Full Traffic Impact Study
Tule Wind Project

Note:
The Tule Wind Project Full Traffic Impact Study (LLG 2010) was used by Dudek to identify traffic conditions on surrounding roadways from which to assess the anticipated traffic impacts of the Tule Wind Project. Traffic impact calculations included in the Full Traffic Impact Study are included in the EIR/EIS and were used to analyze the traffic impacts of the Tule Wind Project. In addition, the Full Traffic Impact Study was reviewed to gather information regarding the existing setting and the policies and regulations applicable to the Tule Wind Project.

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FULL TRAFFIC IMPACT STUDY

TULE WIND PROJECT

MUP 09-019

County of San Diego, California
March 26, 2010

Prepared for:

The County of San Diego

On behalf of:
Pacific Wind Development, LLC

LLG Ref. 3-09-1935

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EXECUTIVE SUMMARY

Linscott, Law & Greenspan Engineers (LLG) has been retained to assess the traffic impacts associated with the proposed Tule Wind Project in the County of San Diego. Iberdola Renewables, Inc. (IBR), is proposing to construct and operate the Tule Wind Project. The proposed project includes the construction of wind turbines capable of generating up to 200 megawatts of electricity. The project site is located in the McCain Valley in the In-Ko-Pah Mountains. It is north of U.S. Interstate-8 in eastern San Diego County. The project access is via Crestwood Road, Ribbonwood Road and McCain Valley Road at Interstate 8.

A Full Traffic Impact Study was conducted in accordance with the *County of San Diego Traffic Impact Study Guidelines (June 30, 2009)*. The following scenarios are evaluated in this report:

- Existing
- Existing + Project
- Existing + Project + Cumulative Projects

Existing weekday AM/PM peak hour turning movement counts and average daily traffic (ADT) counts were commissioned by LLG Engineers and conducted on December 16, 2009 (Tuesday). Supplemental traffic counts were also conducted on March 24, 2010 (Tuesday).

Construction will consist of site preparation (e.g. grading, earthwork) and assembly of the turbine units and related infrastructure. The project construction is expected to occur over a 9- to 12-month period. A typical busy day during the construction period is calculated to generate a maximum of 1,250 ADT. With the addition of project and cumulative project traffic, all the study area intersections and roadway segments are calculated to operate at LOS B or better. Based on the County of San Diego significance criteria, the proposed project will have no significant direct or cumulative impacts. Therefore no mitigation measures are required or recommended.

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FULL TRAFFIC IMPACT STUDY

TULE WIND PROJECT

County of San Diego, California
March 26, 2010

1.0 INTRODUCTION

1.1 Purpose of the Report

Linscott, Law & Greenspan Engineers (LLG) has been retained to assess the traffic impacts associated with the proposed Tule Wind Project in the County of San Diego. Included in this Full Traffic Impact Study are the following.

- Project Description
- Significance Criteria
- Existing Conditions Discussion
- Analysis Approach and Methodology
- Construction Traffic Trip Generation/Distribution/Assignment
- Existing + Project Analyses
- Cumulative Projects Discussion
- Existing + Project + Cumulative Projects Analyses
- Significance of Impacts and Mitigation Measures

1.2 Project Description

Iberdrola Renewables is proposing to construct and operate the Tule Wind Project. The proposed project will consist of wind turbines, an overhead and underground electrical collection system and transmission line, a project collector substation, an operations and maintenance building, transportation haul routes and access roads, a concrete batch plant, a parking area, laydown (staging) areas, and meteorological towers. The majority of the project would be built on federal Bureau of Land Management (BLM) lands although turbines and other project components are also proposed on lands owned by the Ewiiaapaayp Reservation, Manzanita and Campo Reservation (access only), as well as lands owned by the California State Land Commission (CSLC) and privately-owned lands under the jurisdiction of the County of San Diego.

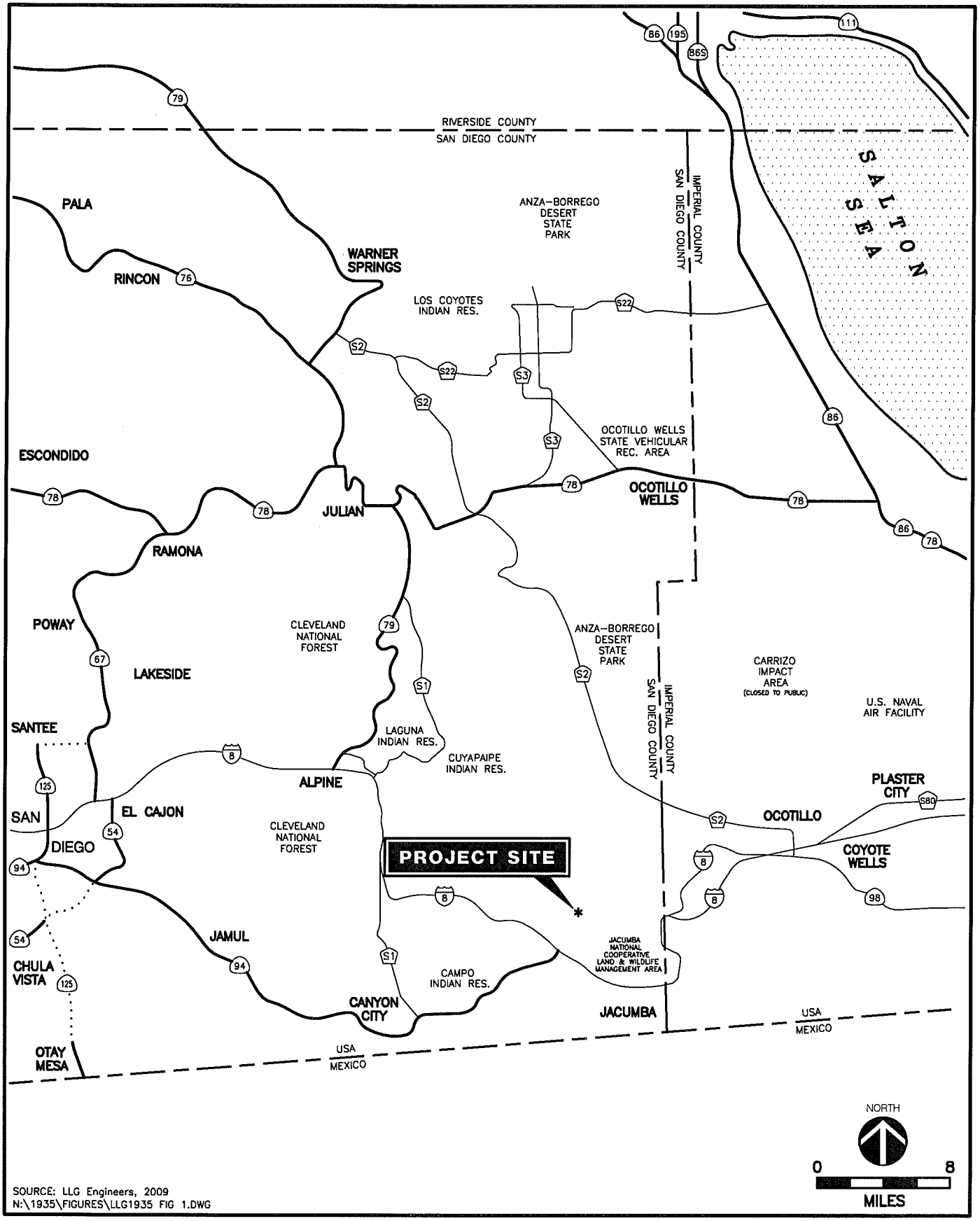
The Tule Wind Project will consist of the following project components:

- Up to 134 wind turbines, ranging in size between 328 and 492 feet in height, to produce 200 MW of electricity;
- A 34.5 kilovolt (kV) overhead and underground collector cable system linking each turbine to the next and to the project collector substation.
- A 138 kV overhead transmission line will run south from the project collector substation to be interconnected with the SDG&E proposed Rebuilt Boulevard Substation;

- A 5-acre collector substation site and 5-acre operation and maintenance (O&M) building site;
- Access roads between turbines, as well as improvements to existing roadways and new roadways to accommodate construction and delivery of equipment;
- A temporary batch plant for construction located on a 5 acre area;
- A 10-acre parking area;
- Nineteen 2-acre temporary laydown areas; and
- Two permanent meteorological towers.

The maximum build-out of the project allows for up to 134 1.5 MW turbines or a minimum of 67 3.0 MW turbines. Turbines with a smaller output can be spaced closer together, whereas turbines with a larger output require larger spacing. The turbine locations include 97 wind turbines on BLM land, 17 turbines on Tribal lands, 7 turbines on State lands, and 13 turbines on private land.

Figure 1 shows the vicinity map and ***Figure 2*** shows the project area map. ***Figure 3*** shows the project extents map with the proposed turbine locations.



SOURCE: LLG Engineers, 2009
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Figure 1

Vicinity Map

TULE WIND PROJECT

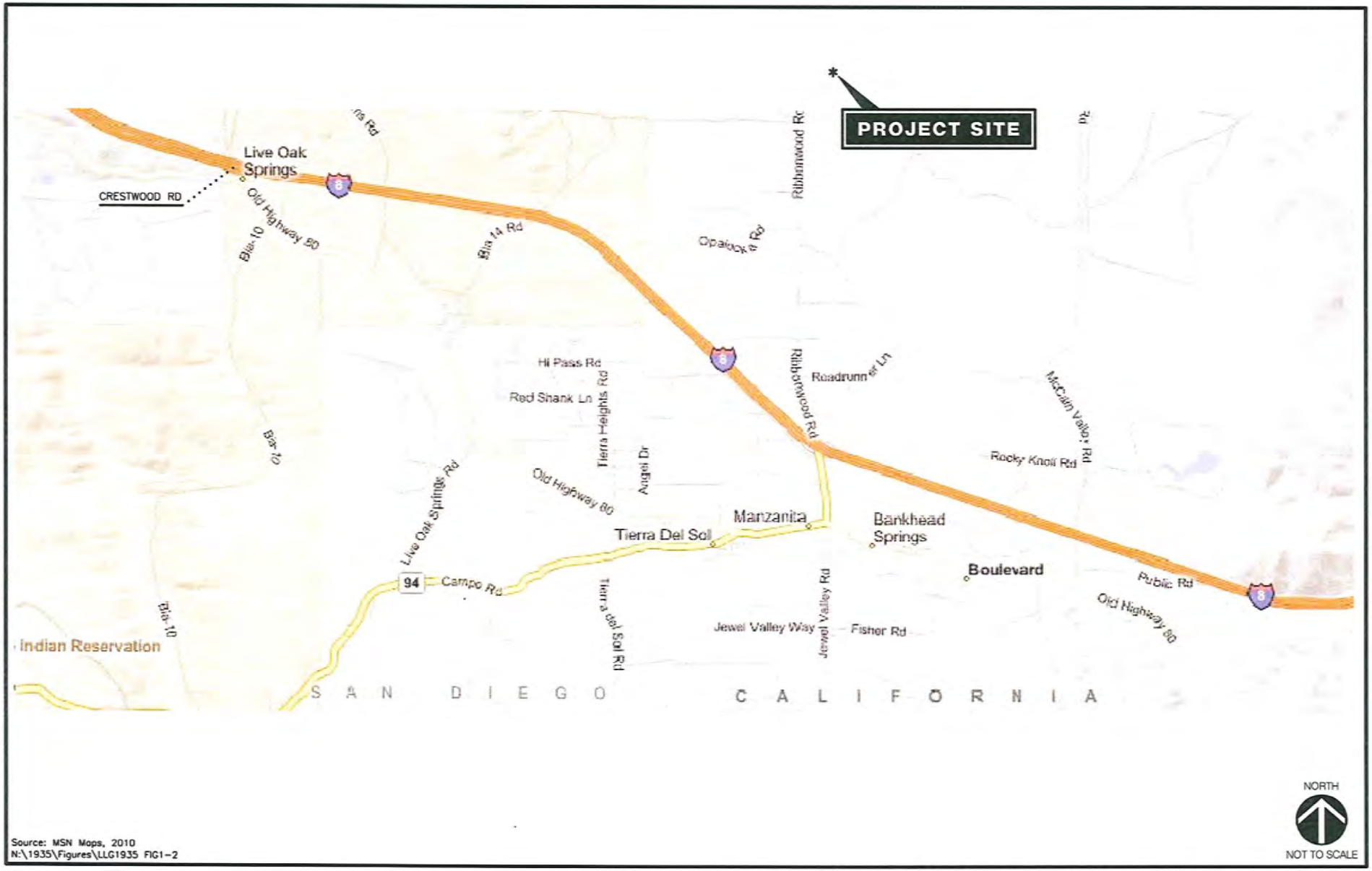

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Figure 2

Project Area Map

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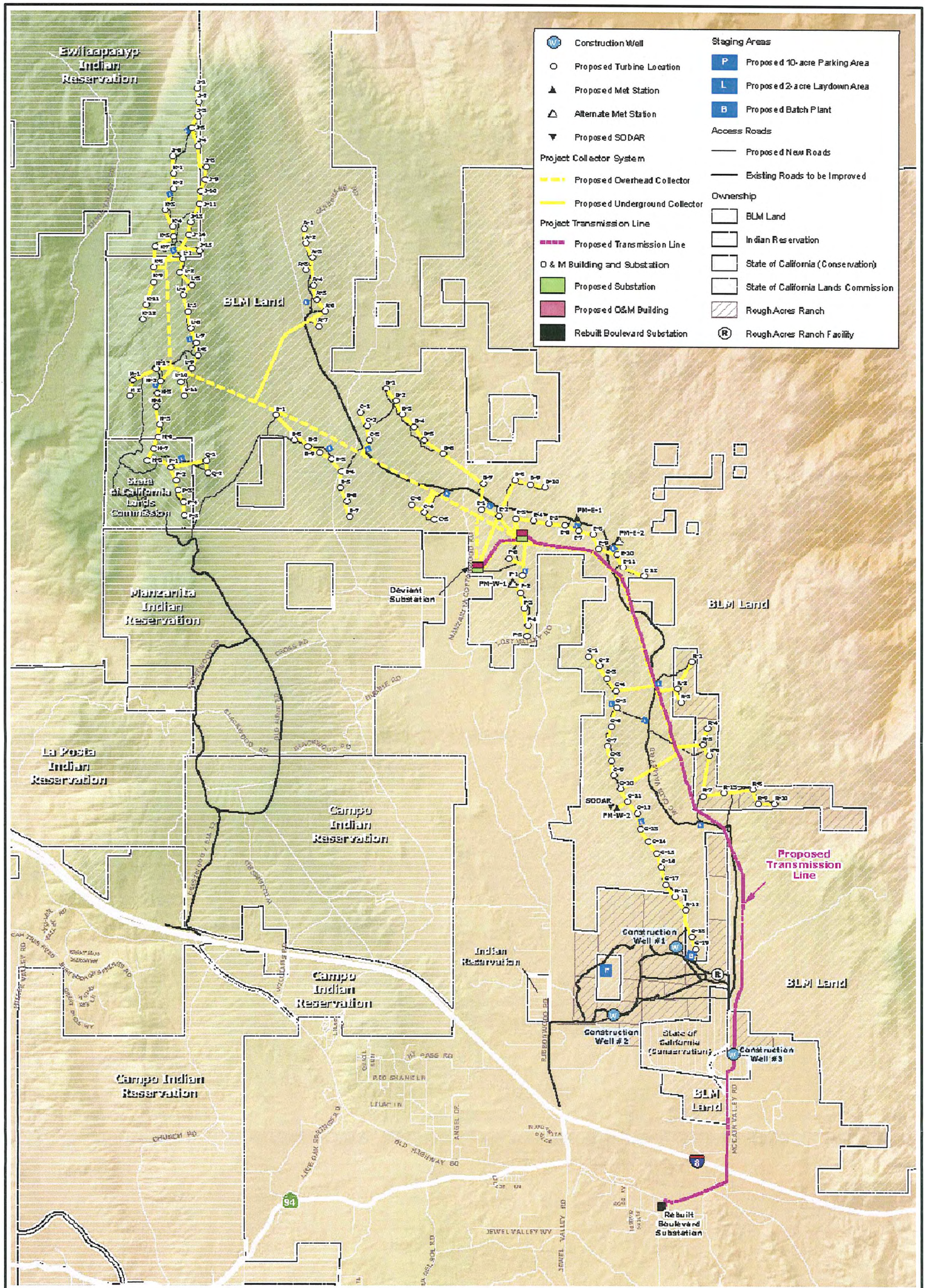

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Figure 3

Project Extents Map

TULE WIND PROJECT

1.3 Summary of County of San Diego Significance Criteria

The following criterion was utilized to evaluate potential significant impacts, based on the County's published *Guidelines for Determining Significance (June 30, 2009).*

1.3.1 *Road Segments*

Pursuant to the County's *General Plan Public Facilities Element (PFE)*, new development must provide improvements or other measures to mitigate traffic impacts to avoid:

a. Reduction in Level of Service (LOS) below "C" for on-site Circulation Element roads;

b. Reduction in LOS below "D" for off-site and on-site abutting Circulation Element roads; and

c. "Significantly impacting congestion" on roads that operate at LOS "E" or "F". If impacts cannot be mitigated, the project will be denied unless a statement of overriding findings is made pursuant to the State CEQA Guidelines. The PFE, however, does not include specific guidelines/thresholds for determining the amount of additional traffic that would "significantly impact congestion" on such roads, as that phrase is used in item (c) above.

The County has created the following guidelines to evaluate likely traffic impacts of a proposed project for road segments and intersections serving that project site, for purposes of determining whether the development would "significantly impact congestion" on the referenced LOS E and F roads. The guidelines are summarized in ***Table 1***. The thresholds in *Table 1* are based upon average operating conditions on County roadways. It should be noted that these thresholds only establish general guidelines, and that the specific project location must be taken into account in conducting an analysis of traffic impact from new development.

TABLE 1
MEASURES OF SIGNIFICANT PROJECT IMPACTS TO CONGESTION ON ROAD SEGMENTS
ALLOWABLE INCREASES ON CONGESTED ROAD SEGMENTS

Level of Service	Two-Lane Road	Four-Lane Road	Six-Lane Road
LOS E	200 ADT	400 ADT	600 ADT
LOS F	100 ADT	200 ADT	300 ADT

General Notes:

1. By adding proposed project trips to all other trips from a list of projects, this same table must be used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes any trips must mitigate a share of the cumulative impacts.
2. The County may also determine impacts have occurred on roads even when a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.
3. ADT – Average Daily Traffic

On-site Circulation Element Roads—PFE, Transportation, Policy 1.1 states that "new development shall provide needed roadway expansion and improvements on-site to meet demand created by the development, and to maintain a Level of Service C on Circulation Element Roads during peak traffic hours". Pursuant to this policy, a significant traffic impact would result if:

- The additional or redistributed average daily traffic (ADT) generated by the proposed land development project will cause on-site Circulation Element Roads to operate below LOS C during peak traffic hours.

Off-Site Circulation Element Roads—PFE, Transportation, Policy 1.1 also states that "new development shall provide needed roadway expansion and improvements off-site to meet demand created by the development, and to maintain a Level of Service D on Circulation Element Roads." "New development that would significantly impact congestion on roads operating at LOS E or F, either currently or as a result of the project, will be denied unless improvements are scheduled to improve the LOS to D or better or appropriate mitigation is provided." The PFE, however, does not specify what would significantly impact congestion or establish criteria for evaluating when increased traffic volumes would significantly impact congestion. The following significance guidelines provided are the County's preferred method for evaluating whether or not increased traffic volumes generated or redistributed from a proposed project will "significantly impact congestion" on County roads, operating at LOS E or F, either currently or as a result of the project.

Traffic volume increases from projects that result in one or more of the following criteria will have a significant traffic impact on a road segment, unless specific facts show that there are other circumstances that mitigate or avoid such impacts:

- The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a Circulation Element Road or State Highway currently operating at LOS E or LOS F, or will cause a Circulation Element Road or State Highway to operate at a LOS E or LOS F as a result of the proposed project as identified in *Table 1*, or
- The additional or redistributed ADT generated by the proposed project will cause a residential street to exceed its design capacity.

1.3.2 *Intersections*

This section provides guidance for evaluating adverse environmental effects a project may have on signalized and unsignalized intersections.

Signalized Intersections—Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on a signalized intersection:

- The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a signalized intersection currently operating at LOS E or LOS F, or will cause a signalized intersection to operate at a LOS E or LOS F as identified in ***Table 2***.

Unsignalized Intersections—The operating parameters and conditions for unsignalized intersections differ dramatically from those of signalized intersections. Very small volume increases on one leg or

turn and/or through movement of an unsignalized intersection can substantially affect the calculated delay for the entire intersection. Significance criteria for unsignalized intersections are based upon a minimum number of trips added to a critical movement at an unsignalized intersection.

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on an unsignalized intersection:

- The additional or redistributed ADT generated by the proposed project will add 20 or more peak hour trips to a critical movement of an unsignalized intersection, and cause an unsignalized intersection to operate below LOS D, or
- The additional or redistributed ADT generated by the proposed project will add 20 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS E, or
- The additional or redistributed ADT generated by the proposed project will add 5 or more peak hour trips to a critical movement of an unsignalized intersection, and cause the unsignalized intersection to operate at LOS F, or
- The additional or redistributed ADT generated by the proposed project will add 5 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS F, or
- Based upon an evaluation of existing accident rates, the signal priority list, intersection geometrics, proximity of adjacent driveways, sight distance or other factors, it is found that the generation rate is less than those specified above, and would significantly impact the operations of the intersection.

TABLE 2
MEASURES OF SIGNIFICANT PROJECT IMPACTS TO CONGESTION ON INTERSECTIONS
ALLOWABLE INCREASES ON CONGESTED INTERSECTIONS

Level of service	Signalized	Unsignalized
LOS E	Delay of 2 seconds	20 peak hour trips on a critical movement
LOS F	Delay of 1 second, or 5 peak hour trips on a critical movement	5 peak hour trips on a critical movement

General Notes:

1. A critical movement is one that is experiencing excessive queues.
2. By adding proposed project trips to all other trips from a list of projects, these same tables are used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes any trips must mitigate a share of the cumulative impacts.
3. The County may also determine impacts have occurred on roads even when a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.

1.4 Summary of Regional Congestion Management Program Requirements

The region's published *Final 2008 Congestion Management Program Update (CMP)* is intended to link land use, transportation and air quality through level of service performance. The CMP requires

an Enhanced CEQA Review for projects that are expected to generate more than 2,400 ADT or more than 200 peak hour trips. As the project trip generation does not exceed the CMP thresholds, a CMP analysis was not conducted.

2.0 EXISTING CONDITIONS

The following intersections and segments are included in the study area as they are expected to carry the majority of the construction traffic.

Intersections

1. Crestwood Road/ I-8 WB ramps (u)
2. Crestwood Road/ I-8 EB ramps (u)
3. Ribbonwood Road/ I-8 WB ramps (u)
4. Ribbonwood Road/ I-8 EB ramps (u)
5. Ribbonwood Road/ Old Highway 80 (u)
6. McCain Valley Road/ Old Highway 80 (u)

(u) – Unsignalized intersection

Street Segments

Crestwood Road

- North of I-8

Ribbonwood Road

- North of I-8
- I-8 to Old Highway 80

McCain Valley Road

- Old Highway 80

Old Highway 80

- Ribbonwood Road to McCain Valley Road

2.1 Existing Transportation Conditions

This section describes the existing study area street system including a description of the existing peak hour intersection volumes with Level of Service (LOS) and existing daily roadway volumes with LOS,

Interstate 8 (I-8) is currently built as a 4-lane east-west freeway connecting the San Diego area to the California-Arizona border and beyond. It provides 2-lanes in each direction in the project area. The posted speed limit is 70 miles per hour (mph). In the project vicinity, a local interchange is provided at Ribbonwood Road.

Crestwood Road is an unclassified roadway on the *Mountain Empire Mobility Network* and currently built as a 2-lane roadway in the project area. South of Interstate 8, Crestwood Road turns into Old Highway 80. Parking is prohibited on Crestwood Road.

Ribbonwood Road is currently classified and built as a 2-lane Rural Collector roadway in the project area. According to the County of San Diego GP Update *Mountain Empire Mobility Network*, Ribbonwood Road is classified as a *Light Collector with Intermittent Turn Lanes* from Interstate 8 to Old Highway 80. The posted speed limit on Ribbonwood Road between I-8 and Old Highway 80 is 55 mph. Shoulders are provided on Ribbonwood Road between I-8 and Old Highway 80.

McCain Valley Road is an unclassified roadway on the *Mountain Empire Mobility Network* and currently built as a 2-lane roadway in the project area. The posted speed limit on McCain Valley Road is 35 mph.

Old Highway 80 is currently built as a 2-lane roadway in the project area. According to the County of San Diego GP Update *Mountain Empire Mobility Network*, Old Highway 80 is classified as a *Light Collector with Improvement Options* from SR 94 to Jacumba Street. Shoulders are provided on both sides of the road.

Figure 4 depicts the existing traffic conditions for the roadway segments and study area intersections.

2.1.1 *Existing Traffic Volumes*

Existing weekday AM /PM peak hour turning movement counts and average daily traffic (ADT) counts were commissioned by LLG Engineers and conducted on Tuesday, December 16, 2009 and Tuesday, March 24, 2010. ***Appendix A*** contains the manual count sheets. ***Figure 5*** shows the existing peak hour intersection turning movements and ADT volumes.

2.1.2 *Existing Intersection Operations*

Table 3 summarizes the existing intersections level of service. As seen in *Table 3*, all the study area intersections are calculated to currently operate at LOS B or better during the AM and PM peak hours.

Appendix B contains the existing intersection analysis worksheets.

2.1.3 *Existing Street Segment Operations*

Table 4 summarizes the existing roadway segment operations. As seen in *Table 4*, all the study area roadway segments are calculated to currently operate at LOS A on a daily basis.

TABLE 3
EXISTING INTERSECTION OPERATIONS

Intersection	Traffic Control	Minor Street[d]	Peak Hour	Existing	
				Delay[a]	LOS[b]
1. Crestwood Road/ I-8 WB ramps	TWSC[c]	WBL	AM	10.2	B
			PM	10.2	B
2. Crestwood Road/ I-8 EB ramps	TWSC	EBL	AM	9.0	A
			PM	9.2	A
3. Ribbonwood Road/ I-8 WB ramps	TWSC	WBL	AM	9.0	A
			PM	9.0	A
4. Ribbonwood Road/ I-8 EB ramps	TWSC	EBL	AM	8.6	A
			PM	8.6	A
5. Ribbonwood Road/ Old Highway 80	TWSC	NB/SB	AM	9.7	A
			PM	9.6	A
6. Ribbonwood Road/ McCain Valley Road	TWSC	SB	AM	8.5	A
			PM	8.7	A

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. TWSC – Two-Way Stop Controlled Intersection.
d. Worst minor street movement delay reported.

UNSIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 < 10.0	A
10.1 to 15.0	B
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E

TABLE 4
EXISTING STREET SEGMENT OPERATIONS

Roadway Segment	Lanes	Functional Classification	Capacity (LOS E) [a]	Existing ADT [b]	LOS [c]
Crestwood Road					
North of I-8	2	Rural Collector	16,200	1,060	A
Ribbonwood Road					
North of I-8	2	Rural Collector	16,200	270	A
I-8 to Old Highway 80	2	Light Collector	16,200	1,230	A
McCain Valley Road					
North of Old Highway 80	2	Rural Collector	16,200	110	A
Old Highway 80					
Ribbonwood Road to McCain Valley Road	2	Light Collector	16,200	990	A

Footnotes:
a. Capacity based on *County of San Diego Roadway Classification* at LOS E.
b. Average Daily Traffic Volumes.
c. Level of Service.

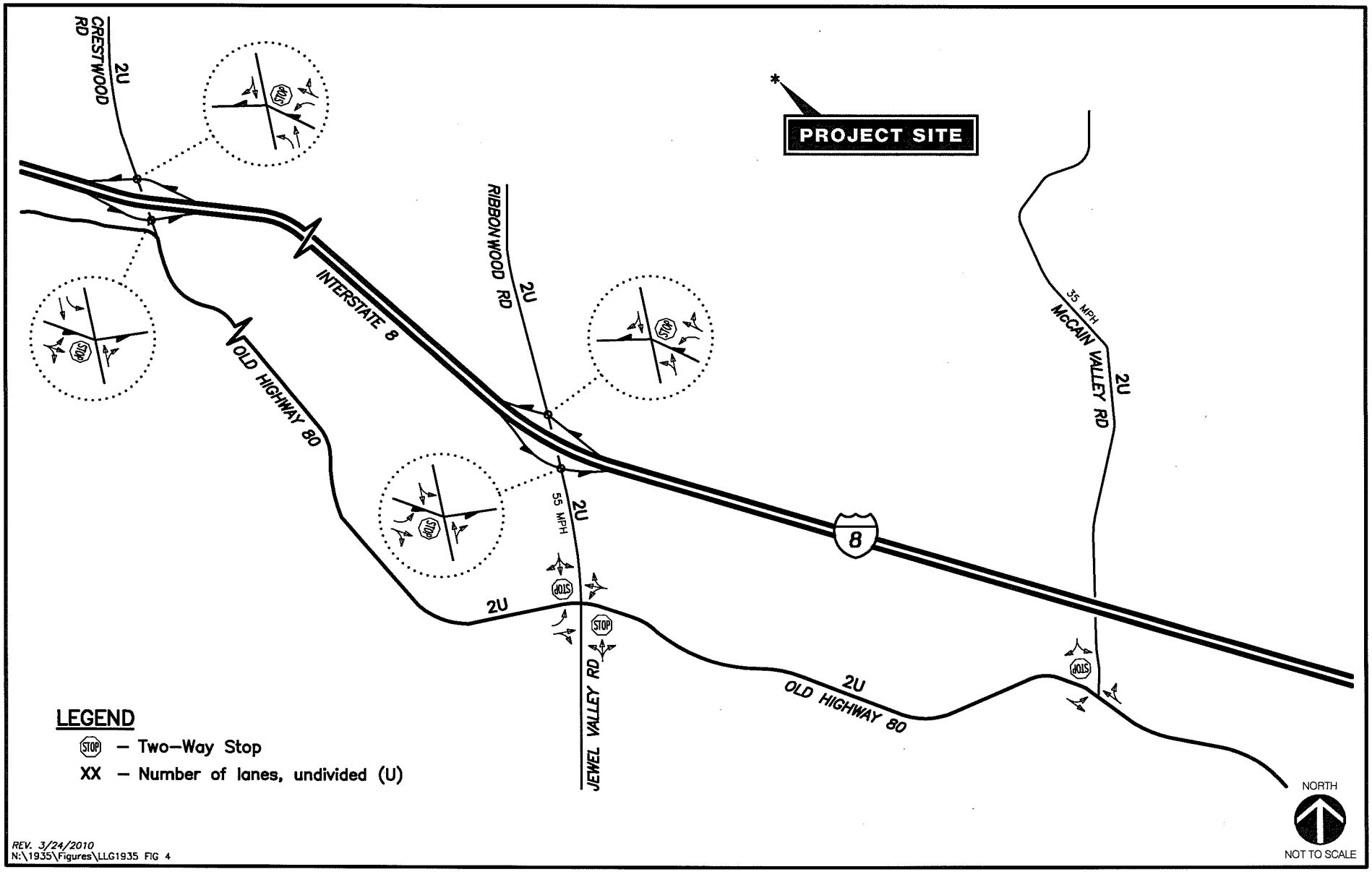

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Figure 4

Existing Conditions Diagram

TULE WIND PROJECT

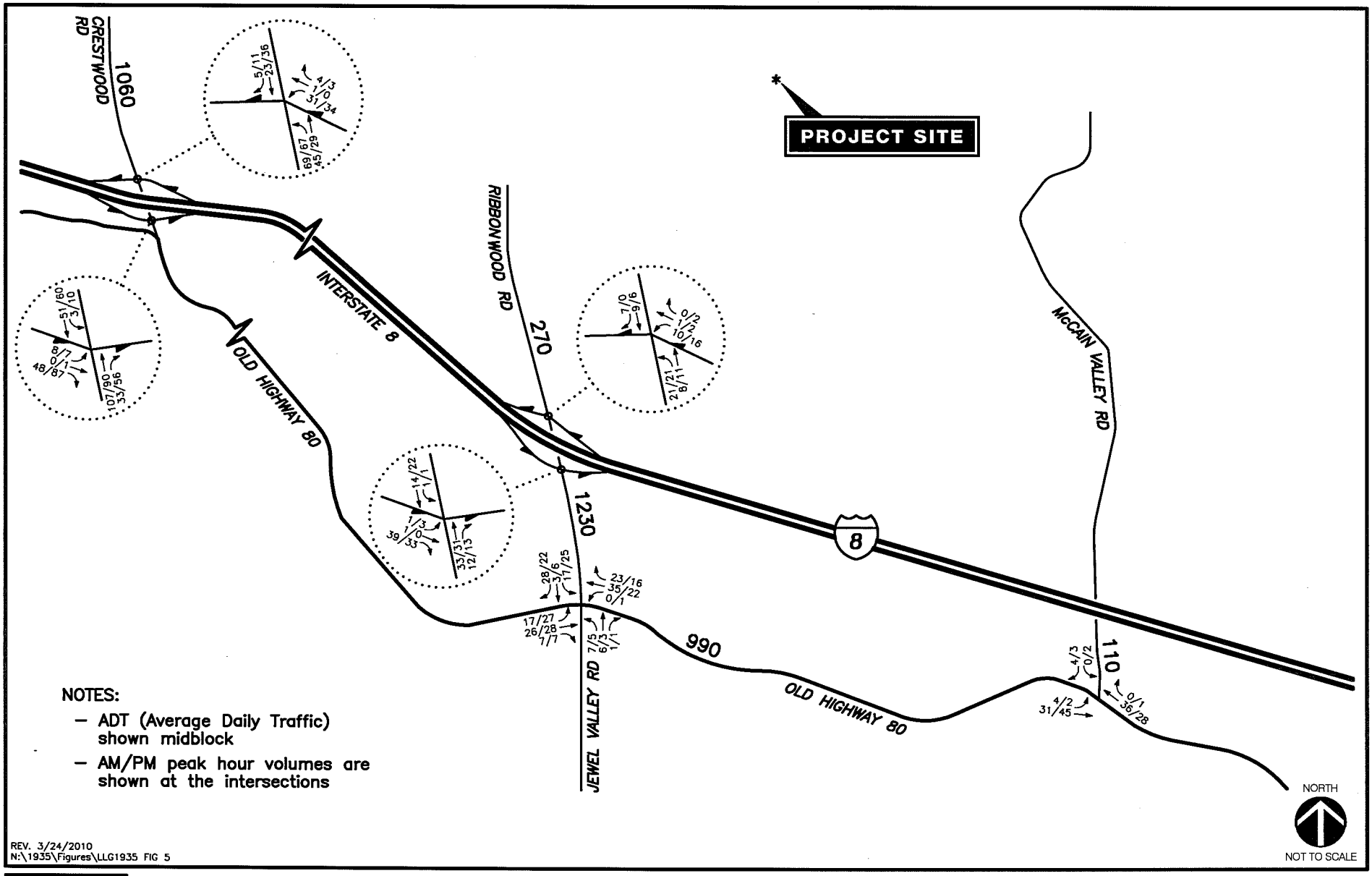

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Figure 5

Existing Traffic Volumes AM/PM Peak Hours & ADT

TULE WIND PROJECT

3.0 PROJECT IMPACT ANALYSIS

3.1 Analysis Methodology

Level of service (LOS) is the term used to denote the different operating conditions which occur on a given roadway segment under various traffic volume loads. It is a qualitative measure used to describe a quantitative analysis taking into account factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Level of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. Level of service designation is reported differently for signalized intersections, unsignalized intersections and roadway segments.

3.1.1 *Intersections*

Unsignalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay and LOS was determined based upon the procedures found in Chapter 17 of the *2000 Highway Capacity Manual (HCM),* with the assistance of *Synchro* (version 7.0) computer software. Unsignalized intersection calculation worksheets and a more detailed explanation of the methodology are attached in ***Appendix C.***

3.1.2 *Street Segments*

Street segment analysis is based upon the comparison of daily traffic volumes (ADTs) to the County of San Diego's *Roadway Classification, Level of Service, and ADT Table*. This table provides segment capacities for different street classifications, based on traffic volumes and roadway characteristics. The County of San Diego's *Roadway Classification, Level of Service, and ADT Table* is attached in *Appendix C.*

3.2 Construction Project Trip Generation

The project trip generation consists of two phases – trips during construction and post-construction operational/maintenance trips. There may be traffic impacts to the adjacent roadway system during the construction period, which include construction worker (employee) trips in passenger vehicles/light trucks, as well as equipment/material delivery trips made in heavy vehicles (trucks). The traffic analyses in this report deals with the trips during the construction period as the day-to-day trips post-construction are expected to be very low. Post-construction, the project is expected to be supported by 5 permanent full-time and 5 part-time employees. Typically, these staff will be present on-site during normal business hours for operational and maintenance purposes.

Project construction is expected to occur over a 9- to 12-month period. A typical day during the peak of the construction period would include approximately 200 trucks, which would help in the transportation of turbines, movement of heavy equipment, transport of material and concrete as well as trips for pump trucks and subcontractor trucks. In addition, approximately 125 construction employees are expected to access the work area.

The construction project trip generation is therefore based on 125 employees and 200 trucks. To estimate the employee trips, LLG assumed that 80% of the employees (approximately 100 employees) would access the work area during the normal commuter peak hours (7 AM to 4 PM). This is considered conservative, as the project trip generation does not account for potential carpooling, which is likely to occur given the remote location of the project.

The project traffic also consists of heavy vehicles (trucks). Based on discussions with the applicant, the assumed percent of ADT to occur during the peak hour for truck traffic is 15% as the truck trips are expected to be equally spread throughout the day, with little more in the peak hours.

According to *Highway Capacity Manual 2000*, a passenger car equivalent (PCE) factor of 2.5 for trucks is used to account for the effects of heavy vehicles in the traffic flow. PCE is defined as the number of passenger cars that are displaced by a single heavy vehicle of a particular type under the prevailing traffic conditions. Heavy vehicles have a greater traffic impact than passenger cars since:

- They are larger than passenger cars, and therefore, occupy more roadway space; and
- Their performance characteristics are generally inferior to passenger cars, leading to the formation of downstream gaps in the traffic stream (especially on upgrades), which cannot always be effectively filled by normal passing maneuvers.

Exhibit 21-8, PCE's on Extended General Highway Segments, (*obtained from "Highway Capacity Manual prepared by Transportation Research Board," dated Year 2000*) summarizes PCE factors for various types of vehicles. The type of terrain in the project area is "rolling". As seen in *Exhibit 21-8*, the passenger car equivalents are 2.5 for trucks on a rolling terrain (See *Appendix C*).

Table 5 tabulates the total project traffic generation. The total project is calculated to generate approximately 1,250 ADT.

TABLE 5
CONSTRUCTION PROJECT TRIP GENERATION

Use	Size	PCE	Daily Trips		AM Peak Hour		PM Peak Hour	
			Rate (In + Out)	Volume (ADT)[a]	Volume		Volume	
					In	Out	In	Out
Employees	125	1.0	2.0 /employee	250	90[b]	10[b]	10	90
Trucks	200	2.5	2.0 /truck	1,000	75[c]	75[c]	75	75
Subtotal	-	-	-	***1,250***	***165***	***85***	***85***	***165***

Footnotes:

a. ADT – Average daily traffic

b. To estimate the employee traffic, it is assumed that 80% of the employee traffic would access the work area during the normal commuter peak hours. The In/Out splits assumed are 90:10 during AM peak hour and 10:90 during the PM peak hour.

c. The assumed percent of ADT to occur during the peak hour for truck traffic is 15 % as the truck trips are expected to be equally spread throughout the day, with little more in the peak hours. The In/Out splits are assumed 50:50 during the AM/PM peak hours.

3.3 Project Trip Distribution

Based on the information provided by the applicant, the construction truck and employee trips are anticipated to originate from the west. Hence 100% of the project traffic was distributed to/from the west.

The local access routes in the project vicinity include Crestwood Road, Ribbonwood Road and McCain Valley Road. The project distribution was deduced based on the number of turbines and their proximity to these access roads. Crestwood Road and Ribbonwood Road interchanges would serve as main access points with Crestwood Road carrying majority of the construction traffic due to its location. Depending on the location of the turbines and construction staging areas, some trips may also use McCain Valley Road. To access McCain Valley Road, trips would use Ribbonwood Road and Old Highway 80.

Figure 6 shows the project traffic distribution and ***Figure 7*** shows the project traffic assignment.

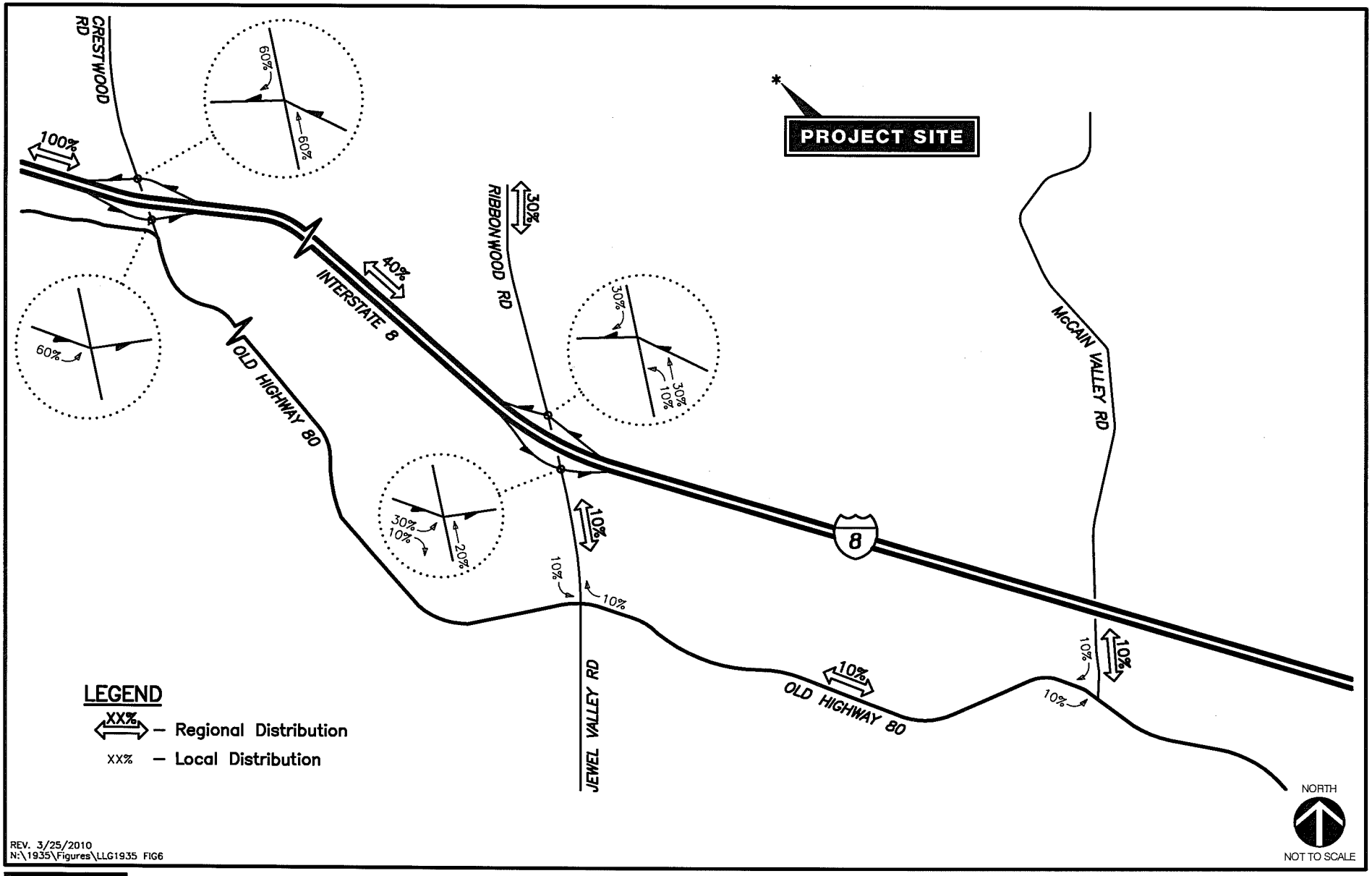

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Figure 6

Project Traffic Distribution

TULE WIND PROJECT

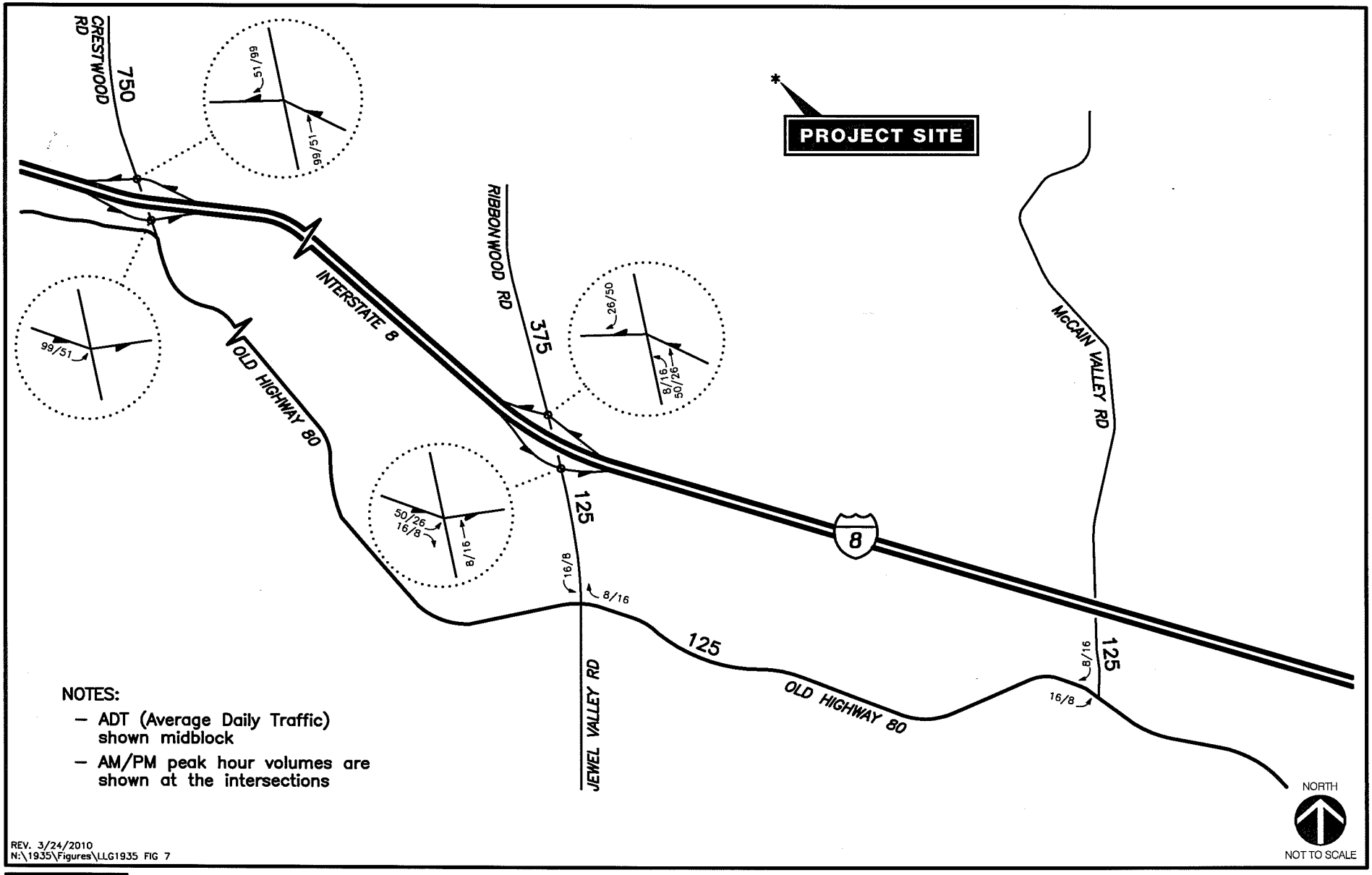

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Figure 7

Project Traffic Assignment AM/PM Peak Hours & ADT

TULE WIND PROJECT

3.4 Existing + Project Conditions

This section summarizes the analyses for the addition of project traffic onto the existing background traffic (existing + project). ***Figure 8*** shows the existing + project traffic volumes.

3.4.1 *Intersection Operations*

Table 6 summarizes the existing + project intersection levels of service. As seen in *Table 6,* with the addition of project traffic, all the study area intersections are calculated to continue to operate at LOS B or better.

Based on the *County of San Diego* significance criteria, the proposed project is calculated to have ***no significant direct impacts*** at the above study area intersections.

Appendix D contains the existing + project intersection analyses worksheets.

3.4.2 *Segment Operations*

Table 7 summarizes the existing + project roadway segment levels of service on a daily basis (ADT). As seen in *Table 7*, with the addition of project traffic, all the roadway segments are calculated to continue to operate at LOS A.

Based on the *County of San Diego* significance criteria, the proposed project is calculated to have ***no significant direct impacts*** on the study area segments.

TABLE 6
EXISTING + PROJECT INTERSECTION OPERATIONS

Intersection	Traffic Control	Minor Street[d]	Peak Hour	Existing		Existing + Project			Delay Increase	Sig?[e]
				Delay[a]	LOS[b]	Delay	LOS	CM Vol		
1. Crestwood Road/ I-8 WB ramps	TWSC[c]	WBL	AM	10.2	B	11.4	B	31	1.2	No
			PM	10.2	B	11.2	B	34	1.0	No
2. Crestwood Road / I-8 EB ramps	TWSC	EBL	AM	9.0	A	10.5	B	99	1.5	No
			PM	9.2	A	10.0	B	51	0.8	No
3. Ribbonwood Road/ I-8 WB ramps	TWSC	WBL	AM	9.0	A	9.6	A	10	0.6	No
			PM	9.0	A	9.6	A	16	0.6	No
4. Ribbonwood Road/ I-8 EB ramps	TWSC	EBL	AM	8.6	A	8.9	A	50	0.3	No
			PM	8.6	A	8.8	A	26	0.2	No
5. Ribbonwood Road/ Old Highway 80	TWSC	NB/SB	AM	9.7	A	9.7	A	16	0.0	No
			PM	9.6	A	9.7	A	8	0.1	No
6. McCain Valley Road/ Old Highway 80	TWSC	SB	AM	8.5	A	8.5	A	8	0.0	No
			PM	8.7	A	8.7	A	16	0.0	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. TWSC – Two-Way Stop Controlled Intersection.
d. Worst minor street approach delay reported.
e. Sig? = Does the addition of project result in a significant impact. (For criteria, refer to *Section 1.3* of Traffic Study).

General Notes:

CM – Critical Movement

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DELAY/LOS THRESHOLDS

Delay	LOS
0.0 < 10.0	A
10.1 to 15.0	B
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E
> 50.1	F

TABLE 7
EXISTING + PROJECT STREET SEGMENT OPERATIONS

Roadway Segment	Lanes	Functional Classification	Capacity (LOS E) [a]	Existing		Project ADT	Existing + Project		Sig? [d]
				ADT [b]	LOS [c]		ADT	LOS	
Crestwood Road									
North of I-8	2	Rural Collector	16,200	1,060	A	750	1,810	A	No
Ribbonwood Road									
North of I-8	2	Rural Collector	16,200	270	A	375	645	A	No
I-8 to Old Highway 80	2	Light Collector	16,200	1,230	A	125	1,355	A	No
McCain Valley Road									
North of Old Highway 80	2	Rural Collector	16,200	110	A	125	235	A	No
Old Highway 80									
Ribbonwood Road to McCain Valley Road	2	Light Collector	16,200	990	A	125	1,115	A	No

Footnotes:

a. Capacity based on *County of San Diego* roadway classification operating at LOS E.
b. Average Daily Traffic.
c. Level of Service.
d. Sig? = Does the addition of project result in a significant impact. (For criteria, refer to *Section 1.3* of Traffic Study).

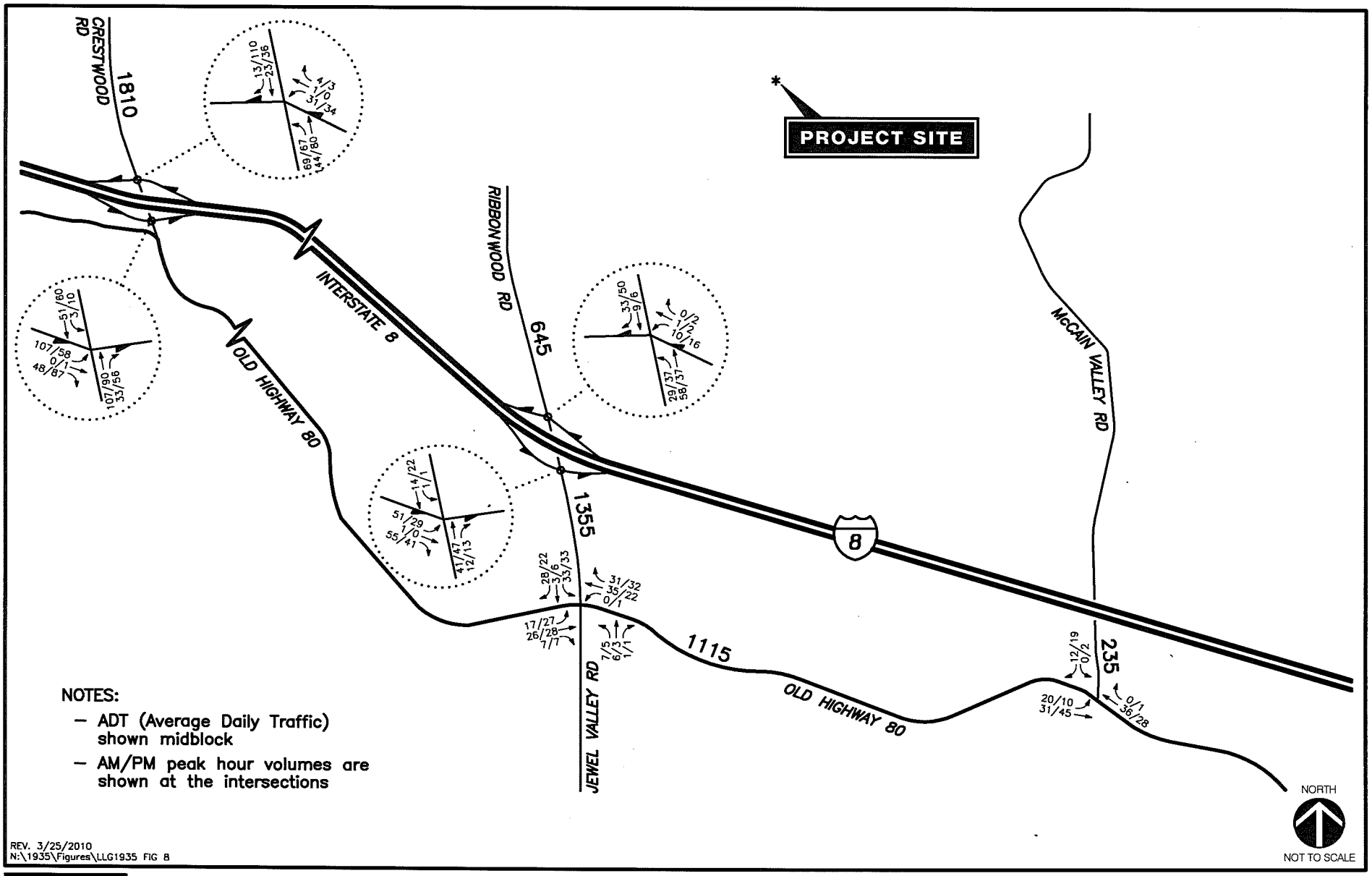

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Figure 8

Existing + Project Traffic Volumes AM/PM Peak Hours & ADT

TULE WIND PROJECT

3.5 Cumulative Traffic

Cumulative projects are other projects in the study area that will add traffic to the local circulation system in the near future. LLG conducted research on the nearby cumulative projects from the County of San Diego KIVA system. There are only a few potential cumulative projects in the area.

To be conservative, LLG applied a 25% growth factor to existing traffic volumes to account for future cumulative projects traffic. ***Figure 9*** shows the cumulative project traffic volumes. ***Appendix E*** contains the list of cumulative projects.

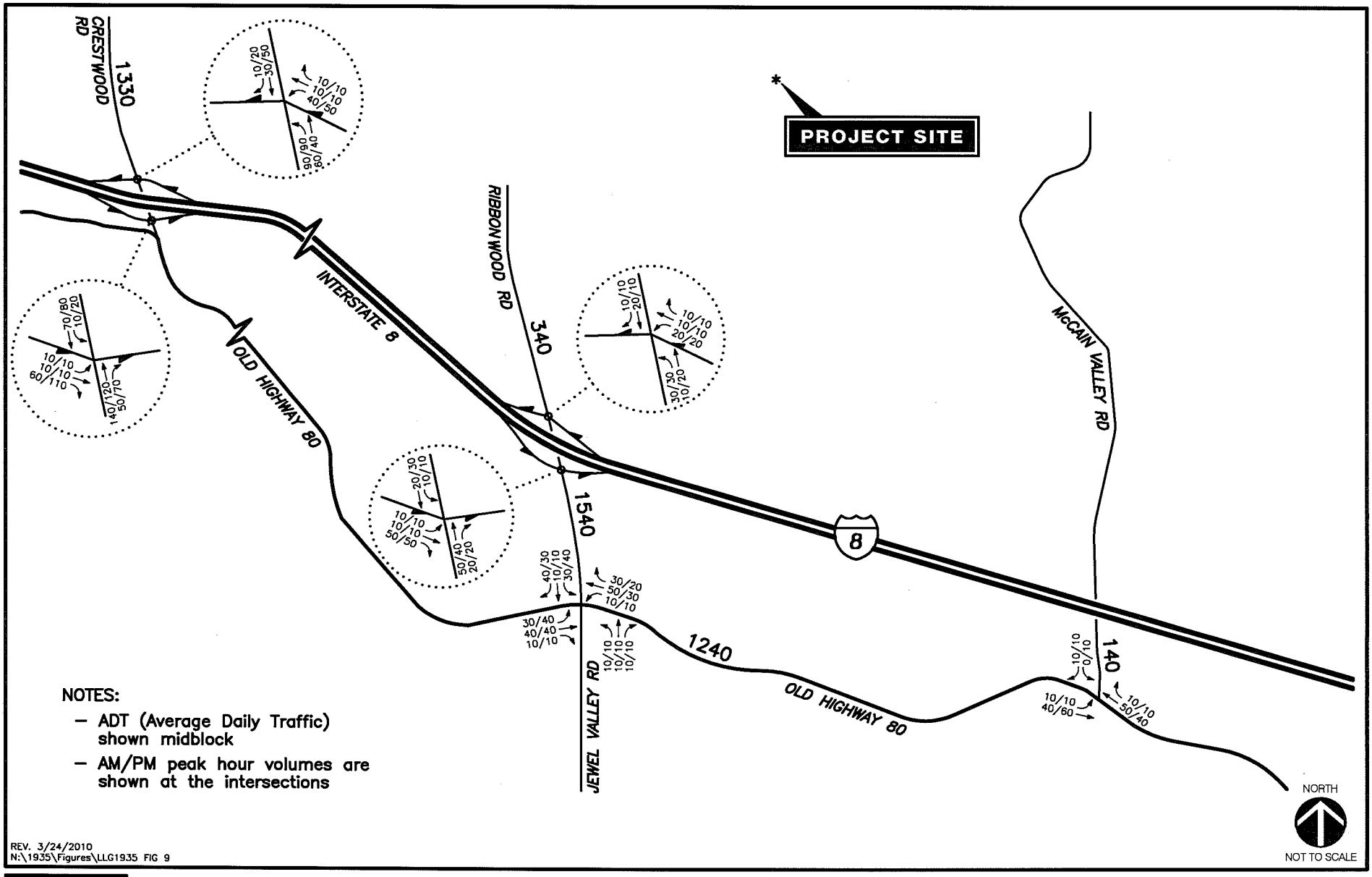

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Figure 9

Cumulative Project Traffic Volumes AM/PM Peak Hours & ADT

TULE WIND PROJECT

3.6 Existing + Project + Cumulative Projects Conditions

This scenario accounts for the addition of the proposed project and cumulative traffic onto existing traffic. ***Figure 10*** shows the existing + cumulative projects + project traffic volumes.

3.6.1 *Intersection Operations*

Table 8 summarizes the existing + project + cumulative projects intersection levels of service. As seen in *Table 8*, with the addition of project and cumulative traffic, all the study area intersections are calculated to operate at LOS C or better.

Based on the *County of San Diego* significance criteria, the proposed project is calculated to have ***no significant cumulative impacts*** at the above study area intersections.

Appendix F contains the existing + project + cumulative projects intersection analyses worksheets.

3.6.2 *Segment Operations*

Table 9 summarizes the existing + project + cumulative projects daily roadway segment level of service. As seen in *Table 9*, with the addition of project and cumulative traffic, all the roadway segments are calculated to operate at LOS B or better.

Based on the *County of San Diego* significance criteria, the proposed project is calculated to have ***no significant cumulative impacts*** on the study area segments.

TABLE 8
EXISTING + PROJECT + CUMULATIVE PROJECTS INTERSECTION OPERATIONS

Intersection	Traffic Control	Minor Street[d]	Peak Hour	Existing + Project		Existing + Project Cumulative Projects		Sig?[e]
				Delay[a]	LOS[b]	Delay	LOS	
1. Crestwood Road/ I-8 WB ramps	TWSC[c]	WBL	AM	11.4	B	16.5	C	No
			PM	11.2	B	17.4	C	No
2. Crestwood Road/ I-8 EB ramps	TWSC	EBL	AM	10.5	B	14.6	B	No
			PM	10.0	B	14.0	B	No
3. Ribbonwood Road/ I-8 WB ramps	TWSC	WBL	AM	9.6	A	10.4	B	No
			PM	9.6	A	10.4	B	No
4. Ribbonwood Road/ I-8 EB ramps	TWSC	EBL	AM	8.9	A	9.5	A	No
			PM	8.8	A	9.4	A	No
5. Ribbonwood Road/ Old Highway 80	TWSC	NB/SB	AM	9.7	A	11.8	B	No
			PM	9.7	A	12.1	B	No
6. McCain Valley Road/ Old Highway 80	TWSC	SB	AM	8.5	A	8.9	A	No
			PM	8.7	A	9.2	A	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. TWSC – Two-Way Stop Controlled Intersection.
d. Worst minor street approach delay reported.
e. Sig? = Does the addition of project result in a significant impact. (For criteria, refer to Section 1.3 of Traffic Study).

UNSIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 < 10.0	A
10.1 to 15.0	B
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E
> 50.1	F

TABLE 9
EXISTING + PROJECT+ CUMULATIVE PROJECTS STREET SEGMENT OPERATIONS

Roadway Segment	Lanes	Functional Classification	Capacity (LOS E) [a]	Existing + Project		Existing + Project + Cumulative		Sig? [d]
				ADT [b]	LOS [c]	ADT	LOS	
Crestwood Road								
North of I-8	2	Rural Collector	16,200	1,810	A	3,140	B	No
Ribbonwood Road								
North of I-8	2	Rural Collector	16,200	645	A	985	A	No
I-8 to Old Highway 80	2	Light Collector	16,200	1,355	A	2,895	B	No
McCain Valley Road								
North of Old Highway 80	2	Rural Collector	16,200	235	A	375	A	No
Old Highway 80								
Ribbonwood Road to McCain Valley Road	2	Light Collector	16,200	1,115	A	2,355	B	No

Footnotes:

a. Capacity based on *County of San Diego* roadway classification operating at LOS E.
b. Average Daily Traffic.
c. Level of Service.
d. Sig? = Does the addition of project result in a significant impact. (For criteria, refer to Section 1.3 of Traffic Study).

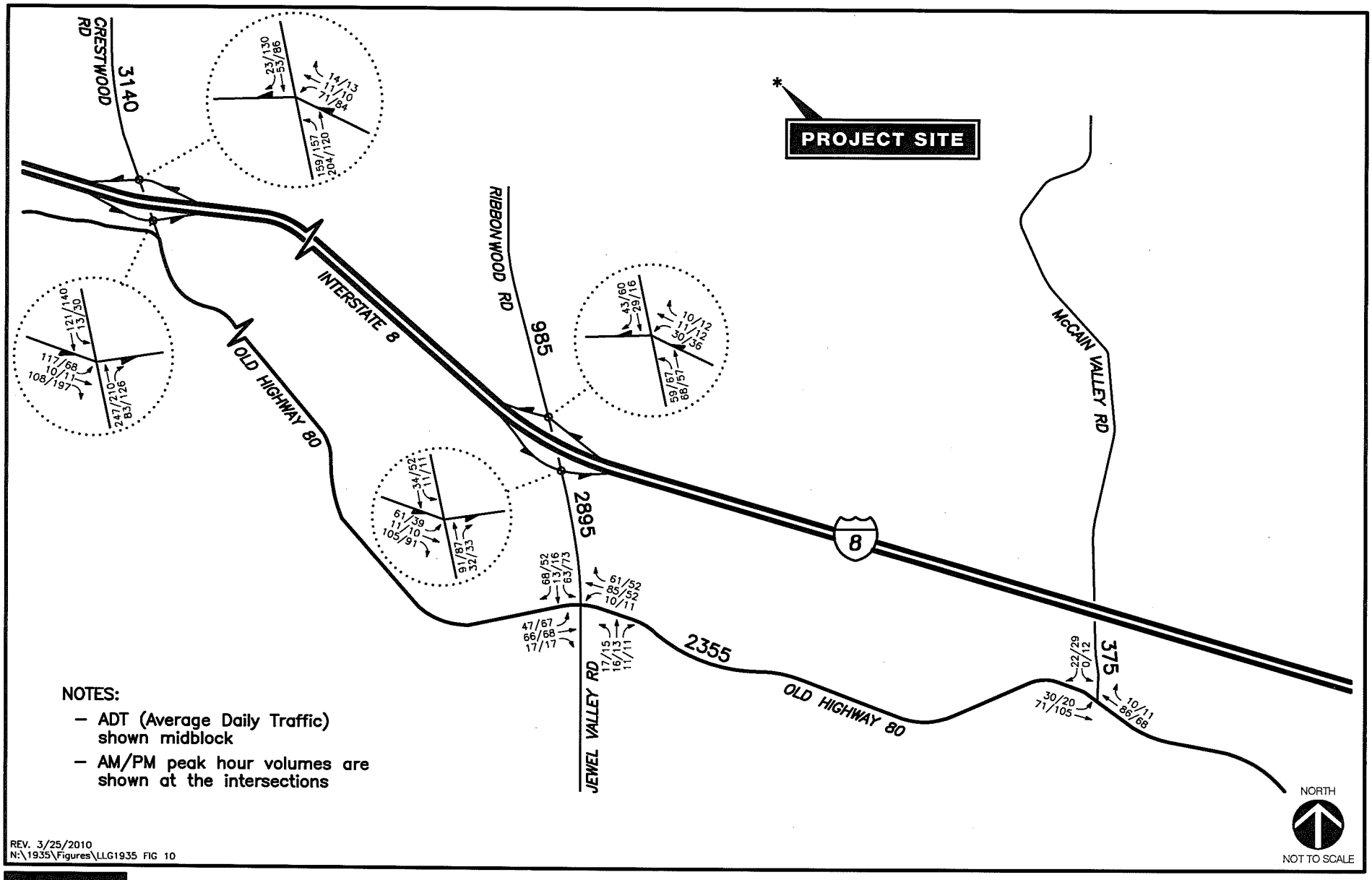

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Figure 10

Existing + Project + Cumulative Projects Traffic Volumes AM/PM Peak Hours & ADT

TULE WIND PROJECT

4.0 IMPACT SUMMARY

4.1 Impact Summary Table

The project is calculated to have no direct and cumulative impacts based on the published *County of San Diego Significance Criteria (June 30, 2009).*

4.2 Summary of Recommended Project Design Features, Impacts and Mitigation

The project is calculated to have no significant direct and cumulative impacts based on the published County of San Diego significance criteria. Hence no mitigation measures are required or recommended.

4.3 Truck Height and Vertical Clearance

A typical construction day would generate approximately 200 trucks, which would include the transportation of steel pipe, movement of heavy equipment for turbine construction, dump trucks, concrete trucks, pump trucks and subcontractor trucks. These trucks are expected to use local access roads such as Crestwood Road, Ribbonwood Road and McCain Valley Road. LLG Engineers conducted a field survey to determine the height of Crestwood Road, Ribbonwood Road and McCain Valley Road under-crossings on Interstate 8, to calculate the maximum height of the trucks that can possibly use these access roads.

LLG coordinated with Caltrans and obtained as-builts of the under-crossings in the project study area to determine the vertical clearances. ***Appendix G*** contains a copy of the as-builts.

Based on the as-builts, Crestwood Road undercrossing has a minimum vertical clearance of 16 feet and 11 inches and Ribbonwood Road undercrossing has a minimum vertical clearance of 19 feet and 1 inch.

Based on a field survey, the McCain Valley Road undercrossing currently has a vertical clearance sign of 15 feet and 1 inch. This is considered as "low" vertical clearance and hence appropriate signs are currently placed on Old Highway 80 and McCain Valley Road.

The California vehicle code (*Section 35250*) suggests that the maximum height of a vehicle cannot exceed 14 feet. The project will need to contact Caltrans and obtain special permits for vehicles that exceed 14 feet.

5.0 REFERENCES

Highway Capacity Manual (HCM) 2000

Institute of Transportation Engineers (ITE) Trip Generation Book, 7th Edition

County of San Diego, KIVA Website

California Vehicle Code

6.0 LIST OF PREPARERS AND ORGANIZATIONS CONTACTED

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