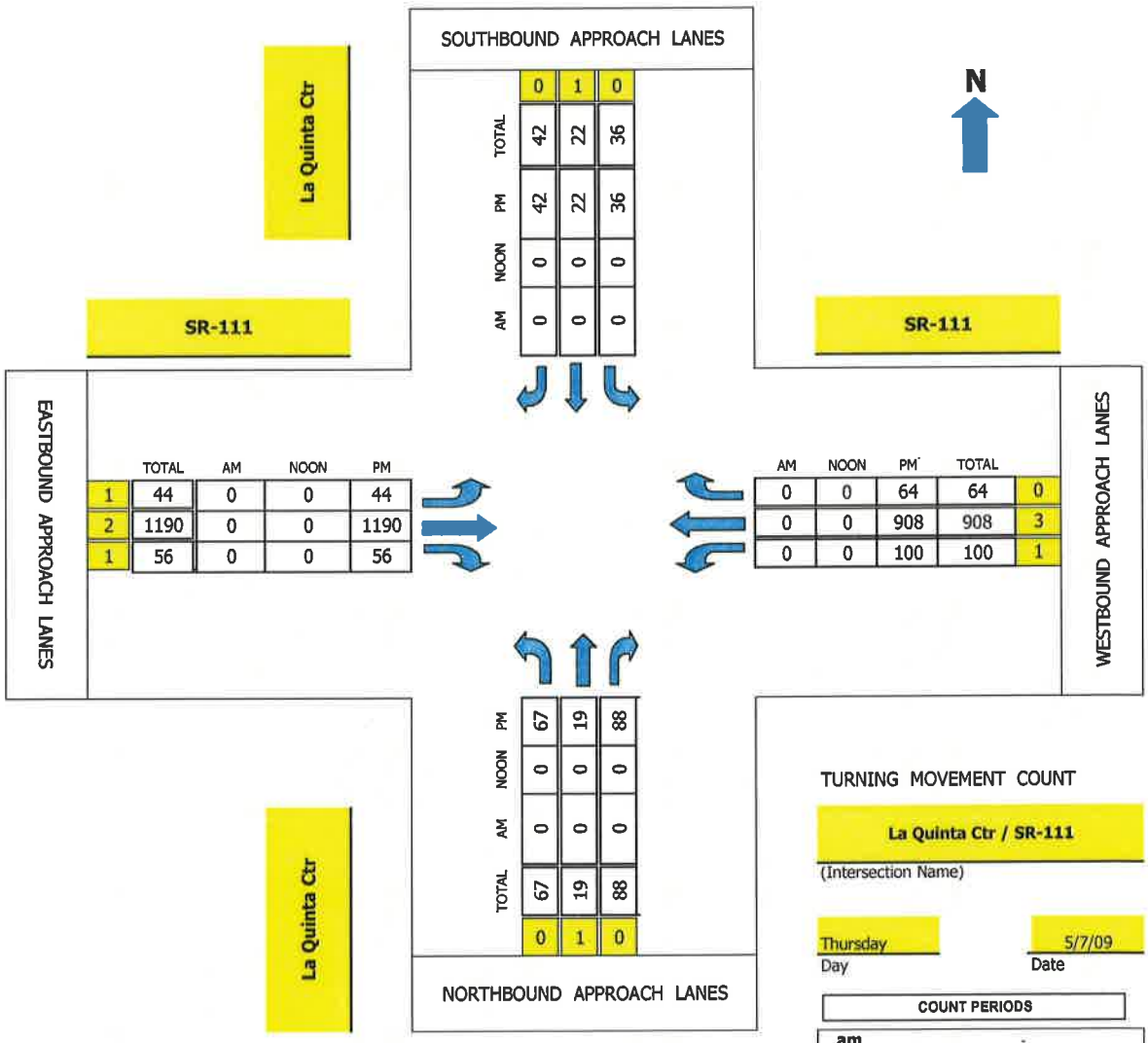
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of La Quinta Ctr/SR-111

Project #: 09-6021-018



TURNING MOVEMENT COUNT

La Quinta Ctr / SR-111
(Intersection Name)

Thursday
Day

5/7/09
Date

COUNT PERIODS		
am		-
noon		-
pm	3:30 PM	- 5:30 PM

CONTROL: Signalized

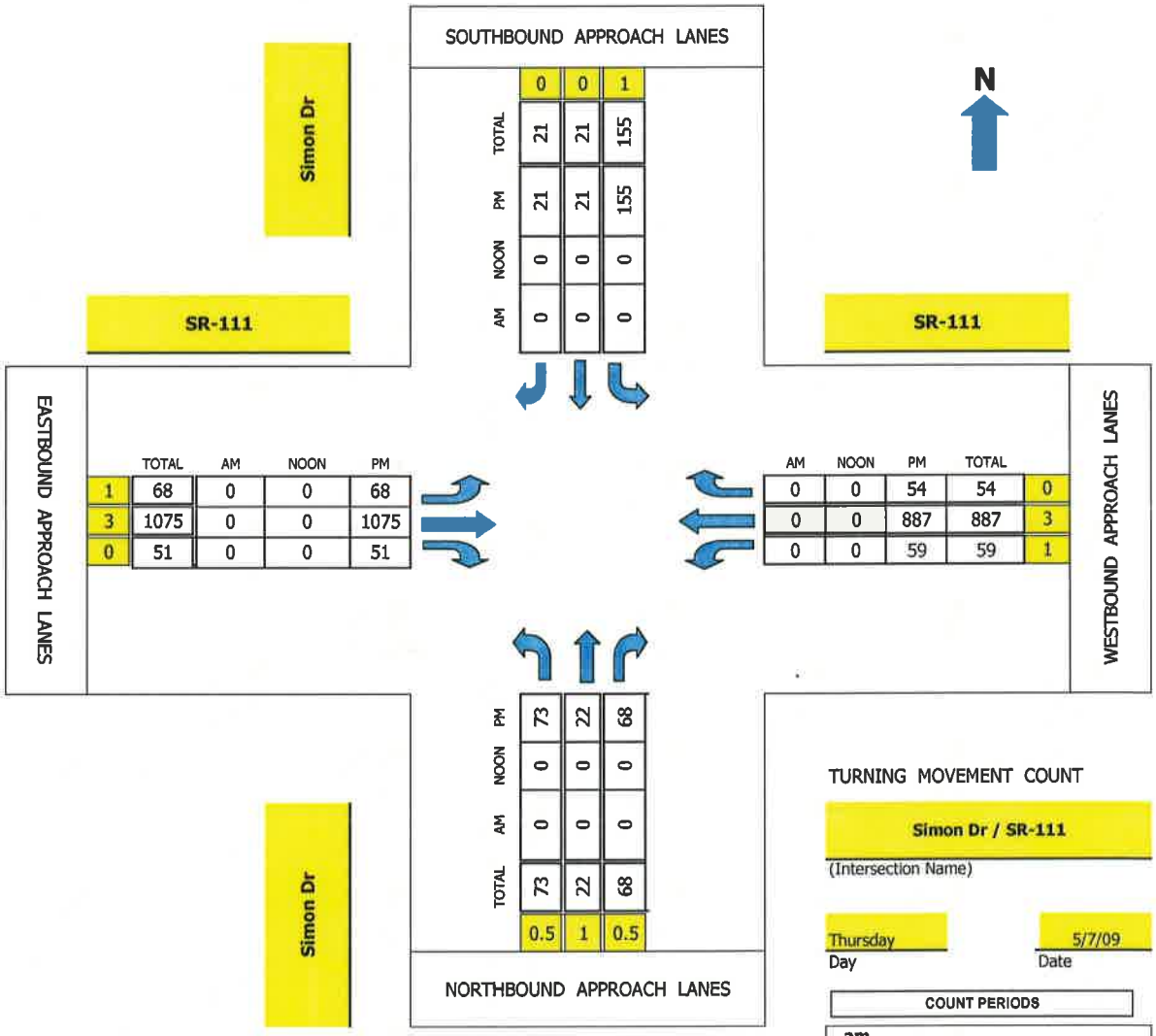
AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	330 PM

Intersection Turning Movement

Prepared by:
NDS
National Data & Surveying Services

TMC Summary of Simon Dr/SR-111

Project #: 09-6021-017



TURNING MOVEMENT COUNT

Simon Dr / SR-111
(Intersection Name)

Thursday
Day

5/7/09
Date

COUNT PERIODS		
am		-
noon		-
pm	3:30 PM	- 5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	330 PM

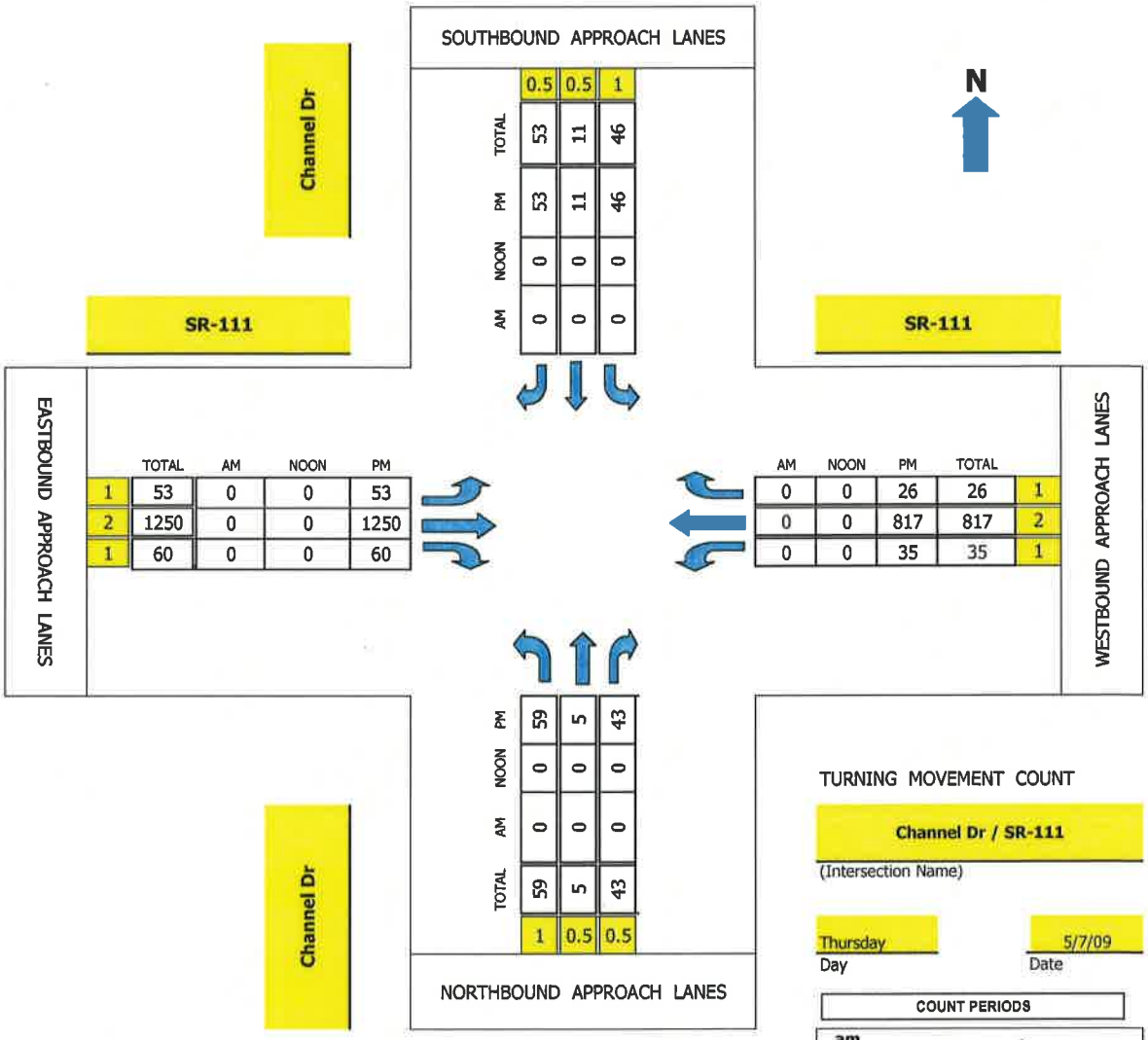
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Channel Dr/SR-111

Project #: 09-6021-016



TURNING MOVEMENT COUNT

Channel Dr / SR-111
(Intersection Name)

Thursday
Day

5/7/09
Date

COUNT PERIODS		
am		
noon		
pm	3:30 PM	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	430 PM

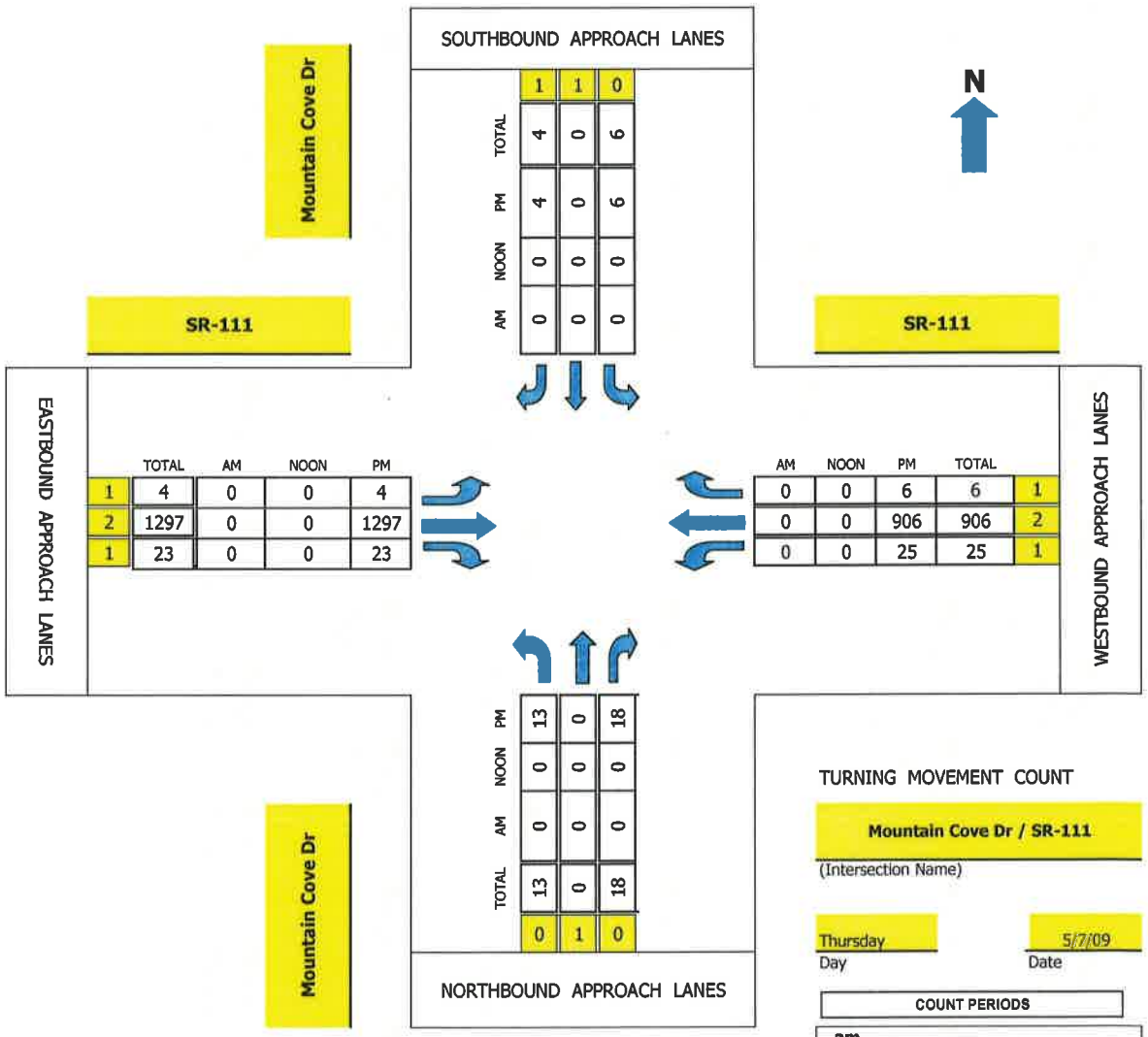
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Mountain Cove Dr/SR-111

Project #: 09-6021-015



TURNING MOVEMENT COUNT

Mountain Cove Dr / SR-111
(Intersection Name)

Thursday
Day

5/7/09
Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	330 PM

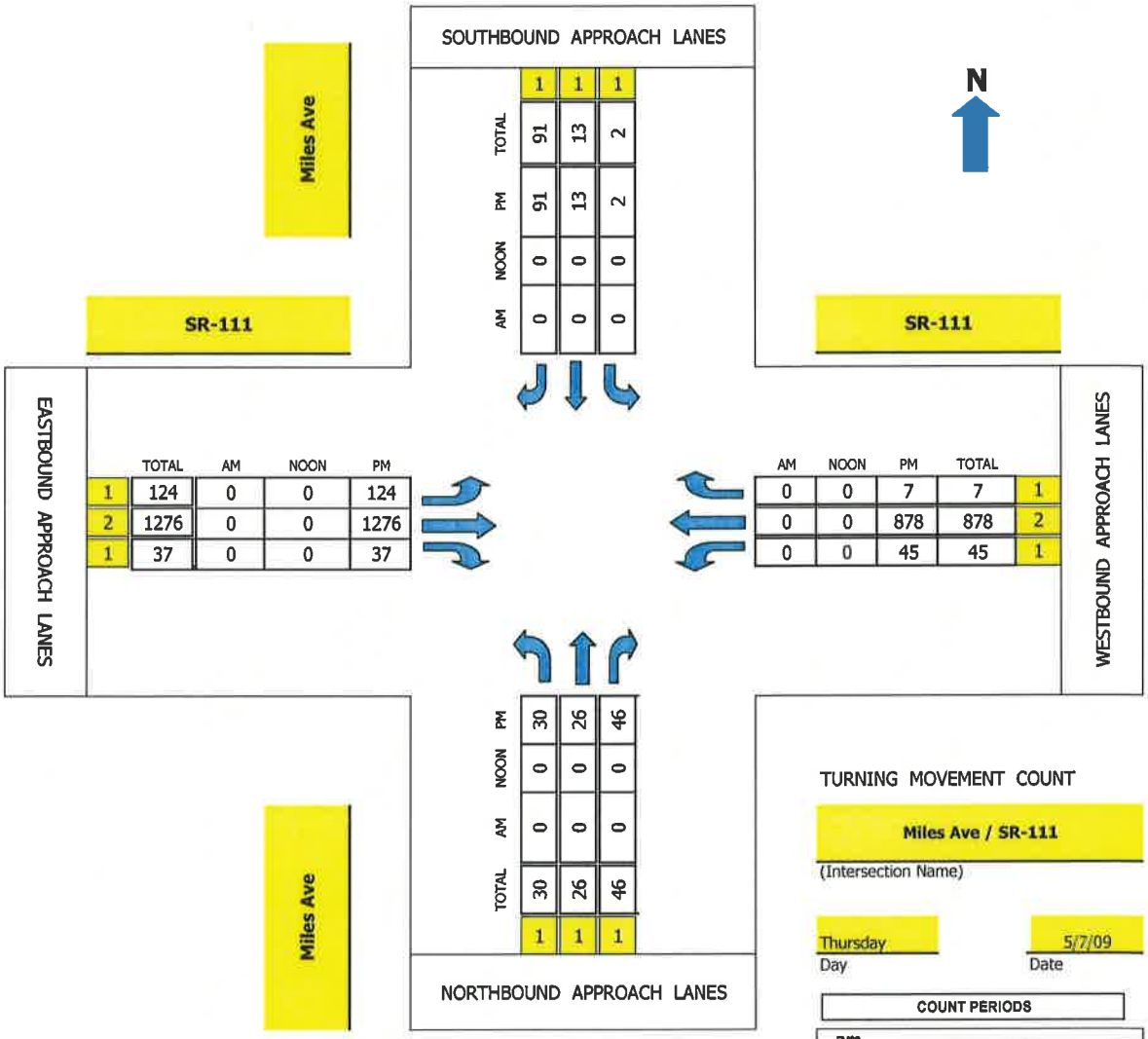
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Miles Ave/SR-111

Project #: 09-6021-014



	TOTAL	AM	NOON	PM
1	124	0	0	124
2	1276	0	0	1276
1	37	0	0	37

	TOTAL	PM	NOON	AM
1	91	91	0	0
1	13	13	0	0
1	2	2	0	0

	AM	NOON	PM	TOTAL
1	0	0	7	7
2	0	0	878	878
1	0	0	45	45

	TOTAL	AM	NOON	PM
1	30	0	0	30
1	26	0	0	26
1	46	0	0	46

TURNING MOVEMENT COUNT

Miles Ave / SR-111
(Intersection Name)

Thursday
Day

5/7/09
Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	330 PM

Intersection Turning Movement

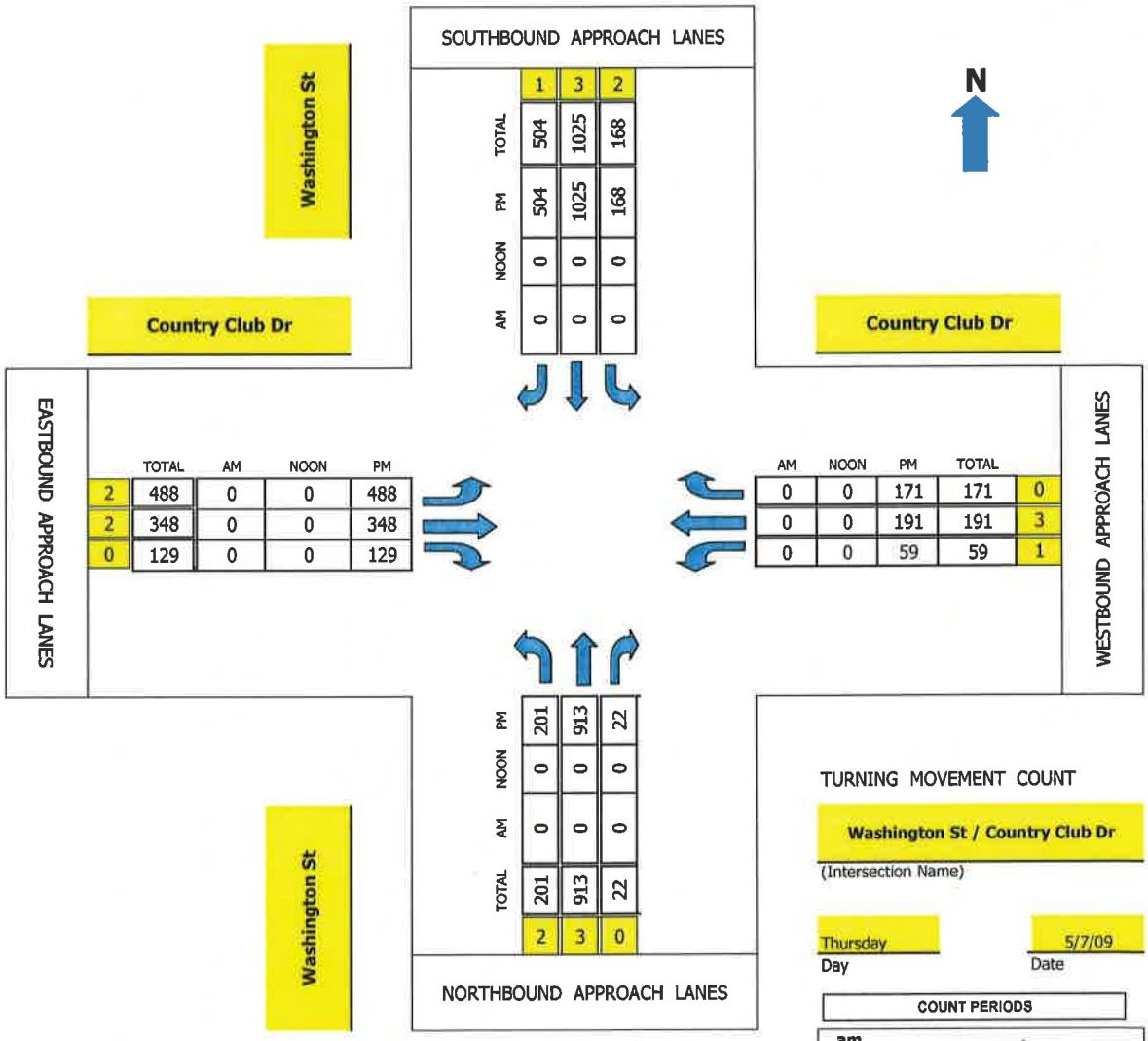
Prepared by:

NDS

National Data & Surveying Services

TMC Summary of Washington St/Country Club Dr

Project #: 09-6021-011



TURNING MOVEMENT COUNT

Washington St / Country Club Dr

(Intersection Name)

Thursday — Day

5/7/09 — Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	430 PM

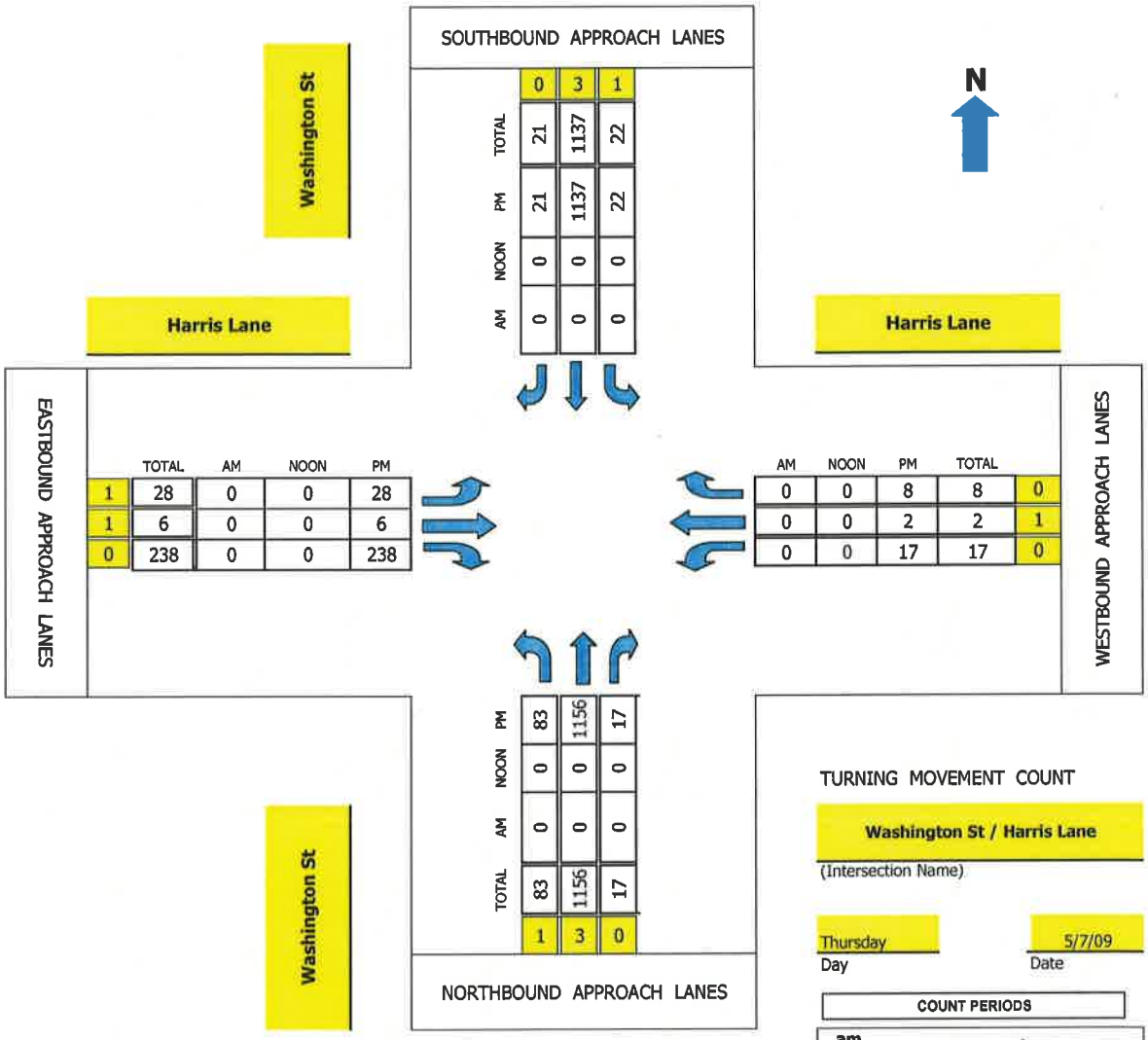
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Washington St/Harris Lane

Project #: 09-6021-010



TURNING MOVEMENT COUNT

Washington St / Harris Lane

(Intersection Name)

Thursday — Day

5/7/09 — Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	430 PM

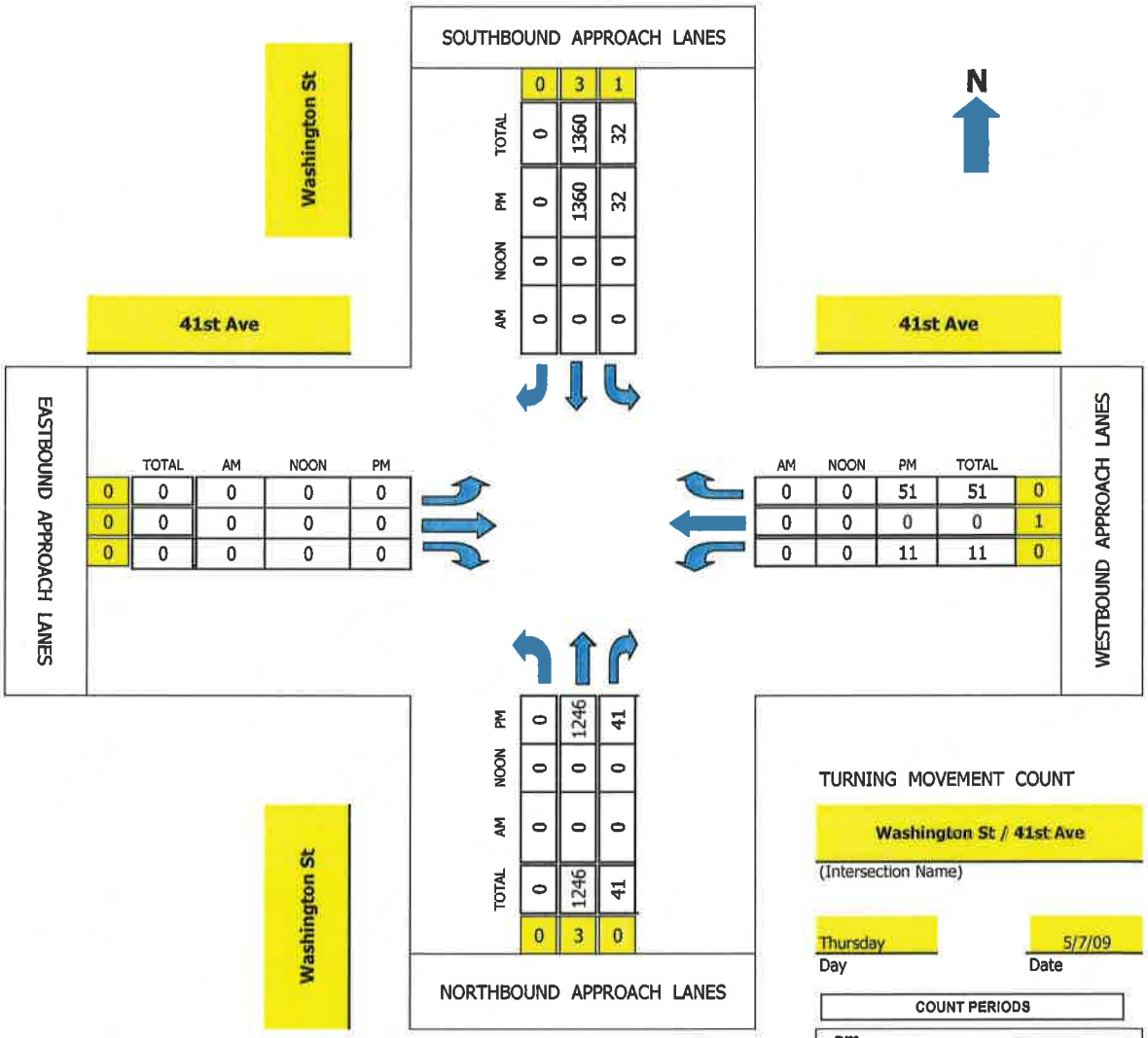
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Washington St/41st Ave

Project #: 09-6021-009



	0	3	1
TOTAL	0	1360	32
PM	0	1360	32
NOON	0	0	0
AM	0	0	0

	TOTAL	AM	NOON	PM
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

	AM	NOON	PM	TOTAL	
	0	0	51	51	0
	0	0	0	0	1
	0	0	11	11	0

	0	3	0
PM	0	1246	41
NOON	0	0	0
AM	0	0	0
TOTAL	0	1246	41

TURNING MOVEMENT COUNT

Washington St / 41st Ave

(Intersection Name)

Thursday — Day

5/7/09 — Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: 1-Way Stop Sign (WB)

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	400 PM

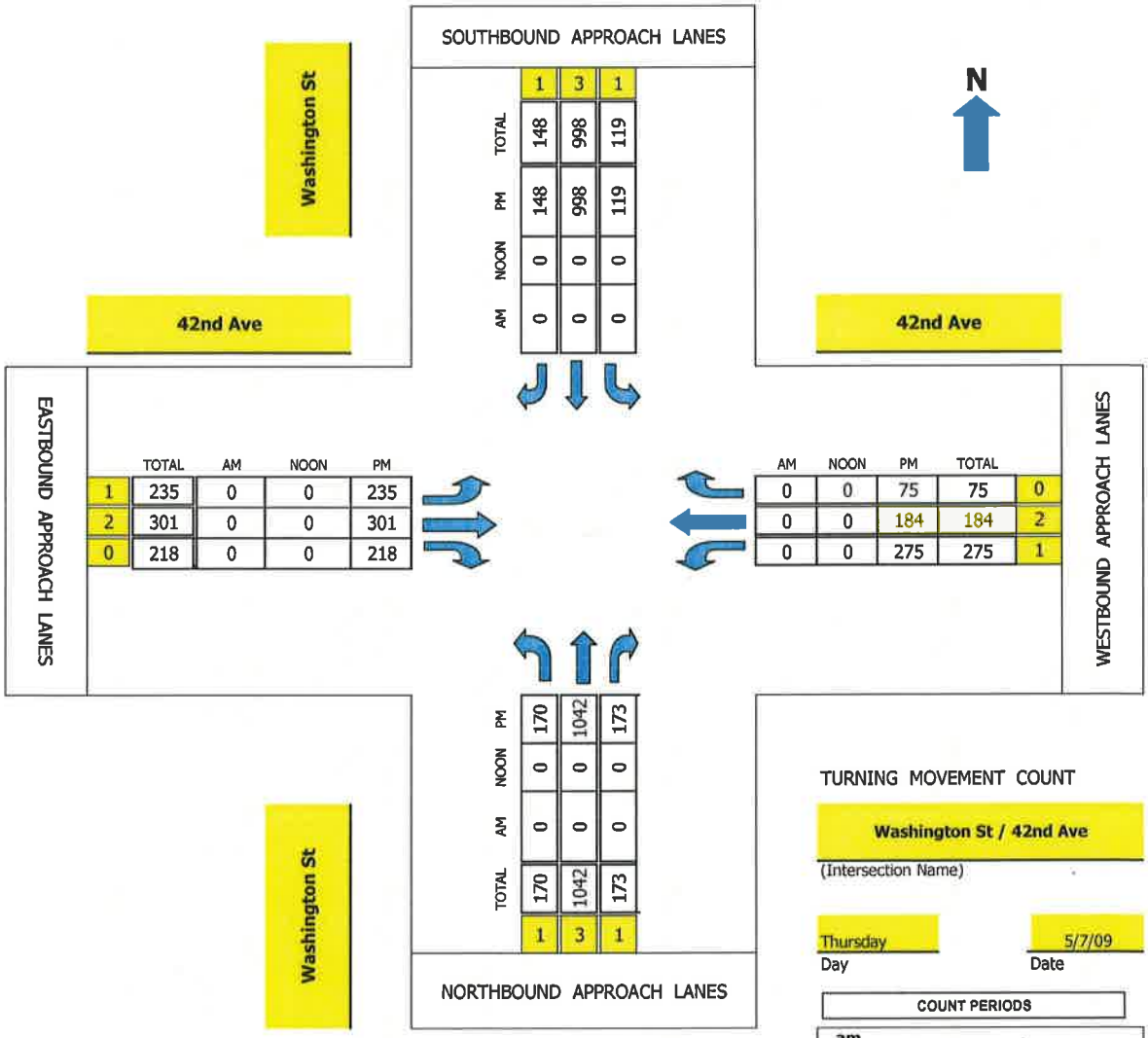
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Washington St/42nd Ave

Project #: 09-6021-008



TURNING MOVEMENT COUNT

Washington St / 42nd Ave

(Intersection Name)

Thursday — Day

5/7/09 — Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	330 PM

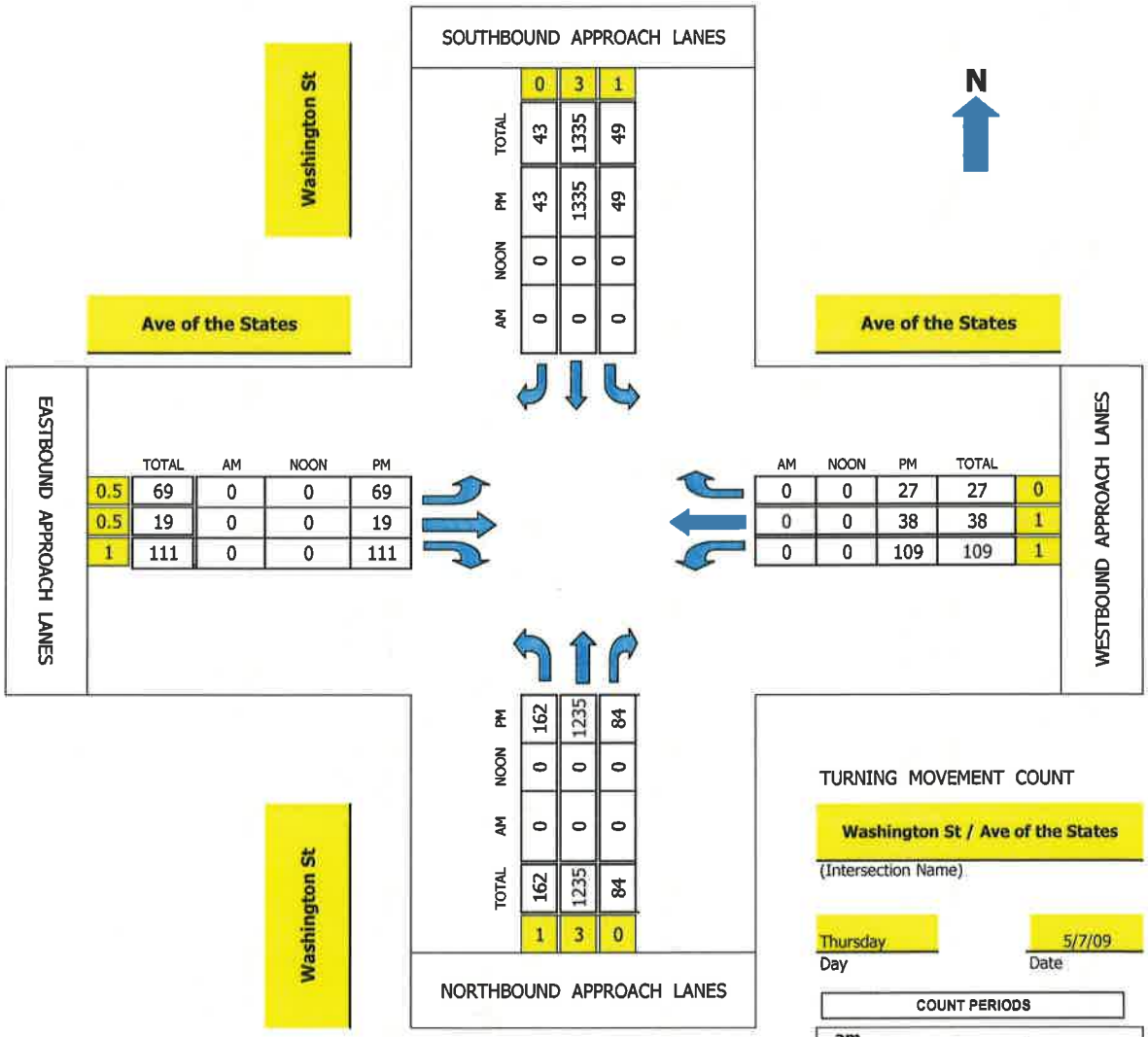
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Washington St/Ave of the States

Project #: 09-6021-007



TOTAL	43	1335	49	
PM	43	1335	49	
NOON	0	0	0	
AM	0	0	0	
	0	3	1	

	TOTAL	AM	NOON	PM
0.5	69	0	0	69
0.5	19	0	0	19
1	111	0	0	111

AM	NOON	PM	TOTAL	
0	0	27	27	0
0	0	38	38	1
0	0	109	109	1

PM	162	1235	84	
NOON	0	0	0	
AM	0	0	0	
TOTAL	162	1235	84	
	1	3	0	

TURNING MOVEMENT COUNT

Washington St / Ave of the States

(Intersection Name)

Thursday — Day

5/7/09 — Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	330 PM

Intersection Turning Movement

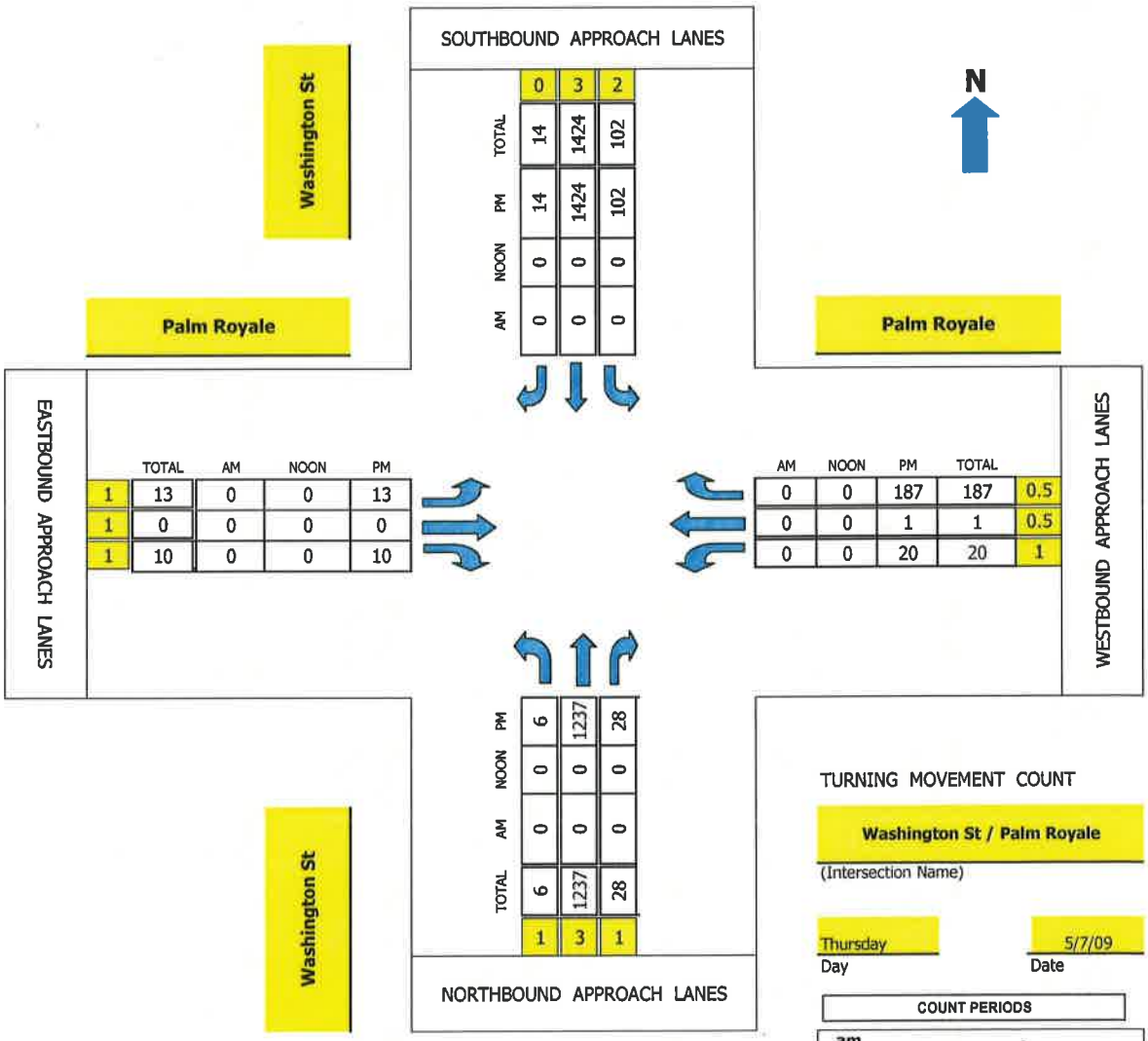
Prepared by:

NDS

National Data & Surveying Services

TMC Summary of Washington St/Palm Royale

Project #: 09-6021-006



TURNING MOVEMENT COUNT

Washington St / Palm Royale

(Intersection Name)

Thursday — Day

5/7/09 — Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	330 PM

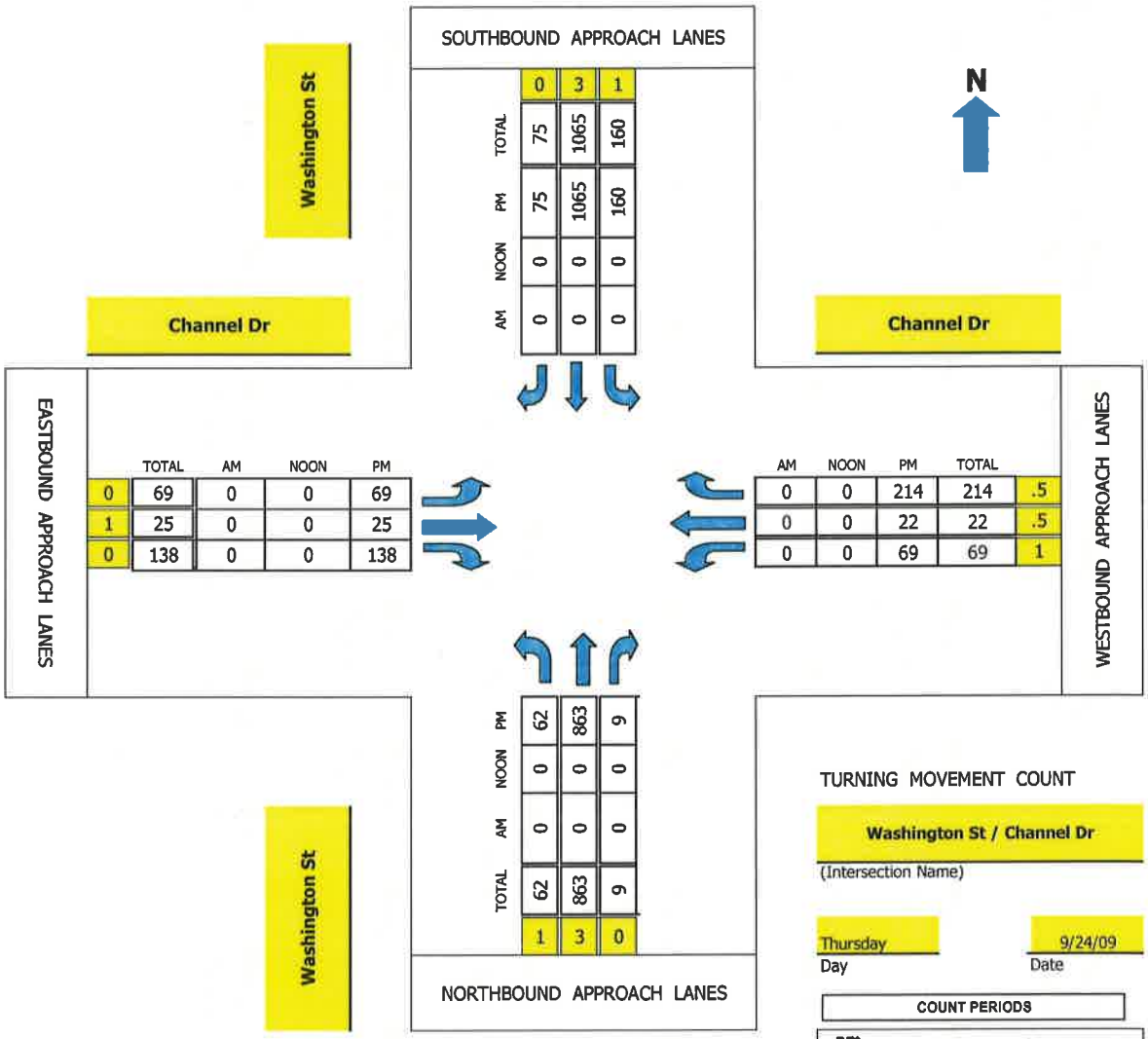
Intersection Turning Movement

Prepared by:

National Data & Surveying Services

TMC Summary of Washington St/Channel Dr

Project #: 09-6040-003



TURNING MOVEMENT COUNT

Washington St / Channel Dr

(Intersection Name)

Thursday — Day

9/24/09 — Date

COUNT PERIODS		
am	-	
noon	-	
pm	3:30 PM -	5:30 PM

CONTROL: Signalized

AM PEAK HOUR	0 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	430 PM

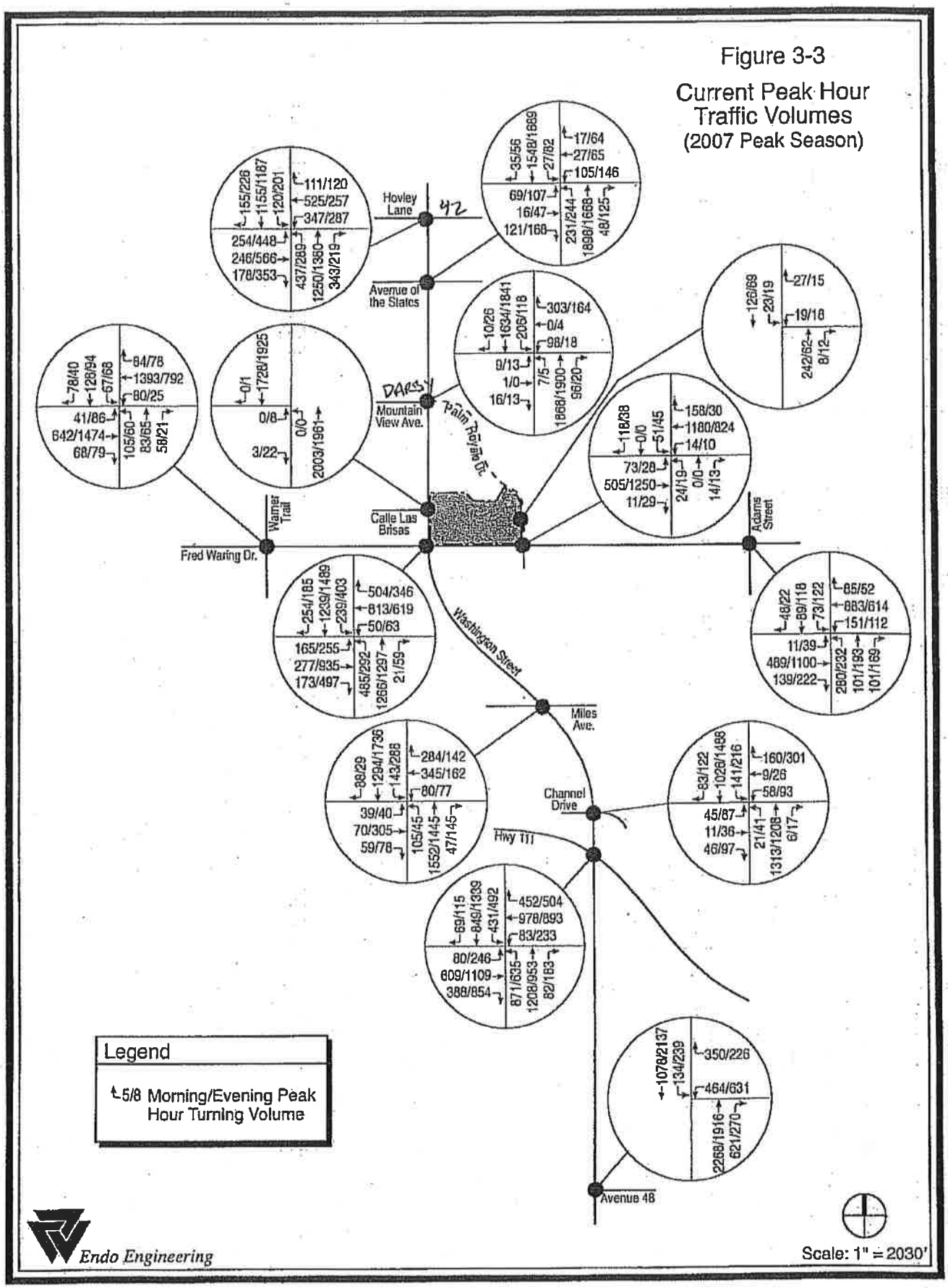
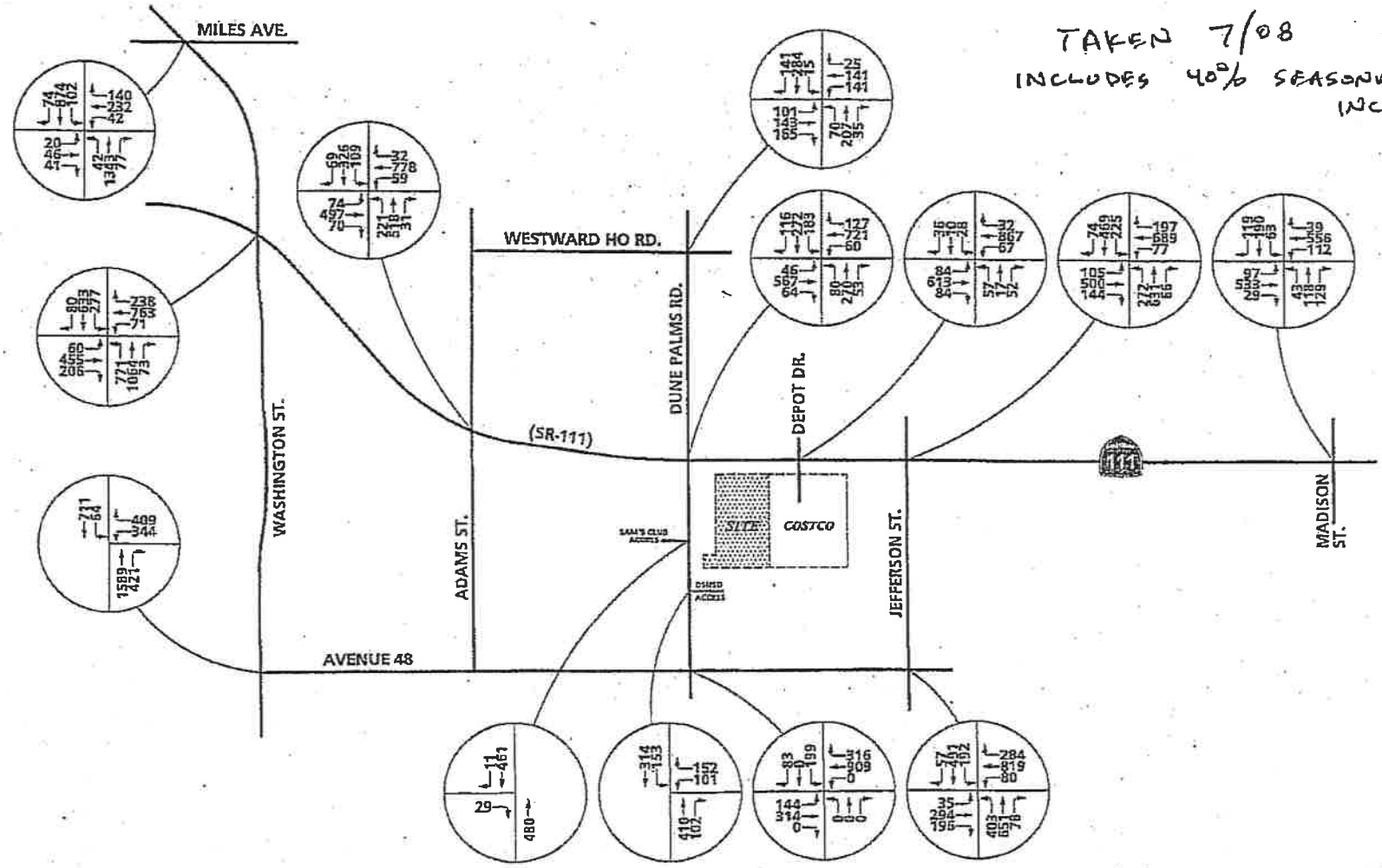


Figure 3-3
Current Peak Hour Traffic Volumes
(2007 Peak Season)
Hovley Lane
Avenue of the States
Mountain View Ave.
Palm Royale Dr.
Calle Las Brisas
Warner Trail
Fred Waring Dr.
Adams Street
Washington Street
Miles Ave.
Channel Drive
Hwy 111
Avenue 48
Legend
5/8 Morning/Evening Peak Hour Turning Volume
Endo Engineering
Scale: 1" = 2030'

EXHIBIT 3-E

EXISTING AM PEAK HOUR INTERSECTION VOLUMES (WITH SEASONAL ADJUSTMENT)

TAKEN 7/08
INCLUDES 40% SEASONAL INCREASE



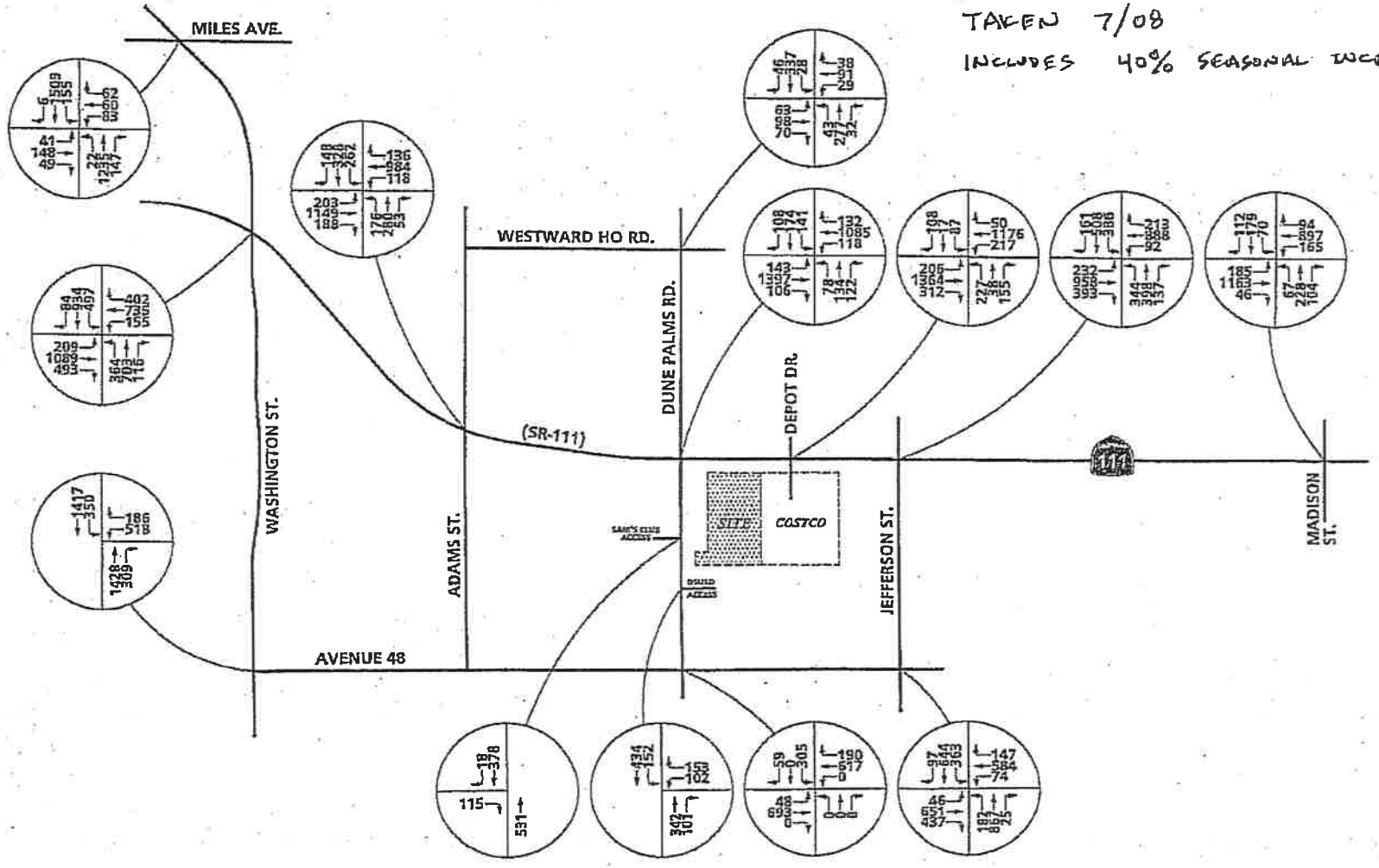
URBAN [illegible]ROADS

EXHIBIT 3-F

EXISTING PM PEAK HOUR INTERSECTION VOLUMES (WITH SEASONAL ADJUSTMENT)

TAKEN 7/08

INCLUDES 40% SEASONAL INCREASE



Appendix C

Existing Pedestrian Count Data

Pedestrian data for La Quinta Area

Intersection	North	South	East	West
Adams St and Ave 48	0	0	0	0
Adams St and Miles St	0	0	0	0
Adams St and Westward Ho Dr	16	20	0	0
Dune Palms Rd and Ave 48	0	0	0	0
Dune Palms Rd and Miles Ave	4	0	0	0
Fred Waring Dr and Palm Royale Dr	1	0	0	0
Fred Waring Dr and Warner Trail	0	0	1	1
Highway 111 and Channel Dr	0	0	0	0
Highway 111 and La Quinta Ctr	0	1	0	0
Highway 111 and La Quinta Dr	3	1	8	8
Highway 111 and Miles Ave	1	0	1	1
Highway 111 and Mountain Cove Dr	0	0	1	1
Highway 111 and Simon Dr	1	4	0	0
Jefferson St and Ave 48	1	0	0	0
Jefferson St and Fred Waring Dr	0	17	1	1
Jefferson St and Miles Ave	0	4	9	9
Jefferson St and Pebble Beach Dr	1	0	1	1
Jefferson St and Westward Ho Dr	10	5	7	7
Miles Ave and Warner Trail	0	0	0	0
Varner and I-10 Ramps	0	0	0	0
Washington St and 41st Ave	0	0	0	0
Washington St and 42nd Ave	3	8	12	12
Washington St and Ave 47	0	0	5	5
Washington St and Ave of the States	0	4	0	0
Washington St and Country Club Dr	1	12	3	3
Washington St and Harris Lane	14	9	3	3
Washington St and Palm Royale Dr	0	0	0	0

Appendix D

Intersection LOS Worksheets

Existing