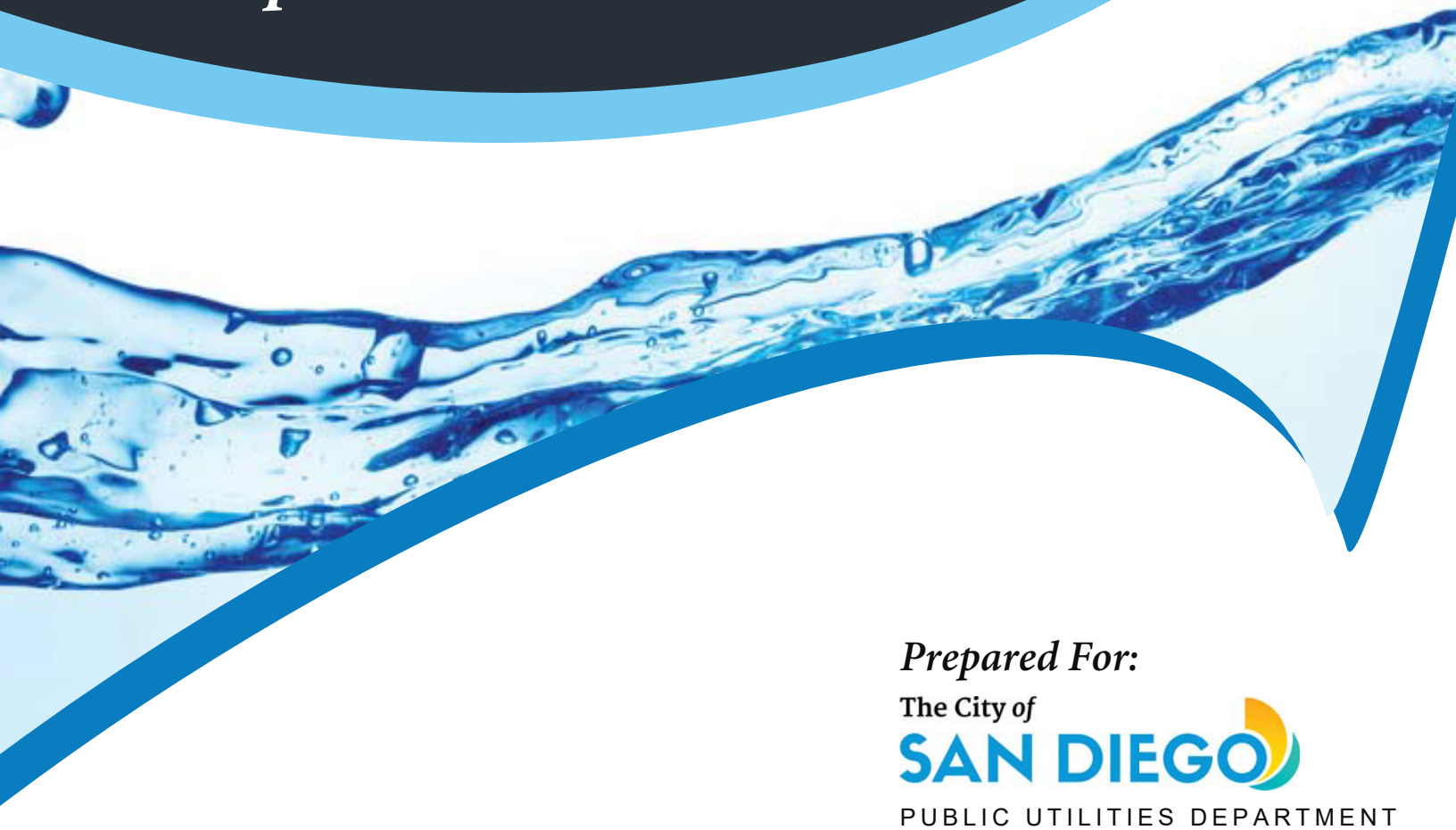
APPENDIX I

Transportation Impact Study

North City Project
Transportation Impact Study

Final Report



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The City of SAN DIEGO

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July 7, 2017

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EXECUTIVE SUMMARY

ES.1 Purpose of the Report

The purpose of this Transportation Impact Study (TIS) is to identify and document potential transportation related impacts associated with the North City project, as well as to recommend mitigation measures, as necessary. Three different components of impact assessments were conducted for this project: (1) permanent transportation impacts associated with the new or improved facilities, such as new North City Pure Water Facility (NCPWF), upgrades and expansion to existing water reclamation facilities, and new pump stations and pipelines; (2) temporary transportation impacts associated with the construction of the two potential pipeline alignment alternatives: Miramar and San Vicente between NCPWF and one of the reservoirs; and (3) temporary transportation impacts associated with the construction of the Morena Wastewater Forcemain and Brine/Centrate Line (Morena Pipelines) between the Morena Pump Station and NCPWF.

ES. 2 Project Background

The North City Project would use advanced water purification technology to produce potable water from recycled water and provide a safe, reliable, and cost-effective drinking water supply for San Diego. The North City Project would create up to 30 million gallons per day (MGD) of locally controlled potable water and reduce flows to the Point Loma Wastewater Treatment Plant (PLWTP), which in turn would reduce total suspended solids (TSS) discharged to the ocean.

The North City Project consists of the design and construction of a new 399,381 square-foot NCPWF, a total of 1,528,043 square-foot expansion upgrades to existing water reclamation facilities, and design and construction of new pump stations and pipelines. The North City Project would construct the NCPWF adjacent to the existing North City Water Reclamation Plant (NCWRP). Upgrades would occur at the existing NCWRP in order to provide sufficient tertiary influent for the NCPWF as well as to connect the existing centrate line with the proposed brine line. Pump station and pipeline facilities would convey different types of flows to and from the treatment facilities for: (1) diverting wastewater flows to NCWRP, (2) conveying recycled water to the NCPWF, (3) conveying purified water from the NCPWF to a reservoir, and (4) transporting waste flows (brine and sludge) from treatment processes to solids handling facilities or back into the Metropolitan Sewerage System (Metro System). Upgrades would also occur at the Metropolitan Biosolids Center (MBC) to handle the additional brine and sludge produced by the NCWRP expansion and advanced water purification process. A new renewable energy facility would be constructed at the NCWRP, which would receive landfill gas from the City's Miramar Landfill gas collection system via a new gas pipeline.

Two North City Project Alternatives (Project Alternatives) are proposed. The North City Purified Water Pipeline (North City Pipeline) would construct the NCPWF and would pipe purified water to Miramar Reservoir. The San Vicente Purified Water Pipeline (San Vicente Pipeline) would also construct the proposed NCPWF, but would include fewer treatment processes at the facility and would pipe purified water to the San Vicente Reservoir rather than the Miramar Reservoir. The

San Vicente Pipeline would also include an additional pump station, the Mission Trails Booster Station (MTBS), along the San Vicente Pipeline. The North City Purified Water Pipeline would include improvements at the Miramar Water Treatment Plant (Miramar WTP).

ES.3 New North City Pure Water Facility (NCPWF) and North City Water Reclamation Facility Expansion – Permanent Traffic

From a TIS perspective, the following project components were examined for the North City Project:

1. New North City Pure Water Facility (NCPWF) – this facility is to be located on the north side of Eastgate Mall, across from the existing NCWRP and the entrance will be across the street from the entrance to the NCWRP and proposed to be signalized. **(45 employees total, permanent facility)**
2. Expansion of the existing North City Water Reclamation Plant (NCWRP) - this facility is currently located on the south side of Eastgate Mall, and takes access off of Eastgate Mall through the existing entrance. There is also a gated emergency access off of Miramar Road. **(15 additional employees total, permanent facility)**
3. Morena Pump Station and Pipelines – No permanent staff required with scheduled maintenance checks. **(0 staff, permanent facilities)**
4. NCPWF Influent Pump Station and Conveyance – one part time employee only. **(1 employee, permanent facilities)**
5. North City Pure Water Pipeline (North City Pipeline) and North City Pump Station - one part time employee only. **(1 employee, permanent facilities)**
6. Pure Water Dechlorination Facility – 2 trips per week by offsite staff and 2 trips per month for chemical delivery. **(2 employees, permanent facility)**

Project Trip Generation

Out of the six project components identified above, construction of the new NCPWF (399,381 square feet) and expansion of the current NCWRP (1,528,043 square feet) would generate permanent traffic on a regular/daily basis due to the additional staffing needed to run and operate these facilities, therefore, included in the traffic impact analyses from this point forward. All other uses are considered negligible traffic generator and are not included in this TIS. The following information was provided by City of San Diego Public Utilities Department, regarding projected additional staffing at both NCPWF and NCWRP expansion, which was utilized to derive trip generation for the project:

NCPWF

- 37 employees during regular day shift (6:00 am to 3:00 pm)
- 8 employees after regular day shift (3:00 pm to 6:00 am)

NCWRP

- 9 employees during regular day shift (6:00 am to 3:00 pm)
- 6 employees after regular day shift (3:00 pm to 6:00 am)

Table ES.1 displays the anticipated daily and peak hour project trip generation. Note that the 3 trips per employee trip rate was based on each employee commuting to and from work (2 trips a day) and the assumption of approximately 50% of employees making two extra trips (inbound and outbound) during their shift for reasons such as meetings, lunch, etc.

TABLE ES.1
PROJECT TRIP GENERATION

Land Use	Quantity (employees)	Trip Rate	Daily Trips	AM Peak Hour (5 AM to 6 AM)	PM Peak Hour (3 PM to 4 PM)
				Trips	Trips
North City Pure Water Facility	45	3 / employee	135	41 (37-in / 4-out)	41 (4-in / 37-out)
North City Water Reclamation Plant - Expansion	15	3 / employee	45	12 (9-in / 3-out)	12 (3-in / 9-out)
Total			**180**	**53 (46-in / 7-out)**	**53 (7-in / 46-out)**

Source: City of San Diego; May 2017.

As shown, the proposed project would generate a total of 180 daily trips, 53 trips (46-in / 7-out) during the AM peak hour, and 53 trips (7-in / 46-out) during the PM peak hour.

Based on input from the City of San Diego Public Utilities Department, employees who work after the regular day shift (6:00 AM to 3:00 PM) are divided into two shifts at 4-person per shift at the NCPWF and two shifts at 3-person per shift at NCWRP and would work from 3:00 PM to 11:00 PM and from 11:00 PM to 6:00 AM.

It is important to note that the proposed work shift for the majority of the workers at these facilities is from 6:00 AM to 3:00 PM. After review of the traffic counts on the roadway facilities in the study area, it was determined that the commute hours for this specific project did not coincide with the regular commute hours of 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. Even if 20 percent of the workers were to arrive to/depart the project site during regular commute hours, this would result in an addition of 12 trips (10-in / 2-out) during the AM peak hour and 12 trips (2-out / 10-in) during the PM peak hour. This amount of peak hour trips less than the 50-peak hour trip requirement for a traffic impact study, per the City of San Diego *Traffic Impact Study Manual, July 1998.* Therefore, a peak hour intersection analysis was not performed as part of the analysis of this project.

Project Trip Distribution

Trip distribution for the proposed project was developed based on existing traffic patterns, surrounding land uses, as well as access to freeways.

Project Study Area

Based on the City of San Diego Traffic Impact Study Manual requirements and project trip assignment, the following key study area roadway segments were analyzed:

Eastgate Mall between

- Towne Center Drive & Judicial Drive
- Judicial Drive & 280 feet west of I-805 Overpass
- 280 feet west of I-805 Overpass & NCWRP Driveway
- NCWRP Driveway & Eastgate Drive
- Eastgate Drive & Miramar Road

Towne Center Drive between

- Eastgate Mall & Executive Drive
- Executive Drive & La Jolla Village Drive

La Jolla Village Drive between

- Towne Center Drive & I-805 SB Ramps

Miramar Road between

- I-805 SB Ramps & I-805 NB Ramps
- I-805 NB Ramps & Nobel Drive
- Nobel Drive & Eastgate Mall

The proposed project is not anticipated to contribute more than 50 peak hour trips on Interstate 805 (I-805) in either direction nor 20 or more peak hour trips on I-805 freeway metered on-ramps; therefore, a freeway impact analysis nor a ramp metering analysis was conducted.

Project Impacts and Mitigation Measures

Direct Impact

The traffic generated by the proposed project is not anticipated to create a direct impact at any of the analyzed roadway facilities.

Cumulative Impact

The traffic generated by the proposed project is not anticipated to create a cumulative impact at any of the analyzed roadway facilities.

Project Site Access

Access to the new NCPWF and the expanded NCWRP is proposed to be located off of Eastgate Mall via a signalized intersection. According to City of San Diego Public Utilities Department, two options involving a full size and small tunnel were also considered as an alternative to the project driveway signalization, in order to allow staff to travel between the two plants. These two tunnels would house the utilities and provide enough space for carts (no full-size vehicles) to travel between the two plants. Both options would require extensive excavation and triggered the need for a basement in the NCPWF's O&M building. Since both alternative options would be costly, the traffic signal option is determined to be the least costly option that would provide a protected crossing for both pedestrians and heavy vehicles.

It is important to note that the proposed project driveway did not meet the Peak Hour traffic signal warrant nor the ADT traffic signal warrant per California's Manual on Uniform Traffic Control Devices 2014 Edition, Revision 1 – Section 4C.01. This result was due to low volumes on the minor approach. However, considering the expected heavy vehicles entering, exiting, and crossing between the two plants and that the closest controlled pedestrian crossing is located approximately 500 feet to the east of the proposed project driveway at the signalized intersection of Eastgate Mall/Eastgate Drive, and approximately 2,200 feet to the west at the signalized intersection of Eastgate Mall/Judicial Drive, it is the preference of City of San Diego Public Utilities Department to signalize the proposed project driveway.

The project driveway should be designed in accordance to City of San Diego standards and should provide sufficient storage for traffic entering the two plants. The project driveway would be signalized and would require the appropriate signing and striping plans per City of San Diego standards.

ES. 4 North City Pipeline – Construction Traffic

The North City Pipeline connects the NCPWF and NCWRP sites at I-805 and Eastgate Mall to the Miramar Reservoir via Eastgate Mall, Miramar Road, Kearny Villa Road, Candida Street, Via Pasar, Via Excelencia, under I-15 to Businesspark Avenue, Carroll Canyon Road, Hoyt Park Drive, and Meanley Drive. It is anticipated that approximately 39,400 LF (7.5 miles) of 48" steel pipeline will be installed along with approximately 4,800 LF (0.91 mile) of subaqueous polyethylene (PE) pipeline ranging in diameter from 20" to 40" with 14 branches of various lengths in the ravines of the reservoir. Construction of the North City Pipeline is anticipated to take place between November 2018 and October 2021. **Table ES.2** displays the work hours proposed for the roadway segments analyzed for the North City Pipeline construction.

TABLE ES.2
WORK HOURS ON ROADWAY SEGMENTS ALONG NORTH CITY PIPELINE ALIGNMENT

Roadway	Segment	Work hours
Eastgate Mall	NCPWF & NCWRP Driveway and Miramar Rd	9:00 PM to 5:00 AM
Miramar Road	Eastgate Mall and Camino Santa Fe	9:00 PM to 5:00 AM
	Camino Santa Fe and Carroll Rd	9:00 PM to 5:00 AM
	Carroll Rd and Camino Ruiz	9:00 PM to 5:00 AM
	Camino Ruiz and Black Mountain Rd	9:00 PM to 5:00 AM
	Black Mountain Rd and Kearny Villa Rd	9:00 PM to 5:00 AM
Kearny Villa Road	Black Mountain Rd/Carroll Centre Rd and Miramar Rd	9:00 PM to 5:00 AM
Candida Street	Kearny Villa Rd and Via Pasar	9:00 PM to 5:00 AM
Via Pasar	Via Excelencia and Candida St	9:00 PM to 5:00 AM
Via Excelencia	east of Via Pasar	9:00 PM to 5:00 AM
Businesspark Avenue	south of Willow Creek Rd	9:00 PM to 5:00 AM
	Carrol Canyon Rd and Willow Creek Rd	9:00 PM to 5:00 AM
Carroll Canyon Rd	Businesspark Ave and Scripps Ranch Blvd	9:00 PM to 5:00 AM
Scripps Ranch Blvd	Carroll Canyon Rd Hoyt Park Dr	9:00 PM to 5:00 AM
Hoyt Park Dr	Scripps Ranch Blvd and Meanley Dr	9:00 PM to 5:00 AM

Source: City of San Diego Public Utilities Department and Construction Management and Field Services Department, May 2017.

Project Impacts and Mitigation Measures

Construction traffic associated with the North City Pipeline would result in significant traffic impact to the following roadway segment:

- Eastgate Mall, between the NCPWF & NCWRP driveway and Miramar Road – LOS F.

However, based on information provided by City of San Diego Public Utilities Department, construction of the pipeline would be performed 75 LF per day, and the impacted area at any one time would encompass the work area as well as the traffic control setup length. Therefore, this project impact would be temporary in nature (approximately 64[1] working days) and since the construction will occur during nighttime when there is less traffic on the road, this roadway should function at reasonable operations. Therefore, since the impact would be temporary, no mitigation measure is required.

Table ES.3 displays the projected amount of days for which construction would take place at the identified impacted roadway above as well as on roadways adjacent to residential areas. Nighttime work hours may be modified/reduced or work may be performed during weekends on roadways near residential areas.

TABLE ES.3
SUMMARY OF IMPACT DURATION – NORTH CITY PIPELINE

Roadway	Segment	Length (ft)	Approximate Duration of Impact (days)
Eastgate Mall	NCPWF & NCWRP Driveway and Miramar Rd	4,800	64
Miramar Road	Camino Ruiz and Black Mountain Road	3,000	40
	Black Mountain Rd and Kearny Villa Rd	1,000	14

Source: Chen Ryan Associates; May 2017.

The duration of the impacts is based on the anticipated 75 LF of pipeline installation per day. It is important to note that these impacts would not occur concurrently, but rather at different points in time depending on the location of pipeline construction[1], and the impacted area at any one time would encompass the work area as well as the traffic control setup length. Therefore, the project impacts shown above would be temporary in nature and no mitigation measures are required.

[1] The impacted roadway segment of Eastgate Mall, between NCPWF & NCWRP driveway and Miramar Road and Willow Road, between SR-67 and Moreno Avenue would be approximately 4,800 feet and 1,300 feet in length respectively, and at 75 feet of installation per day, it is estimated that it would take approximately 64 days and 17 days to complete, respectively. After the pipeline installation is complete at the first 75 LF, the next 75 LF of construction would begin to be under construction, etc.

ES. 5 San Vicente Pipeline – Construction Traffic

The San Vicente Pipeline connects the NCPWF and NCWRP sites at I-805 and Eastgate Mall to the San Vicente Reservoir traversing a number of local jurisdictions, including the cities of San Diego and Santee, and the community of Lakeside in unincorporated San Diego County. This is a much longer pipeline when compared to the North City Pipeline, covering approximately 190,600 LF (36 miles). San Vicente Pipeline, construction is anticipated to take place between December 2018 and May 2021. **Table ES.4** displays the work hours proposed for the roadway segments analyzed for the San Vicente Pipeline construction.

TABLE ES.4
WORK HOURS ON ROADWAY SEGMENTS ALONG SAN VICENTE PIPELINE ALIGNMENT

Roadway	Segment	Work hours
Section 1A		
Eastgate Mall	NCPWF & NCWRP Driveway and Miramar Rd	9:00 PM to 5:00 AM
Miramar Rd	Nobel Dr and Eastgate Mall	9:00 PM to 5:00 AM
Copley Dr	Hickman Field Dr and Copley Park Pl	9:00 PM to 5:00 AM
Copley Park Pl	Copley Dr and Convoy St	9:00 PM to 5:00 AM
Convoy St	Copley Park Pl and Convoy Ct	9:00 PM to 5:00 AM
Convoy Ct	east of Convoy St	9:00 PM to 5:00 AM
Section 1B		
Ronson Rd	Ronson Ct and Kearny Mesa Rd	9:00 PM to 5:00 AM
Lightwave Ave	Kearny Villa Rd and Ruffin Rd	9:00 PM to 5:00 AM
Ruffin Rd	Clairemont Mesa Blvd and Lightwave Ave	9:00 PM to 5:00 AM
Clairemont Mesa Blvd	Ruffin Rd and Murphy Canyon Rd	9:00 PM to 5:00 AM
Murphy Canyon Rd	Clairemont Mesa Blvd and 1650 ft South of Clairemont Mesa Blvd	9:00 PM to 5:00 AM
Clairemont Mesa Blvd	1300 ft East of I-15 NB Ramps and Santo Rd	9:00 PM to 5:00 AM
Santo Rd	Clairemont Mesa Blvd and Tierrasanta Blvd	9:00 PM to 5:00 AM
Tierrasanta Blvd	Santo Rd and Copperleaf Ln	9:00 PM to 5:00 AM
Princess View Dr	north of Mission Gorge Rd	9:00 PM to 5:00 AM
Section 2		
Mission Gorge Rd	Princess View Dr and Golfcrest Dr	9:00 PM to 5:00 AM
	Golfcrest Dr and Rockyridge Rd	9:00 PM to 5:00 AM
	Rockyridge Rd and W Hills Pkwy	9:00 PM to 5:00 AM
W Hills Pkwy	Mission Gorge Rd and Carlton Oaks Dr	9:00 PM to 5:00 AM
Section 3		
Carlton Oaks Dr	W Hills Pkwy and Fanita Pkwy	9:00 PM to 5:00 AM
	400 ft West of Fanita Pkwy and Stoyer Dr	9:00 PM to 5:00 AM
Halberns Blvd	Stoyer Dr and Mast Blvd	9:00 PM to 5:00 AM
Section 4		
Mast Blvd	Halberns Blvd and Magnolia Ave	9:00 PM to 5:00 AM
	Magnolia Ave and Eastern Terminus	9:00 PM to 5:00 AM

TABLE ES.4
WORK HOURS ON ROADWAY SEGMENTS ALONG SAN VICENTE PIPELINE ALIGNMENT

Roadway	Segment	Work hours
Mast Blvd	Western Terminus and Riverford Rd	9:00 PM to 5:00 AM
Riverside Dr	Riverford Rd and Valle Vista Rd	9:00 PM to 5:00 AM
Lakeside Ave	Valle Vista Rd and Lakeside Ave/Channel Rd	9:00 PM to 5:00 AM
	Lakeside Ave/Channel Rd and SR-67	9:00 PM to 5:00 AM
Willow Rd	SR-67 and Moreno Ave	9:00 PM to 5:00 AM
Moreno Ave	San Vicente Reservoir and Willow Rd	9:00 PM to 5:00 AM

Source: City of San Diego Public Utilities Department and Construction Management and Field Services Department, May 2017.

Project Impacts and Mitigation Measures

Construction traffic associated with the San Vicente Alignment would result in a significant traffic impact to the following two roadway segments:

- Eastgate Mall, between the NCPWF & NCWRP driveway and Miramar Road – LOS F; and
- Willow Road, between SR-67 and Moreno Avenue – LOS F.

However, based on information provided by City of San Diego Public Utilities Department, construction of the pipeline would be performed 75 LF per day, and the impacted area at any one time would encompass the work area as well as the traffic control setup length. Therefore, these project impacts would be temporary in nature (approximately 64[1] working days and 17[1] working days, respectively) and since the construction will occur during nighttime when there is less traffic on the road, this roadway should function at reasonable operations. Therefore, since the impact would be temporary, no mitigation measures are required.

Table ES.5 displays the projected amount of days for which construction would take place at the identified impacted roadways above as well as on roadways adjacent to residential areas. Nighttime work hours may be modified/reduced or work may be performed during weekends on roadways near residential areas.

TABLE ES.5
SUMMARY OF IMPACT DURATION – SAN VICENTE PIPELINE

Roadway	Segment	Length (ft)	Approximate Duration of Impact (days)
Section 1B			
Eastgate Mall	NCPWF & NCWRP Driveway and Miramar Rd	4,800	64
Lightwave Avenue	Kearny Villa Rd and Ruffin Rd	4,800	64
Ruffin Rd	Clairemont Mesa Blvd and Lightwave Ave	880	12
Clairemont Mesa Blvd	1300 ft East of I-15 NB Ramps	1,300	18
Santo Rd	Clairemont Mesa Blvd and Tierrasanta Blvd	2,070	28
Tierrasanta Blvd	Santo Rd and Cooperleaf Ln	8,000	107
Section 2			
Mission Gorge Rd	Princess View Dr and Golfcrest Dr	11,300	151
	1160 ft west of Rockyridge Rd	1,160	16
	Rockyridge Rd and W Hills Pkwy	3,000	40

TABLE ES.5
SUMMARY OF IMPACT DURATION – SAN VICENTE PIPELINE

Roadway	Segment	Length (ft)	Approximate Duration of Impact (days)
W Hills Pkwy	Mission Gorge Rd and Carlton Oaks Dr	2,200	30
Section 3			
Carlton Oaks Dr	W Hills Pkwy and Fanita Pkwy	6,500	87
	400 ft West of Fanita Pkwy and Stoyer Dr	4,400	59
Halberns Blvd	Stoyer Dr and Mast Blvd	1,600	22
Section 4			
Mast Blvd	Halberns Blvd and Magnolia Ave	6,850	92
	Magnolia Ave and Eastern Terminus	4,000	54
	Western Terminus and Riverford Rd	2,500	32
Riverside Dr	Riverford Rd and Valle Vista Rd	5,400	72
Lakeside Dr	Valle Vista Rd and Lakeside Ave/Channel Rd	1,125	15
	Lakeside Ave/Channel Rd and SR-67	2,600	35
Willow Rd	SR-67 and Moreno Ave	1,300	17
Moreno Ave	San Vicente Reservoir and Willow Rd	9,600	125

Source: Chen Ryan Associates; May 2017.

The duration of the impacts is based on the anticipated 75 LF of pipeline installation per day. It is important to note that these impacts would not occur concurrently, but rather at different points in time depending on the location of pipeline construction[1], and the impacted area at any one time would encompass the work area as well as the traffic control setup length. Therefore, the project impacts shown above would be temporary in nature and no mitigation measures are required.

[1] The impacted roadway segment of Eastgate Mall, between NCPWF & NCWRP driveway and Miramar Road and Willow Road, between SR-67 and Moreno Avenue would be approximately 4,800 feet and 1,300 feet in length respectively, and at 75 feet of installation per day, it is estimated that it would take approximately 64 days and 17 days to complete, respectively. After the pipeline installation is complete at the first 75 LF, the next 75 LF of construction would begin to be under construction, etc.

ES. 6 Morena Pipelines – Construction Traffic

The Morena Pipelines propose the construction of two pipelines, a 30-inch brine pipeline and a 48-inch wastewater forcemain, running parallel to each other in a common pipe trench, connecting the Morena Pump Station which is to be located on a parcel currently owned by the San Diego Humane Society and the Society for the Prevention of Cruelty to Animals, to the NCWRP. The pipelines will connect the new pump station to the NCWRP, via Sherman Street, Morena Boulevard, West Morena Boulevard, Ingulf Street, Denver Street, Clairemont Drive, Clairemont Mesa Boulevard, Genesee Avenue, Nobel Drive, Towne Centre Drive, and Executive Drive, traversing the communities of Linda Vista, Clairemont Mesa, and University. This pipeline is approximately 11 miles. Construction of the Morena Pipelines is anticipated to take place between March 2019 and July 2021.

Pipeline construction is proposed largely to be open-trench, covering approximately 50,890 linear feet or 93% of the total alignment, while the tunneling sections cover approximately 4,105 linear feet or 7% of the total alignment. Based on information provided by City of San Diego Public Utilities Department and Construction Management and Field Services, the majority of the pipeline construction work hours are proposed to be during nighttime, between 9:00 pm and 5:00 am, with daytime construction along some roadway segments along the pipelines alignment. **Table ES.6** displays the work hours proposed for the roadway segments analyzed for the Morena Pipelines construction.

TABLE ES.6
WORK HOURS ON ROADWAY SEGMENTS ALONG MORENA PIPELINES ALIGNMENT

Roadway	Segment	Work Hours
Executive Drive	End of cul-de-sac and Judicial Drive	9:00 PM to 5:00 AM
Executive Drive	Judicial Drive and Towne Centre Drive	9:00 PM to 5:00 AM
Towne Centre Drive	Executive Drive and La Jolla Village Drive	9:00 PM to 5:00 AM
Towne Centre Drive	La Jolla Village Drive and Golden Haven Drive	8:30 AM to 3:30 PM
Towne Centre Drive	Golden Haven Drive and Nobel Drive	8:30 AM to 3:30 PM
Nobel Drive	Towne Centre Drive and Genesee Avenue	8:30 AM to 3:30 PM
Genesee Ave	Nobel Drive to Governor Drive	9:00 PM to 5:00 AM
Genesee Ave	Governor Drive and SR-52 WB Ramps	9:00 PM to 5:00 AM
Genesee Ave	SR-52 WB Ramps and SR-52 EB Ramps	9:00 PM to 5:00 AM
Genesee Ave	SR-52 EB Ramps and Appleton Street	9:00 PM to 5:00 AM
Genesee Ave	Appleton Street and Clairemont Mesa Blvd	(NB) 9:00 PM to 5:00 AM, (SB) 7:30 AM to 2:30 PM
Clairemont Mesa Blvd	Genesee Avenue and Clairemont Drive	8:30 AM to 3:30 PM
Clairemont Drive	Clairemont Mesa Boulevard and Lakehurst Avenue	7:30 AM to 4:30 PM
Clairemont Drive	Lakehurst Avenue and Clairemont Mesa Boulevard	7:30 AM to 4:30 PM
Clairemont Drive	Clairemont Mesa Boulevard and Balboa Avenue	7:30 AM to 4:30 PM
Clairemont Drive	Balboa Avenue to Rappahannock Avenue	7:30 AM to 4:30 PM
Clairemont Drive	Rappahannock Avenue to Iroquois Avenue	7:30 AM to 4:30 PM
Clairemont Drive	Iroquois Avenue to Burgener Drive	9:00 PM to 5:00 AM

TABLE ES.6
WORK HOURS ON ROADWAY SEGMENTS ALONG MORENA PIPELINES ALIGNMENT

Roadway	Segment	Work Hours
Clairemont Drive	Burgener Drive to Denver Street	9:00 PM to 5:00 AM
Denver St	Clairemont Drive and Ingulf Street	9:00 PM to 5:00 AM
Ingulf St	Denver Street and West Morena Boulevard	9:00 PM to 5:00 AM
West Morena Boulevard	Ingulf Street to Littlefield Street	9:00 PM to 5:00 AM
West Morena Boulevard	Littlefield Street to Morena Blvd	9:00 PM to 5:00 AM
West Morena Boulevard	Morena Boulevard and Tecolote Road Overpass	9:00 PM to 5:00 AM
West Morena Boulevard	Tecolote Road Overpass and Vega Street	9:00 PM to 5:00 AM
West Morena Boulevard	Vega Street and Morena Boulevard	9:00 PM to 5:00 AM

Source: City of San Diego Public Utilities Department and Construction Management and Field Services Department, May 2017.

The construction of the pipelines will also require the closure to through traffic of two roadways, Ingulf Street and Denver Street. The closure of the aforementioned roadways segments will result in the following traffic detours:

- Closure of Ingulf Street between West Morena Boulevard and Denver Street - Detour signs shall be placed redirecting traffic to travel on alternative routes along Milton Street, Lister Street, Jellett Street and Galveston Street.

- Closure of Denver Street between Ingulf Street and Clairemont Drive – Detour signs shall be placed redirecting traffic to travel on alternative routes along Milton Street, Lister Street, Jellett Street and Galveston Street.

It is important to note that the Morena Pipelines alignment coincides with the alignment for the construction of the Mid-Coast Trolley alignment (along West Morena Boulevard), therefore, close coordination is necessary between these two projects.

Project Impacts and Mitigation Measures

Roadway Segments

The construction traffic would result in significant traffic impact to thirteen (13) of studied roadway segments along the Morena Pipelines:

- Executive Drive, between end of cul-de-sac and Judicial Drive – LOS E;
- Towne Centre Drive, between La Jolla Village Drive and Golden Haven Drive – LOS F;
- Towne Centre Drive, between Golden Haven Drive and Nobel Drive – LOS F;
- Nobel Drive, between Towne Centre Drive and Genesee Avenue – LOS F;
- Genesee Avenue, between Governor Drive and SR-52 WB Ramps – LOS F;
- Genesee Avenue, between Appleton Street and Clairemont Mesa Boulevard – LOS F;
- Clairemont Mesa Boulevard, between Genesee Avenue and Clairemont Drive – LOS F;
- Clairemont Drive, between Clairemont Mesa Boulevard and Lakehurst Avenue – LOS F;
- Clairemont Drive, between Lakehurst Avenue and Clairemont Mesa Boulevard – LOS F;
- Clairemont Drive, between Clairemont Mesa Boulevard and Balboa Avenue – LOS F;
- Clairemont Drive, between Balboa Avenue and Rappahannock Avenue – LOS F;
- Clairemont Drive, between Rappahannock Avenue and Iroquois Avenue – LOS F; and
- Clairemont Drive, between Burgener Drive and Denver Street – LOS F.

Table ES.7 displays the projected amount of days for which construction would take place at the identified impacted roadways above as well as on roadways adjacent to residential areas. Nighttime work hours may be modified/reduced or work may be performed during weekends on roadways near residential areas.

TABLE ES.7
SUMMARY OF IMPACT DURATION – MORENA PIPELINES

Roadway	Segment	Length (ft)	Approximate Duration of Impact (days)
Executive Drive	End of cul-de-sac and Judicial Drive	1,000	13
	Judicial Drive and Towne Centre Drive	550	7
Towne Centre Drive	Executive Drive and La Jolla Village Drive	880	12
	La Jolla Village Drive and Golden Haven Drive	1,300	26[1]
	Golden Haven Drive and Nobel Drive	1,700	34[1]
Nobel Drive	Towne Center Drive and Genesee Avenue	1,650	33[1]
Genesee Avenue	Nobel Drive and Governor Drive	5,320	71
	Governor Drive and SR-52 WB Ramps	2,112	28
	SR-52 EB Ramps and Appleton Street	2,855	38
	Appleton Street and Clairemont Mesa Blvd	1,166	19[2]
Clairemont Mesa Boulevard	Genesee Avenue and Clairemont Drive	2,112	28

TABLE ES.7
SUMMARY OF IMPACT DURATION – MORENA PIPELINES

Roadway	Segment	Length (ft)	Approximate Duration of Impact (days)
Clairemont Drive	Clairemont Mesa Boulevard and Lakehurst Avenue	2,112	28
	Lakehurst Avenue and Clairemont Mesa Boulevard	1,056	14
	Clairemont Mesa Boulevard and Balboa Avenue	6,336	85
Clairemont Drive	Balboa Avenue and Rappahannock Avenue	2,112	28
	Rappahannock Avenue and Iroquois Avenue	3,696	49
	Iroquois Avenue and Burgener Blvd	1,160	15
	Burgener Blvd and Denver Street	3,168	42
Denver Street	Clairemont Drive and Ingulf Street	330	4
Ingulft Street	Denver Street and West Morena Boulevard	660	9
West Morena Boulevard	Ingulf Street to Littlefield Street	3,370	45
	Littlefield Street and Morena Boulevard	1,970	26
	Morena Boulevard and Tecolote Road Overpass	1,660	22
	Tecolote Road Overpass and Vega Street	300	4
	Vega Street and Morena Boulevard	1,700	23

Source: Chen Ryan Associates; June 2017.

Notes:
[1] Duration of Impact calculated based on 50 LF of pipeline installation per day due to restricted working hours.
[2] Duration of Impact calculated based on 60 LF of pipeline installation per day due to restricted working hours.

The duration of the impacts is based on the anticipated 75 LF of pipeline installation per day. It is important to note that these impacts would not occur concurrently, but rather at different points in time depending on the location of pipeline construction[1], and the impacted area at any one time would encompass the work area as well as the traffic control setup area. Therefore, the project impacts shown above would be temporary in nature and no mitigation measures are required.

[1] A roadway segment that measures 750 feet in length, at 75 feet of installation per day it is estimated that it would take approximately 10 days to complete. After the pipeline installation is complete at the first 75 LF, the next 75 LF of the roadway segment would to be impacted, etc.

Intersections

The construction traffic would result in significant traffic impact to six (6) intersections along the Morena Pipelines:

- Towne Centre Drive & Nobel Drive – LOS F during the PM peak hour;
- Genesee Avenue & Nobel Drive – LOS F during both the AM and PM peak hours;
- Genesee Avenue & Appleton Street/Lehrer Drive – LOS F during both the AM and PM peak hours;
- Genesee Avenue & Clairemont Mesa Boulevard – LOS F during both the AM and PM peak hours;
- Clairemont Mesa Boulevard & Clairemont Drive/Kleefeld Avenue – LOS F during both the AM and PM peak hours; and
- Clairemont Drive & Clairemont Mesa Boulevard – LOS F during both the AM and PM peak hours.

Since project construction conditions are temporary in nature, no physical mitigation measures are recommended. Instead, it is recommended that a Transportation Demand Management Plan is developed to limit the number of construction worker trips that travel through the impacted intersection during peak periods. The following lists a series of TDM strategies that would be appropriate during project construction.

- Implementation of a ride-sharing program to encourage carpooling amongst workers.
- Adjusting work schedules so workers do not access the site during the peak hours.
- Provide off-site parking locations for workers outside of the area with shuttle services to bring them on-site.
- Provide subsidized transit passes for construction workers

In order to help reduce the temporary transportation and parking related impacts associated with project construction, it is recommended that the project applicant develop a TDM plan utilizing one or multiple of the strategies listed above during the construction of the proposed project.

1.0 Introduction

1.1 Purpose of the Report

The purpose of this Transportation Impact Study (TIS) is to identify and document potential transportation related impacts associated with the North City project, as well as to recommend mitigation measures, as necessary. Three different components of impact assessments were conducted for this project: (1) permanent transportation impacts associated with the new or improved facilities, such as new North City Pure Water Facility (NCPWF), upgrades and expansion to existing water reclamation facilities, and new pump stations and pipelines; (2) temporary transportation impacts associated with the construction of the two potential pipeline alignment alternatives: Miramar and San Vicente between NCPWF and one of the reservoirs; and (3) temporary transportation impacts associated with the construction of the Morena Wastewater Forcemain and Brine/Centrate Line (Morena Pipelines) between the Morena Pump Station and NCPWF.

1.2 Project Background

On average, 85% of City's water supply is imported from the Colorado River and Northern California. This reliance on imported water causes San Diego to be vulnerable to supply shortages and price increases.

With few local water supply options, the City has explored potable and non-potable reuse options of treated wastewater. In 2011, the City started operating one million gallons per day (MGD) demonstration-scale advanced water purification facility at the NCWRP site and confirmed that the purified water complied with all federal and state drinking water standards.

On April 29, 2014, the City Council adopted a resolution (R-308906) supporting the implementation of the Pure Water Program. On November 18, 2014, the City Council unanimously supported the application to renew the NPDES permit for the Point Loma Wastewater Treatment Plant (WWTP); the application included key elements of the City's Pure Water Program to implement potable reuse.

The Pure Water Program will ultimately produce 83 MGD of locally controlled water, and will be implemented in phases over a 20-year period, grouped by geographical area: North City, Central Area, and South Bay. The North City Project will produce 30 MGD of purified water and is scheduled to be operational in 2021. The Central Area project and/or South Bay projects are scheduled to be completed by December 31, 2035, and will produce a combined total up to 53 MGD.

1.3 Project Description

The North City Project would use advanced water purification technology to produce potable water from recycled water and provide a safe, reliable, and cost-effective drinking water supply for San Diego. The North City Project would create up to 30 MGD of locally controlled potable water and reduce flows to the PLWTP, which in turn would reduce total suspended solids (TSS) discharged to the ocean.

The North City Project consists of the design and construction of a new 399,381 square-foot NCPWF, 1,528,043 square-foot upgrades to existing water reclamation facilities, and design and construction of new pump stations and pipelines. The North City Project would construct the NCPWF adjacent to the existing North City Water Reclamation Plant (NCWRP). Upgrades would occur at the existing NCWRP in order to provide sufficient tertiary influent for the NCPWF as well as to connect the existing centrate line with the proposed brine line. Pump station and pipeline facilities would convey different types of flows to and from the treatment facilities for: (1) diverting wastewater flows to NCWRP, (2) conveying recycled water to the NCPWF, (3) conveying purified water from the NCPWF to a reservoir, and (4) transporting waste flows (brine and sludge) from treatment processes to solids handling facilities or back into the Metropolitan Sewerage System (Metro System). Upgrades would also occur at the Metropolitan Biosolids Center (MBC) to handle the additional brine and sludge produced by the NCWRP expansion and advanced water purification process. A new renewable energy facility would be constructed at the NCWRP, which would receive landfill gas from the City's Miramar Landfill gas collection system via a new gas pipeline.

Two North City Project Alternatives (Project Alternatives) are proposed. The North City Purified Water Pipeline (North City Pipeline) would construct the NCPWF and would pipe purified water to Miramar Reservoir. The San Vicente Purified Water Pipeline (San Vicente Pipeline) would also construct the proposed NCPWF, but would include fewer treatment processes at the facility and would pipe purified water to the San Vicente Reservoir rather than the Miramar Reservoir. The San Vicente Pipeline would also include an additional pump station, the Mission Trails Booster Station (MTBS), along the San Vicente Pipeline alignment. The North City Pipeline would include improvements at the Miramar Water Treatment Plant (Miramar WTP).

From a TIS perspective, the following project components were examined for the North City Project:

1. New North City Pure Water Facility (NCPWF) – this facility is to be located on the north side of Eastgate Mall, across from the existing NCWRP and the entrance will be across the street from the entrance to the NCWRP and proposed to be signalized. **(45 employees total, permanent facility)**
2. Expansion of the existing North City Water Reclamation Plant (NCWRP) - this facility is currently located on the south side of Eastgate Mall, and takes access off of Eastgate Mall through the existing entrance. There is also a gated emergency access off of Miramar Road. **(15 additional employees total, permanent facility)**

3. Morena Pump Station and Pipelines – No permanent staff required with scheduled maintenance checks; **(0 staff, permanent facilities)**
4. NCPWF Influent Pump Station and Conveyance – one part time employee only; **(1 employee, permanent facilities)**
5. North City Pure Water Pipeline (North City Pipeline) and North City Pump Station - one part time employee only; **(1 employee, permanent facilities)**
6. Pure Water Dechlorination Facility – 2 trips per week by offsite staff and 2 trips per month for chemical delivery. **(2 employees, permanent facility)**

The project site is located in San Diego, California. The regional location of the proposed project is displayed in **Figure 1-1**.

1.4 Report Organization

Following this introduction chapter, this report is organized into the following chapters:

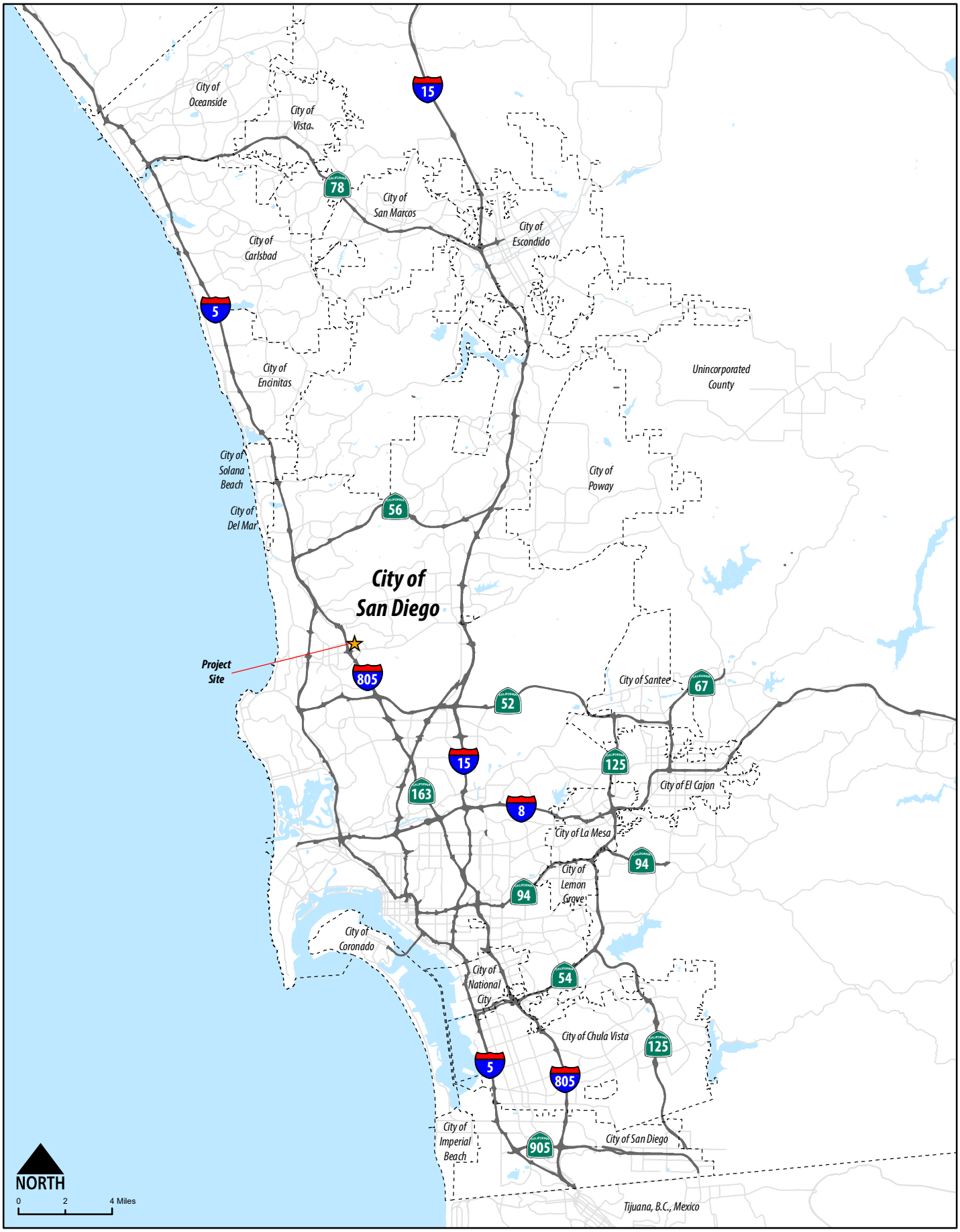
2.0 Analysis Methodology – This chapter describes the methodologies and standards utilized to analyze roadway and intersection traffic conditions.

3.0 North City Pure Water Facility – This chapter describes the proposed project including project trip generation, trip distribution patterns, and project trip assignments. It also documents existing, near-term year 2022, and future year 2035 traffic operations both with and without the proposed project. Mitigation measures, if necessary, for project-related impacts are also identified.

4.0 Purified Water Pipelines – This chapter describes potential traffic impacts during pipeline construction for both the North City Pipeline and the San Vicente Pipeline alignment alternatives.

5.0 Morena Wastewater Forcemain and Brine/Centrate Line – This chapters discusses potential construction traffic impacts associated with pipelines connecting the expanded NCWRP and the Morena Pump Station.

6.0 Findings – This chapter provide a summary of project findings in terms of potential transportation related impacts and recommended mitigation measures.



North City Project
Transportation Impact Study

CHEN RYAN

Figure 1-1
Project Regional Location

2.0 Analysis Methodology

This TIS was performed in accordance with the requirements of the City of San Diego *Traffic Impact Study Manual* and the District's California Environmental Quality Act (CEQA) project review process. Detailed information on roadway segment analysis methodologies, standards, and thresholds are discussed in the following sections.

2.1 Level of Service Definition

Level of Service (LOS) is a quantitative measure describing operational conditions within a traffic stream, and the motorist's and/or passengers' perception of operations. A LOS definition generally describes these conditions in terms of such factors as delay, speed, travel time, freedom to maneuver, interruptions in traffic flow, queuing, comfort, and convenience. **Table 2.1** describes generalized definitions of the various LOS categories (A through F) as applied to roadway operations.

TABLE 2.1
LEVEL OF SERVICE DEFINITIONS

LOS Category	Definition of Operation
A	This LOS represents a completely free-flow condition, where the operation of vehicles is virtually unaffected by the presence of other vehicles and only constrained by the geometric features of the highway and by driver preferences.
B	This LOS represents a relatively free-flow condition, although the presence of other vehicles becomes noticeable. Average travel speeds are the same as in LOS A, but drivers have slightly less freedom to maneuver.
C	At this LOS, the influence of traffic density on operations becomes marked. The ability to maneuver within the traffic stream is clearly affected by other vehicles.
D	At this LOS, the ability to maneuver is notably restricted due to traffic congestion, and only minor disruptions can be absorbed without extensive queues forming and the service deteriorating.
E	This LOS represents operations at or near capacity. LOS E is an unstable level, with vehicles operating with minimum spacing for maintaining uniform flow. At LOS E, disruptions cannot be dissipated readily thus causing deterioration down to LOS F.
F	At this LOS, forced or breakdown of traffic flow occurs, although operations appear to be at capacity, queues form behind these breakdowns. Operations within queues are highly unstable, with vehicles experiencing brief periods of movement followed by stoppages.

Source: Highway Capacity Manual 2010

2.2 Roadway Segment LOS Standards and Thresholds

Roadway segment LOS standards and thresholds provide the basis for analysis of arterial roadway segment performance. The analysis of roadway segment LOS is based on the functional classification of the roadway, the maximum capacity, roadway geometrics, and existing or forecast Average Daily Traffic (ADT) volumes. **Table 2.2** presents the roadway segment capacity and LOS standards utilized to analyze roadways evaluated in this report.

TABLE 2.2
CITY OF SAN DIEGO ROADWAY CLASSIFICATIONS AND LOS STANDARDS

Roadway Classification	LOS A	LOS B	LOS C	LOS D	LOS E
Expressway (6 lanes)	< 30,000	< 42,000	< 60,000	**< 70,000**	< 80,000
Primary Arterial (6 lanes)	< 25,000	< 35,000	< 50,000	**< 55,000**	< 60,000
Major Arterial (6-lane, divided)	< 20,000	< 28,000	< 40,000	**< 45,000**	< 50,000
Major Arterial (4-lane, divided)	< 15,000	< 21,000	< 30,000	**< 35,000**	< 40,000
Collector (4-lane w/ center lane)	< 10,000	< 14,000	< 20,000	**< 25,000**	< 30,000
Collector (4-lane w/o center lane)	< 5,000	< 7,000	< 10,000	**< 13,000**	< 15,000
Collector (2-lane w/ continuous left-turn lane)	< 5,000	< 7,000	< 10,000	**< 13,000**	< 15,000
Collector (2-lane no fronting property)	< 4,000	< 5,500	< 7,500	**< 9,000**	< 10,000
Collector (2-lane commercial-industrial fronting)	<2,500	< 3,500	< 5,000	**< 6,500**	< 8,000
Collector (2-lane multi-family)	<2,500	< 3,500	< 5,000	**< 6,500**	< 8,000
Sub-Collector (2-lane single family)	-	-	< 2,200	-	**-**

Source: City of San Diego, Traffic Impact Study Manual, July 1998

Note:
Bold numbers indicate the ADT thresholds for acceptable LOS.

These standards are generally used as long-range planning guidelines to determine the functional classification of roadways. The actual capacity of a roadway facility varies according to its physical attributes. Typically, the performance and LOS of a roadway segment is heavily influenced by the ability of its intersections to accommodate peak hour traffic volumes. For the purposes of this traffic analysis, LOS D is considered acceptable for the analyzed roadway segments.

2.3 Peak Hour Intersection LOS Standards and Thresholds

This section presents the methodologies used to perform peak hour intersection capacity analysis for signalized intersections. The following assumptions were utilized in conducting all intersection LOS analyses:

- *Pedestrian Calls per Hour:* 10 calls per hour for each pedestrian movement was assumed.
- *Signal Timing:* Based on existing signal timing plans (as of November, 2016), provided in **Appendix A.**
- *Peak Hour Factor*: Based on existing peak hour count data for existing conditions included in Appendix A, and 0.92 for all Near-Term Year 2022 conditions.

Signalized Intersection Analysis

The analysis of signalized intersections utilized the procedures outlined in the *2010 Highway Capacity Manual (HCM)*. This method defines LOS in terms of delay, or more specifically, average stopped delay per vehicle. Delay is a measure of driver and/or passenger discomfort, frustration, fuel consumption and lost travel time. This technique uses 1,900 vehicles per hour per lane (VPHPL) as the maximum saturation volume of an intersection. This saturation volume is adjusted to account for lane width, on-street parking, pedestrians, traffic composition (i.e., percentage trucks) and shared lane movements (i.e. through and right-turn movements originating from the same lane). The LOS criteria used for this technique are described in **Table 2.3**. The computerized analysis of intersection operations was performed utilizing *Synchro 9.0* traffic analysis software.

TABLE 2.3
SIGNALIZED INTERSECTION LOS CRITERIA

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

Source: Highway Capacity Manual 2010

Unsignalized Intersection Analysis

Unsignalized intersections, including two-way and all-way stop controlled intersections were analyzed using the *2010 HCM* unsignalized intersection analysis methodology. The Synchro 9.0 software supports this methodology and was utilized to produce LOS results. The LOS for a side-street stop controlled (SSSC) intersection is determined by the computed or measured control delay and is defined for the minor movement. **Table 2.4** summarizes the level of service criteria for unsignalized intersections. Consistent with City policy, LOS E was used in this study as the minimum acceptable LOS for peak hour intersection operations.

TABLE 2.4
LEVEL OF SERVICE CRITERIA FOR STOP CONTROLLED UNSIGNALIZED INTERSECTIONS

Average Control Delay (sec/veh)	Level of Service (LOS)
≤10.0	A
10.1 – 15.0	B
15.1 – 25.0	C
25.1 – 35.0	D
35.1 – 50.0	E
>50.0	F

Source: Highway Capacity Manual, Transportation Research Board (2010)

2.4 Determination of Significant Impacts

The City of San Diego Significance Determination Thresholds, January 2011 defines project impact thresholds by facility type. These thresholds are generally based upon an acceptable increase in the Volume / Capacity (V/C) ratio for roadway and freeway segments, and upon increases in vehicle delays at intersections and ramps.

Within the City of San Diego's jurisdiction, LOS D is considered acceptable for roadway and intersection operations. A project is considered to have a significant impact if it degrades the operations of a roadway or intersection from an acceptable LOS (D or better) to an unacceptable LOS (E or F), or if it adds additional delay to a facility already operating at an unacceptable level. **Table 2.5** summarizes the impact significant thresholds as identified within the City of San Diego's guidelines beyond which mitigation measures are required.

TABLE 2.5
MEASURE OF SIGNIFICANT PROJECT TRAFFIC IMPACTS

Level of Service (LOS) with Project*	Allowable Change Due to Impact**					
	Freeways		Roadway Segments		Intersections	Ramp Metering
	V/C	Speed (mph)	V/C	Speed (mph)	Delay (sec)	Delay (min.)
LOS E (or ramp meter delays > 15 min.)	0.010	1.0	0.02	1.0	2.0	2.0
LOS F (or ramp meter delays > 15 min.)	0.005	0.5	0.01	0.5	1.0	1.0

Source: City of San Diego, Significance Determination Thresholds (January 2011)

Note 1: The allowable increase in delay at a ramp meter with more than 15 minutes of delay and freeway LOS E is 2 minutes.
Note 2: The allowable increase in delay at a ramp meter with more than 15 minutes of delay and freeway LOS F is 1 minute.

* All level of service (LOS) measurements are based upon HCM procedures for peak-hour conditions. However, vehicle to capacity (V/C) ratios for roadway segments may be estimated on an ADT/24-hour traffic volume basis (using Table 2.1 or a similar LOS chart for each jurisdiction). The acceptable LOS for freeways, roadways, and intersections is generally "D" ("C" for undeveloped or not densely developed locations per jurisdiction definitions). For metered freeway ramps, LOS does not apply. However, ramp meter delays above 15 minutes are considered excessive.

** If a proposed project's traffic causes the values shown in the table to be exceeded, the impacts are determined to be significant. These impact changes may be measured from appropriate computer programs or expanded manual spreadsheets. The project applicant shall then identify feasible mitigation (within the Traffic Impact Study report) that will maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see above * note), or if the project adds a significant amount of peak-hour trips to cause any traffic queues to exceed on- or off-ramp storage capacities, the project applicant shall be responsible for mitigating significant impact changes.

3.0 North City Pure Water Facility

This chapter describes the proposed project, including land uses and estimated trip generation, trip distribution, trip assignment, and project study area. It also documents existing, near-term year 2022, and future year 2035 traffic operations both with and without the proposed project. Mitigation measures, if necessary, for project-related impacts are also identified. Construction of the NCPWF is anticipated to take place between October 2018 and November 2021, while for the expansion of the NCWRP, construction is anticipated to take place between October 2018 and December 2021.

3.1 Project Description

The North City Project would use advanced water purification technology to produce potable water from recycled water and provide a safe, reliable, and cost-effective drinking water supply for San Diego. The North City Project would create up to 30 MGD of locally controlled potable water and reduce flows to the PLWTP, which in turn would reduce total suspended solids (TSS) discharged to the ocean.

The North City Project would construct the NCPWF adjacent to the existing NCWRP. Upgrades would occur at the existing NCWRP in order to provide sufficient tertiary influent for the NCPWF as well as to connect the existing centrate line with the proposed brine line. Pump station and pipeline facilities would convey different types of flows to and from the treatment facilities for: (1) diverting wastewater flows to NCWRP, (2) conveying recycled water to the NCPWF, (3) conveying purified water from the NCPWF to a reservoir, and (4) transporting waste flows (brine and sludge) from treatment processes to solids handling facilities or back into the Metropolitan Sewerage System (Metro System). Upgrades would also occur at the Metropolitan Biosolids Center (MBC) to handle the additional brine and sludge produced by the NCWRP expansion and advanced water purification process. A new renewable energy facility would be constructed at the NCWRP, which would receive landfill gas from the City's Miramar Landfill gas collection system via a new gas pipeline.

3.2 Project Trip Generation, Distribution, and Assignment

Project Trip Generation

Construction of the new 399,381 square-foot NCPWF and 1,528,043 square-foot expansion of the current NCWRP would generate permanent traffic on a regular/daily basis due to the additional staffing needed to run and operate these facilities, therefore, included in the traffic impact analyses from this point forward. All other uses are considered negligible traffic generators and are not included in this TIS. The following information was provided by City of San Diego Public Utilities Department, regarding projected additional staffing at both NCPWF and NCWRP expansion, which was utilized to derive trip generation for the project:

NCPWF

- 37 employees during regular day shift (6:00 am to 3:00 pm)
- 8 employees after regular day shift (3:00 pm to 6:00 am)

NCWRP

- 9 employees during regular day shift (6:00 am to 3:00 pm)
- 6 employees after regular day shift (3:00 pm to 6:00 am)

Table 3.1 displays the anticipated daily and peak hour project trip generation. Note that the 3 trips per employee trip rate was based on each employee commuting to and from work (2 trips a day) and the assumption of approximately 50% of employees making two extra trips (inbound and outbound) during their shift for reasons such as meetings, lunch, etc.

TABLE 3.1
PROJECT TRIP GENERATION

Land Use	Quantity (employees)	Trip Rate	Daily Trips	AM Peak Hour (5 AM to 6 AM)	PM Peak Hour (3 PM to 4 PM)
				Trips	Trips
North City Pure Water Facility	45	3 / employee	135	41 (37-in / 4-out)	41 (4-in / 37-out)
North City Water Reclamation Plant - Expansion	15	3 / employee	45	12 (9-in / 3-out)	12 (3-in / 9-out)
		Total	**180**	**53 (46-in / 7-out)**	**53 (7-in / 46-out)**

Source: City of San Diego; May 2017.

As shown, the proposed project would generate a total of 180 daily trips, 53 trips (46-in / 7-out) during the AM peak hour, and 53 trips (7-in / 46-out) during the PM peak hour.

Based on input from the City of San Diego Public Utilities Department, employees who work after the regular day shift (6:00 AM to 3:00 PM) are divided into two shifts at 4-person per shift at the NCPWF and two shifts at 3-person per shift at NCWRP and would work from 3:00 PM to 11:00 PM and from 11:00 PM to 6:00 AM.

It is important to note that the proposed work shift for the majority of the workers at these facilities is from 6:00 AM to 3:00 PM. After review of the daily traffic counts in 15-min intervals on the roadway facilities in the study area, it was determined that the commute hours for this specific project did not coincide with the regular commute hours of 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. Hence, the new NCPWF and expansion of the current NCWRP would not likely contribute traffic to the study area during the regular commute hours. Furthermore, even if 20 percent of the workers were to arrive to/depart the project site during regular commute hours, this would result in approximately 12 trips during the AM peak hour and 12 trips during the PM peak hour. This amount of peak hour traffic is less than the 50-peak hour trip requirement for a traffic impact study, per the City of San Diego *Traffic Impact Study Manual, July 1998.* Therefore, a peak hour intersection analysis was not performed as part of the analysis of this project.

Project Trip Distribution

Trip distribution for the proposed project was developed based on existing traffic patterns, surrounding land uses, as well as access to freeways, and it is displayed in **Figure 3-1**.

Project Trip Assignment

Based upon the assumed project trip distribution (Figure 3-1), as well as the anticipated project trip generation (Table 3.1), daily project trips were assigned to the adjacent roadway network, as displayed in **Figure 3-2.**

3.3 Project Study Area

This TIS was performed in accordance with the requirements of the City of San Diego Traffic Impact Study Manual, July 1998 requirements. The City of San Diego Traffic Impact Study Manual requires that the defined study area include all regionally significant arterial system segments and intersections where the proposed project would add 50 or more peak hour trips in either direction, mainline freeway locations where the project would add 150 or more peak hour trips in either direction, and metered freeway on-ramps where the proposed project would add 20 or more peak hour trips. Additionally, it provides a methodology for determining potentially affected roadway segments using ADT and roadway capacity.

Based on the City of San Diego Traffic Impact Study Manual requirements, the expected project trips, and trip assignment, no intersection peak hour analysis or roadway segment analysis is required. However, the following key study area roadway segments were analyzed to show project does not result in impacting any of the roadway segments within the study area:

Eastgate Mall between

- Towne Center Drive & Judicial Drive
- Judicial Drive & 280 feet west of I-805 Overpass
- 280 feet west of I-805 Overpass & NCWRP Driveway
- NCWRP Driveway & Eastgate Drive
- Eastgate Drive & Miramar Road

Towne Center Drive between

- Eastgate Mall & Executive Drive
- Executive Drive & La Jolla Village Drive

La Jolla Village Drive between

- Towne Center Drive & I-805 SB Ramps

Miramar Road between

- I-805 SB Ramps & I-805 NB Ramps
- I-805 NB Ramps & Nobel Drive
- Nobel Drive & Eastgate Mall

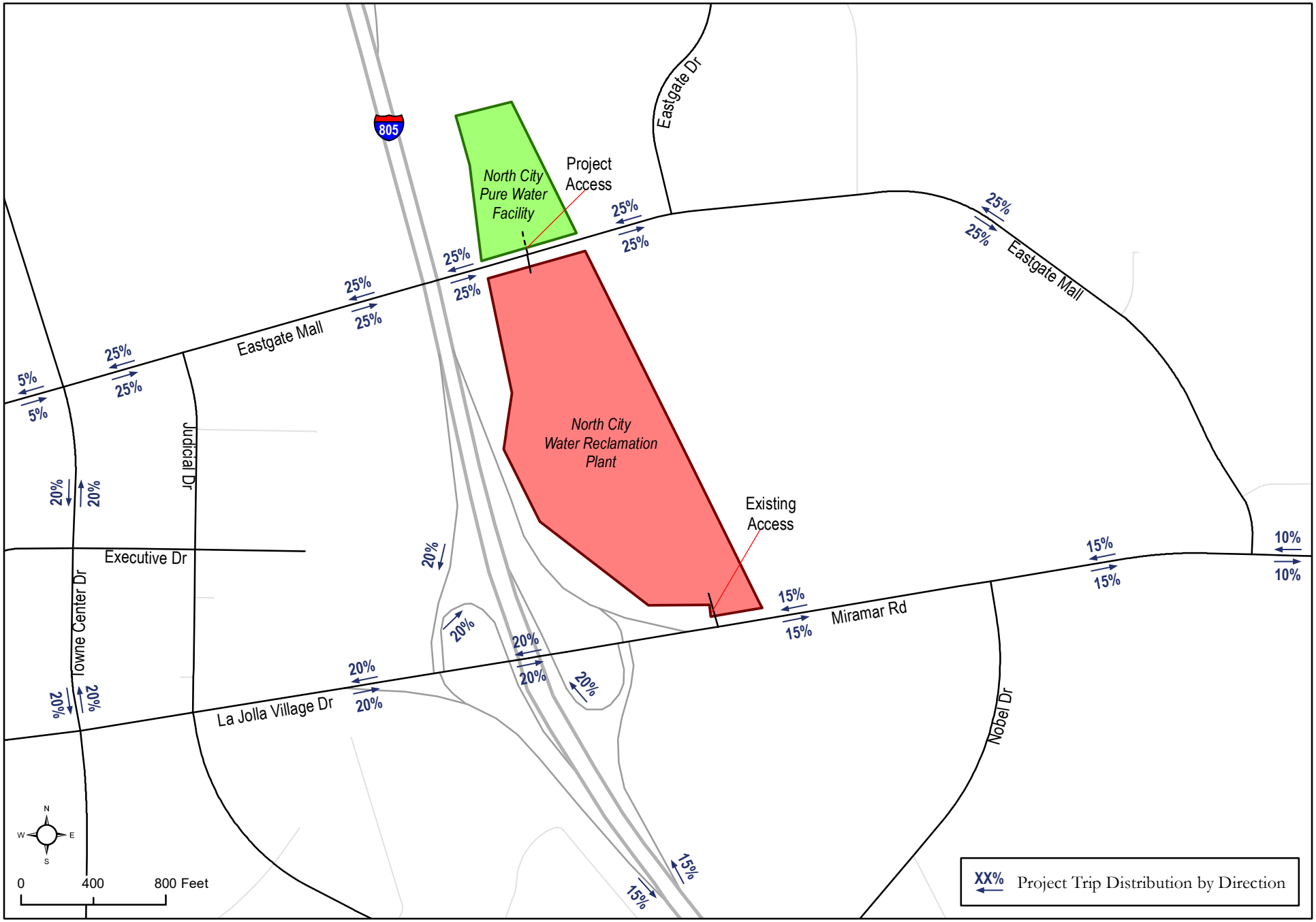


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Figure 3-1
Project Trip Distribution

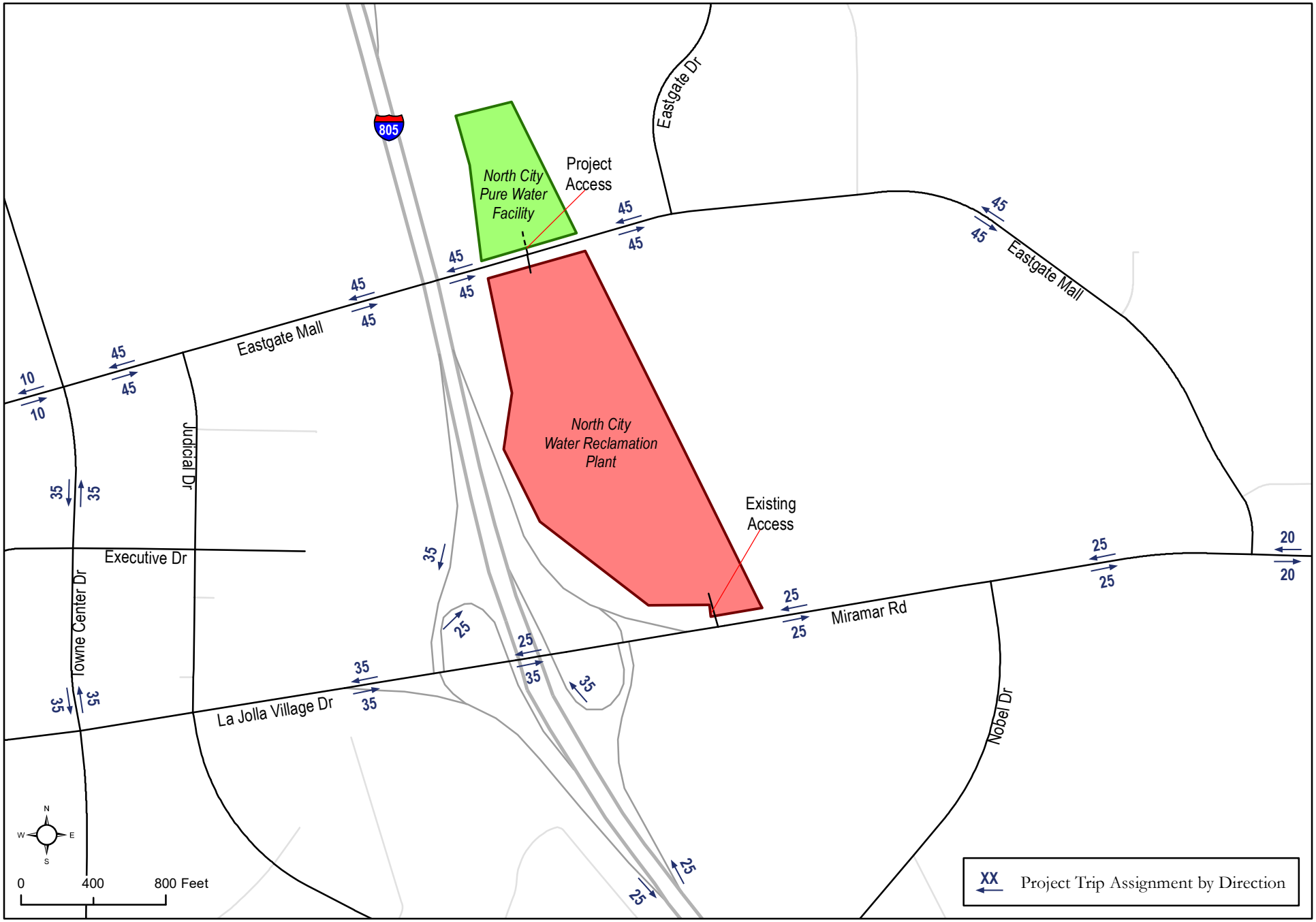

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Figure 3-2
Project Trip Assignment

The proposed project is not anticipated to contribute more than 50 peak hour trips on Interstate 805 (I-805) in either direction nor 20 or more peak hour trips on I-805 freeway metered on-ramps; therefore, a freeway impact analysis nor a ramp metering analysis was conducted. **Figure 3-3** illustrates the project study area.

3.4 Existing Conditions

This section provides an analysis of the current traffic conditions.

Existing Roadway Network

Four locally significant roadways traverse the study area. Each of the key roadways included in the study area are discussed below.

North-South Facilities

Towne Center Drive – Within the project study area, Towne Center Drive is a four-lane roadway with a raised median and a posted speed limit of 40 mph between Eastgate Mall and La Jolla Village Drive. Parallel parking is generally permitted on both sides of the roadway between Eastgate Mall and Executive Drive, while between Executive Drive and La Jolla Village Drive parallel parking is prohibited on both sides of the roadway. Within the project study area, sidewalks are present on both sides of the roadway. Bicycle facilities are not present on either side of the roadway between Eastgate Mall and Executive Drive, while a Class II bicycle lane is present on both sides of the roadway between Executive Drive and La Jolla Village Drive. Towne Center Drive is classified as a four-lane Major Arterial roadway in the currently adopted *University Community Plan,* last updated December 2016.

East-West Facilities

Eastgate Mall – Within the project study area, Eastgate Mall is a four-lane roadway with a raised median between Towne Center Drive and just west (approximately 280 feet) of the I-805 overpass. Sidewalks and Class II bicycle lanes are present on both sides of the roadway. Between 280 feet west of the I-805 freeway overpass and the North City Water Reclamation Plan driveway, the roadway transitions from a four-lane roadway with a raised median into an undivided two-lane roadway. Just east of the I-805 overpass, unpaved shoulders are present, providing space for potential roadway widening in the event that this roadway needs to be widened and restriped to include left-turn pockets. Sidewalks are generally present on the south side of the roadway while Class II bicycle lanes are present on both sides. East of the NCWRP driveway, Eastgate Mall is a two-lane roadway with a center left-turn lane between Eastgate Drive and Miramar Road with a posted limit of 45 mph. Parallel parking is allowed in some segments with a sidewalk on the westbound side and parallel and perpendicular parking in the dirt shoulder on the eastbound side. Eastgate Mall is classified as a four-lane Collector roadway between Towne Centre Drive and Miramar Road in the currently adopted *University Community Plan,* last updated December 2016.

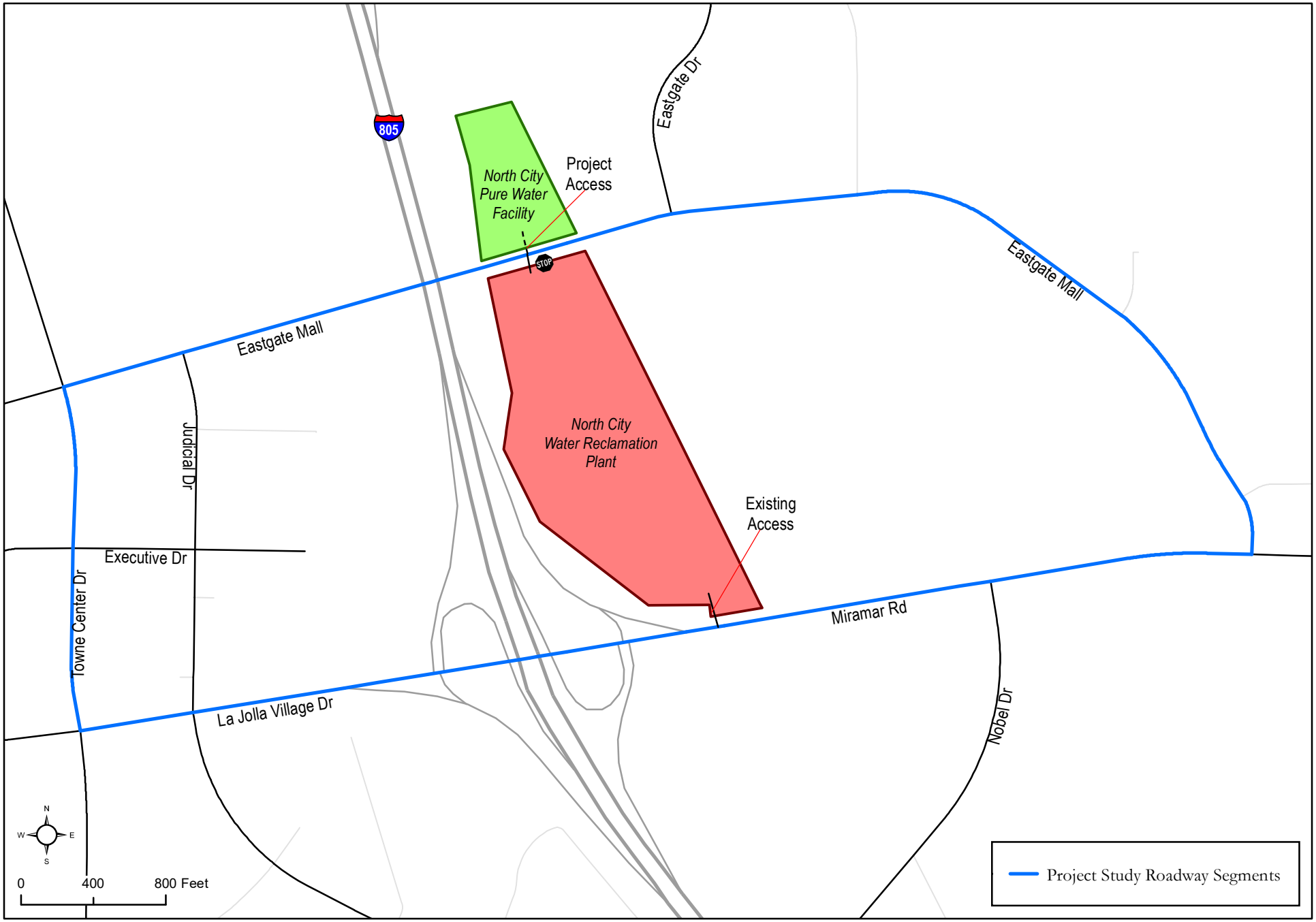

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Figure 3-3
Project Study Area

La Jolla Village Drive – Within the project study area, La Jolla Village drive is an eight-lane roadway with a landscaped raised median and a posted speed limit of 50 mph between Towne Center Drive and the I-805 southbound ramps. Sidewalks are present on both sides and a Class II bicycle lane is present in the north side of the roadway. Parking is prohibited on both sides of the roadway. La Jolla Village Drive is classified as an eight-lane Primary Arterial roadway between Towne Center Drive and the I-805 SB Ramps, in the currently adopted *University Community Plan,* last updated December 2016.

Miramar Road – Within the project study area, Miramar Road is a six-lane roadway with a raised median and a posted speed limit of 50 mph between the I-805 SB Ramps and the I-805 NB ramps. East of the I-805 NB Ramps, Miramar Road transitions from a six-lane roadway into an eight-lane roadway until reaching Nobel Drive, where it drops a lane and becomes a seven-lane roadway until reaching Eastgate Mall. Sidewalks and Class II bicycle lanes are present on both sides along the entire roadway, with the exception of approximately 300 feet of sidewalk on the south side of the roadway between the I-805 NB Ramps and Nobel Drive. Parking is prohibited on both sides of the roadway. Miramar Road is classified as a six-lane Primary Arterial between the I-805 SB Ramps and Eastgate Mall, in the currently adopted *University Community Plan,* last updated December 2016.

Figure 3-4 displays the existing cross-sections/functional classifications for the key study area roadway segments.

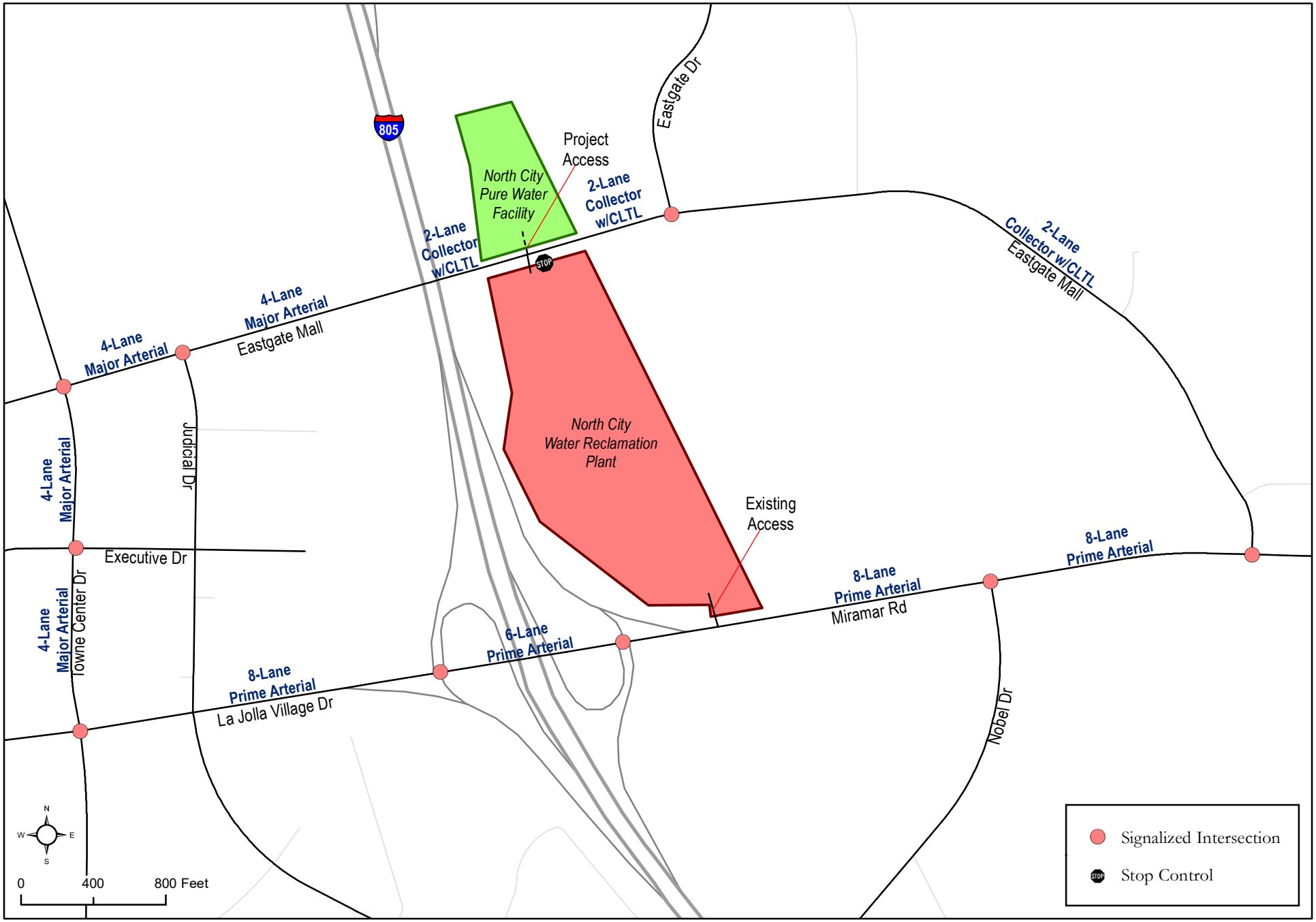

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Figure 3-4
Roadway Geometrics - Existing Conditions

Existing Roadway Traffic Volumes

Existing traffic volumes are displayed in **Figure 3-5.** Roadway segment traffic counts were obtained from the *University Community Plan Amendment Transportation Impact Study* prepared by Kimley-Horn and Associates, Inc. dated June 2016. These counts were collection in April and May 2015 and count worksheets are provided in Appendix A.

Existing Roadway Level of Service Analysis

Level of Service analyses under Existing conditions were conducted using the methodologies described in Chapter 2.0. Roadway segment LOS analysis is discussed below.

Table 3.2 displays the LOS analysis results for key study area roadway segments under Existing conditions.

TABLE 3.2
ROADWAY SEGMENT LOS RESULTS - EXISTING CONDITIONS

Roadway	Segment	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS
Towne Center Drive	Eastgate Mall and Executive Drive	4-Lane Major Arterial	40,000	20,120	0.503	B
	Executive Drive and La Jolla Village Drive	4-Lane Major Arterial	40,000	20,120	0.503	B
Eastgate Mall	Towne Center Drive and Judicial Drive	4-Lane Major Arterial	40,000	11,120	0.278	A
	Judicial Drive and 280 feet west of I-805 Overpass	4-Lane Major Arterial	40,000	10,100	0.253	A
	280 feet west of I-805 Overpass and NCWRP Driveway	2-Lane Collector W/ CLTL	15,000	10,100	0.673	D
	NCWRP Driveway and Eastgate Drive	2-Lane Collector W/ CLTL	15,000	10,100	0.673	D
	Eastgate Drive and Miramar Road	2-Lane Collector W/ CLTL	15,000	14,670	0.978	**E**
La Jolla Village Drive	Towne Center Drive and I-805 SB Ramps	8-Lane Prime Arterial	80,000	58,830	0.735	C
Miramar Road	I-805 SB Ramps and I-805 NB Ramps	6-Lane Prime Arterial	60,000	66,140	1.102	**F**
	I-805 NB Ramps and Nobel Drive	8-Lane Prime Arterial	80,000	47,990	0.600	C
	Nobel Drive and Eastgate Mall	7-Lane Prime Arterial	70,000[1]	64,560	0.922	**E**

Source: University Community Plan Amendment Transportation Impact Study, Chen Ryan Associates; May 2017.

Notes:
V/C = Volume to Capacity Ratio.
Bold letter indicates substandard LOS E or F.
CLTL = Continuous Left-Turn Lane.
[1] Based on the Capacity of an 8-Ln Prime Arterial, reduced to exclude a lane. (7/8*80,000 = 70,000)

As shown in Table 3.2, all the key study area roadway segments currently operate at acceptable LOS D or better with the following three (3) exceptions:

- Eastgate Mall, between Eastgate Drive and Miramar Road – LOS E;
- Miramar Road, between I-805 SB Ramps and I-805 NB Ramps – LOS F; and Miramar Road, between Nobel Drive and Eastgate Mall – LOS E.

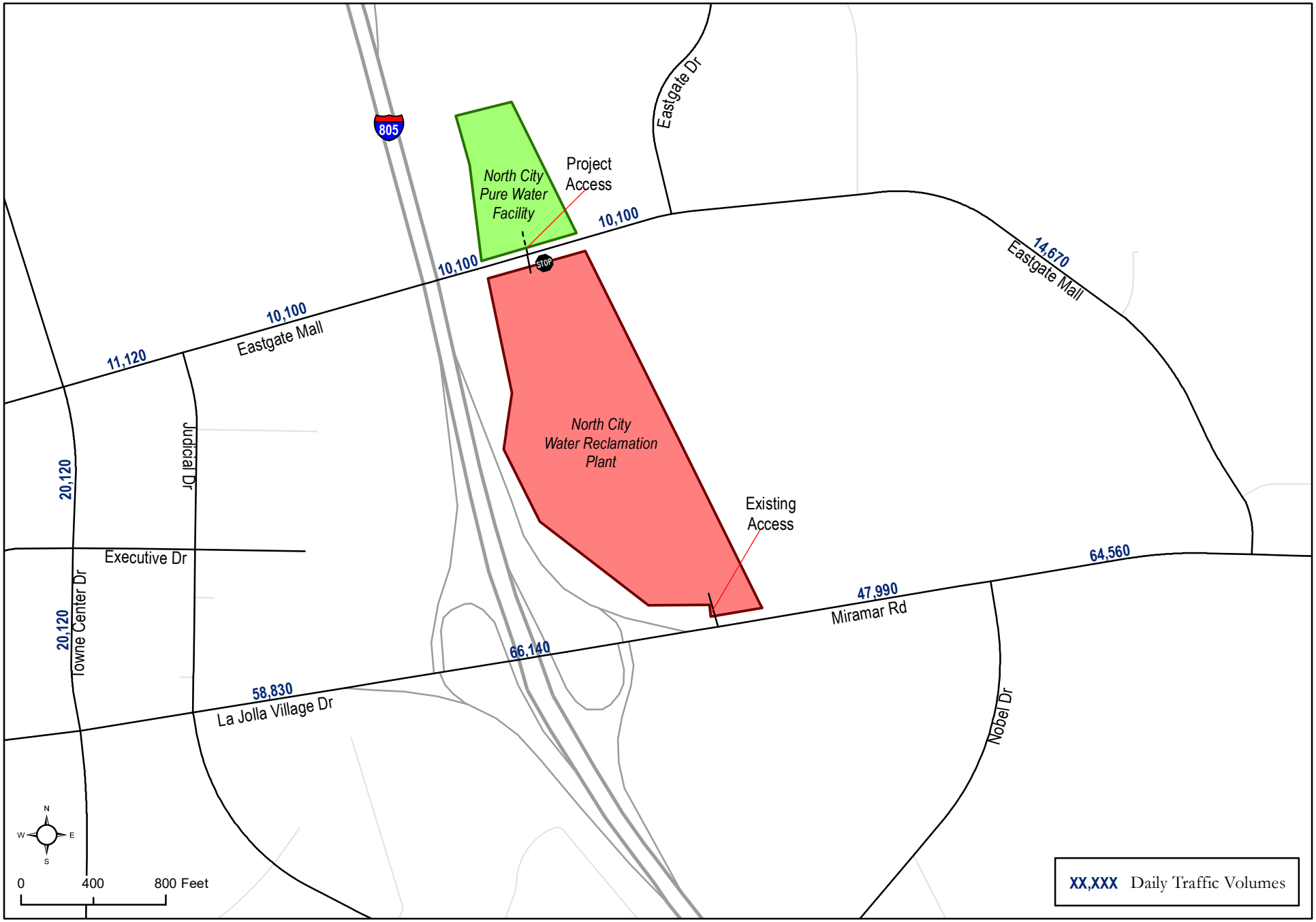

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Figure 3-5
Traffic Volumes - Existing Conditions

3.5 Existing Plus Project Conditions

This section provides an analysis of Existing traffic conditions with the addition of project traffic generated by the new NCPWF and the NCWRP expansion.

Existing Plus Project Roadway Network and Traffic Volumes

The roadway network under Existing Plus Project conditions is assumed to be identical to the Existing conditions (shown in Figure 3-4). Existing Plus Project traffic volumes were derived by combining the existing traffic volumes (displayed in Figure 3-5) with the project trip assignment volumes (displayed in Figure 3-2). Daily roadway volumes are displayed in **Figure 3-6.**

Existing Plus Project Roadway Level of Service Analysis

Analyses were conducted using the methodologies described in Chapter 2.0. Roadway segment LOS analysis results are discussed below. **Table 3.3** displays the LOS analysis results for key roadway segments under Existing Plus Project conditions.

TABLE 3.3
ROADWAY SEGMENT LOS RESULTS - EXISTING PLUS PROJECT CONDITIONS

Roadway	Segment	Functional Classification	Threshold (LOS E)	Existing + Project			Existing	Δ	SI?
				ADT	V/C	LOS	ADT / V/C / LOS		
Towne Center Drive	Eastgate Mall and Executive Drive	4-Lane Major Arterial	40,000	20,190	0.505	B	20,120 / 0.503 / B	0.002	N
	Executive Drive and La Jolla Village Drive	4-Lane Major Arterial	40,000	20,190	0.505	B	20,120 / 0.503 / B	0.002	N
Eastgate Mall	Towne Center Drive and Judicial Drive	4-Lane Major Arterial	40,000	11,210	0.280	A	11,120 / 0.278 / A	0.002	N
	Judicial Drive and 280 feet west of I-805 Overpass	4-Lane Major Arterial	40,000	10,190	0.255	A	10,100 / 0.253 / A	0.002	N
	280 feet west of I-805 Overpass and NCWRP Driveway	2-Lane Collector W/ CLTL	15,000	10,190	0.679	D	10,100 / 0.673 / D	0.006	N
	NCWRP Driveway and Eastgate Drive	2-Lane Collector W/ CLTL	15,000	10,190	0.679	D	10,100 / 0.673 / D	0.006	N
	Eastgate Drive and Miramar Road	2-Lane Collector W/ CLTL	15,000	14,760	0.984	**E**	14,670 / 0.978 / **E**	0.006 *<0.02*	N

TABLE 3.3
ROADWAY SEGMENT LOS RESULTS - EXISTING PLUS PROJECT CONDITIONS

Roadway	Segment	Functional Classification	Threshold (LOS E)	Existing + Project			Existing	Δ	SI?
				ADT	V/C	LOS	ADT / V/C / LOS		
La Jolla Village Drive	Towne Center Drive and I-805 SB Ramps	8-Lane Prime Arterial	80,000	58,900	0.736	C	58,830 / 0.735 / C	0.001	N
Miramar Road	I-805 SB Ramps and I-805 NB Ramps	6-Lane Prime Arterial	60,000	66,210	1.104	**F**	66,140 / 1.102 / **F**	0.001 *<0.01*	N
	I-805 NB Ramps and Nobel Drive	8-Lane Prime Arterial	80,000	48,040	0.601	C	47,990 / 0.600 / C	0.001	N
	Nobel Drive and Eastgate Mall	7-Lane Prime Arterial	70,000	64,610	0.923	**E**	64,560 / 0.922 / **E**	0.001 <0.02	N

Source: Chen Ryan Associates; May 2017.

Notes:
Bold letter indicates substandard LOS E or F.
CLTL = Continuous Left-Turn Lane.
SI? = Significant Impact?
[1] Based on the Capacity of an 8-Ln Prime Arterial, reduced to exclude a lane. (7/8*80,000 = 70,000)

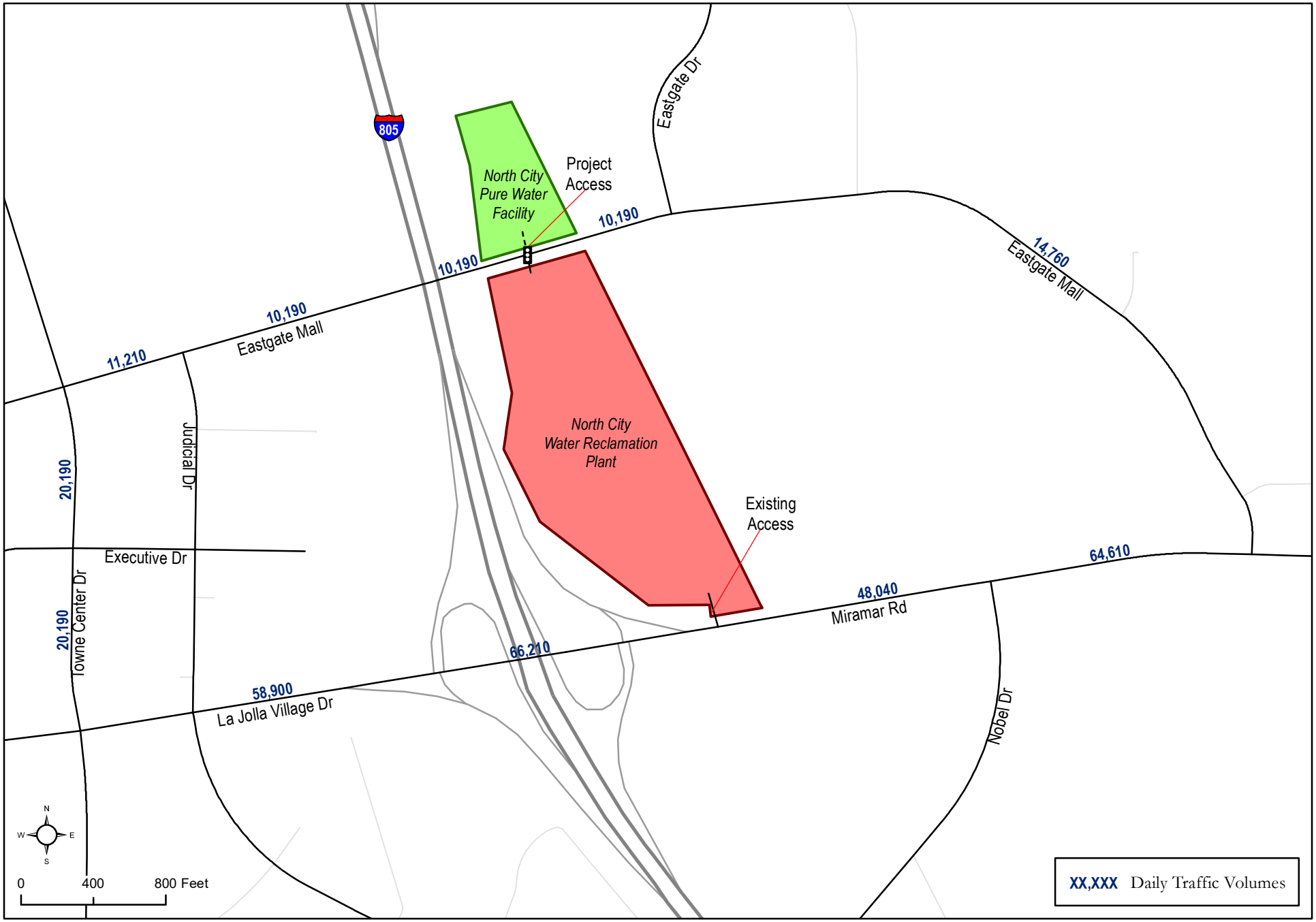

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Figure 3-6
Traffic Volumes - Existing Plus Project Conditions

As shown in the Table 3.3, similar to existing conditions, all of the roadways within the study area would continue to operate at acceptable LOS D or better under Existing Plus Project conditions, with the following three (3) exceptions:

- Eastgate Mall, between Eastgate Drive and Miramar Road – LOS E;
- Miramar Road, between I-805 SB Ramps and I-805 NB Ramps – LOS F; and
- Miramar Road, between Nobel Drive and Eastgate Mall – LOS E.

Project Impacts and Mitigation Measures

Based upon the significance criteria presented in Section 2.4 of this report, the addition of project traffic would not result in any significant traffic related impacts to the study area roadway segments under Existing Plus Project condition.

3.6 Near-Term Year 2022 Base Traffic Conditions

Based on review of the Project Data Summary (PDSS) Draft prepared by HDR dated on 9/28/2016, it was determined that the proposed project would be in operations by year 2022. This section provides an analysis of Near-Term Year 2022 traffic conditions without the proposed project.

Cumulative Project Traffic

Chen Ryan Associates has obtained a list of potential cumulative projects (within one mile of the proposed project) from the City of San Diego's website (http://opendsd.sandiego.gov/web/maps/approvalsdiscretionary). This list was then carefully reviewed and discussed with Development Services Department in order to develop the following twelve (12) cumulative projects which are anticipated to contribute traffic to the project study area. These cumulative projects (listed in **Table 3.4**) are included in the near-term year 2022 base scenario to provide an accurate background for comparing traffic impacts associated with the proposed project.

Table 3.4 displays the trip generation for the cumulative projects previously described. All trip generation rates for the cumulative projects were derived from the City of San Diego *Land Use Development Code – Trip Generation Manual – Revised May 2003.*

Separate distributions were developed (included in **Appendix B**) for each of the cumulative projects in order to accurately reflect the associated travel patterns. The distribution patterns were based on the location of cumulative project access points to the regional roadway network and predicted travel patterns. **Figure 3-7** displays assignment of the cumulative project trips to the study area roadways.

TABLE 3.4
CUMULATIVE PROJECTS TRIP GENERATION

Project ID	Project Location	Project Description	Daily Trip Generation
1	4570 Executive Drive	Construct a 95,609 square-foot commercial building with two (2) commercial condominium units on a 3.36-acre site	1,632
2	4589 La Jolla Village Drive	Add approximately 483,000 square feet of retail space, 300 residential units, associated parking structures and the Transit Center encompasses 75.86 acres	21,906
3	4770 Eastgate Mall	Construct a 62,805 square-foot three-story office building over sub-level parking.	1,188
4	4755 Nexus Centre Drive	Construct a new 78,000 square-foot research & development three-story building, with subterranean parking, on a 11.27-acre site.	624
5	4767 Nexus Centre Drive	Demolish a 69,000 square-foot building and construct a 122,015 square-foot four story research & development building.	425
6	4775 Executive Drive	Construct a 250,000 square-foot office and research & development building over 3 level below grade parking on a 7.07-acre site.	2,000
7	6320 Miramar Road	Construct a 21,000 square-foot retail/warehouse building on a vacant 1.5-acre site.	105
8	9923 1/3 Olson Drive	Change in use from an existing equipment and materials storage facility for the development of a private parking facility for utilization by the adjacent FedEx Building site 13.61-acre site.	817
9	5909 Nancy Ridge Drive	Construct two level pads for an outdoor storage yard and an access road on a 13.95-acre site.	837
10	6162 Nancy Ridge Drive	Construct a 47,228 square-foot four story research & development/Office building and a five-story parking structure on a 3-acre site.	378
11	9198 Genesee Avenue	Construction of 560 multi-family dwelling units.	3,360
12	9015 Judicial Drive	Construct 309 residential condominiums with deviation to building height and remove Prime Industrial Lands designation on a 7.93-acre site.	1,854
		Total	**35,126**

Source: City of San Diego, Chen Ryan Associates, May 2017.

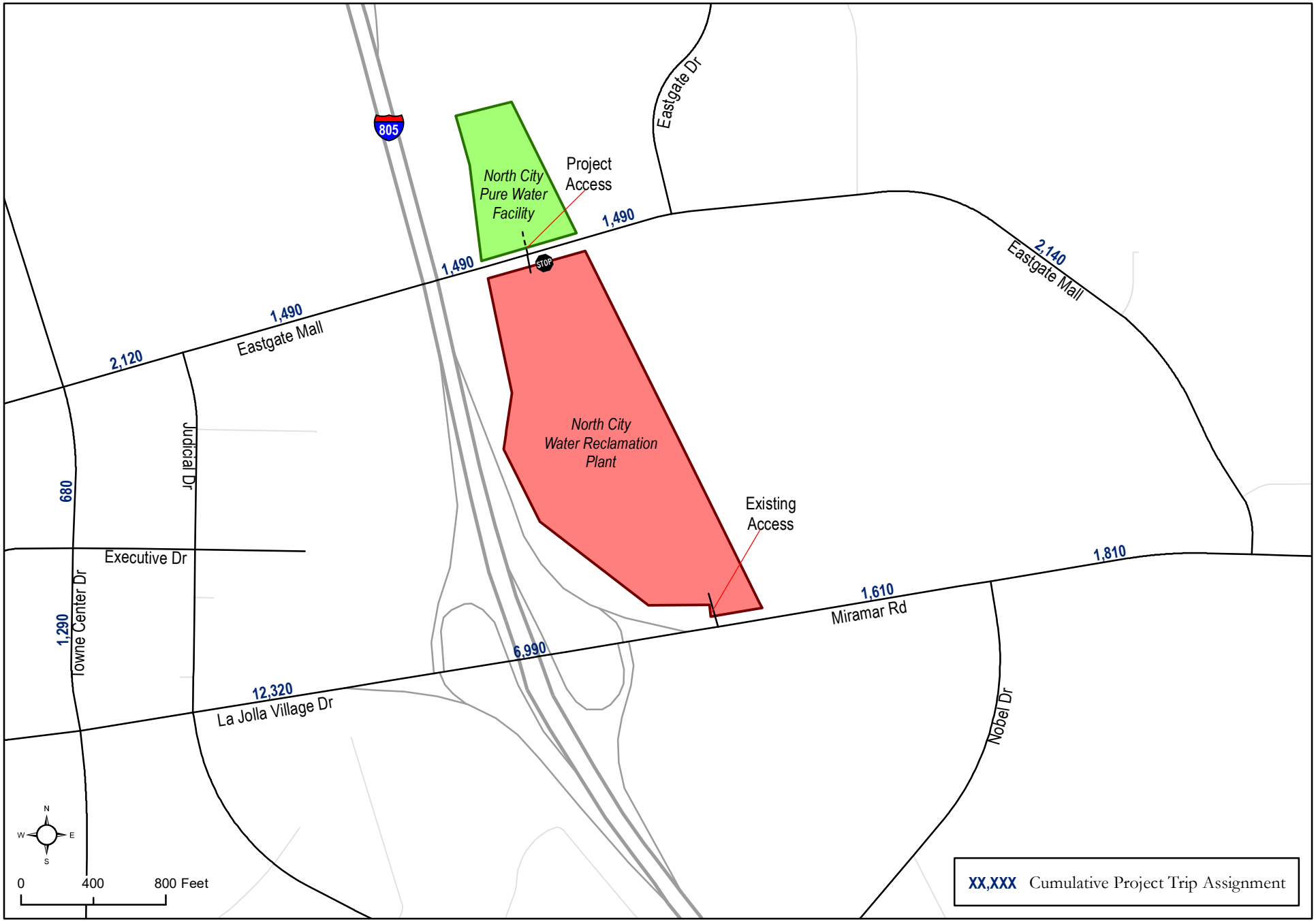

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Figure 3-7
Cumulative Project Trip Assignment

Near-Term Year 2022 Base Roadway Network and Traffic Volumes

It is assumed that roadway geometrics under Near-Term Year 2022 Base conditions would be identical to those under Existing conditions, as previously displayed in in Figure 3-4.

Near-Term Year 2022 Base traffic volumes were derived by adding the additional trips generated by the cumulative projects (shown in Figure 3-7) to the existing traffic volumes (displayed in Figure 3-5). **Figure 3-8** displays average daily traffic volumes for the study roadway segments under the Near-Term Year 2022 Base conditions.

Near-Term Year 2022 Base Roadway Level of Service Analysis

LOS analyses for Near-Term Year 2022 Base Conditions were conducted using the methodologies described in Chapter 2.0. Roadway segment LOS analysis is discussed below. **Table 3.5** displays the LOS analysis results for key roadway segments under the Near-Term Year 2022 Base Conditions.

TABLE 3.5
ROADWAY SEGMENT LOS RESULTS - NEAR-TERM YEAR 2022 BASE CONDITIONS

Roadway	Segment	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS
Towne Center Drive	Eastgate Mall and Executive Drive	4-Lane Major Arterial	40,000	20,800	0.520	B
	Executive Drive and La Jolla Village Drive	4-Lane Major Arterial	40,000	21,410	0.535	C
Eastgate Mall	Towne Center Drive and Judicial Drive	4-Lane Major Arterial	40,000	13,240	0.331	A
	Judicial Drive and 280 feet west of I-805 Overpass	4-Lane Major Arterial	40,000	11,590	0.290	A
	280 feet west of I-805 Overpass and NCWRP Driveway	2-Lane Collector W/ CLTL	15,000	11,590	0.773	D
	NCWRP Driveway and Eastgate Drive	2-Lane Collector W/ CLTL	15,000	11,590	0.773	D
	Eastgate Drive and Miramar Road	2-Lane Collector W/ CLTL	15,000	16,810	1.121	**F**
La Jolla Village Drive	Towne Center Drive and I-805 SB Ramps	8-Lane Prime Arterial	80,000	71,150	0.889	D
Miramar Road	I-805 SB Ramps and I-805 NB Ramps	6-Lane Prime Arterial	60,000	73,130	1.219	**F**
	I-805 NB Ramps and Nobel Drive	8-Lane Prime Arterial	80,000	49,600	0.620	C
	Nobel Drive and Eastgate Mall	7-Lane Prime Arterial	70,000	66,370	0.948	**E**

Source: Chen Ryan Associates; May 2017.

Notes:
Bold letter indicates substandard LOS E or F.
CLTL = Continuous Left-Turn Lane.
[1] Based on the Capacity of an 8-Ln Prime Arterial, reduced to exclude a lane. (7/8*80,000 = 70,000)

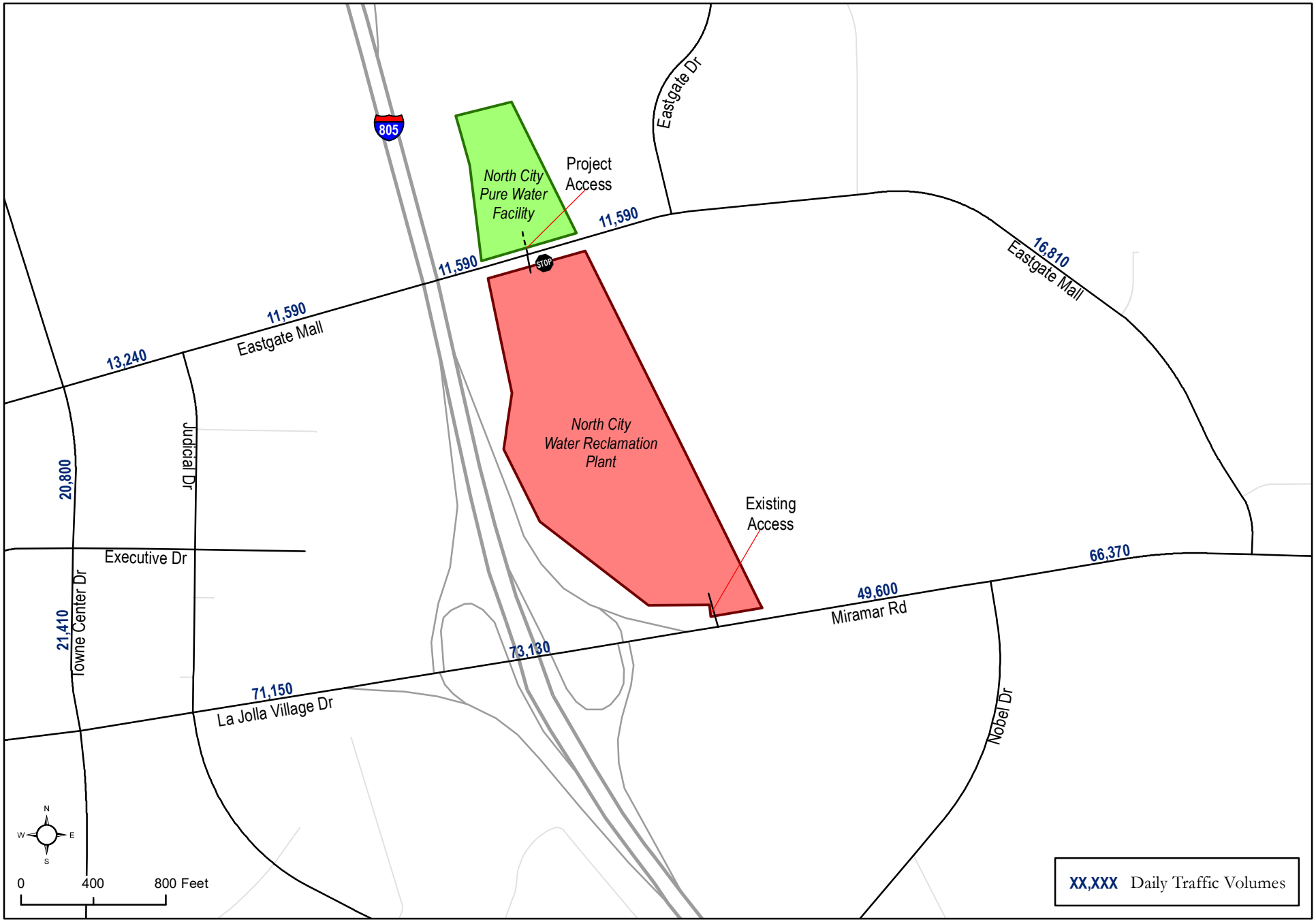

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Figure 3-8
Traffic Volumes - Near-Term Year 2022 Base Conditions

As shown in Table 3.5, all of the roadways within the study area are projected to operate at acceptable LOS D or better under Near-Term Year 2022 Base Conditions, with the following three (3) exceptions:

- Eastgate Mall, between Eastgate Drive and Miramar Road – LOS F;
- Miramar Road, between I-805 SB Ramps and I-805 NB Ramps – LOS F; and
- Miramar Road, between Nobel Drive and Eastgate Mall – LOS E.

3.7 Near-Term Year 2022 Base Plus Project Traffic Conditions

This section provides an analysis of Near-Term Year 2022 Base traffic conditions with the addition of project traffic generated by the new NCPWF and the NCWRP expansion.

Near-Term Year 2022 Base Plus Project Roadway Network and Traffic Volumes
It is assumed that roadway geometrics under Near-Term Year 2022 Base Plus Project conditions would be identical to those under Existing conditions, as previously displayed in in Figure 3-4.

Near-Term Year 2022 Base Plus Project traffic volumes were derived by combining the Near-Term Year 2022 Base traffic volumes (displayed in Figure 3-8) and the project trip assignment volumes (displayed in Figures 3-2). Daily traffic segment volumes for this scenario are displayed in **Figure 3-9.**

Near-Term Year 2022 Base Plus Project Roadway Level of Service Analysis
Roadway Segment LOS analyses were conducted using the methodologies described in Chapter 2.0. Roadway segment LOS analysis is discussed below.

Table 3.6 displays the LOS analysis results for key roadway segments under Near-Term Year 2022 Base Plus Project conditions.

As shown in the table, similar to the Near-Term Year 2022 Base conditions, all key study roadway segments are projected to operate at LOS D or better under Near-Term Year 2022 Plus Project conditions, with the following three (3) exceptions:

- Eastgate Mall, between Eastgate Drive and Miramar Road – LOS F;
- Miramar Road, between I-805 SB Ramps and I-805 NB Ramps – LOS F; and
- Miramar Road, between Nobel Drive and Eastgate Mall – LOS E.

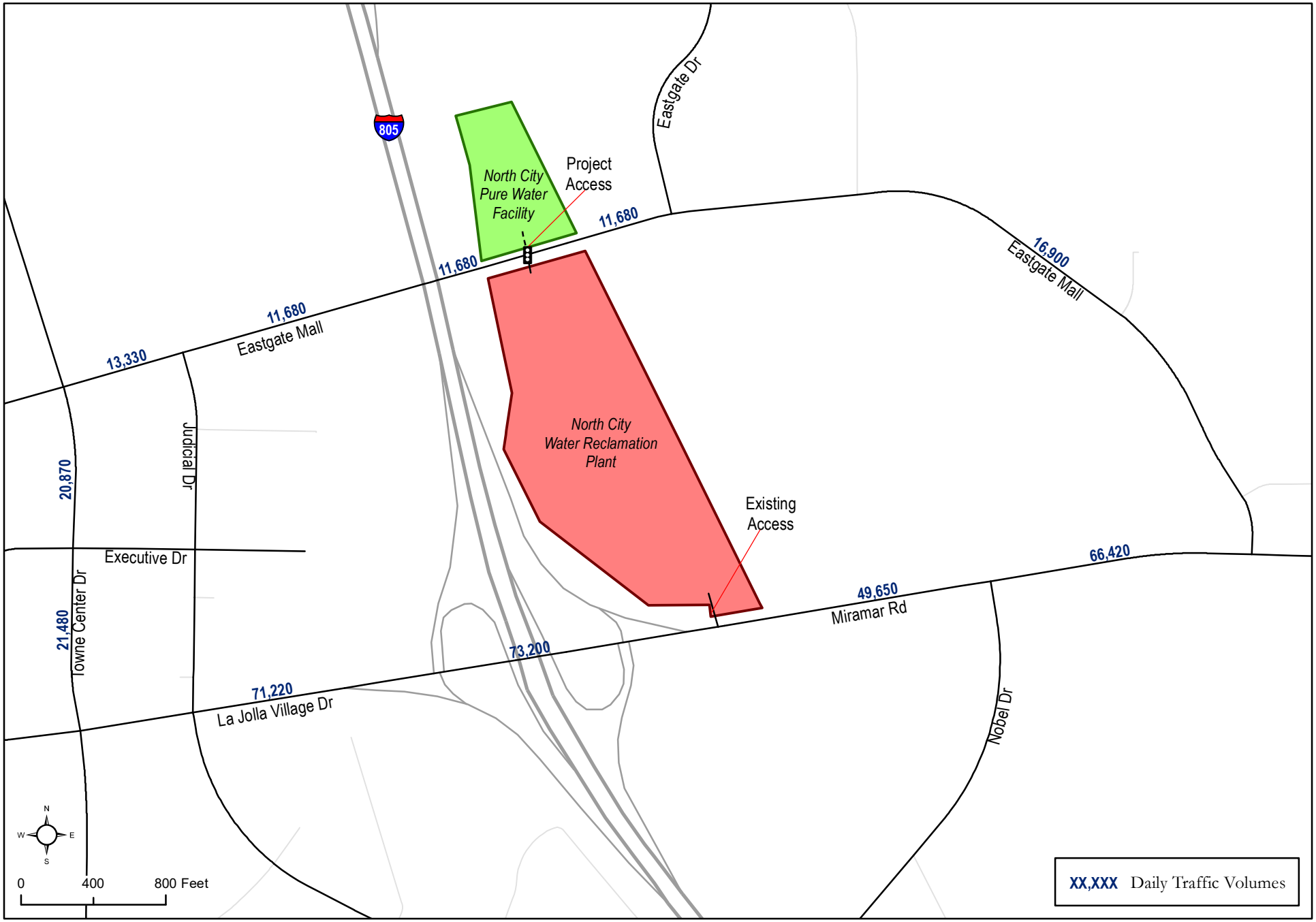

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Figure 3-9
Traffic Volumes - Near-Term Year 2022 Base Plus Project Conditions

TABLE 3.6
ROADWAY SEGMENT LOS RESULTS
NEAR-TERM YEAR 2022 BASE PLUS PROJECT CONDITIONS

Roadway	Segment	Functional Classification	Threshold (LOS E)	2022 Base + Project			2022 Base	Δ	SI?
				ADT	V/C	LOS	ADT / V/C / LOS		
Towne Center Drive	Eastgate Mall and Executive Drive	4-Lane Major Arterial	40,000	20,870	0.522	B	20,800 / 0.520 / B	0.002	N
	Executive Drive and La Jolla Village Drive	4-Lane Major Arterial	40,000	21,480	0.537	C	21,410 / 0.535 / C	0.002	N
Eastgate Mall	Towne Center Drive and Judicial Drive	4-Lane Major Arterial	40,000	13,330	0.333	A	13,240 / 0.331 / A	0.002	N
	Judicial Drive and 280 feet west of I-805 Overpass	4-Lane Major Arterial	40,000	11,680	0.292	A	11,590 / 0.290 / A	0.002	N
	280 feet west of I-805 Overpass and NCWRP Driveway	2-Lane Collector W/ CLTL	15,000	11,680	0.779	D	11,590 / 0.773 / D	0.006	N
	NCWRP Driveway and Eastgate Drive	2-Lane Collector W/ CLTL	15,000	11,680	0.779	D	11,590 / 0.773 / D	0.006	N
	Eastgate Drive and Miramar Road	2-Lane Collector W/ CLTL	15,000	16,900	1.127	**F**	16,810 / 1.121 / **F**	0.006 *<0.01*	N
La Jolla Village Drive	Towne Center Drive and I-805 SB Ramps	8-Lane Prime Arterial	80,000	71,220	0.890	D	71,150 / 0.889 / D	0.001	N
Miramar Road	I-805 SB Ramps and I-805 NB Ramps	6-Lane Prime Arterial	60,000	73,200	1.220	**F**	73,130 / 1.219 / **F**	0.001 *<0.01*	N
	I-805 NB Ramps and Nobel Drive	8-Lane Prime Arterial	80,000	49,650	0.621	C	49,600 / 0.620 / C	0.001	N
	Nobel Drive and Eastgate Mall	7-Lane Prime Arterial	70,000	66,420	0.949	**E**	66,370 / 0.948 / **E**	0.001 *<0.02*	N

Source: Chen Ryan Associates; May 2017.

Notes:
Bold letter indicates substandard LOS E or F.
CLTL = Continuous Left-Turn Lane.
SI? = Significant Impact?
[1] Based on the Capacity of an 8-Ln Prime Arterial, reduced to exclude a lane. (7/8*80,000 = 70,000).

Project Impacts and Mitigation Measures

Based upon the significance criteria presented in Section 2.4 of this report, the addition of project traffic would not result in any significant traffic related impacts to the study area roadway segments under Near-Term Year 2022 Plus Project conditions.

3.8 Horizon Year 2035 Base Traffic Conditions

This section provides an analysis of Horizon Year 2035 traffic conditions without the proposed project.

Horizon Year 2035 Base Roadway Network and Traffic Volumes

The roadway network under Existing Plus Project conditions is assumed to be identical to Existing conditions (shown in Figure 3-4), while traffic volumes under Horizon Year 2035 Base conditions were assumed to be identical to the *University Community Plan Amendment.* Detailed traffic volume information was obtained from the City of San Diego Planning Department, as displayed in **Figure 3-10**. Trip generation, distribution, and assignment did not change under this scenario.

Horizon Year 2035 Base Roadway Level of Service Analysis

LOS analyses for Horizon Year 2035 Base conditions were conducted using the methodologies described in Chapter 2.0. Roadway segment LOS analysis results is discussed below. **Table 3.7** displays the LOS analysis results for key roadway segments under the Horizon Year 2035 Base conditions.

TABLE 3.7
ROADWAY SEGMENT LOS RESULTS - HORIZON YEAR 2035 BASE CONDITIONS

Roadway	Segment	Designated Classification	Threshold (LOS E)	ADT	V/C	LOS
Towne Center Drive	Eastgate Mall and Executive Drive	4-Lane Major Arterial	40,000	21,600	0.540	C
	Executive Drive and La Jolla Village Drive	4-Lane Major Arterial	40,000	21,600	0.540	C
Eastgate Mall	Towne Center Drive and Judicial Drive	4-Lane Major Arterial	40,000	14,300	0.358	A
	Judicial Drive and 280 feet west of I-805 Overpass	4-Lane Major Arterial	40,000	19,500	0.488	B
	280 feet west of I-805 Overpass and NCWRP Driveway	2-Lane Collector W/ CLTL	15,000	19,500	1.300	**F**
	NCWRP Driveway and Eastgate Drive	2-Lane Collector W/ CLTL	15,000	19,500	1.300	**F**
	Eastgate Drive and Miramar Road	2-Lane Collector W/ CLTL	15,000	29,200	1.947	**F**
La Jolla Village Drive	Towne Center Drive and I-805 SB Ramps	8-Lane Prime Arterial	80,000	69,500	0.869	D
Miramar Road	I-805 SB Ramps and I-805 NB Ramps	6-Lane Prime Arterial	60,000	66,000	1.100	**F**
	I-805 NB Ramps and Nobel Drive	8-Lane Prime Arterial	80,000	50,300	0.629	C
	Nobel Drive and Eastgate Mall	7-Lane Prime Arterial	70,000	69,100	0.987	**E**

Source: City of San Diego Planning Department, Chen Ryan Associates; May 2017.

Notes:
Bold letter indicates substandard LOS E or F.
CLTL = Continuous Left-Turn Lane.
[1] Based on the Capacity of an 8-Ln Prime Arterial, reduced to exclude a lane. (7/8*80,000 = 70,000).

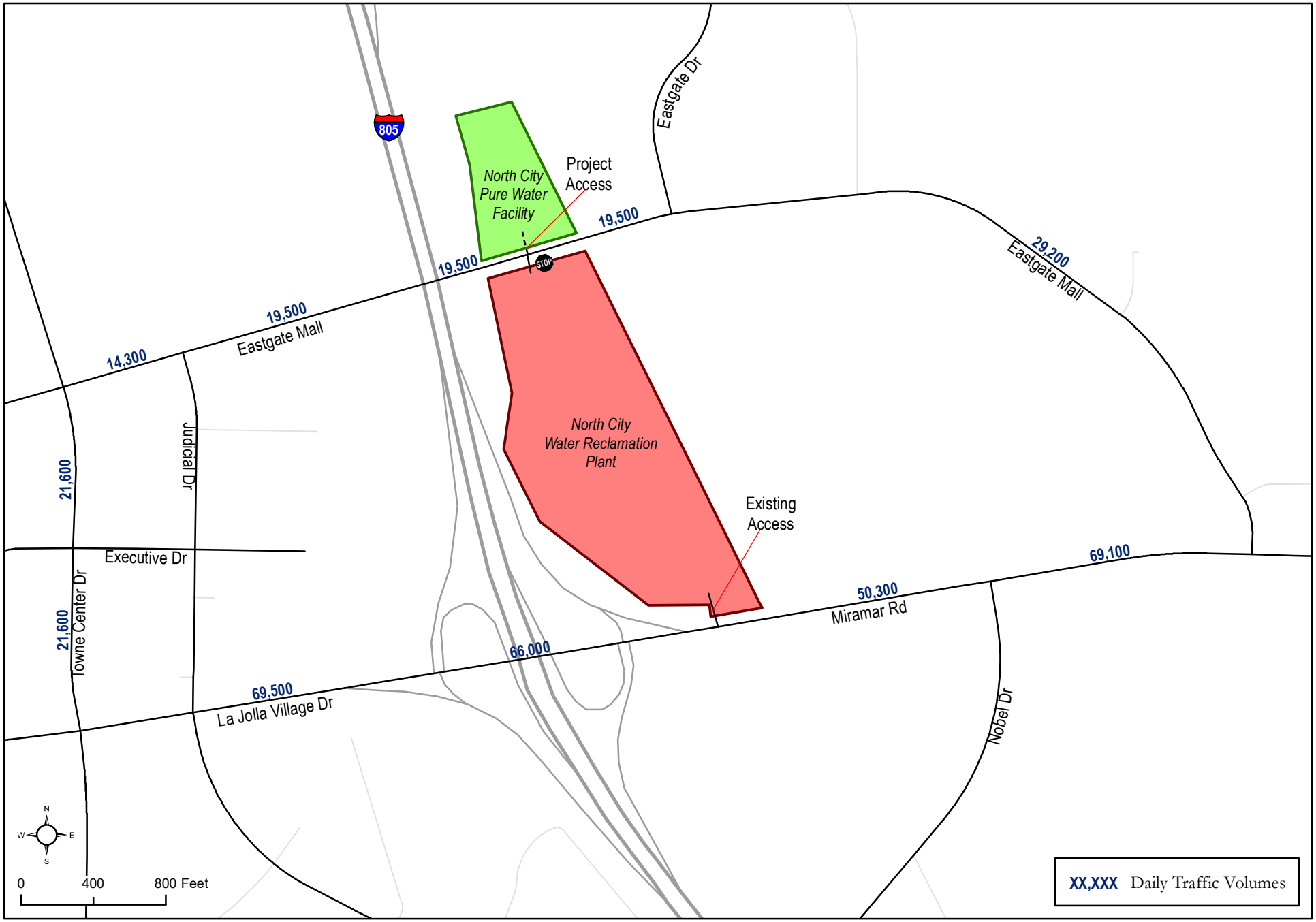

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Figure 3-10
Traffic Volumes - Horizon Year 2035 Base Conditions

As shown in Table 3.7, all of the roadways within the study area are projected to operate at acceptable LOS D or better under Horizon Year 2035 Base traffic Conditions, with the following five (5) exceptions:

- Eastgate Mall, between 280 feet west of I-805 Overpass and NCWRP Driveway – LOS F;
- Eastgate Mall, between NCWRP Driveway and Eastgate Drive – LOS F;
- Eastgate Mall, between Eastgate Drive and Miramar Road – LOS F;
- Miramar Road, between I-805 SB Ramps and I-805 NB Ramps – LOS F; and
- Miramar Road, between Nobel Drive and Eastgate Mall – LOS E.

3.9 Horizon Year 2035 Base Plus Project Conditions

This section provides an analysis of Horizon Year 2035 Base traffic conditions with the addition of project traffic generated by the new NCPWF and the NCWRP expansion.

Horizon Year 2035 Base Plus Project Roadway Network and Traffic Volumes

It is assumed that roadway geometrics under Horizon Year 2035 Base Plus Project conditions would be identical to those under the Existing Conditions, as previously displayed in in Figure 3-4.

Horizon Year 2035 Base Plus Project traffic volumes were derived by combining the Horizon Year 2035 Base traffic volumes (displayed in Figure 3-10) and the project trip assignment volumes (displayed in Figures 3-2). Daily traffic segment volumes for this scenario are displayed in **Figure 3-11**.

Horizon Year 2035 Base Plus Project Roadway Level of Service Analysis

Roadway Segment LOS analyses were conducted using the methodologies described in Chapter 2.0. Roadway segment LOS analysis is discussed below. **Table 3.8** displays the LOS analysis results for key roadway segments under Horizon Year 2035 Base Plus Project conditions.

TABLE 3.8
ROADWAY SEGMENT LOS RESULTS - HORIZON YEAR 2035 BASE PLUS PROJECT CONDITIONS

Roadway	Segment	Designated Classification	Threshold (LOS E)	2035 Base + Project			2035 Base	Δ	SI?
				ADT	V/C	LOS	ADT / V/C / LOS		
Towne Center Drive	Eastgate Mall and Executive Drive	4-Lane Major Arterial	40,000	21,670	0.542	C	21,600 / 0.540 / C	0.002	N
	Executive Drive and La Jolla Village Drive	4-Lane Major Arterial	40,000	21,670	0.542	C	21,600 / 0.540 / C	0.002	N
Eastgate Mall	Towne Center Drive and Judicial Drive	4-Lane Major Arterial	40,000	14,390	0.360	A	14,300 / 0.358 / A	0.002	N
Eastgate Mall	Judicial Drive and 280 feet west of I-805 Overpass	4-Lane Major Arterial	40,000	19,590	0.490	B	19,500 / 0.488 / B	0.002	N

TABLE 3.8
ROADWAY SEGMENT LOS RESULTS - HORIZON YEAR 2035 BASE PLUS PROJECT CONDITIONS

Roadway	Segment	Designated Classification	Threshold (LOS E)	2035 Base + Project			2035 Base	Δ	SI?
				ADT	V/C	LOS	ADT / V/C / LOS		
	280 feet west of I-805 Overpass and NCWRP Driveway	2-Lane Collector W/ CLTL	15,000	19,590	1.306	**F**	19,500 / 1.300 / **F**	0.006 <0.01	N
	NCWRP Driveway and Eastgate Drive	2-Lane Collector W/ CLTL	15,000	19,590	1.306	**F**	19,500 / 1.300 / **F**	0.006 *<0.01*	N
	Eastgate Drive and Miramar Road	2-Lane Collector W/ CLTL	15,000	29,290	1.953	**F**	29,200 / 1.947 / **F**	0.006 *<0.01*	N
La Jolla Village Drive	Towne Center Drive and I-805 SB Ramps	8-Lane Prime Arterial	80,000	69,570	0.870	D	69,500 / 0.869 / D	0.001	N
Miramar Road	I-805 SB Ramps and I-805 NB Ramps	6-Lane Prime Arterial	60,000	66,070	1.101	**F**	66,000 / 1.100 / **F**	0.001 *<0.01*	N
	I-805 NB Ramps and Nobel Drive	8-Lane Prime Arterial	80,000	50,350	0.629	C	50,300 / 0.629 / C	0.001	N
	Nobel Drive and Eastgate Mall	7-Lane Prime Arterial	70,000	69,150	0.988	**E**	69,100 / 0.987 / **E**	0.001 <0.02	N

Source: Chen Ryan Associates; May 2017.

Notes:
Bold letter indicates substandard LOS E or F.
CLTL = Continuous Left-Turn Lane.
SI? = Significant Impact?
[1] Based on the Capacity of an 8-Ln Prime Arterial, reduced to exclude a lane. (7/8*80,000 = 70,000).

As shown in Table 3.8, similar to Horizon Year 2035 Base conditions, all of the key study roadway segments are projected to operate at acceptable LOS D or better under Horizon Year 2035 Plus Project Conditions with the following five (5) exceptions:

- Eastgate Mall, between 280 feet west of I-805 Overpass and NCWRP Driveway – LOS F;
- Eastgate Mall, between NCWRP Driveway and Eastgate Drive – LOS F;
- Eastgate Mall, between Eastgate Drive and Miramar Road – LOS F;
- La Jolla Village Drive/Miramar Road, between I-805 SB Ramps and I-805 NB Ramps – LOS F; and
- Miramar Road, between Nobel Drive and Eastgate Mall – LOS E.

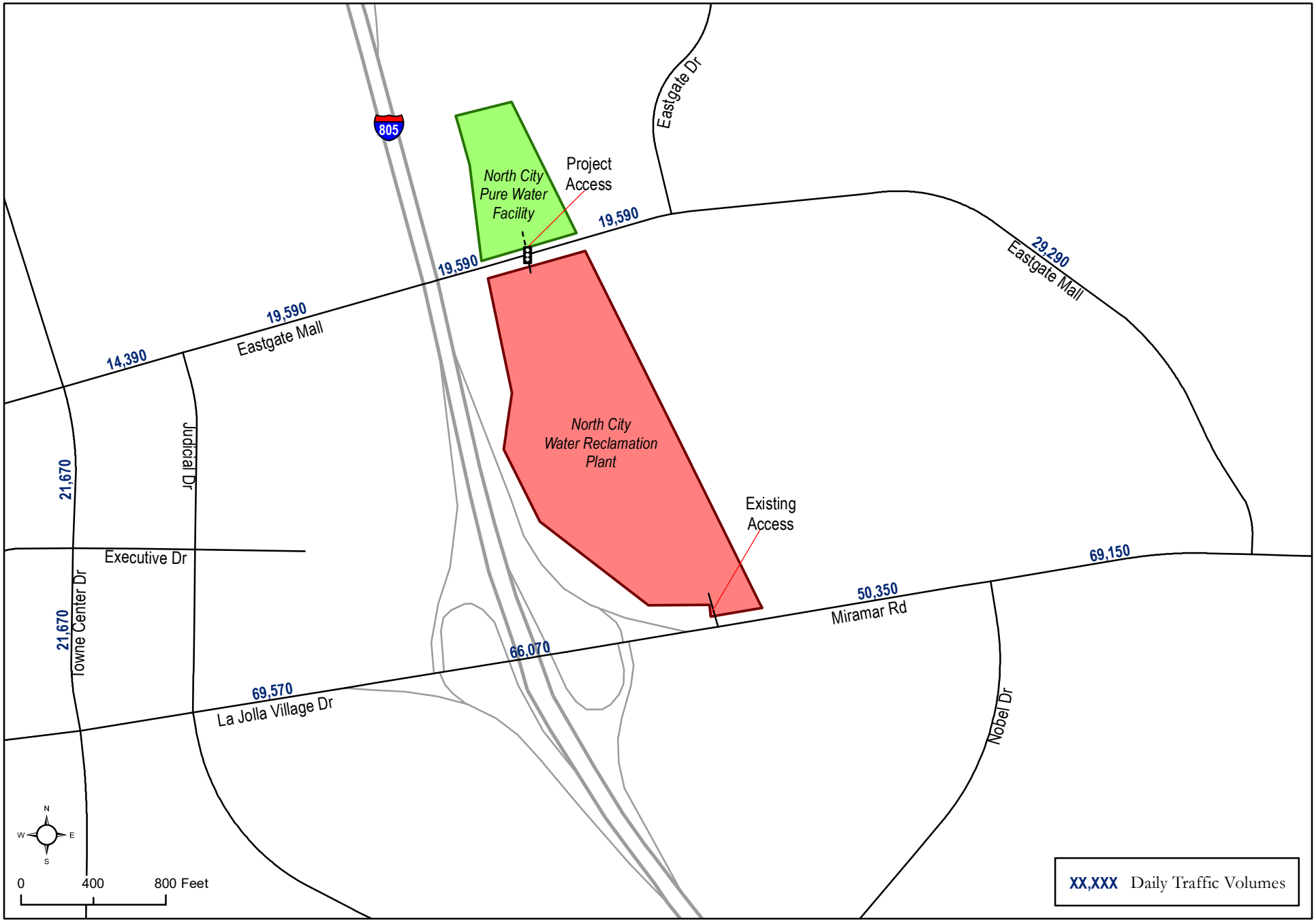

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Figure 3-11
Traffic Volumes - Horizon Year 2035 Base Plus Project Conditions

Project Impacts and Mitigation Measures

Based upon the significance criteria presented in Section 2.4 of this report, the addition of project traffic would not result in any significant traffic related impacts to the study area roadway segments under Horizon Year 2035 Plus Project conditions.

3.10 Project Site Access

Access to the new NCPWF and the expanded NCWRP is proposed to be located off of Eastgate Mall via a signalized intersection. According to City of San Diego Public Utilities Department, two options involving a full size and small tunnel were also considered as an alternative to the project driveway signalization, in order to allow staff to travel between the two plants. These two tunnels would house the utilities and provide enough space for carts (no full-size vehicles) to travel between the two plants. Both options would require extensive excavation and triggered the need for a basement in the NCPWF's O&M building. Since both alternative options would be costlythe traffic signal option is determined to be the least costly option that would provide a protected crossing for both pedestrians and heavy vehicles.

It is important to note that the proposed project driveway did not meet the Peak Hour traffic signal warrant nor the ADT traffic signal warrant per California's Manual on Uniform Traffic Control Devices 2014 Edition, Revision 1 – Section 4C.01. This result was due to low volumes on the minor approach. However, considering the expected heavy vehicles entering, exiting, and crossing between the two plants and that the closest controlled pedestrian crossing is located approximately 500 feet to the east of the proposed project driveway at the signalized intersection of Eastgate Mall/Eastgate Drive, and approximately 2,200 feet to the west at the signalized intersection of Eastgate Mall/Judicial Drive, it is the preference of City of San Diego Public Utilities Department to signalize the proposed project driveway. **Appendix C** provides traffic signal warrant analysis worksheets.

The project driveway should be designed in accordance to City of San Diego standards and should have sufficient storage for traffic entering the two plants. The project driveway would be signalized and would require the appropriate signing and striping plans per City of San Diego standards.

4.0 Purified Water Pipelines

As mentioned previously, in addition to analyzing the permanent traffic impacts associated with the proposed North City project, this TIS also includes the evaluation of the temporary pipeline construction traffic impacts. Two potential pipeline alignment alternatives were evaluated in this report: the North City Pipeline and the San Vicente Pipeline. The North City Pipeline would construct the NCPWF – Miramar Reservoir (NCPWF-MR) and would pipe purified water to Miramar Reservoir. The San Vicente Pipeline would construct the NCPWF – San Vicente Reservoir (NCPWF-SVR) at the same location as the NCPWF-MR, but would include fewer treatment processes and would pipe purified water to the San Vicente Reservoir rather than the Miramar Reservoir. Construction of the North City Pipeline is anticipated to take place between November 2018 and October 2021, while for the San Vicente Pipeline, construction is anticipated to take place between December 2018 and May 2021.

4.1 Pipeline Construction Trip Generation

Pipeline construction is proposed largely to be open-trench and during nighttime (between 9:00 pm and 5:00 am), with trenches backfilled and steel plated in order to open travel lanes during the day. As a result, typical commute AM and PM peak hour (7:00 am to 9:00 am and 4:00 pm to 6:00 pm) trips are not anticipated to coincide with the construction of the proposed project, thus no peak hour intersection analysis was conducted. It is assumed that truck trips (excavation, material transport, utility trucks, etc.) and worker trips will be generated during construction. Based on City of San Diego Public Utilities Department input, the open-trench excavation will be approximately 10’ deep and 6’ wide and 75’ long per day, and the same number of workers and heavy vehicles will be required per day throughout the construction duration under the two different pipeline alignment alternatives. As a worst-case scenario, it was assumed that all workers would drive individual vehicles to the project site.

Table 4.1 displays the assumed daily vehicle trip generation during construction.

TABLE 4.1
CONSTRUCTION TRIP GENERATION

Trip Type	Unit	Rate	Daily Generation	Passenger Car Equivalent	Daily Vehicle Trips
Construction Workers	20 workers	3 / worker	60 vehicle trips	1	60
Construction Trucks	44 trucks	2 / truck	88 truck trips	2.5	220
				Total	**280**

Source: City of San Diego, Chen Ryan Associates; May 2017.

As shown, the proposed project construction is anticipated to generate approximately 280 daily trips.

4.2 North City Pipeline

The North City Pipeline connects the NCPWF and NCWRP sites at I-805 and Eastgate Mall to the Miramar Reservoir via Eastgate Mall, Miramar Road, Kearny Villa Road, Candida Street, Via Pasar, Via Excelencia, under I-15 to Businesspark Avenue, Carroll Canyon Road, Hoyt Park Drive, and Meanley Drive. It is anticipated that approximately 39,400 LF (7.5 miles) of 48" steel pipeline will be installed along with approximately 4,800 LF (0.91 mile) of subaqueous polyethylene (PE) pipeline ranging in diameter from 20" to 40" with 14 branches of various lengths in the ravines of the reservoir.

Based on information provided by the City of San Diego, construction staging areas were assumed to be located at the NCWRP site off Eastgate Mall, Scripps Technology Ranch property, Miramar Water Treatment Plant (near tunnel shaft opening west of clearwells), and Miramar Reservoir (near the boat dock). Vulcan in Mira Mesa will be the main site as the origin or the designation of construction materials. **Table 4.2** displays the work hours proposed for the roadway segments analyzed for the North City Pipeline construction.

TABLE 4.2
WORK HOURS ON ROADWAY SEGMENTS ALONG NORTH CITY PIPELINE ALIGNMENT

Roadway	Segment	Work hours
Eastgate Mall	NCPWF & NCWRP Driveway and Miramar Rd	9:00 PM to 5:00 AM
Miramar Road	Eastgate Mall and Camino Santa Fe	9:00 PM to 5:00 AM
	Camino Santa Fe and Carroll Rd	9:00 PM to 5:00 AM
	Carroll Rd and Camino Ruiz	9:00 PM to 5:00 AM
	Camino Ruiz and Black Mountain Rd	9:00 PM to 5:00 AM
	Black Mountain Rd and Kearny Villa Rd	9:00 PM to 5:00 AM
Kearny Villa Road	Black Mountain Rd/Carroll Centre Rd and Miramar Rd	9:00 PM to 5:00 AM
Candida Street	Kearny Villa Rd and Via Pasar	9:00 PM to 5:00 AM
Via Pasar	Via Excelencia and Candida St	9:00 PM to 5:00 AM
Via Excelencia	east of Via Pasar	9:00 PM to 5:00 AM
Businesspark Avenue	south of Willow Creek Rd	9:00 PM to 5:00 AM
	Carrol Canyon Rd and Willow Creek Rd	9:00 PM to 5:00 AM
Carroll Canyon Rd	Businesspark Ave and Scripps Ranch Blvd	9:00 PM to 5:00 AM
Scripps Ranch Blvd	Carroll Canyon Rd Hoyt Park Dr	9:00 PM to 5:00 AM
Hoyt Park Dr	Scripps Ranch Blvd and Meanley Dr	9:00 PM to 5:00 AM

Source: City of San Diego Public Utilities Department and Construction Management and Field Services Department, May 2017.

Existing Conditions

The section below discusses the existing traffic conditions along roadways serving the North City Pipeline. **Figure 4-1** displays the existing traffic volumes, while **Table 4.3** displays the daily roadway segment LOS results under Existing conditions. Roadway segment traffic counts were collected on November 15 and 16 (Tuesday/Wednesday) 2016 and are provided in Appendix A.

As should in the table, the following five (5) roadway segments are currently operating at a substandard LOS E or F:

- Eastgate Mall, between the NCPWF & NCWRP driveway and Miramar Road – LOS E;
- Miramar Road, between Eastgate Mall and Camino Santa Fe – LOS F;
- Miramar Road, between Carroll Road and Camino Ruiz – LOS E;
- Miramar Road, between Camino Ruiz and Black Mountain Road – LOS F; and
- Miramar Road, between Black Mountain Road and Kearny Villa Road – LOS F.

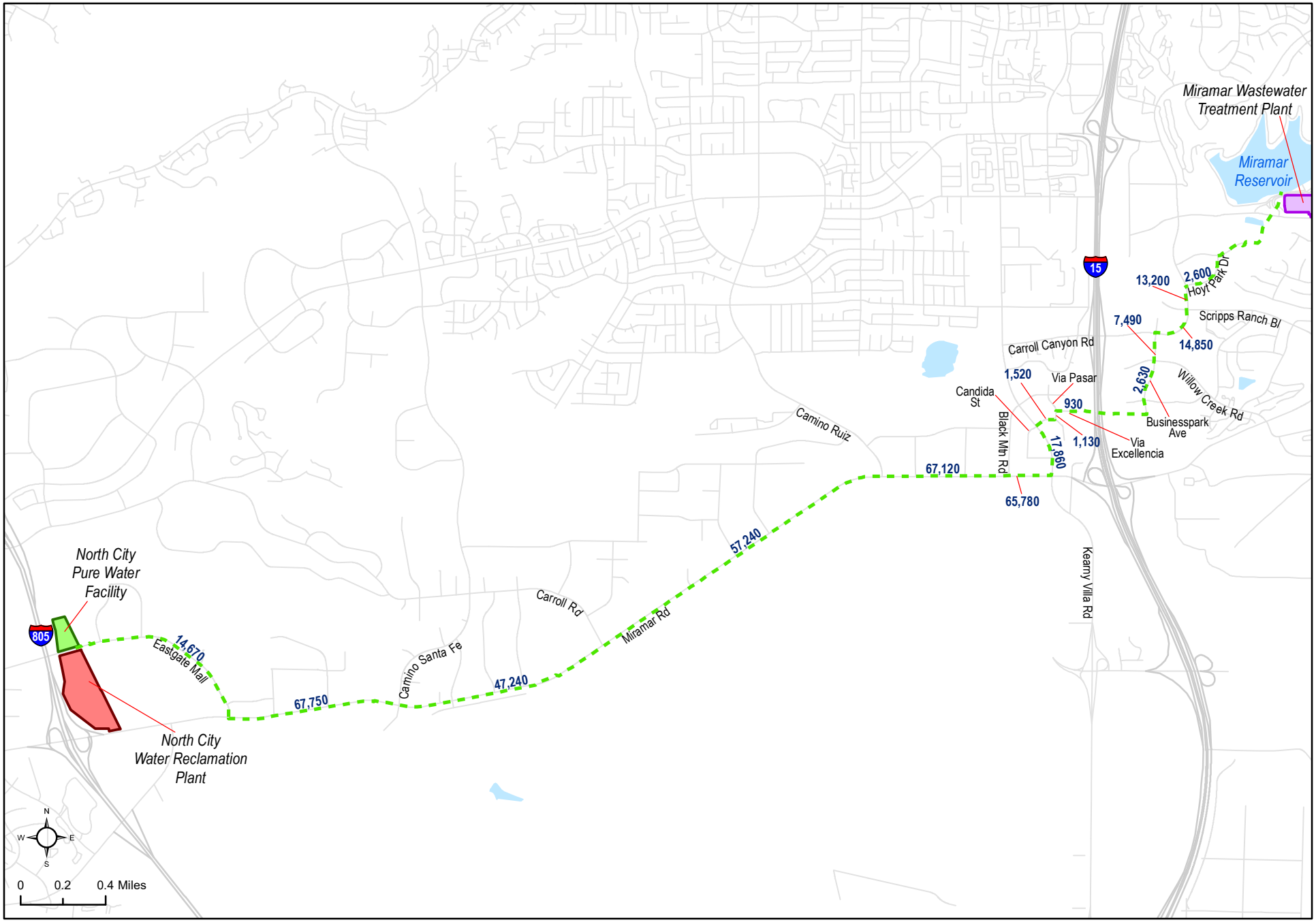

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Figure 4-1
Traffic Volumes - Existing Conditions
(North City Pipeline)

TABLE 4.3
ROADWAY SEGMENT LOS RESULTS
EXISTING CONDITIONS – NORTH CITY PIPELINE

Roadway	Segment	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS
Eastgate Mall	NCPWF & NCWRP Driveway and Miramar Rd	2-Lane Collector W/ CLTL	15,000	14,670	0.978	**E**
Miramar Road	Eastgate Mall and Camino Santa Fe	6-Lane Prime Arterial	60,000	67,750	1.129	**F**
	Camino Santa Fe and Carroll Rd	6-Lane Prime Arterial	60,000	47,240	0.787	C
	Carroll Rd and Camino Ruiz	6-Lane Prime Arterial	60,000	57,240	0.954	**E**
	Camino Ruiz and Black Mountain Rd	6-Lane Prime Arterial	60,000	67,120	1.119	**F**
	Black Mountain Rd and Kearny Villa Rd	6-Lane Prime Arterial	60,000	65,780	1.096	**F**
Kearny Villa Road	Black Mountain Rd/Carroll Centre Rd and Miramar Rd	4-Lane Collector W/ CLTL	30,000	17,860	0.595	C
Candida Street	Kearny Villa Rd and Via Pasar	2-Lane Collector	8,000	1,520	0.190	A
Via Pasar	Via Excelencia and Candida St	2-Lane Collector	8,000	1,130	0.141	A
Via Excelencia	east of Via Pasar	2-Lane Collector	8,000	930	0.117	A
Businesspark Avenue	south of Willow Creek Rd	2-Lane Collector	8,000	2,630	0.329	B
	Carrol Canyon Rd and Willow Creek Rd	3-Lane Collector (1SB &2 NB)	12,000	7,490	0.624	C
Carroll Canyon Rd	Businesspark Ave and Scripps Ranch Blvd	4-Lane Collector W/ CLTL	30,000	14,850	0.495	C
Scripps Ranch Blvd	Carroll Canyon Rd Hoyt Park Dr	4-Lane Major Arterial	40,000	13,200	0.330	A
Hoyt Park Dr	Scripps Ranch Blvd and Meanley Dr	2-Lane Collector	10,000	2,600	0.260	A

Source: Chen Ryan Associates; May 2017

Note:
Bold letter indicates substandard LOS E or F.

Construction Traffic Analysis

It is assumed that the North City project will be in operations by Year 2022, for a worst-case analysis, construction traffic was added to the Year 2022 Base traffic volumes. Near-Term Year 2022 volumes were derived by comparing SANDAG Series 13 Year 2035 and Year 2020 forecast volumes, as well as the existing traffic counts. Growth factors were developed and applied to existing traffic volumes for each specific roadway segments. **Figure 4-2** displays the Near-Term Year 2022 Base traffic volumes, while **Figure 4-3** displays the Year 2022 Base Plus Construction Traffic.

Table 4.4 displays the daily roadway segment LOS results under both Near-Term Year 2022 Base and Near-Term Year 2022 Base Plus Construction Traffic conditions.

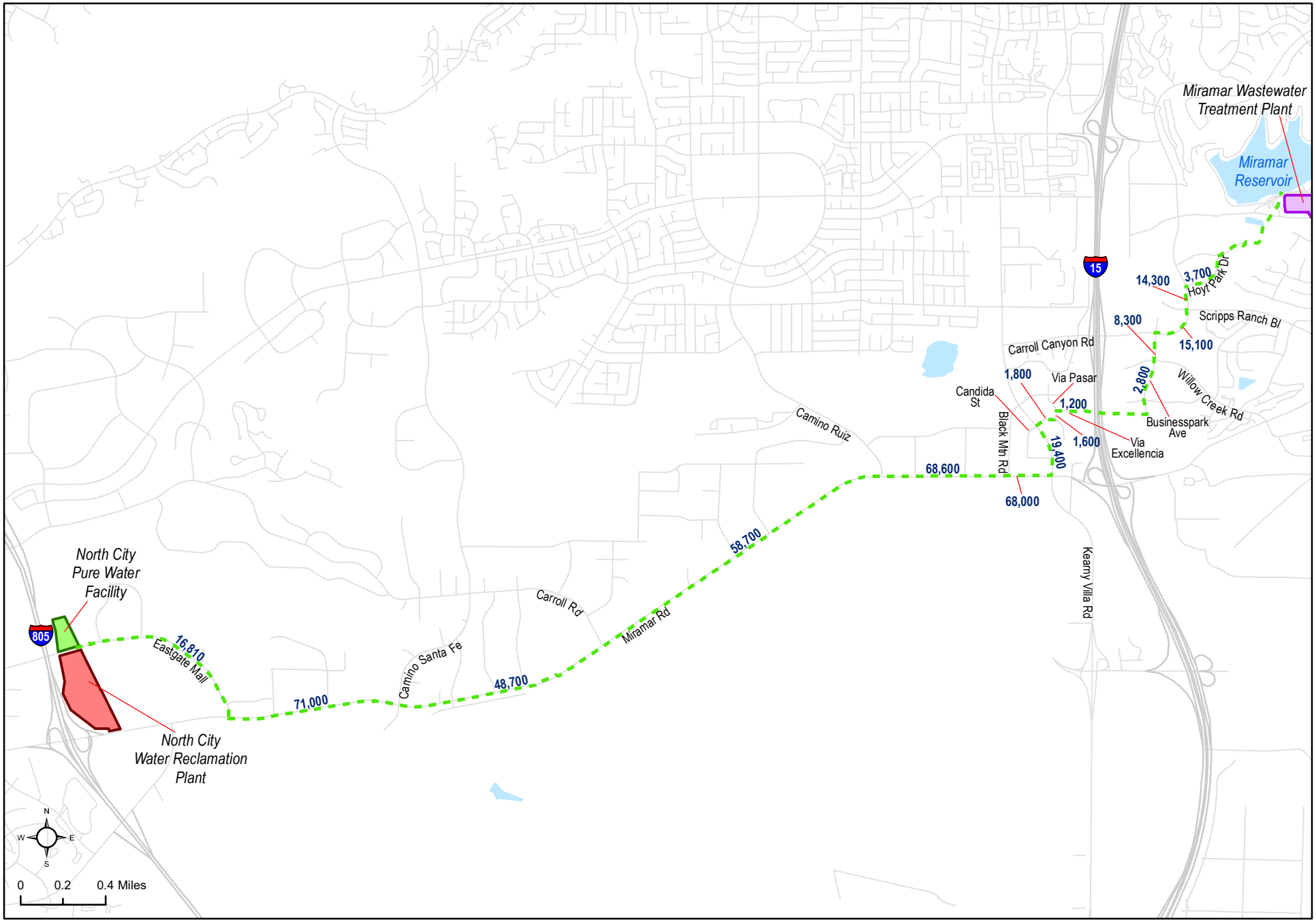

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Figure 4-2
Traffic Volumes - Near-Term Year 2022 Base Conditions
(North City Pipeline)

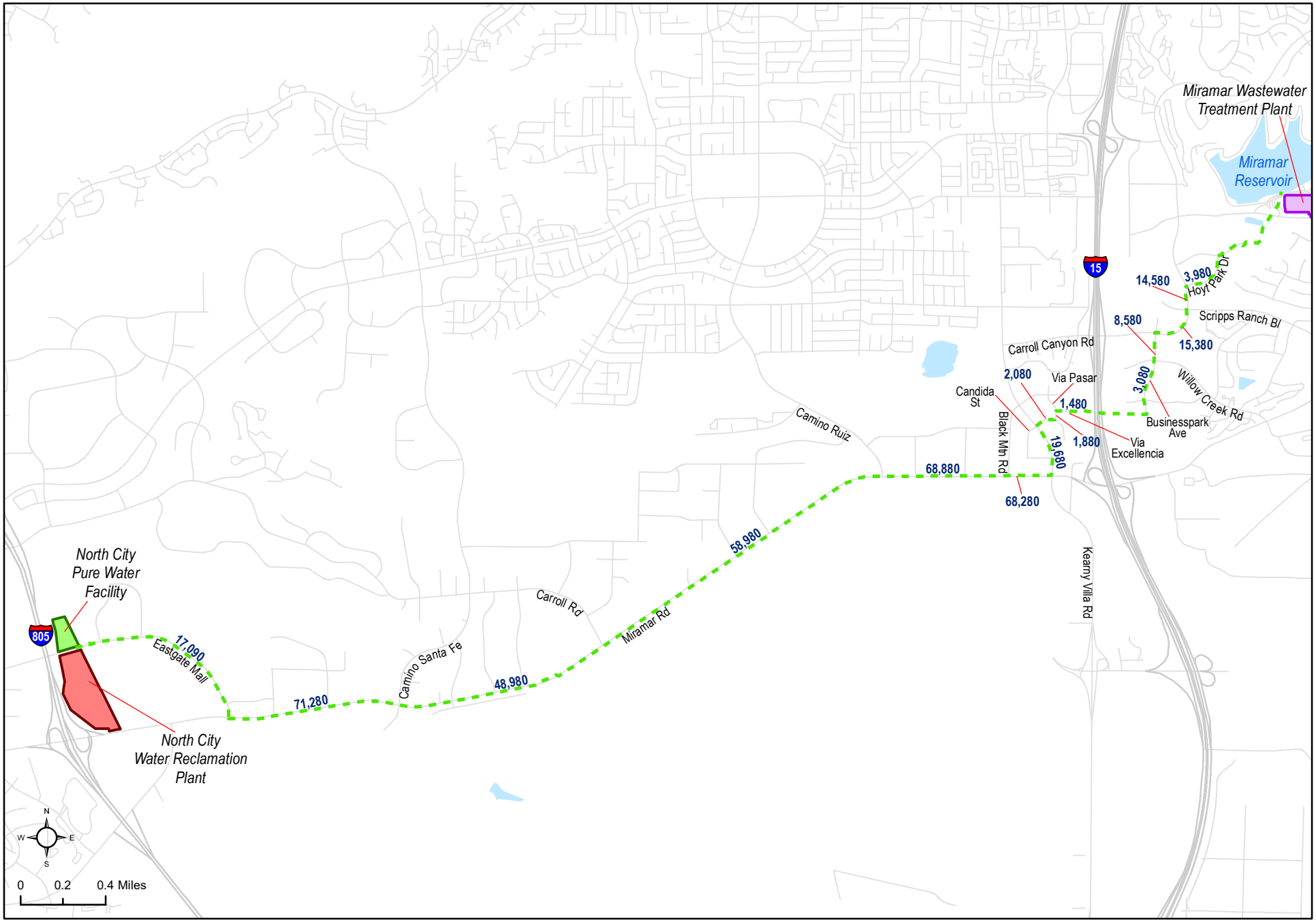

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Figure 4-3
Traffic Volumes - Near-Term Year 2022 Base Plus Construction Traffic Conditions (North City Pipeline)

TABLE 4.4
ROADWAY SEGMENT LOS RESULTS
NEAR-TERM YEAR 2022 TRAFFIC CONDITIONS – NORTH CITY PIPELINE

Roadway	Segment	Functional Classification	Threshold (LOS E)	Near-Term 2022 Base + Construction Traffic			Near-Term Year 2022 Base			Change in V/C	SI?
				ADT	V/C	LOS	ADT	V/C	LOS		
Eastgate Mall	NCPWF & NCWRP Driveway and Miramar Rd	2-Lane Collector W/ CLTL	15,000	17,090	1.139	**F**	16,810	1.121	**F**	0.019 *>0.01*	**Y**
Miramar Road	Eastgate Mall and Camino Santa Fe	6-Lane Prime Arterial	60,000	71,280	1.188	**F**	71,000	1.183	**F**	0.005 *<0.01*	N
	Camino Santa Fe and Carroll Rd	6-Lane Prime Arterial	60,000	48,980	0.816	C	48,700	0.812	C	0.005	N
	Carroll Rd and Camino Ruiz	6-Lane Prime Arterial	60,000	58,980	0.983	**E**	58,700	0.978	**E**	0.005 *<0.02*	N
	Camino Ruiz and Black Mountain Rd	6-Lane Prime Arterial	60,000	68,880	1.148	**F**	68,600	1.143	**F**	0.005 *<0.01*	N
	Black Mountain Rd and Kearny Villa Rd	6-Lane Prime Arterial	60,000	68,280	1.138	**F**	68,000	1.133	**F**	0.005 *<0.01*	N
Kearny Villa Road	Black Mountain Rd/Carroll Centre Rd and Miramar Rd	4-Lane Collector W/ CLTL	30,000	19,680	0.656	C	19,400	0.647	C	0.009	N
Candida Street	Kearny Villa Rd and Via Pasar	2-Lane Collector	8,000	2,080	0.260	A	1,800	0.225	A	0.035	N
Via Pasar	Via Excelencia and Candida St	2-Lane Collector	8,000	1,880	0.235	A	1,600	0.200	A	0.035	N
Via Excelencia	east of Via Pasar	2-Lane Collector	8,000	1,480	0.185	A	1,200	0.150	A	0.035	N
Businesspark Avenue	south of Willow Creek Rd	2-Lane Collector	8,000	3,080	0.385	B	2,800	0.350	B	0.035	N
	Carrol Canyon Rd and Willow Creek Rd	3-Lane Collector (1SB &2 NB)	12,000	8,580	0.715	D	8,300	0.692	D	0.023	N
Carroll Canyon Rd	Businesspark Ave and Scripps Ranch Blvd	4-Lane Collector W/ CLTL	30,000	15,380	0.513	C	15,100	0.503	C	0.009	N
Scripps Ranch Blvd	Carroll Canyon Rd and Hoyt Park Dr	4-Lane Major Arterial	40,000	14,580	0.365	A	14,300	0.358	A	0.007	N
Hoyt Park Drive	Scripps Ranch Blvd and Meanley Dr	2-Lane Collector (no fronting property)	10,000	3,980	0.398	A	3,700	0.370	A	0.028	N

Source: Chen Ryan Associates; May 2017.

Notes:
Bold letter indicates substandard LOS E or F.
SI? = Significant Impact?

As shown in the Table 4.4, the following five (5) roadway segments are projected to operate at substandard LOS E or F both with and without construction traffic under Near-Term Year 2022:

- Eastgate Mall, between the NCPWF & NCWRP driveway and Miramar Road – LOS F;
- Miramar Road, between Eastgate Mall and Camino Santa Fe – LOS F;
- Miramar Road, between Carroll Road and Camino Ruiz – LOS E;
- Miramar Road, between Camino Ruiz and Black Mountain Road – LOS F;
- Miramar Road, between Black Mountain Road and Kearny Villa Road – LOS F; and

Project Impacts and Mitigation Measures

Based upon the significance criteria presented in Section 2.4 of this report, the construction traffic would result in significant traffic impact to the following roadway segment:

- Eastgate Mall, between the NCPWF & NCWRP driveway and Miramar Road – LOS F.

However, based on information provided by City of San Diego Public Utilities Department, construction of the pipeline would be performed 75 LF per day, and the impacted area at any one time would encompass the work area as well as the traffic control setup area. Therefore, this project impact would be temporary in nature (approximately 64 working days[1]) and since the construction will occur during nighttime when there is less traffic on the road, this roadway should function at reasonable operations. Therefore, since the impact would be temporary no mitigation measure is required.

Table 4.5 displays the projected amount of days for which construction would take place at the identified impacted roadway above as well as on roadways adjacent to residential areas. Nighttime work hours may be modified/reduced or work may be performed during weekends on roadways near residential areas.

TABLE 4.5
SUMMARY OF IMPACT DURATION – NORTH CITY PIPELINE

Roadway	Segment	Length (ft)	Approximate Duration of Impact (days)
Eastgate Mall	NCPWF & NCWRP Driveway and Miramar Rd	4,800	64
Miramar Road	Camino Ruiz and Black Mountain Road	3,000	40
	Black Mountain Rd and Kearny Villa Rd	1,000	14

Source: Chen Ryan Associates; May 2017.

The duration of the impacts is based on the anticipated 75 LF of pipeline installation per day. It is important to note that these impacts would not occur concurrently, but rather at different points in time depending on the location of pipeline construction[1], and the impacted area at any one time would encompass the work area as well as the traffic control setup length. Therefore, the project impacts shown above would be temporary in nature and no mitigation measures are required.

[1] The impacted roadway segment of Eastgate Mall, between NCPWF & NCWRP driveway and Miramar Road would be approximately 4,800 feet in length, and at 75 feet of installation per day, it is estimated that it would take approximately 64 days. After the pipeline installation is complete at the first 75 LF, the next 75 LF of construction would begin to be under construction, etc

4.3 San Vicente Pipeline

The San Vicente Pipeline connects the NCPWF and NCWRP sites at I-805 and Eastgate Mall to the San Vicente Reservoir traversing a number of local jurisdictions, including the cities of San Diego and Santee, and the community of Lakeside in unincorporated San Diego County. This is a much longer pipeline when compare to the Miramar Reservoir Alignment, covering approximately 190,600 LF (36 miles). **Table 4.6** displays the work hours proposed for the roadway segments analyzed for the San Vicente Pipeline construction.

TABLE 4.6
WORK HOURS ON ROADWAY SEGMENTS ALONG SAN VICENTE PIPELINE ALIGNMENT

Roadway	Segment	Work hours
Section 1A		
Eastgate Mall	NCPWF & NCWRP Driveway and Miramar Rd	9:00 PM to 5:00 AM
Miramar Rd	Nobel Dr and Eastgate Mall	9:00 PM to 5:00 AM
Copley Dr	Hickman Field Dr and Copley Park Pl	9:00 PM to 5:00 AM
Copley Park Pl	Copley Dr and Convoy St	9:00 PM to 5:00 AM
Convoy St	Copley Park Pl and Convoy Ct	9:00 PM to 5:00 AM
Convoy Ct	east of Convoy St	9:00 PM to 5:00 AM
Section 1B		
Ronson Rd	Ronson Ct and Kearny Mesa Rd	9:00 PM to 5:00 AM
Lightwave Ave	Kearny Villa Rd and Ruffin Rd	9:00 PM to 5:00 AM
Ruffin Rd	Clairemont Mesa Blvd and Lightwave Ave	9:00 PM to 5:00 AM
Clairemont Mesa Blvd	Ruffin Rd and Murphy Canyon Rd	9:00 PM to 5:00 AM
Murphy Canyon Rd	Clairemont Mesa Blvd and 1650 ft South of Clairemont Mesa Blvd	9:00 PM to 5:00 AM
Clairemont Mesa Blvd	1300 ft East of I-15 NB Ramps and Santo Rd	9:00 PM to 5:00 AM
Santo Rd	Clairemont Mesa Blvd and Tierrasanta Blvd	9:00 PM to 5:00 AM
Tierrasanta Blvd	Santo Rd and Copperleaf Ln	9:00 PM to 5:00 AM
Princess View Dr	north of Mission Gorge Rd	9:00 PM to 5:00 AM
Section 2		
Mission Gorge Rd	Princess View Dr and Golfcrest Dr	9:00 PM to 5:00 AM
	Golfcrest Dr and Rockyridge Rd	9:00 PM to 5:00 AM
	Rockyridge Rd and W Hills Pkwy	9:00 PM to 5:00 AM
W Hills Pkwy	Mission Gorge Rd and Carlton Oaks Dr	9:00 PM to 5:00 AM
Section 3		
Carlton Oaks Dr	W Hills Pkwy and Fanita Pkwy	9:00 PM to 5:00 AM
	400 ft West of Fanita Pkwy and Stoyer Dr	9:00 PM to 5:00 AM
Halberns Blvd	Stoyer Dr and Mast Blvd	9:00 PM to 5:00 AM
Section 4		
Mast Blvd	Halberns Blvd and Magnolia Ave	9:00 PM to 5:00 AM
	Magnolia Ave and Eastern Terminus	9:00 PM to 5:00 AM
	Western Terminus and Riverford Rd	9:00 PM to 5:00 AM

TABLE 4.6
WORK HOURS ON ROADWAY SEGMENTS ALONG SAN VICENTE PIPELINE ALIGNMENT

Roadway	Segment	Work hours
Riverside Dr	Riverford Rd and Valle Vista Rd	9:00 PM to 5:00 AM
Lakeside Ave	Valle Vista Rd and Lakeside Ave/Channel Rd	9:00 PM to 5:00 AM
	Lakeside Ave/Channel Rd and SR-67	9:00 PM to 5:00 AM
Willow Rd	SR-67 and Moreno Ave	9:00 PM to 5:00 AM
Moreno Ave	San Vicente Reservoir and Willow Rd	9:00 PM to 5:00 AM

Source: City of San Diego Public Utilities Department and Construction Management and Field Services Department, May 2017.

Existing Conditions

The section below discusses the existing traffic conditions along roadways serving the San Vicente Pipeline. **Figure 4-4** displays the existing traffic volumes, while **Table 4.7** displays the daily roadway segment LOS results under Existing conditions. Roadway segment traffic counts were obtained from a number of sources including the *City of Santee Circulation Element Update* project (late 2014), the *Kearny Mesa Community Plan Update* project (late 2016), as well as the SANDAG Series 13 base year traffic volumes. The count worksheets are provided in Appendix A.

As should in the table, the following two (2) roadway segments are currently operating at a substandard LOS E or F:

- Eastgate Mall, between the NCPWF & NCWRP driveway and Miramar Road – LOS E; and
- Willow Road, between SR-67 and Moreno Avenue – LOS F.

[1] After the pipeline installation is complete at the first 75 LF, the next 75 LF of the roadway segment would to be under construction, etc. The roadway segment of Eastgate Mall, between NCPWF & NCWRP driveway and Miramar Road would be approximately 4,800 feet in length and at 75 feet installation per day it's estimated that it would take approximately 64 days to complete.

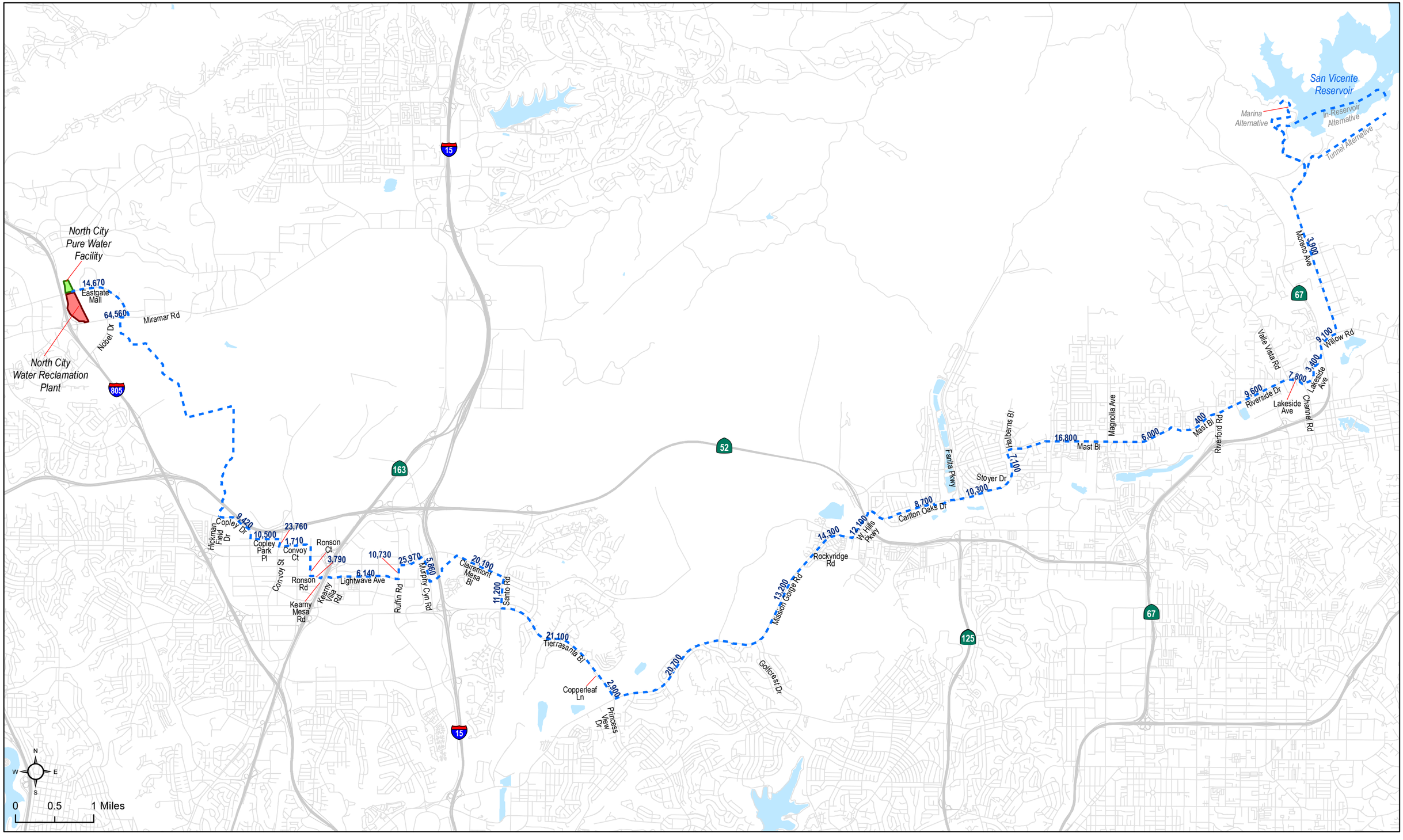

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Figure 4-4
Traffic Volumes - Existing Conditions
(San Vicente Pipeline)

TABLE 4.7
ROADWAY SEGMENT LOS RESULTS
EXISTING CONDITIONS – SAN VICENTE PIPELINE

Roadway	Segment	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS
Section 1A						
Eastgate Mall	NCPWF & NCWRP Driveway and Miramar Rd	2-Lane Collector W/ CLTL	15,000	14,670	0.978	**E**
Miramar Rd	Nobel Dr and Eastgate Mall	8-Lane Prime Arterial	80,000	64,560	0.807	C
Copley Dr	Hickman Field Dr and Copley Park Pl	4-Lane Collector	15,000	9,420	0.628	C
Copley Park Pl	Copley Dr and Convoy St	4-Lane Collector W/ CLTL	30,000	10,500	0.350	B
Convoy St	Copley Park Pl and Convoy Ct	4-Lane Collector W/ CLTL	30,000	23,760	0.792	D
Convoy Ct	east of Convoy St	2-Lane Collector	8,000	1,710	0.214	A
Section 1B						
Ronson Rd	Ronson Ct and Kearny Mesa Rd	2-Lane Collector	8,000	3,790	0.474	C
Lightwave Ave	Kearny Villa Rd and Ruffin Rd	4-Lane Collector W/ CLTL	30,000	6,140	0.205	A
Ruffin Rd	Clairemont Mesa Blvd and Lightwave Ave	4-Lane Major Arterial	40,000	10,730	0.268	A
Clairemont Mesa Blvd	Ruffin Rd and Murphy Canyon Rd	4-Lane Major Arterial	40,000	25,970	0.649	C
Murphy Canyon Rd	Clairemont Mesa Blvd and 1650 ft South of Clairemont Mesa Blvd	2-Lane Collector	8,000	5,860	0.733	D
Clairemont Mesa Blvd	1300 ft East of I-15 NB Ramps and Santo Rd	4-Lane Major Arterial	40,000	20,190	0.505	B
Santo Rd	Clairemont Mesa Blvd and Tierrasanta Blvd	4-Lane Major Arterial	40,000	11,200	0.280	A
Tierrasanta Blvd	Santo Rd and Copperleaf Ln	4-Lane Major Arterial	40,000	21,100	0.528	C
Princess View Dr	north of Mission Gorge Rd	2-Lane Collector	8,000	2,900	0.363	B
Section 2						
Mission Gorge Rd	Princess View Dr and Golfcrest Dr	6-Lane Prime Arterial	60,000	20,700	0.345	A
	Golfcrest Dr and Rockyridge Rd	5-Lane Prime Arterial (2EB & 3WB)	50,000	13,200	0.264	A
	Rockyridge Rd and W Hills Pkwy	4-Lane Major Arterial	40,000	14,300	0.358	A
W Hills Pkwy	Mission Gorge Rd and Carlton Oaks Dr	4-Lane Major Arterial	40,000	12,100	0.303	A
Section 3						
Carlton Oaks Dr	W Hills Pkwy and Fanita Pkwy	2-Lane Collector W/ CLTL	15,000	8,700	0.580	C
	400 ft West of Fanita Pkwy and Stoyer Dr	2-Lane Collector W/ CLTL	15,000	10,300	0.687	D

TABLE 4.7
ROADWAY SEGMENT LOS RESULTS
EXISTING CONDITIONS – SAN VICENTE PIPELINE

Roadway	Segment	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS
Halberns Blvd	Stoyer Dr and Mast Blvd	2-Lane Collector W/ CLTL	15,000	7,100	0.473	C
Section 4						
Mast Blvd	Halberns Blvd and Magnolia Ave	4-Lane Major Arterial	40,000	16,800	0.420	B
	Magnolia Ave and Eastern Terminus	2-Lane Collector W/ CLTL	15,000	6,000	0.400	B
	Western Terminus and Riverford Rd	2-Lane Collector	8,000	400	0.050	A
Riverside Dr	Riverford Rd and Valle Vista Rd	2-Lane Collector W/ CLTL	15,000	9,600	0.640	C
Lakeside Ave	Valle Vista Rd and Lakeside Ave/Channel Rd	2-Lane Collector W/ CLTL	15,000	7,800	0.520	C
	Lakeside Ave/Channel Rd and SR-67	2-Lane Collector	8,000	3,400	0.425	B
Willow Rd	SR-67 and Moreno Ave	2-Lane Collector	8,000	9,100	1.138	**F**
Moreno Ave	San Vicente Reservoir and Willow Rd	2-Lane Collector	8,000	3,900	0.488	C

Source: Chen Ryan Associates; May 2017

Note:
Bold letter indicates substandard LOS E or F.

Construction Traffic Analysis

It is assumed that the North City project will be in operations by Year 2022, for a worst-case analysis, construction traffic was added to the Year 2022 Base traffic volumes. Near-Term Year 2022 volumes were derived by comparing SANDAG Series 13 Year 2035 and Year 2020 forecast volumes, as well as the existing traffic counts. Growth factors were developed and applied to existing traffic volumes for each specific roadway segments. **Figure 4-5** displays the Near-Term Year 2022 Base traffic volumes, while **Figure 4-6** displays the Year 2022 Base Plus Construction Traffic.

Table 4.8 displays the daily roadway segment LOS results under both Near-Term Year 2022 Base and Near-Term Year 2022 Base Plus Construction Traffic conditions.

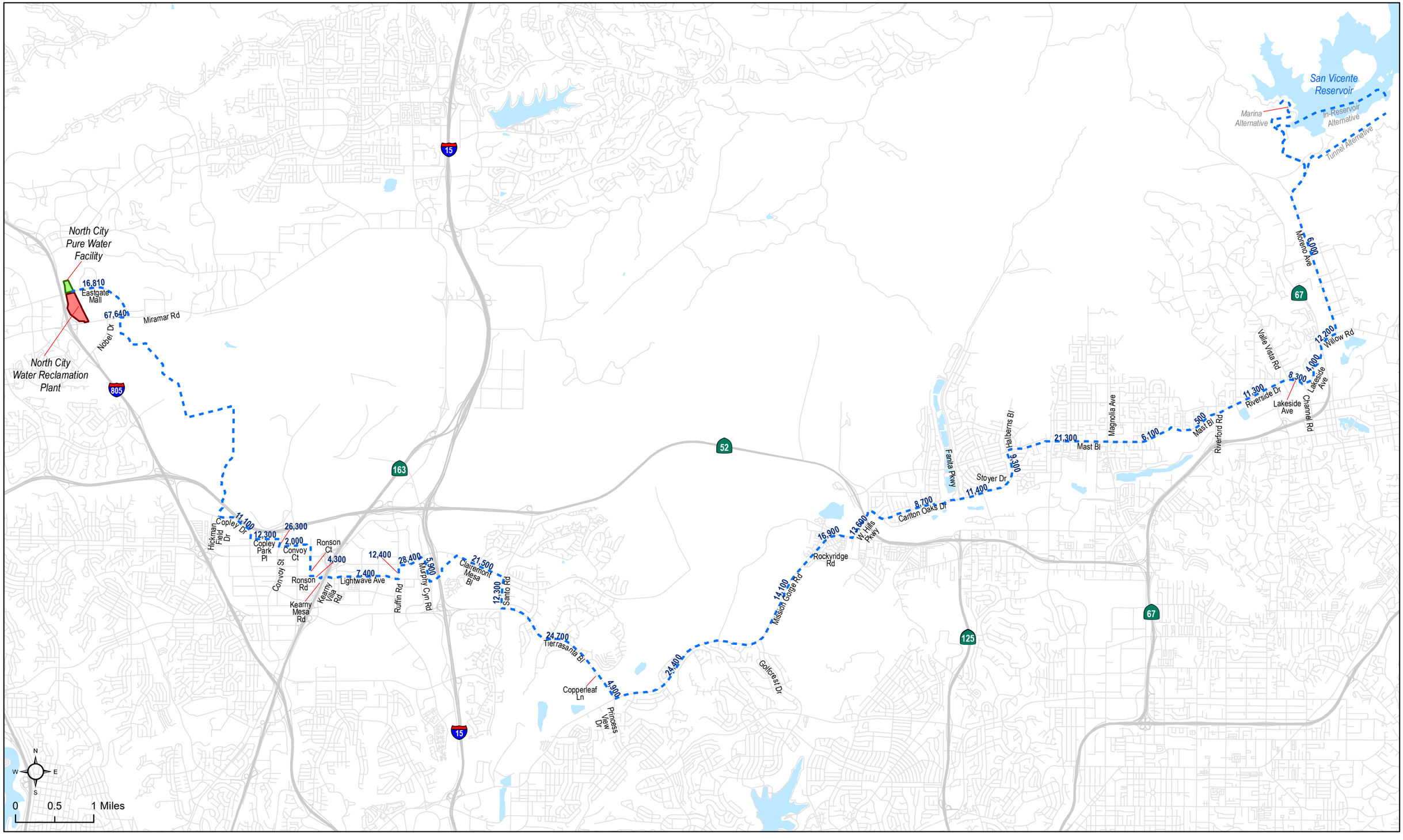

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Figure 4-5
Traffic Volumes - Near-Term Year 2022 Base Conditions
(San Vicente Pipeline)

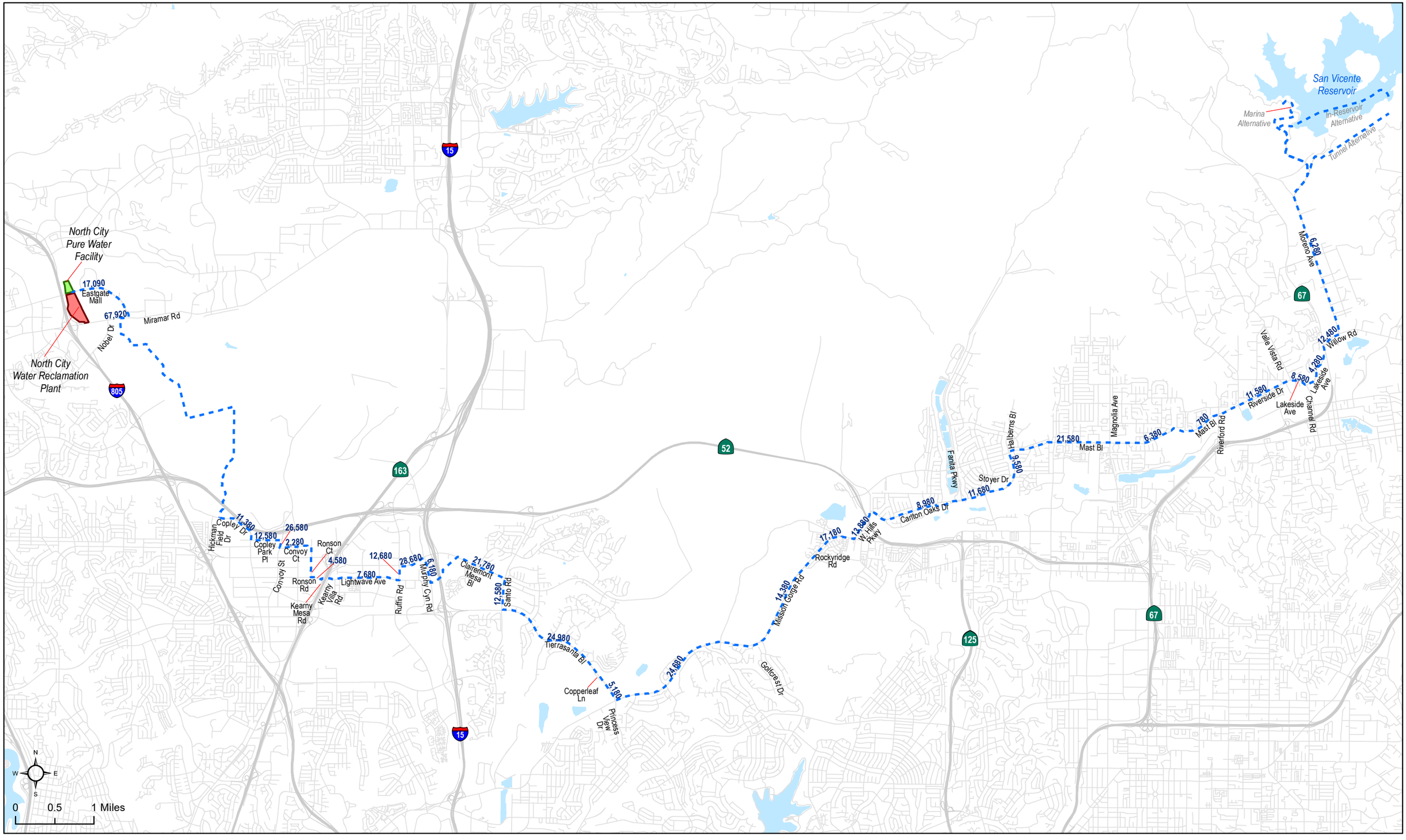

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Figure 4-6
Traffic Volumes - Near-Term Year 2022 Base Plus Construction Traffic Conditions (San Vincente Pipeline)

TABLE 4.8
ROADWAY SEGMENT LOS RESULTS
NEAR-TERM YEAR 2022 TRAFFIC CONDITIONS – SAN VICENTE PIPELINE

Roadway	Segment	Functional Classification	Threshold (LOS E)	Near-Term Year 2022 Base + Construction Traffic			Near-Term Year 2022 Base			Change in V/C	SI?
				ADT	V/C	LOS	ADT	V/C	LOS		
Section 1A											
Eastgate Mall	NCPWF & NCWRP Driveway and Miramar Rd	2-Lane Collector W/ CLTL	15,000	17,090	1.139	**F**	16,810	1.121	**F**	0.019 *> 0.01*	**Y**
Miramar Rd	Nobel Dr and Eastgate Mall	8-Lane Prime Arterial	80,000	67,920	0.849	D	67,640	0.846	D	0.003	N
Copley Dr	Hickman Field Dr and Copley Park Pl	4-Lane Collector	15,000	11,380	0.759	D	11,100	0.740	D	0.019	N
Copley Park Pl	Copley Dr and Convoy St	4-Lane Collector W/ CLTL	30,000	12,580	0.419	B	12,300	0.410	B	0.009	N
Convoy St	Copley Park Pl and Convoy Ct	4-Lane Collector W/ CLTL	30,000	26,580	0.886	**E**	26,300	0.877	**E**	0.009 *<0.02*	N
Convoy Ct	east of Convoy St	2-Lane Collector	8,000	2,280	0.285	A	2,000	0.250	A	0.035	N
Section 1B											
Ronson Rd	Ronson Ct and Kearny Mesa Rd	2-Lane Collector	8,000	4,580	0.573	C	4,300	0.538	C	0.035	N
Lightwave Ave	Kearny Villa Rd and Ruffin Rd	4-Lane Collector W/ CLTL	30,000	7,680	0.256	A	7,400	0.247	A	0.009	N
Ruffin Rd	Clairemont Mesa Blvd and Lightwave Ave	4-Lane Major Arterial	40,000	12,680	0.317	A	12,400	0.310	A	0.007	N
Clairemont Mesa Blvd	Ruffin Rd and Murphy Canyon Rd	4-Lane Major Arterial	40,000	28,680	0.717	C	28,400	0.710	C	0.007	N
Murphy Canyon Rd	Clairemont Mesa Blvd and 1650 ft South of Clairemont Mesa Blvd	2-Lane Collector	8,000	6,180	0.773	D	5,900	0.738	D	0.035	N
Clairemont Mesa Blvd	1300 ft East of I-15 NB Ramps and Santo Rd	4-Lane Major Arterial	40,000	21,780	0.545	C	21,500	0.538	C	0.007	N
Santo Rd	Clairemont Mesa Blvd and Tierrasanta Blvd	4-Lane Major Arterial	40,000	12,580	0.315	A	12,300	0.308	A	0.007	N
Tierrasanta Blvd	Santo Rd and Copperleaf Ln	4-Lane Major Arterial	40,000	24,980	0.625	C	24,700	0.618	C	0.007	N
Princess View Dr	north of Mission Gorge Rd	2-Lane Collector	8,000	5,180	0.648	D	4,900	0.613	C	0.035	N

TABLE 4.8
ROADWAY SEGMENT LOS RESULTS
NEAR-TERM YEAR 2022 TRAFFIC CONDITIONS – SAN VICENTE PIPELINE

Roadway	Segment	Functional Classification	Threshold (LOS E)	Near-Term Year 2022 Base + Construction Traffic			Near-Term Year 2022 Base			Change in V/C	SI?
				ADT	V/C	LOS	ADT	V/C	LOS		
Section 2											
Mission Gorge Rd	Princess View Dr and Golfcrest Dr	6-Lane Prime Arterial	60,000	24,680	0.411	A	24,400	0.407	A	0.005	N
	Golfcrest Dr and Rockyridge Rd	5-Lane Prime Arterial (2EB & 3WB)	50,000	14,380	0.288	A	14,100	0.282	A	0.006	N
	Rockyridge Rd and W Hills Pkwy	4-Lane Major Arterial	40,000	17,180	0.430	B	16,900	0.423	B	0.007	N
W Hills Pkwy	Mission Gorge Rd and Carlton Oaks Dr	4-Lane Major Arterial	40,000	13,880	0.347	A	13,600	0.340	A	0.007	N
Section 3											
Carlton Oaks Dr	W Hills Pkwy and Fanita Pkwy	2-Lane Collector W/ CLTL	15,000	8,980	0.599	C	8,700	0.580	C	0.019	N
	400 ft West of Fanita Pkwy and Stoyer Dr	2-Lane Collector W/ CLTL	15,000	11,680	0.779	D	11,400	0.760	D	0.019	N
Halberns Blvd	Stoyer Dr and Mast Blvd	2-Lane Collector W/ CLTL	15,000	9,580	0.639	C	9,300	0.620	C	0.019	N
Section 4											
Mast Blvd	Halberns Blvd and Magnolia Ave	4-Lane Major Arterial	40,000	21,580	0.540	C	21,300	0.533	C	0.007	N
	Magnolia Ave and Eastern Terminus	2-Lane Collector W/ CLTL	15,000	6,380	0.425	B	6,100	0.407	B	0.019	N
	Western Terminus and Riverford Rd	2-Lane Collector	8,000	780	0.098	A	500	0.063	A	0.035	N
Riverside Dr	Riverford Rd and Valle Vista Rd	2-Lane Collector W/ CLTL	15,000	11,580	0.772	D	11,300	0.753	D	0.019	N
Lakeside Ave	Valle Vista Rd and Lakeside Ave/Channel Rd	2-Lane Collector W/ CLTL	15,000	8,580	0.572	C	8,300	0.553	C	0.019	N
	Lakeside Ave/Channel Rd and SR-67	2-Lane Collector	8,000	4,280	0.535	C	4,000	0.500	C	0.035	N

TABLE 4.8
ROADWAY SEGMENT LOS RESULTS
NEAR-TERM YEAR 2022 TRAFFIC CONDITIONS – SAN VICENTE PIPELINE

Roadway	Segment	Functional Classification	Threshold (LOS E)	Near-Term Year 2022 Base + Construction Traffic			Near-Term Year 2022 Base			Change in V/C	SI?
				ADT	V/C	LOS	ADT	V/C	LOS		
Willow Rd	SR-67 and Moreno Ave	2-Lane Collector	8,000	12,480	1.560	**F**	12,200	1.525	**F**	0.035 *>0.01*	**Y**
Moreno Ave	San Vicente Reservoir and Willow Rd	2-Lane Collector	8,000	6,280	0.785	D	6,000	0.750	D	0.035	N

Source: Chen Ryan Associates; May 2017

Bold letter indicates substandard LOS E or F.
SI? = Significant Impact?

As shown in the Table 4.8, the following three (3) roadway segments are projected to operate at substandard LOS E or F both with and without construction traffic under Near-Term Year 2022:

- Eastgate Mall, between the NCPWF & NCWRP driveway and Miramar Road – LOS F;
- Convoy Street, between Copley Park Place and Convoy Court – LOS E; and
- Willow Road, between SR-67 and Moreno Avenue – LOS F.

Project Impacts and Mitigation Measures

Based upon the significance criteria presented in Section 2.4 of this report, the construction traffic would result in significant traffic impact to two of studied roadway segments along the San Vicente Pipeline:

- Eastgate Mall, between the NCPWF & NCWRP driveway and Miramar Road – LOS F; and
- Willow Road, between SR-67 and Moreno Avenue – LOS F.

However, based on information provided by City of San Diego Public Utilities Department, construction of the pipeline would be performed 75 LF per day, and the impacted area at any one time would encompass the work area as well as the traffic control setup length. Therefore, these project impacts would be temporary in nature (approximately 64[1] working days and 17[1] working days, respectively) and since the construction will occur during nighttime when there is only less traffic on the road, this roadway should function at reasonable operations. Therefore, since the impact would be temporary, no mitigation measures are required.

Table 4.9 displays the projected amount of days for which construction would take place at the identified impacted roadways above as well as on roadways adjacent to residential areas. Nighttime work hours may be modified/reduced or work may be performed during weekends on roadways near residential areas.

TABLE 4.9
SUMMARY OF IMPACT DURATION – SAN VICENTE PIPELINE

Roadway	Segment	Length (ft)	Approximate Duration of Impact (days)
Eastgate Mall	NCPWF & NCWRP Driveway and Miramar Rd	4,800	64
Lightwave Avenue	Kearny Villa Rd and Ruffin Rd	4,800	64
Ruffin Rd	Clairemont Mesa Blvd and Lightwave Ave	880	12
Clairemont Mesa Blvd	1300 ft East of I-15 NB Ramps	1,300	18
Santo Rd	Clairemont Mesa Blvd and Tierrasanta Blvd	2,070	28
Tierrasanta Blvd	Santo Rd and Cooperleaf Ln	8,000	107

TABLE 4.9
SUMMARY OF IMPACT DURATION – SAN VICENTE PIPELINE

Roadway	Segment	Length (ft)	Approximate Duration of Impact (days)
Section 2			
Mission Gorge Rd	Princess View Dr and Golfcrest Dr	11,300	151
	1160 ft west of Rockyridge Rd	1,160	16
	Rockyridge Rd and W Hills Pkwy	3,000	40
W Hills Pkwy	Mission Gorge Rd and Carlton Oaks Dr	2,200	30
Section 3			
Carlton Oaks Dr	W Hills Pkwy and Fanita Pkwy	6,500	87
	400 ft West of Fanita Pkwy and Stoyer Dr	4,400	59
Halberns Blvd	Stoyer Dr and Mast Blvd	1,600	22
Section 4			
Mast Blvd	Halberns Blvd and Magnolia Ave	6,850	92
	Magnolia Ave and Eastern Terminus	4,000	54
	Western Terminus and Riverford Rd	2,500	32
Riverside Dr	Riverford Rd and Valle Vista Rd	5,400	72
Lakeside Dr	Valle Vista Rd and Lakeside Ave/Channel Rd	1,125	15
	Lakeside Ave/Channel Rd and SR-67	2,600	35
Willow Rd	SR-67 and Moreno Ave	1,300	17
Moreno Ave	San Vicente Reservoir and Willow Rd	9,600	125

Source: Chen Ryan Associates; May 2017.

The duration of the impacts is based on the anticipated 75 LF of pipeline installation per day. It is important to note that these impacts would not occur concurrently, but rather at different points in time depending on the location of pipeline construction[1], and the impacted area at any one time would encompass the work area as well as the traffic control setup length. Therefore, the project impacts shown above would be temporary in nature and no mitigation measures are required.

[1] The impacted roadway segment of Eastgate Mall, between NCPWF & NCWRP driveway and Miramar Road and Willow Road, between SR-67 and Moreno Avenue would be approximately 4,800 feet and 1,300 feet in length respectively, and at 75 feet of installation per day, it is estimated that it would take approximately 64 days and 17 days to complete, respectively. After the pipeline installation is complete at the first 75 LF, the next 75 LF of construction would begin to be under construction, etc.

5.0 Morena Pipelines

The Morena Pipelines proposes the construction of two pipelines, a 30-inch brine pipeline and a 48-inch wastewater forcemain, running parallel to each other in a common pipe trench, connecting the Morena Pump Station which is to be located on a parcel currently owned by the San Diego Humane Society and the Society for the Prevention of Cruelty to Animals, to the NCWRP. The pipelines will connect the new pump station to the North City Water Reclamation Plant, via Sherman Street, Morena Boulevard, West Morena Boulevard, Ingulf Street, Denver Street, Clairemont Drive, Clairemont Mesa Boulevard, Genesee Avenue, Nobel Drive, Towne Centre Drive, and Executive Drive, traversing the communities of Linda Vista, Clairemont Mesa, and University. This pipeline is approximately 11 miles. Construction of the Morena Pipelines is anticipated to take place between March 2019 and July 2021.

Pipeline construction is proposed largely to be open-trench, covering approximately 50,890 linear feet or 93% of the total alignment, while the tunneling sections cover approximately 4,105 linear feet or 7% of the total alignment. Based on information provided by City of San Diego Public Utilities Department and Construction Management and Field Services, the majority of the pipeline construction work hours are proposed to be during nighttime, between 9:00 pm and 5:00 am, with daytime construction along some roadway segments along the pipelines alignment. **Table 5.1** displays the work hours proposed for the roadway segments analyzed for the Morena Pipelines construction.

TABLE 5.1
WORK HOURS ON ROADWAY SEGMENTS ALONG MORENA PIPELINES ALIGNMENT

Roadway	Segment	Work hours
Executive Drive	End of cul-de-sac and Judicial Drive	9:00 PM to 5:00 AM
Executive Drive	Judicial Drive and Towne Centre Drive	9:00 PM to 5:00 AM
Towne Centre Drive	Executive Drive and La Jolla Village Drive	9:00 PM to 5:00 AM
Towne Centre Drive	La Jolla Village Drive and Golden Haven Drive	8:30 AM to 3:30 PM
Towne Centre Drive	Golden Haven Drive and Nobel Drive	8:30 AM to 3:30 PM
Nobel Drive	Towne Centre Drive and Genesee Avenue	8:30 AM to 3:30 PM
Genesee Ave	Nobel Drive to Governor Drive	9:00 PM to 5:00 AM
Genesee Ave	Governor Drive and SR-52 WB Ramps	9:00 PM to 5:00 AM
Genesee Ave	SR-52 WB Ramps and SR-52 EB Ramps	9:00 PM to 5:00 AM
Genesee Ave	SR-52 EB Ramps and Appleton Street	9:00 PM to 5:00 AM

TABLE 5.1
WORK HOURS ON ROADWAY SEGMENTS ALONG MORENA PIPELINES ALIGNMENT

Roadway	Segment	Work hours
Genesee Ave	Appleton Street and Clairemont Mesa Blvd	(NB) 9:00 PM to 5:00 AM, (SB) 7:30 AM to 2:30 PM
Clairemont Mesa Blvd	Genesee Avenue and Clairemont Drive	8:30 AM to 3:30 PM
Clairemont Drive	Clairemont Mesa Boulevard and Lakehurst Avenue	7:30 AM to 4:30 PM
Clairemont Drive	Lakehurst Avenue and Clairemont Mesa Boulevard	7:30 AM to 4:30 PM
Clairemont Drive	Clairemont Mesa Boulevard and Balboa Avenue	7:30 AM to 4:30 PM
Clairemont Drive	Balboa Avenue to Rappahannock Avenue	7:30 AM to 4:30 PM
Clairemont Drive	Rappahannock Avenue to Iroquois Avenue	7:30 AM to 4:30 PM
Clairemont Drive	Iroquois Avenue to Burgener Drive	9:00 PM to 5:00 AM
Clairemont Drive	Burgener Drive to Denver Street	9:00 PM to 5:00 AM
Denver St	Clairemont Drive and Ingulf Street	9:00 PM to 5:00 AM
Ingulf St	Denver Street and West Morena Boulevard	9:00 PM to 5:00 AM
West Morena Boulevard	Ingulf Street to Littlefield Street	9:00 PM to 5:00 AM
West Morena Boulevard	Littlefield Street to Morena Blvd	9:00 PM to 5:00 AM
West Morena Boulevard	Morena Boulevard and Tecolote Road Overpass	9:00 PM to 5:00 AM
West Morena Boulevard	Tecolote Road Overpass and Vega Street	9:00 PM to 5:00 AM
West Morena Boulevard	Vega Street and Morena Boulevard	9:00 PM to 5:00 AM

Source: City of San Diego Public Utilities Department and Construction Management and Field Services Department, June 2017.

The construction of the pipelines will also require the closure to through traffic of two roadways, Ingulf Street and Denver Street. The closure of the aforementioned roadways segments will result in the following traffic detours:

- Closure of Ingulf Street between West Morena Boulevard and Denver Street - Detour signs shall be placed redirecting traffic to travel on alternative routes along Milton Street, Lister Street, Jellett Street and Galveston Street.

- Closure of Denver Street between Ingulf Street and Clairemont Drive – Detour signs shall be placed redirecting traffic to travel on alternative routes along Milton Street, Lister Street, Jellett Street and Galveston Street.

It is important to note that the Morena Pipelines coincide with the alignment for the construction of the Mid-Coast Trolley alignment (along West Morena Boulevard), therefore, close coordination is necessary between these two projects.

Both daily roadway segment and peak hour intersection analysis were conducted in the chapter to disclose all potential construction traffic impacts associated with these pipelines since daytime construction with lane and road closures are proposed.

5.1 Pipeline Construction Trip Generation

It is assumed that truck trips (excavation, material transport, utility trucks, ect.) and worker trips will be generated during construction. Based on review of the 10% Engineering Design Report for the Morena Pump Station, it is also assumed that the open-trench excavation will be approximately 10' deep, 8' wide, and 75' long per day, and the same number of workers and heavy vehicles will be required per day for the duration of the pipeline construction. As a worst-case scenario, it was assumed that all workers would drive individual vehicles to the project site.

Table 5.2 displays the assumed daily and peak hour vehicle trip generation during construction.

TABLE 5.2
CONSTRUCTION TRIP GENERATION

Trip Type	Unit	Rate	Daily Generation	Passenger Car Equivalent	Daily Vehicle Trips	AM Peak Hour	PM Peak Hour
Construction Workers	8 workers	3 / worker	24 vehicle trips	1	24	8 (8-in / 0-out)	8 (0-in / 8-out)
Construction Trucks	60 trucks	2 / truck	120 truck trips	2.5	300	38 (19-in / 19-out)	38 (19-in / 19-out)
				Total	**324**	**46 (27-in / 19-out)**	**46 (19-in / 27out)**

Source: Chen Ryan Associates; May 2017

As shown, the proposed project construction is anticipated to generate approximately 324 daily trips, as well as 46 trips during both the AM and PM peak hour.

5.2 Morena Pipelines Construction Trip Distribution, Trip Assignment & Staging Areas

Pipeline staging areas are proposed to be located within developed parking lots or other developed areas to minimize traffic and road disruptions and would move frequently as construction progresses along the alignment. No new access roads would be needed. Staging areas for open cut construction would range from 30 feet to 60 feet wide and would occupy half the roadway width. Staging areas for trenchless construction would range from 20 feet by 50 feet up to 100 feet by 150 feet.

A jacking pit would be constructed at the beginning of each trenchless pipeline segment and a receiving pit would be constructed at the end of each segment.

The Miramar Landfill would be the main site as the origin or the destination of material disposal trucks and SR-52 would be the main route.

5.3 Existing Conditions

The section below discusses the existing traffic conditions along roadways and intersections serving the Morena Pipelines.

Roadway Segment Analysis

Figure 5-1 displays the existing roadway traffic volumes. **Table 5.3** displays the daily roadway segment LOS results under Existing conditions. Roadway segment and intersection traffic counts were obtained from a number of sources including the *University Community Plan Amendment Existing Conditions Summary (late 2015)*, the *Morena Boulevard Station Area Planning Study (2014)*, as well as the Clairemont Mesa Community Plan Update (2016). The traffic count worksheets are provided in Appendix A.

As shown in the Table 5.3, the following four (4) roadway segments operate at substandard LOS E or F:

- Clairemont Mesa Boulevard, between Genesee Avenue and Clairemont Drive – LOS E;
- Clairemont Drive, between Clairemont Mesa Boulevard and Balboa Avenue – LOS F;
- Clairemont Drive, between Burgener Drive and Denver Street – LOS F;
- Denver Street, between Clairemont Drive and Ingulf Street – LOS F.

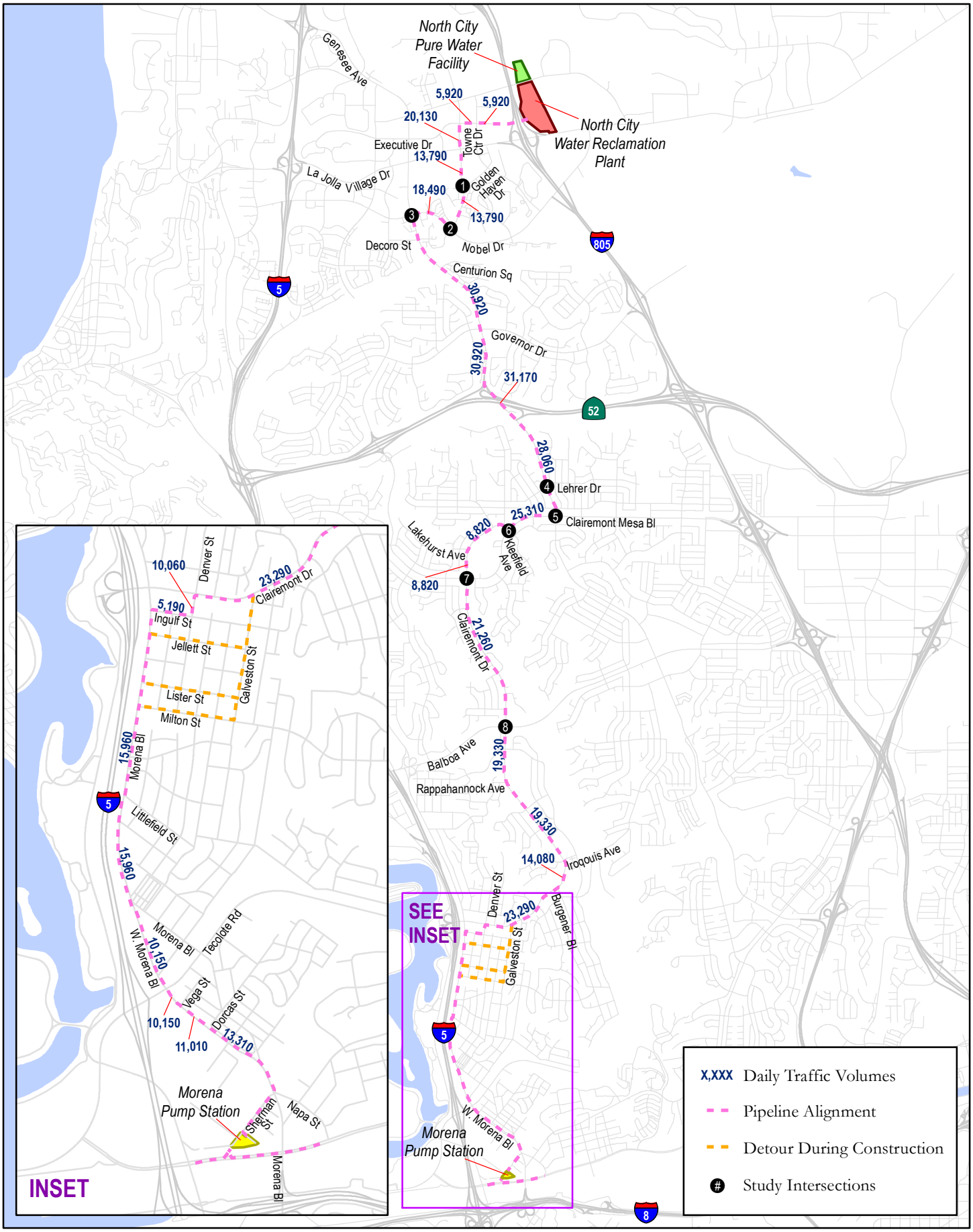

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Figure 5-1
Roadway Traffic Volumes - Existing Conditions
(Morena Pipelines)

TABLE 5.3
ROADWAY SEGMENT LOS RESULTS
EXISTING CONDITIONS – MORENA PIPELINES

Roadway	Segment	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS
Executive Drive	End of cul-de-sac and Judicial Drive	2-Lane Collector	8,000	5,920	0.739	D
	Judicial Drive and Towne Centre Drive	4-Lane Major Arterial	40,000	5,920	0.148	A
Towne Centre Drive	Executive Drive and La Jolla Village Drive	4-Lane Major Arterial	40,000	20,130	0.503	B
	La Jolla Village Drive and Golden Haven Drive	4-Lane Major Arterial	40,000	13,790	0.345	A
	Golden Haven Drive and Nobel Drive	4-Lane Major Arterial	40,000	13,790	0.345	A
Nobel Drive	Towne Centre Drive and Genesee Avenue	4-Lane Major Arterial	40,000	18,490	0.462	B
Genesee Avenue	Nobel Drive and Governor Drive	4-Lane Major Arterial	40,000	30,920	0.773	D
	Governor Drive and SR-52 WB Ramps	4-Lane Major Arterial	40,000	30,920	0.773	D
	SR-52 WB Ramps and SR-52 EB Ramps	4-Lane Major Arterial	40,000	31,170	0.779	D
	SR-52 EB Ramps and Appleton Street	4-Lane Major Arterial	40,000	28,060	0.702	C
	Appleton Street and Clairemont Mesa Boulevard	4-Lane Major Arterial	40,000	28,060	0.702	C
Clairemont Mesa Boulevard	Genesee Avenue and Clairemont Drive	4-Lane Collector with CLTL	30,000	25,310	0.844	**E**
Clairemont Drive	Clairemont Mesa Boulevard and Lakehurst Avenue	4-Lane Collector with CLTL	30,000	8,820	0.294	A
	Lakehurst Avenue and Clairemont Mesa Boulevard	4-Lane Collector with CLTL	30,000	8,820	0.294	A
	Clairemont Mesa Boulevard and Balboa Avenue	2-Lane Collector W/ CLTL	15,000	21,260	1.417	**F**
	Balboa Avenue and Rappahannock Avenue	4-Lane Major Arterial	40,000	19,330	0.483	B
	Rappahannock Avenue and Iroquois Avenue	4-Lane Collector with CLTL	30,000	19,330	0.644	C

TABLE 5.3
ROADWAY SEGMENT LOS RESULTS
EXISTING CONDITIONS – MORENA PIPELINES

Roadway	Segment	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS
Clairemont Drive	Iroquois Avenue and Burgener Drive	4-Lane Collector with CLTL	30,000	14,080	0.469	C
	Burgener Drive and Denver Street	2-Lane Collector W/ CLTL	15,000	23,290	1.553	**F**
Denver Street	Clairemont Drive and Ingulf Street	2-Lane Collector	8,000	10,060	1.258	**F**
Ingulf Street	Denver Street and West Morena Boulevard	2-Lane Collector	8,000	5,190	0.648	D
West Morena Boulevard	Ingulf Street and Littlefield Street	4-Lane Major Arterial	40,000	15,960	0.399	B
	Littlefield Street to Morena Boulevard	4-Lane Major Arterial	40,000	15,960	0.399	B
	Morena Boulevard and Tecolote Road Overpass	4-Lane Major Arterial	40,000	10,150	0.254	A
	Tecolote Road Overpass and Vega Street	4-Lane Major Arterial	40,000	10,150	0.254	A
	Vega Street and Morena Boulevard	5-Lane Major Arterial	50,000	13,310	0.266	A

Source: Chen Ryan Associates; May 2017

Note: Bold letter indicates substandard LOS E or F.

Intersection Analysis

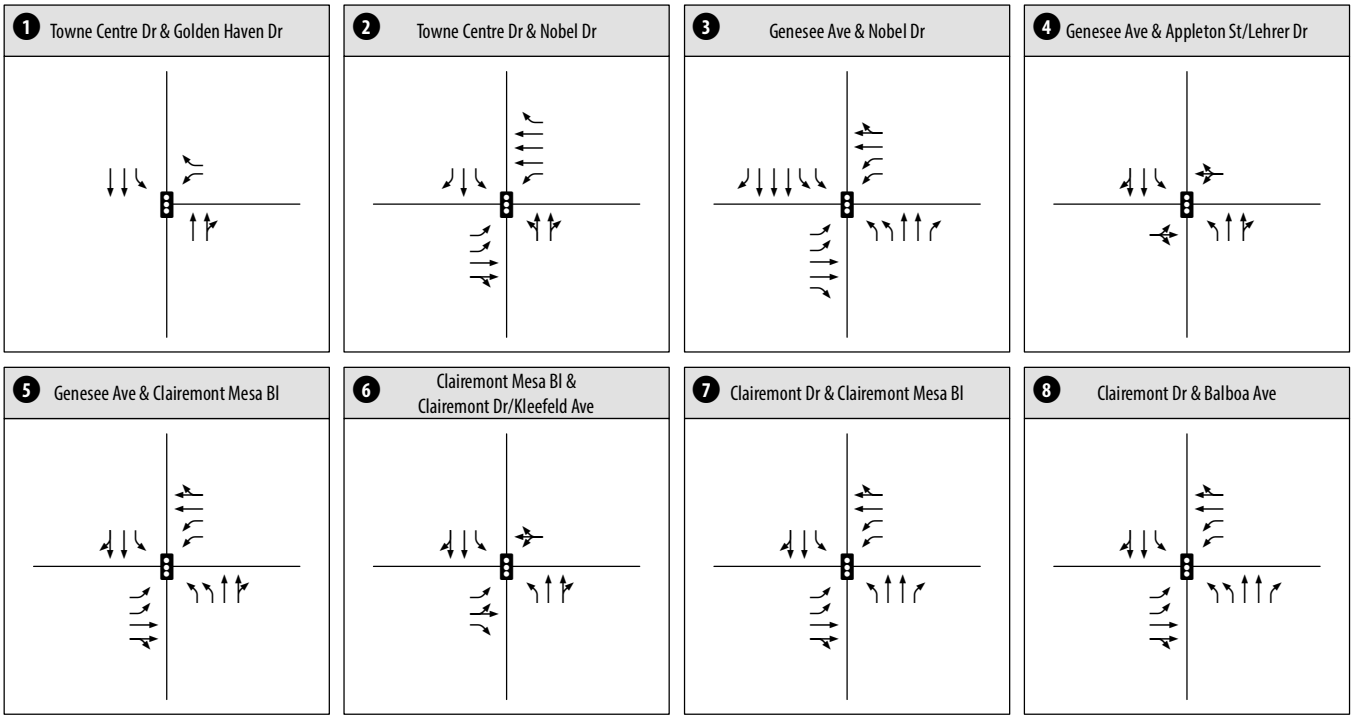
Figure 5-2 displays existing intersection geometry while **Figure 5-3** displays peak hour intersection volumes. **Table 5.4** displays intersection LOS results and average delay results for key study area intersections under Existing Conditions. LOS calculation worksheets for Existing Conditions are provided in **Appendix D**. It is important to note that the intersections analyzed for the Morena Pipelines are those that are found along roadway segments where daytime work is proposed.

TABLE 5.4
PEAK HOUR INTERSECTION LEVEL OF SERVICE RESULTS
EXISTING CONDITIONS – MORENA PIPELINES

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS
1. Towne Centre Drive & Golden Haven Drive	Signalized	14.9	B	9.7	A
2. Towne Centre Drive & Nobel Drive	Signalized	34.2	C	28.2	C
3. Genesee Avenue & Nobel Drive	Signalized	69.4	**E**	33.5	C
4. Genesee Avenue & Appleton Street/Lehrer Drive	Signalized	84.8	**F**	34.9	C
5. Genesee Avenue & Clairemont Mesa Boulevard	Signalized	46.0	D	56.1	**E**
6. Clairemont Mesa Boulevard & Clairemont Drive/Kleefeld Avenue	Signalized	413.7	**F**	672.1	**F**
7. Clairemont Drive & Clairemont Mesa Boulevard	Signalized	78.7	**E**	53.8	D
8. Clairemont Drive & Balboa Avenue	Signalized	51.4	D	71.0	**E**

Source: Chen Ryan Associates, May 2017

Notes:
Bold letter indicates substandard LOS E or F.
SSSC = Side-Street Stop Control.
For SSSC intersections, the delay shown is the worst delay experienced by any of the approaches.



Legend

- Study Intersection
- Lane Geometry
- Signalized Intersection

*Names of North-South cross-streets always listed first

NORTH
NOT TO SCALE

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Figure 5-2
Intersection Geometrics - Existing Conditions
(Morena Pipelines) (Intersections 1-8)

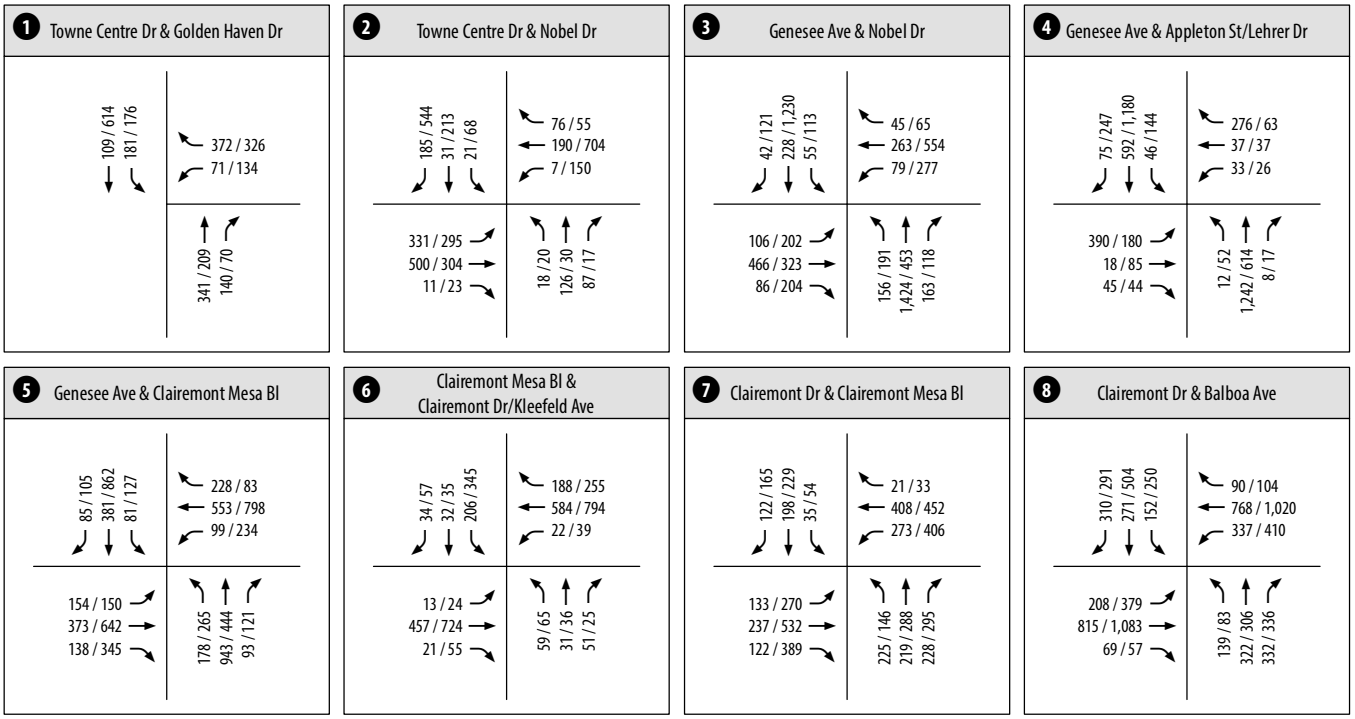

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Figure 5-3
Intersection Traffic Volumes - Existing Conditions
(Morena Pipelines) (Intersections 1-8)

As shown in Table 5.4, the following six (6) intersections currently operate under substandard LOS E or F during the peak hours:

- Genesee Avenue & Nobel Drive – LOS E during the AM peak hour;
- Genesee Avenue & Appleton Street/Lehrer Drive – LOS F during the AM peak hour;
- Genesee Avenue & Clairemont Mesa Boulevard – LOS E during the PM peak hour;
- Clairemont Mesa Boulevard & Clairemont Drive/Kleefeld Avenue – LOS F during both the AM and PM peak hour;
- Clairemont Drive & Clairemont Mesa Boulevard – LOS E during the AM peak hour;
- Clairemont Drive & Balboa Avenue – LOS E during the PM peak hour;

5.4 Construction Traffic Analysis (Near-Term Year 2022)

It is assumed that the North City project will be in operations by Year 2022, for a worst-case analysis, construction traffic was added to the Year 2022 Base traffic volumes. Near-Term Year 2022 volumes were derived by comparing SANDAG Series 13 Year 2035 and Year 2020 forecast volumes, as well as the existing traffic counts. Growth factors were developed and applied to existing traffic volumes for each specific roadway segments and connecting intersections.

Roadway Segment Analysis

Figure 5-4 displays the Near-Term Year 2022 Base traffic volumes, while **Figure 5-5** displays Near-Term Year 2022 Base with Construction traffic volumes along study area roadway segments.

Table 5.5 displays the daily roadway segment LOS results under both Near-Term Year 2022 Base and Near-Term Year 2022 Base with Construction Traffic conditions.

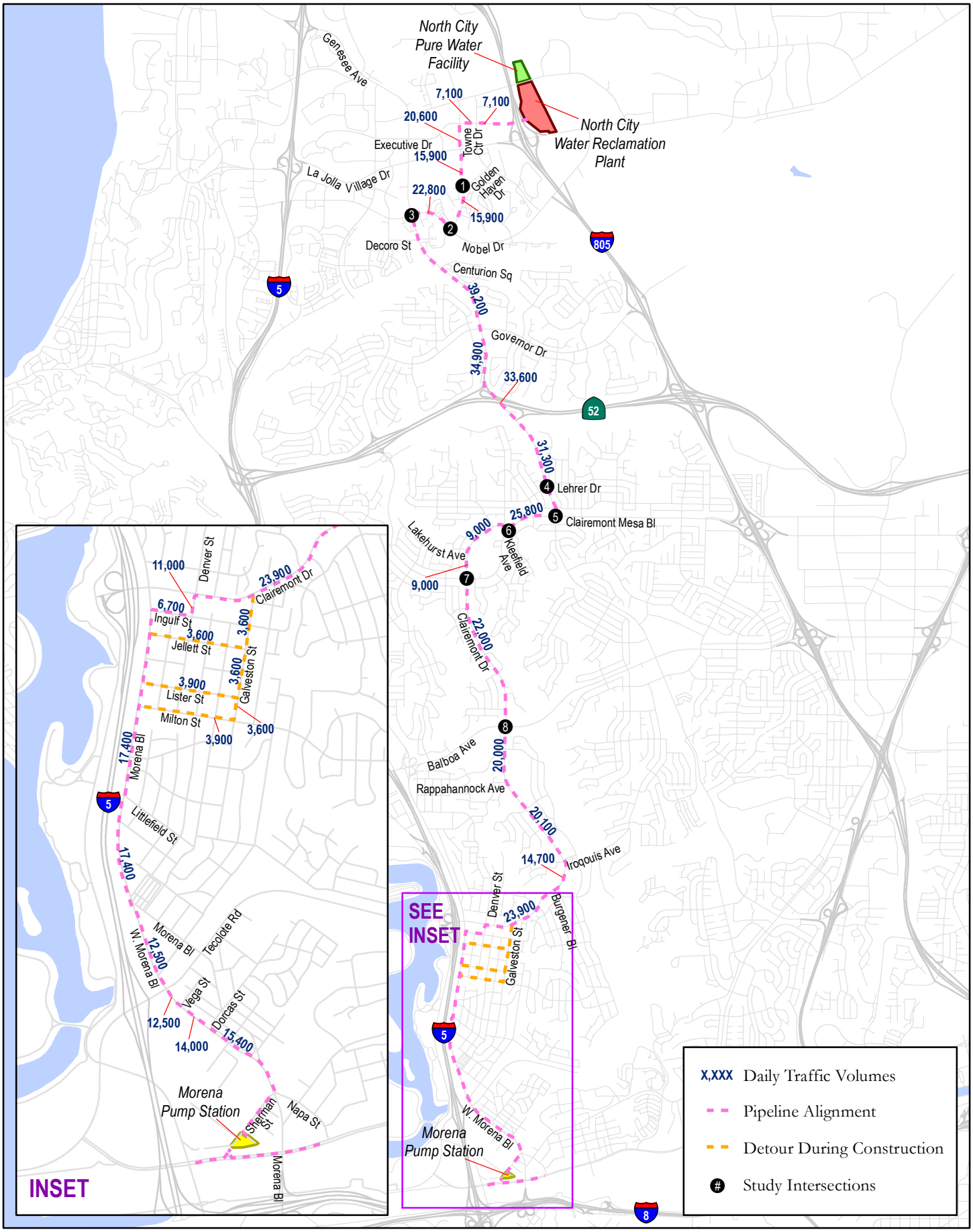

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Figure 5-4
Roadway Traffic Volumes - Near-Term Year 2022 Base Conditions (Morena Pipelines)

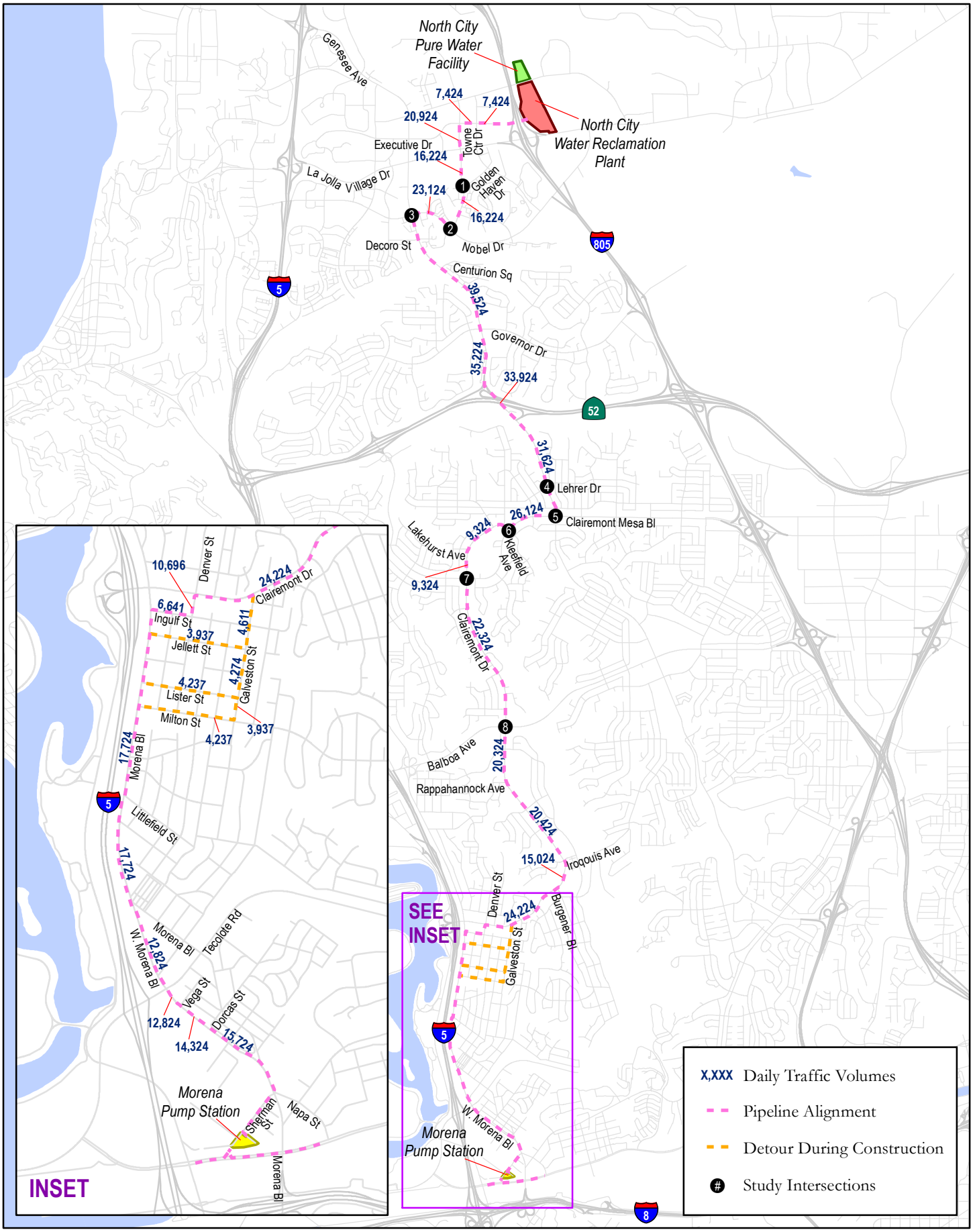

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Figure 5-5
Roadway Traffic Volumes - Near-Term Year 2022 Base Plus Construction Traffic Conditions (Morena Pipelines)

TABLE 5.5
ROADWAY SEGMENT LOS RESULTS
NEAR-TERM YEAR 2022 TRAFFIC CONDITIONS – MORENA PIPELINES

		Near-Term Year 2022 Base + Construction Traffic					Near-Term Year 2022 Base						
Roadway	Segment	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS	Change in V/C	SI?
Executive Drive	End of cul-de-sac and Judicial Drive	2-Lane Collector	8,000	7,424	0.928	**E**	2-Lane Collector	8,000	7,100	0.888	**E**	0.041	**Y**
	Judicial Drive and Towne Centre Drive	4-Lane Major Arterial	40,000	7,424	0.186	A	4-Lane Major Arterial	40,000	7,100	0.178	A	0.008	N
Towne Centre Drive	Executive Drive and La Jolla Village Drive	4-Lane Major Arterial	40,000	20,924	0.523	B	4-Lane Major Arterial	40,000	20,600	0.515	B	0.008	N
	La Jolla Village Drive and Golden Haven Drive	2-Lane Collector	8,000	16,224	2.028	**F**	4-Lane Major Arterial	40,000	15,900	0.398	B	1.631	**Y**
	Golden Haven Drive and Nobel Drive	2-Lane Collector	8,000	16,224	2.028	**F**	4-Lane Major Arterial	40,000	15,900	0.398	B	1.631	**Y**
Nobel Drive	Towne Centre Drive and Genesee Avenue	2-Lane Collector	8,000	23,124	2.891	**F**	4-Lane Major Arterial	40,000	22,800	0.570	C	2.321	**Y**
Genesee Avenue	Nobel Drive to Governor Drive	4-Lane Major Arterial	40,000	39,524	0.988	**E**	4-Lane Major Arterial	40,000	39,200	0.980	**E**	0.008	N
	Governor Drive and SR-52 WB Ramps	4-Lane Major Arterial	40,000	35,224	0.881	**E**	4-Lane Major Arterial	40,000	34,900	0.873	D	0.008	**Y**
	SR-52 WB Ramps and SR-52 EB Ramps	4-Lane Major Arterial	40,000	33,924	0.848	D	4-Lane Major Arterial	40,000	33,600	0.840	D	0.008	N
	SR-52 EB Ramps and Appleton Street	4-Lane Major Arterial	40,000	31,624	0.791	D	4-Lane Major Arterial	40,000	31,300	0.783	D	0.008	N
	Appleton Street and Clairemont Mesa Blvd	2-Lane Collector	8,000	31,624	3.953	**F**	4-Lane Major Arterial	40,000	31,300	0.783	D	3.171	**Y**

TABLE 5.5
ROADWAY SEGMENT LOS RESULTS
NEAR-TERM YEAR 2022 TRAFFIC CONDITIONS – MORENA PIPELINES

		Near-Term Year 2022 Base + Construction Traffic					Near-Term Year 2022 Base						
Roadway	Segment	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS	Change in V/C	SI?
Clairemont Mesa Boulevard	Genesee Avenue and Clairemont Drive	2-Lane Collector	8,000	26,124	3.266	**F**	4-Lane Secondary Arterial	30,000	25,800	0.860	**E**	2.406	**Y**
Clairemont Drive	Clairemont Mesa Boulevard and Lakehurst Avenue	2-Lane Collector	8,000	9,324	1.166	**F**	4-Lane Secondary Arterial	30,000	9,000	0.300	A	0.866	**Y**
	Lakehurst Avenue and Clairemont Mesa Boulevard	2-Lane Collector	8,000	9,324	1.166	**F**	4-Lane Secondary Arterial	30,000	9,000	0.300	A	0.866	**Y**
	Clairemont Mesa Boulevard and Balboa Avenue	2-Lane Collector	8,000	22,324	2.791	**F**	2-Lane Collector W/ CLTL	15,000	22,000	1.467	**F**	1.324	**Y**
	Balboa Avenue and Rappahannock Avenue	2-Lane Collector	8,000	20,324	2.541	**F**	4-Lane Major Arterial	40,000	20,000	0.500	B	2.041	**Y**
	Rappahannock Avenue and Iroquois Avenue	2-Lane Collector W/ CLTL	15,000	20,424	1.362	**F**	4-Lane Secondary Arterial	30,000	20,100	0.670	D	0.692	**Y**
	Iroquois Avenue and Burgener Drive	4-Lane Secondary Arterial	30,000	15,024	0.501	C	4-Lane Secondary Arterial	30,000	14,700	0.490	C	0.011	N
	Burgener Drive and Denver Street	2-Lane Collector W/ CLTL	15,000	24,224	1.615	**F**	2-Lane Collector W/ CLTL	15,000	23,900	1.593	**F**	0.022	**Y**

TABLE 5.5
ROADWAY SEGMENT LOS RESULTS
NEAR-TERM YEAR 2022 TRAFFIC CONDITIONS – MORENA PIPELINES

		Near-Term Year 2022 Base + Construction Traffic					Near-Term Year 2022 Base						
Roadway	Segment	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS	Change in V/C	SI?
Denver Street	Clairemont Drive and Ingulf Street	2-Lane Collector (Full closure during work hours)	8,000	10,696[1]	1.337	**F**	2-Lane Collector	8,000	11,000	1.375	**F**	-0.038	N
Ingulf Street	Denver Street and West Morena Boulevard	2-Lane Collector (Full closure during work hours)	8,000	6,641[1]	0.830	**E**	2-Lane Collector	8,000	6,700	0.838	**E**	-0.007	N
Galveston Street	Clairemont Drive and Jellet Street	2-Lane Collector	8,000	4,611[2]	0.576	C	2-Lane Collector	8,000	3,600	0.450	C	0.126	N
	Jellet Street and Lister Street	2-Lane Collector	8,000	4,274[2]	0.534	C	2-Lane Collector	8,000	3,600	0.450	C	0.084	N
	Lister Street and Milton Street	2-Lane Collector	8,000	3,937[2]	0.492	C	2-Lane Collector	8,000	3,600	0.450	C	0.042	N
Jellet Street	Galveston Street and West Morena Boulevard	2-Lane Collector	8,000	3,937[2]	0.492	C	2-Lane Collector	8,000	3,600	0.450	C	0.042	N
Lister Street	Galveston Street and West Morena Boulevard	2-Lane Collector	8,000	4,237[2]	0.530	C	2-Lane Collector	8,000	3,900	0.488	C	0.042	N
Milton Street	Galveston Street and West Morena Boulevard	2-Lane Collector	8,000	4,237[2]	0.530	C	2-Lane Collector	8,000	3,900	0.488	C	0.042	N

TABLE 5.5
ROADWAY SEGMENT LOS RESULTS
NEAR-TERM YEAR 2022 TRAFFIC CONDITIONS – MORENA PIPELINES

		Near-Term Year 2022 Base + Construction Traffic					Near-Term Year 2022 Base						
Roadway	Segment	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS	Functional Classification	Threshold (LOS E)	ADT	V/C	LOS	Change in V/C	SI?
West Morena Boulevard	Ingulf Street and Littlefield Street	4-Lane Major Arterial	40,000	17,724	0.443	B	4-Lane Major Arterial	40,000	17,400	0.435	B	0.008	N
	Littlefield Street to Morena Boulevard	4-Lane Major Arterial	40,000	17,724	0.443	B	4-Lane Major Arterial	40,000	17,400	0.435	B	0.008	N
	Morena Boulevard and Tecolote Road Overpass	4-Lane Major Arterial	40,000	12,824	0.321	A	4-Lane Major Arterial	40,000	12,500	0.313	A	0.008	N
	Tecolote Road Overpass and Vega Street	4-Lane Major Arterial	40,000	12,824	0.321	A	4-Lane Major Arterial	40,000	12,500	0.313	A	0.008	N
	Vega Street and North of Dorcas Street	5-Lane Major Arterial	50,000	14,324	0.286	A	5-Lane Major Arterial	50,000	14,000	0.280	A	0.006	N
	North of Dorcas Street and Morena Boulevard	5-Lane Major Arterial	50,000	15,724	0.314	A	5-Lane Major Arterial	50,000	15,400	0.308	A	0.006	N

Source: Chen Ryan Associates; May 2017

Notes:
Bold letter indicates substandard LOS E or F.
SI? = Significant Impact?
[1] Traffic volume in this segment excludes traffic during the work hours (9 pm to 5 am) and includes construction traffic.
[2] Traffic along Ingulf Street and Denver Street rerouted onto this roadway segment.

As shown in the Table 5.5, the following seven (7) roadway segments are projected to operate at substandard LOS E or F under Near-Term Year 2022 Conditions:

- Executive Drive, between End of cul-de-sac to Judicial Drive – LOS E;
- Genesee Avenue, between Nobel Drive and Governor Drive – LOS E;
- Clairemont Mesa Boulevard, between Genesee Avenue and Clairemont Drive – LOS E;
- Clairemont Drive, between Clairemont Mesa Boulevard and Balboa Avenue – LOS F;
- Clairemont Drive, between Burgener Drive and Denver Street – LOS F;
- Denver Street, between Clairemont Drive and Ingulf Street – LOS F; and
- Ingulf Street, between Denver Street and West Morena Boulevard – LOS E.

The following sixteen (16) roadway segments are projected to operate at substandard LOS E or F under Near-Term Year 2022 with Construction Conditions:

- Executive Drive, between End of cul-de-sac to Judicial Drive – LOS E;
- Towne Centre Drive, between La Jolla Village Drive and Golden Haven Drive – LOS F;
- Towne Centre Drive, between Golden Haven Drive and Nobel Drive – LOS F;
- Nobel Drive, between Towne Centre Drive and Genesee Avenue – LOS F;
- Genesee Avenue, between Nobel Drive and Governor Drive – LOS F;
- Genesee Avenue, between Governor Drive and SR-52 WB Ramps – LOS F;
- Genesee Avenue, between SR-52 EB Ramps and Clairemont Mesa Boulevard – LOS F;
- Clairemont Mesa Boulevard, between Appleton Street and Clairemont Mesa Blvd – LOS F;
- Clairemont Drive, between Clairemont Mesa Boulevard and Lakehurst Avenue – LOS F;
- Clairemont Drive, between Lakehurst Avenue and Clairemont Mesa Boulevard – LOS F;
- Clairemont Drive, between Clairemont Mesa Boulevard and Balboa Avenue – LOS F;
- Clairemont Drive, between Balboa Avenue and Rappahannock Avenue – LOS F;
- Clairemont Drive, between Rappahannock Avenue and Iroquois Avenue – LOS F;
- Clairemont Drive, between Burgener Drive and Denver Street – LOS F;
- Denver Street, between Clairemont Drive and Ingulf Street – LOS F;
- Ingulf Street, between Denver Street and West Morena Boulevard – LOS E;

Intersection Analysis

Intersection geometry under the Near-Term Year 2022 Base conditions is assumed to be identical as existing conditions, as shown in Figure 5-2. **Figure 5-6** displays peak hour intersection volumes during Near-Term Year 2022 Base traffic conditions. During the pipeline construction, intersection geometrics would change due to lane and road closures. **Figure 5-7** displays intersection geometry under Near-Term Year 2022 Base with Construction Conditions. **Figure 5-8** displays peak hour intersection volumes under Near-Term Year 2022 Base with Construction Conditions.

Table 5.6 displays intersection LOS results and average delay results for key study area intersections under Near-Term Year 2022 both with and without construction traffic scenarios.

Peak hour intersection calculation worksheets are provided in **Appendix E.** It is important to note that the intersections analyzed for the Morena Pipelines are those that are found along roadway segments where daytime work is proposed.

TABLE 5.6
PEAK HOUR INTERSECTION LOS RESULTS
NEAR-TERM YEAR 2022 TRAFFIC CONDITIONS – MORENA PIPELINES

Intersection	Traffic Control	Near-Term Year 2022 + Construction Traffic				Near-Term Year 2022 Base				Change in Delay	SI?
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
		Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS		
1. Towne Centre Drive & Golden Haven Drive	Signalized	26.7	C	30.0	C	14.5	B	16.7	B	12.2 / 13.3	N
2. Towne Centre Drive & Nobel Drive	Signalized	30.4	C	256.4	**F**	29.9	C	26.8	C	0.5 / 229.6	**Y**
3. Genesee Avenue & Nobel Drive	Signalized	424.1	**F**	133.8	**F**	72.6	**E**	33.1	C	351.5 / 100.7	**Y**
4. Genesee Avenue & Appleton Street/Lehrer Drive	Signalized	71.2	**E**	141.5	**F**	69.4	**E**	33.2	C	1.8 / 108.3	**Y**
5. Genesee Avenue & Clairemont Mesa Boulevard	Signalized	251.0	**F**	268.9	**F**	48.4	D	57.3	**E**	202.6 / 211.6	**Y**
6. Clairemont Mesa Boulevard & Clairemont Drive/Kleefeld Avenue	Signalized	342.8	**F**	N/A[1]	**F**	359.4	**F**	700.4	**F**	-16.6 / -26.2	**Y**
7. Clairemont Drive & Clairemont Mesa Boulevard	Signalized	97.1	**F**	199.9	**F**	72.2	**E**	56.9	**E**	24.9 / 143	**Y**
8. Clairemont Drive & Balboa Avenue	Signalized	44.5	D	75.2	**E**	44.3	D	74.9	**E**	0.2 / 0.3	N

Source: Chen Ryan Associates, May 2017

Notes:
Bold letter indicates substandard LOS E or F.
SSSC = Side-Street Stop Control.
For SSSC intersections, the delay shown is the worst delay experienced by any of the approaches.
[1]Exceeds maximum reasonable calculable delay of 600 seconds per Synchro 9.0 traffic analysis software.

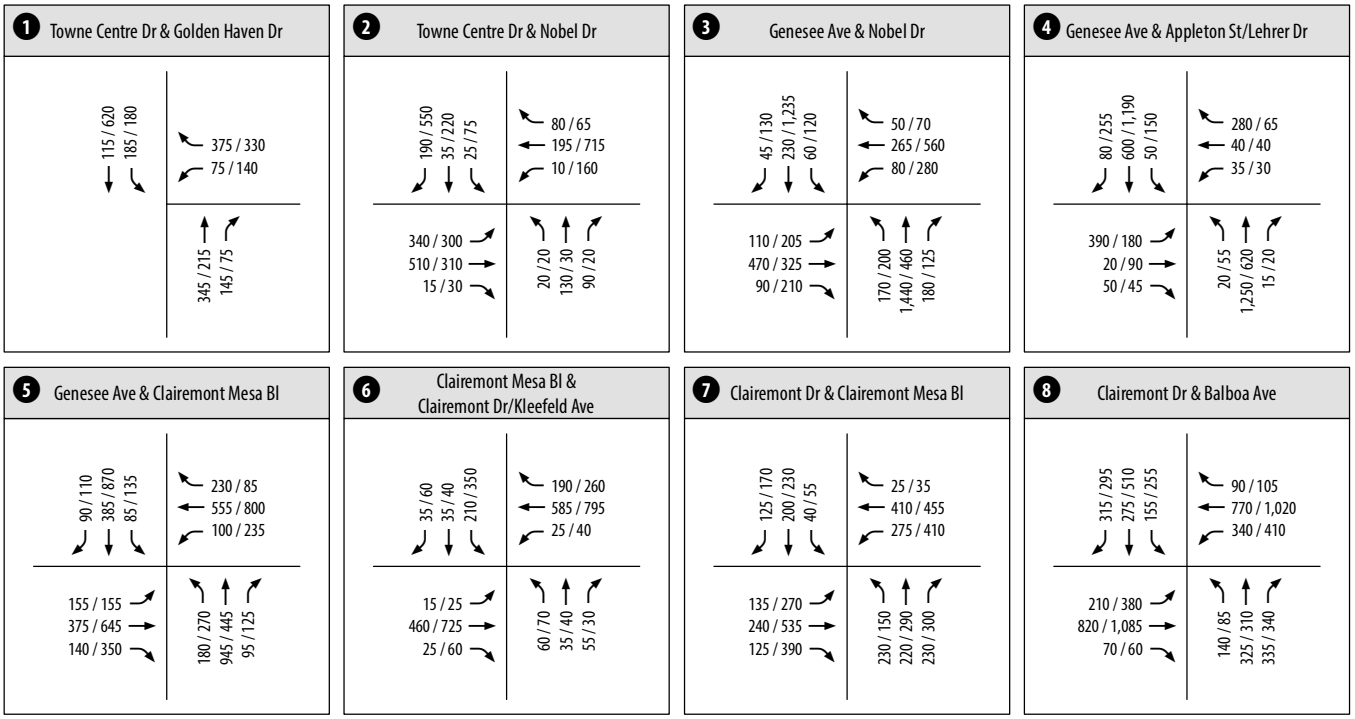

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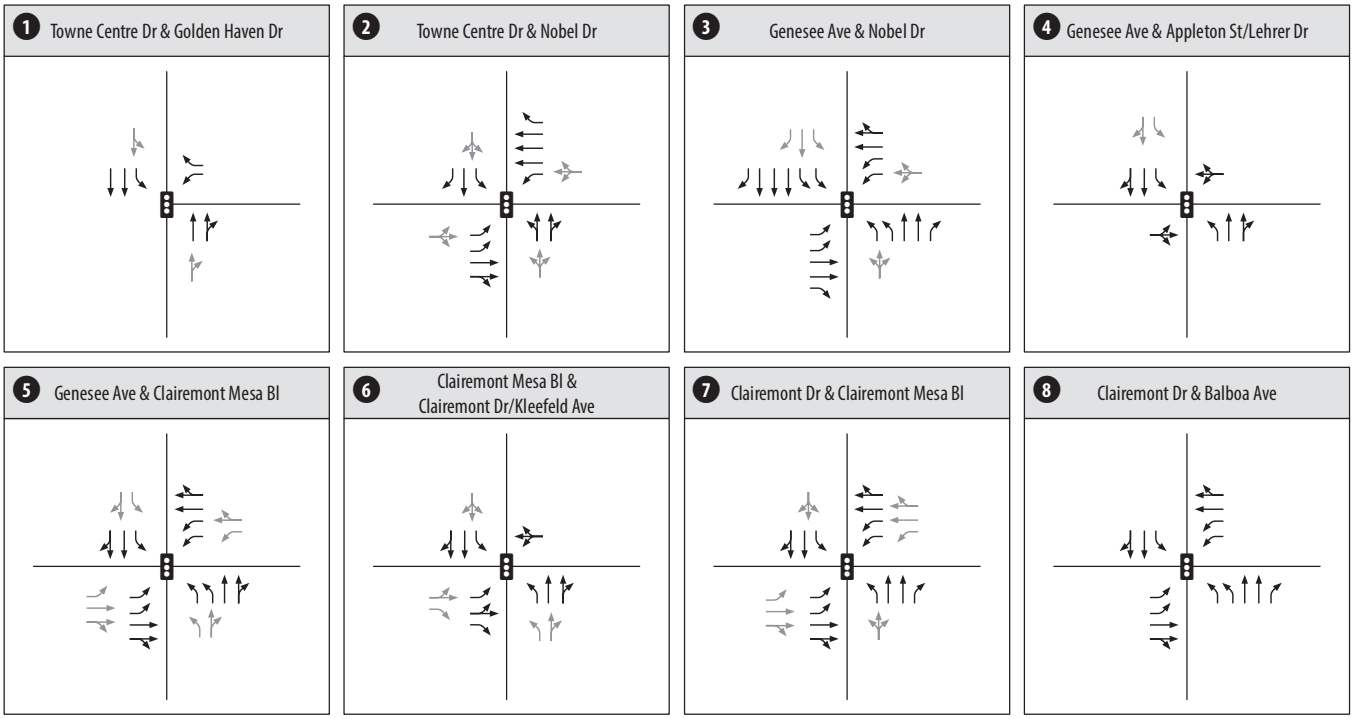
Figure 5-6
Intersection Traffic Volumes - Near-Term 2022 Base Conditions (Morena Pipelines) (Intersections 1-8)



Legend

- X Study Intersection
- Lane Geometry
- Lane Geometry during Construction
- Signalized Intersection

*Names of North-South cross-streets always listed first

NORTH

NOT TO SCALE

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Figure 5-7
Intersection Geometrics - Near-Term Year 2022 Base Plus Construction
Traffic Conditions (Morena Pipelines) (Intersections 1-8)

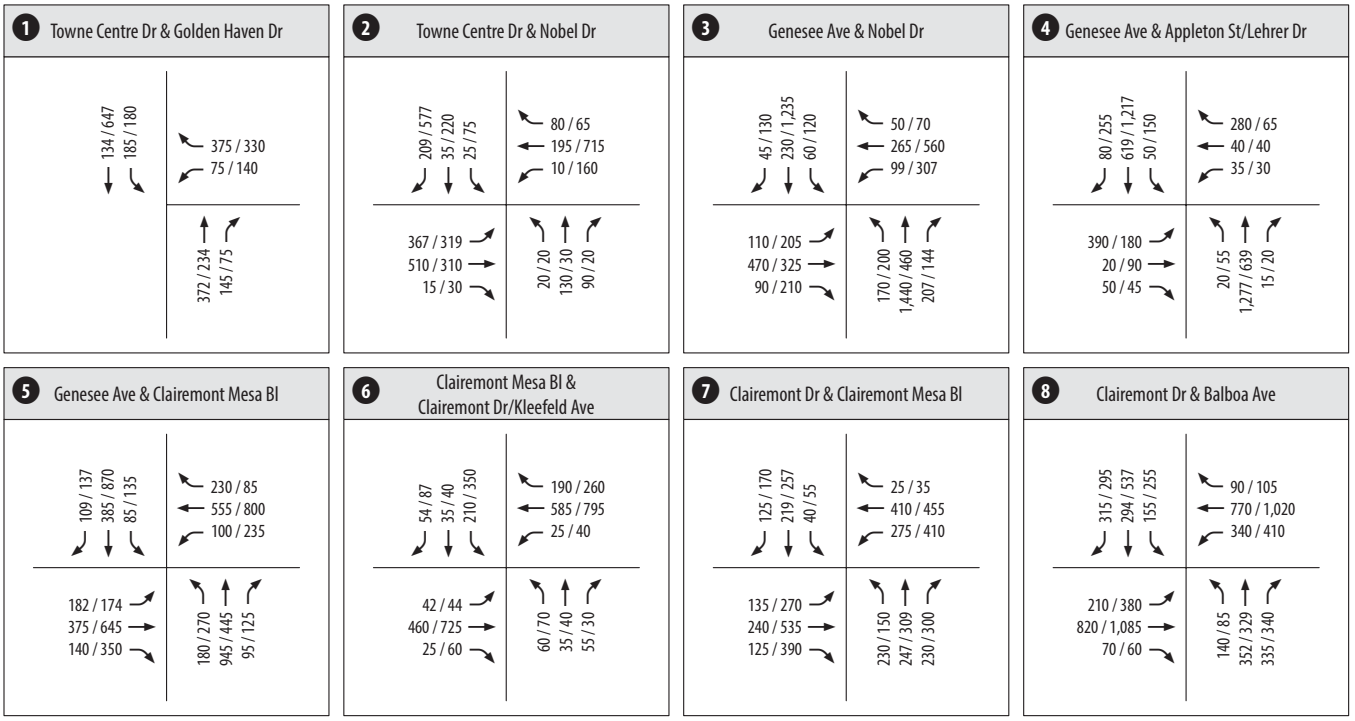

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Figure 5-8
Intersection Traffic Volumes - Near-Term 2022 Base Plus Construction Traffic Conditions (Morena Pipelines) (Intersections 1-8)

As shown in the Table 5.6, the following six (6) out of the eight (8) study intersections are projected to operate at substandard LOS E or F under Near-Term Year 2022 Base conditions:

- Genesee Avenue & Nobel Drive – LOS E during the AM peak hour;
- Genesee Avenue & Appleton Street/Lehrer Drive – LOS E during the AM peak hour;
- Genesee Avenue & Clairemont Mesa Boulevard – LOS E during the PM peak hour;
- Clairemont Mesa Boulevard & Clairemont Drive/Kleefeld Avenue – LOS F during both the AM and PM peak hour;
- Clairemont Drive & Clairemont Mesa Boulevard – LOS E during both the AM and PM peak hour;
- Clairemont Drive & Balboa Avenue – LOS E during the PM peak hour; and

Under Near-Term Year 2022 Base Plus Construction Traffic Conditions, seven (7) out of the eight (8) study intersections are projected to operate at substandard LOS E or F:

- Towne Centre Drive & Nobel Drive – LOS F during the PM peak hour;
- Genesee Avenue & Nobel Drive – LOS F during both the AM and PM peak hour;
- Genesee Avenue & Appleton Street/Lehrer Drive – LOS E during the AM peak hour and LOS F during the PM peak hour;
- Genesee Avenue & Clairemont Mesa Boulevard – LOS F during both the AM and PM peak hour;
- Clairemont Mesa Boulevard & Clairemont Drive/Kleefeld Avenue – LOS F during both the AM and PM peak hour;
- Clairemont Drive & Clairemont Mesa Boulevard – LOS F during both the AM and PM peak hour; and
- Clairemont Drive & Balboa Avenue – LOS E during the PM peak hour;

Impact Significance and Mitigation

Roadway Segments

Based upon the significance criteria presented in Section 2.4 of this report, the construction traffic would result in significant traffic impact to thirteen (13) of studied roadway segments along the Morena Pipelines:

- Executive Drive, between end of cul-de-sac and Judicial Drive – LOS E;
- Towne Centre Drive, between La Jolla Village Drive and Golden Haven Drive – LOS F;
- Towne Centre Drive, between Golden Haven Drive and Nobel Drive – LOS F;
- Nobel Drive, between Towne Centre Drive and Genesee Avenue – LOS F;
- Genesee Avenue, between Governor Drive and SR-52 WB Ramps – LOS F;
- Genesee Avenue, between Appleton Street and Clairemont Mesa Boulevard – LOS F;
- Clairemont Mesa Boulevard, between Genesee Avenue and Clairemont Drive – LOS F;
- Clairemont Drive, between Clairemont Mesa Boulevard and Lakehurst Avenue – LOS F;
- Clairemont Drive, between Lakehurst Avenue and Clairemont Mesa Boulevard – LOS F;
- Clairemont Drive, between Clairemont Mesa Boulevard and Balboa Avenue – LOS F;
- Clairemont Drive, between Balboa Avenue and Rappahannock Avenue – LOS F;
- Clairemont Drive, between Rappahannock Avenue and Iroquois Avenue – LOS F; and
- Clairemont Drive, between Burgener Drive and Denver Street – LOS F.

Table 5.7 displays the projected amount of days for which construction would take place at the identified impacted roadways above as well as on roadways adjacent to residential areas. Nighttime work hours may be modified/reduced or work may be performed during weekends on roadways near residential areas.

TABLE 5.7
SUMMARY OF IMPACT DURATION – MORENA PIPELINES

Roadway	Segment	Length (ft)	Approximate Duration of Impact (days)
Executive Drive	End of cul-de-sac and Judicial Drive	1,000	13
	Judicial Drive and Towne Centre Drive	550	7
Towne Centre Drive	Executive Drive and La Jolla Village Drive	880	12
	La Jolla Village Drive and Golden Haven Drive	1,300	26[1]
	Golden Haven Drive and Nobel Drive	1,700	34[1]
Nobel Drive	Towne Center Drive and Genesee Avenue	1,650	33[1]

TABLE 5.7
SUMMARY OF IMPACT DURATION – MORENA PIPELINES

Roadway	Segment	Length (ft)	Approximate Duration of Impact (days)
Genesee Avenue	Nobel Drive and Governor Drive	5,320	71
	Governor Drive and SR-52 WB Ramps	2,112	28
	SR-52 EB Ramps and Appleton Street	2,855	38
	Appleton Street and Clairemont Mesa Blvd	1,166	19[2]
Clairemont Mesa Boulevard	Genesee Avenue and Clairemont Drive	2,112	28
Clairemont Drive	Clairemont Mesa Boulevard and Lakehurst Avenue	2,112	28
	Lakehurst Avenue and Clairemont Mesa Boulevard	1,056	14
	Clairemont Mesa Boulevard and Balboa Avenue	6,336	85
	Balboa Avenue and Rappahannock Avenue	2,112	28
	Rappahannock Avenue and Iroquois Avenue	3,696	49
	Iroquois Avenue and Burgener Blvd	1,160	15
	Burgener Blvd and Denver Street	3,168	42
Denver Street	Clairemont Drive and Ingulf Street	330	4
Ingulft Street	Denver Street and West Morena Boulevard	660	9
West Morena Boulevard	Ingulf Street to Littlefield Street	3,370	45
	Littlefield Street and Morena Boulevard	1,970	26
	Morena Boulevard and Tecolote Road Overpass	1,660	22
	Tecolote Road Overpass and Vega Street	300	4
	Vega Street and Morena Boulevard	1,700	23

Source: Chen Ryan Associates; June 2017.

Notes:
[1] Duration of Impact calculated based on 50 LF of pipeline installation per day due to restricted working hours.
[2] Duration of Impact calculated based on 60 LF of pipeline installation per day due to restricted working hours.

The duration of the impacts is based on the anticipated 75 LF of pipeline installation per day. It is important to note that these impacts would not occur concurrently, but rather at different points in time depending on the location of pipeline construction[1], and the impacted area at any one time would encompass the work area as well as the traffic control setup length. Therefore, the project impacts shown above would be temporary in nature and no mitigation measures are required.

[1]After the pipeline installation is complete at the first 75 LF, the next 75 LF of the roadway segment would to be impacted, etc. A roadway segment that measures 750 feet in length, at 75 feet of installation per day it is estimated that it would take approximately 10 days to complete.

Intersections

Based upon the significance criteria presented in Section 2.4 of this report, the construction traffic would result in significant traffic impact to six (6) intersections along the Morena Pipelines:

- Towne Centre Drive & Nobel Drive – LOS F during the PM peak hour;
- Genesee Avenue & Nobel Drive – LOS F during both the AM and PM peak hour;
- Genesee Avenue & Appleton Street/Lehrer Drive – LOS F during the PM peak hour;
- Genesee Avenue & Clairemont Mesa Boulevard – LOS F during both the AM and PM peak hour;
- Clairemont Mesa Boulevard & Clairemont Drive/Kleefeld Avenue – LOS F during both the AM and PM peak hour; and
- Clairemont Drive & Clairemont Mesa Boulevard – LOS F during both the AM and PM peak hour.

Since project construction conditions are temporary in nature, no physical mitigation measures are recommended. Instead, it is recommended that a Transportation Demand Management (TDM) Plan is developed to limit the number of construction worker trips that travel through the impacted intersection during peak periods. The following lists a series of TDM strategies that would be appropriate during project construction:

- Implementation of a ride-sharing program to encourage carpooling amongst workers.
- Adjusting work schedules so workers do not access the site during the peak hours.
- Provide off-site parking locations for workers outside of the area with shuttle services to bring them on-site.
- Provide subsidized transit passes for construction workers

In order to help reduce the temporary transportation and parking related impacts associated with project construction, it is recommended that the project applicant develop a TDM plan utilizing one or multiple of the strategies listed above during the construction of the proposed project.

6.0 Findings

North City Project Operational Traffic Impacts – New NCPWF & NCWRP Expansion

The following transportation related impact were identified:

Direct Impact

The traffic generated by the proposed project is not anticipated to create a direct impact at any of the analyzed roadway segments.

Cumulative Impact

The traffic generated by the proposed project is not anticipated to create a direct impact at any of the analyzed roadway segments.

Construction Traffic Impacts – North City Pipeline

Transportation related impact was identified on Eastgate Mall, between the NCPWF & NCWRP driveway and Miramar Road. However, this impact is temporary in nature and since the construction will occur during nighttime when there is only minimal amount traffic on the road, it is determined that this roadway should function at reasonable operations even with the lane closure. Therefore, no mitigation measure is recommended.

Construction Traffic Impacts – San Vicente Pipeline

Transportation related impact was identified on Eastgate Mall, between the NCPWF & NCWRP driveway and Miramar Road, and Willow Road, between SR-67 and Moreno Avenue. However, these impacts are temporary in nature and since the construction will occur during nighttime when there is only minimal amount traffic on the road, it is determined that these roadways should function at reasonable operations even with the lane closure. Therefore, no mitigation measure is recommended.

Construction Traffic Impacts – Morena Pipelines

Transportation related impacts were identified on Executive Drive, Towne Centre Drive, Nobel Drive, Genesee Avenue, Clairemont Mesa Boulevard, and Clairemont Drive. However, since project construction conditions are temporary in nature, no physical mitigation measures are recommended. Instead, it is recommended that a Transportation Demand Management (TDM) Plan is developed to limit the number of construction worker trips that travel through the impacted intersection during peak periods. The following lists a series of TDM strategies that would be appropriate during project construction:

- *Implementation of a ride-sharing program to encourage carpooling amongst workers.*
- *Adjusting work schedules so workers do not access the site during the peak hours.*
- *Provide off-site parking locations for workers outside of the area with shuttle services to bring them on-site.*
- *Provide subsidized transit passes for construction workers*

In order to help reduce the temporary transportation and parking related impacts associated with project construction, it is recommended that the project applicant develop a TDM plan utilizing one or multiple of the strategies listed above during the construction of the proposed project.