LINSCOTT LAW & GREENSPAN engineers

LOCAL MOBILITY ANALYSIS

COTTONWOOD SAND MINE

County of San Diego, California
September 2021

LLG Ref. 3-19-2958

Linscott, Law & Greenspan, Engineers
4542 Ruffner Street
Suite 100
San Diego, CA 92111
858.300.8800 T
858.300.8810 F
www.llgengineers.com

ADDENDUM

DECEMBER 2022

The following changes have been made to the Cottonwood Sand Mine Local Mobility Analysis Report (September 2021) since the release of the Cottonwood Sand Mine Draft Environmental Impact Report (draft EIR):

Section 2.2 Project Description: Reclamation of the project site will include backfilling after each subphase in order to achieve final elevations. Backfilling will be accomplished using a combination of wash fines and overburden produced from the mining operations and imported fill. Approximately 2.5 million cubic yards will need to be imported to the site to fulfill the backfill requirements. The imported material will consist of inert debris transported to the project site at an estimated rate of 250,000 CY per year for the 10-year duration of mining activities. Backfill material import operations would occur from 9:00 a.m. to 3:30 p.m. Monday through Friday to avoid peak traffic periods. In addition to the 88 trucks necessary for daily export of the saleable material, 58 trucks are assumed to commute to the construction site on a daily basis for backfill material import.

Section 5.4 Existing Bicycle Network: An inventory of the existing bicycle network was conducted for the study area. ***Figure A*** presents the existing bicycle network in the project study area. As shown in *Figure A*, Class II non-buffered bike lanes are currently provided on both sides of Willow Glen Drive within the study area.

Existing bicycle counts were conducted at every intersection in the study area during the commuter AM/PM peak hours as shown in *Appendix B*. Based on these counts, no existing bicycle activity was observed within the study area during the peak commute hours.

Section 5.5 Existing Pedestrian Conditions: An inventory of the existing pedestrian network was conducted for the study area. ***Figure B*** presents the existing pedestrian network in the project study area. This included documenting missing sidewalks, pedestrian barriers and crosswalks. As shown in *Figure B,* sidewalks are intermittently provided on both sides of Willow Glen Drive within the study area.

Existing pedestrian counts were conducted at every intersection in the study area during the commuter AM/PM peak hours as shown in *Appendix B*. ***Figure C*** shows the existing pedestrian counts that were observed at the project study intersections during the commuter AM/PM peak hours.

Section 7.0 Trip Generation, Distribution, and Assignment: In addition to the 14 employee and visitor light vehicles and 4 vendors that were assumed to access the project site on a typical day, a maximum of 146 one-way heavy vehicles (which includes 88 trucks for export of saleable material and 58 trucks for import of backfill material) were assumed to access the project site on a typical day. Trucking operations during the week will operate from 9:00 am to 3:30 pm to avoid peak traffic periods in the area.

Table A tabulates the project traffic generation for Phase 1. The project is calculated to generate approximately 766 ADT (PCE adjusted), 15 trips (14 inbound, 1 outbound) during AM peak period and 15 trips (2 inbound, 13 outbound) during PM peak period. The currently operating Ivanhoe golf course would be completely closed during the project Phase 1. However, to be conservative, no existing traffic credit associated with this closure was assumed.

For project Phases 2 and 3, the same construction workforce as Phase 1 was assumed. However, during Phases 2 and 3, an existing traffic credit commensurate with the golf course closure was included based on existing driveway counts. While the golf course would be closed during Phase 1 as well, no existing trip credit was taken to be conservative. ***Table B*** tabulates the total project traffic generation for Phases 2 and 3. The project is calculated to generate approximately 632 ADT, zero (0) trips during AM peak period and 6 trips (0 inbound, 6 outbound) during PM peak period.

Even though there is an increase in dirt import trips, no change were made or required to the peak hour intersection analysis as these truck trips occur outside the commuter peak hours.

Section 9.0 Project Improvements: Since no changes were made or required to the peak hour intersection analysis, the previous conclusion remains the same. Per the criteria and the assessment methodology presented in this report, under the Existing and Near-Term conditions, project-related traffic would still cause no deficiencies within the study area. Therefore, no off-site improvements are required.

The vehicular mobility improvements were revised to the following:

Vehicle Improvements:

- Willow Glen Drive – east of Steele Canyon Road:
  The project will restripe Willow Glen Drive between Steele Canyon Road and the project ingress driveway to provide a raised median and Class II buffered bike lanes on both sides of the roadway. To facilitate deceleration of right-turning vehicles into the project ingress driveway, a dedicated right-turn lane will also be constructed. The project will also construct an acceleration lane between the ingress and egress project driveways, which will serve as a refuge lane for trucks to complete their outbound maneuver. Willow Glen Drive between Steele Canyon Road and Hillsdale Road is classified in the Mobility Element as a 4*.1B: Major Road with Intermittent Turn lanes.* The project frontage along this stretch extends between Steele Canyon Road to approximately 1000’ west of Hillsdale Road. In addition to the above improvements, the project proposes to provide an Irrevocable Offer of Dedication along the project frontage as needed to accommodate the ultimate roadway classification of Willow Glen Drive.

In addition to the recommended vehicular mobility improvements, the following pedestrian and bicycle improvements are recommended. These pedestrian and bicycle improvements were already included in the draft EIR:

Pedestrian Improvements:

- To enhance pedestrian mobility, the project will construct a pedestrian pathway along the northern Project frontage/Willow Glen Drive east of Steele Canyon Road to provide pedestrian access within the Project vicinity where there are no existing sidewalks. The public pathway has been designed to avoid removal of existing mature screening vegetation. The pathway would range in width from eight feet wide just east of Steele Canyon Road, to five feet wide in the eastern portion of the Project site where the potential pathway alignment is constrained by existing topography and the Sweetwater River channel.

- A publicly accessible community trail is also proposed to be constructed within the Project site. The multi-use trail would connect to the pathway described above. The trail would be constructed by the Project applicant in conjunction with final site reclamation activities. Specifically, trail construction would be completed in segments and would begin in a phase area when mining activities have been completed in the phase area and reclamation has begun in the final subphase of that area.

Bicycle Improvements:

- Currently, while there are bicycle lanes provided on Willow Glen Drive, east of Steele Canyon Road, there is no buffer area provided separating the bicyclists from the vehicle travel lanes. To enhance bicycle mobility, the project proposes to provide Class II buffered bike lanes on both sides of Willow Glen Drive between Steele Canyon Road and the project easterly property line.

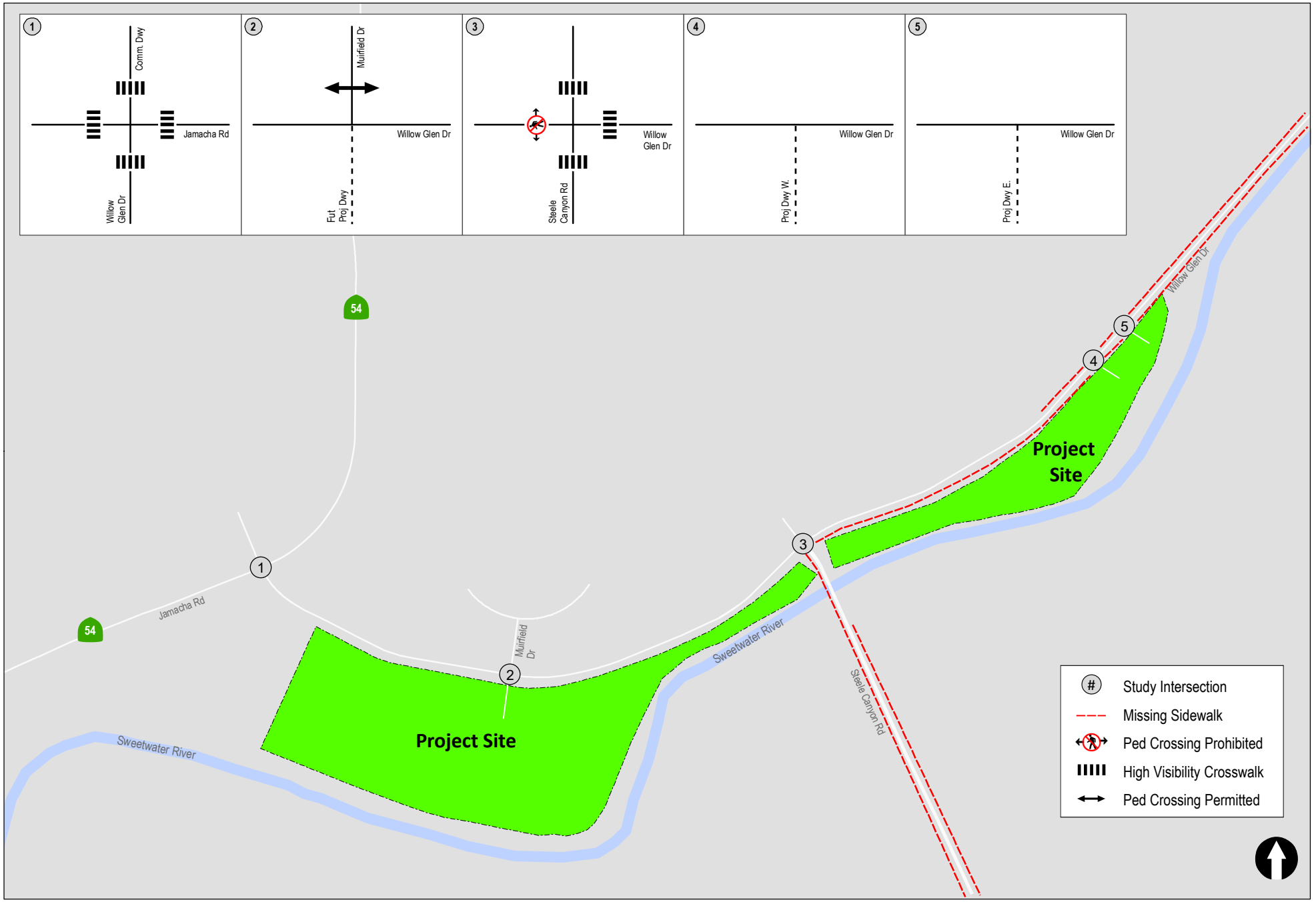
LINSCOTT LAW & GREENSPAN engineers

N:\2958\Figures
Date: 7/11/2022
Time: 1:05 PM

Figure A

Existing Bicycle Network

Cottonwood Sand Mine



LINSCOTT LAW & GREENSPAN engineers

N:\2958\Figures
Date: 7/11/2022
Time: 1:09 PM

Figure B

Existing Pedestrian Network

Cottonwood Sand Mine

LINSCOTT LAW & GREENSPAN engineers

N:\2958\Figures
Date: 7/11/2022
Time: 1:14 PM

Figure C

Existing Pedestrian Activity

Cottonwood Sand Mine

TABLE A
TRIP GENERATION – PHASE 1

Use	Quantity	PCE[a]	Daily Trips		AM Peak Hour					PM Peak Hour				
			Rate	ADT[b]	% of ADT	In : Out Split	Volume In	Volume Out	Volume Total	% of ADT	In : Out Split	Volume In	Volume Out	Volume Total
Mining Traffic														
Heavy Vehicle (trucks)[c, d]	146	2.5	2 /veh	730	0%	50% : 50%	0	0	0	0%	50% : 50%	0	0	0
Light Vehicles (Employees)[e]	14	1.0	2 /veh	28	50%	90% : 10%	13	1	14	50%	10% : 90%	1	13	14
Vendors [d,f]	4	1.0	2 /veh	8	15%	50% : 50%	1	0	1	15%	50% : 50%	1	0	1
Net New Traffic				***766***			***14***	***1***	***15***			***2***	***13***	***15***

Footnotes:

a. PCE – Passenger car equivalence.
b. ADT – Average daily traffic.
c. Heavy vehicle traffic includes trucks carrying loads of construction aggregate, fuel, parts, backfill material, etc.
d. Trucking operations for material sales would occur from 9:00 a.m. to 3:30 p.m. Monday through Friday to avoid peak traffic periods.
e. Light vehicle traffic includes vehicles used by approximately 9 employees and 5 miscellaneous visitors such as cars, pick-up trucks and small service vehicles.
f. Vendor trips include fuel, supplies, service companies, etc.

General Notes:

1. The currently operating Ivanhoe golf course would be completely closed during the project Phase 1. However, to be conservative, no existing traffic credit associated with this closure was assumed.

TABLE B
TRIP GENERATION - PHASES 2 AND 3

Use	Quantity	PCE	Daily Trips		AM Peak Hour					PM Peak Hour				
			Rate	ADT[a]	% of ADT	In : Out Split	Volume In	Volume Out	Volume Total	% of ADT	In : Out Split	Volume In	Volume Out	Volume Total
Mining Traffic														
Heavy Vehicles (trucks)[b, c]	146	2.5	2 /veh	730	0%	50% : 50%	0	0	0	0%	50% : 50%	0	0	0
Light Vehicles (Employees)[d]	14	1.0	2 /veh	28	50%	90% : 10%	13	1	14	50%	10% : 90%	1	13	14
Vendors[c,e]	4	1.0	2 /veh	8	15%	50% : 50%	1	0	1	15%	50% : 50%	1	0	1
Subtotal	106		-	766			14	1	15			2	13	15
Existing Traffic To Be Removed														
Golf Course (holes)[f]	9	1.0	per count[g]	(134)	11%	93% : 7%	(14)	(1)	(15)	7%	22% : 78%	(2)	(7)	(9)
Net New Traffic				***632***			***0***	***0***	***0***			***0***	***6***	***6***

Footnotes:

a. ADT – Average daily traffic.
b. Heavy vehicle traffic includes trucks carrying loads of construction aggregate, fuel, parts, backfill material, etc.
c. Trucking operations for material sales would occur from 9:00 a.m. to 3:30 p.m. Monday through Friday to avoid peak traffic periods.
d. Light vehicle traffic includes vehicles used by approximately 9 employees and miscellaneous visitors such as cars, pick-up trucks and small service vehicles.
e. Vendor trips include fuel, supplies, service companies, etc.
f. In phases 2 and 3, the 18-hole golf course is assumed to be closed. To be conservative, a traffic credit for 9 holes were taken.
g. A traffic count at the golf course driveway was taken, which showed 269 ADT for 18-holes. The existing credit was calculated for 9 holes (i.e. half of 269 ADT)

TABLE OF CONTENTS

APPENDICES

APPENDIX

LIST OF FIGURES

SECTION—FIGURE # **PAGE**

LIST OF TABLES

1.0 INTRODUCTION

Linscott, Law & Greenspan, Engineers (LLG) has prepared this Local Mobility Analysis (LMA) for the Cottonwood Sand Mine Project (proposed project) in the County of San Diego. The project proposes a redevelopment of the existing Cottonwood Golf Club for mining mineral resources. The project site is located at 3121 Willow Glen Drive, east of Jamacha Road in the Valle de Oro community of the County of San Diego. A maximum production limit of 570,000-tons (380,000 cubic yards) of construction grade aggregate (sand and gravel) in any calendar year is anticipated. This report addresses the potential construction transportation impacts from the proposed project.

This LMA has been prepared to assess the transportation effects of the Project on mobility, access and circulation in the proximate area of the Project. The potential transportation impacts of the proposed Project are based on Vehicle Miles Traveled (VMT) to satisfy the California Environmental Quality Act (CEQA) guidelines through Senate Bill (SB) 743 consistent with the Office of Planning and Research (OPR) Technical Advisory. Therefore, consistent with SB 743 and CEQA Guidelines 15064.3, the CEQA significance determination for the Project is based only on VMT and not on LOS. A VMT Report was prepared and included under a separate cover.

The report is organized as follow:

Section 1.0 Introduction
Section 2.0 Project Description
Section 3.0 Study Area, Analysis Approach & Methodology
Section 4.0 Existing Conditions Discussion
Section 5.0 Trip Generation, Distribution & Assignment
Section 6.0 Analysis of Existing Conditions
Section 7.0 Analysis of Near-Term Scenarios
Section 8.0 Vehicular Mobility Improvements

2.0 PROJECT DESCRIPTION

2.1 Project Location

The project proposes a Major Use Permit (MUP) to allow sand mining activities on 251 acres of an approximately 280-acre site in the unincorporated community of Rancho San Diego in eastern San Diego County. The Project site is currently occupied by the existing Cottonwood Golf Club, which is located on the south side of Willow Glen Drive, east and west of Steele Canyon Road in the County of San Diego.

Figure 2–1 shows the vicinity map. ***Figure 2–2*** shows a more detailed Project area map.

2.2 Project Description

The property is currently occupied by the Cottonwood Golf Club, which is permitted to operate two 18-hole golf courses referred to as the Lakes course and the Ivanhoe course. The project proposes to convert the golf courses to a sand mining operation that would be conducted in three phases, with three to four sub-phases in each phase of less than 30 acres each, and a fourth phase for cleanup, equipment removal, and final reclamation. Mining is expected to be completed over an approximately 10 year period. The project proposes to extract approximately 4.7 million cubic yards (CY; 7.05 million tons) of material, with approximately 3.8 million CY (5.7 million tons) produced for market use. Extraction operations would be limited to a maximum production of 380,000 cy (570,000 tons) of construction grade aggregate per calendar year. Material extracted and processed at the site would be suitable for construction uses and would be available to customers in San Diego County.

In association with the MUP, a Reclamation Plan would be required to specify the standards to which the site must be reclaimed upon completion of mining activities. Areas disturbed by resource extraction would be progressively reclaimed in an ongoing process that commences when mining operations have ceased within a given area and continues until all mining-related disturbance is reclaimed and all equipment involved in the operations has been removed. Reclaimed areas would be restored to an end use of open space, recreational trails, and land suitable for uses allowed by the General Plan and existing zoning classifications. Surface areas included within the MUP boundary that would not be disturbed by mining would be subject to removal of invasive species in the Sweetwater River channel on the southwest portion of the site or be left in their current condition.

Sand excavation and processing will occur Monday through Friday, between the hours of 7:00 a.m. and 5:00 p.m. Trucking operations for material sales would occur from 9:00 a.m. to 3:30 p.m. Monday through Friday to avoid peak traffic periods. Construction traffic would include heavy vehicles and light vehicles. A total of 88 trucks, 14 employee light vehicles and 4 vendor vehicles are assumed to commute to the construction site on a daily basis. This represents a conservative assumption as only 9 employees are expected.

The primary truck and employee access to the project site is proposed via two driveways (one inbound and one outbound) on Willow Glen Drive, east of Steele Canyon Road. The Project

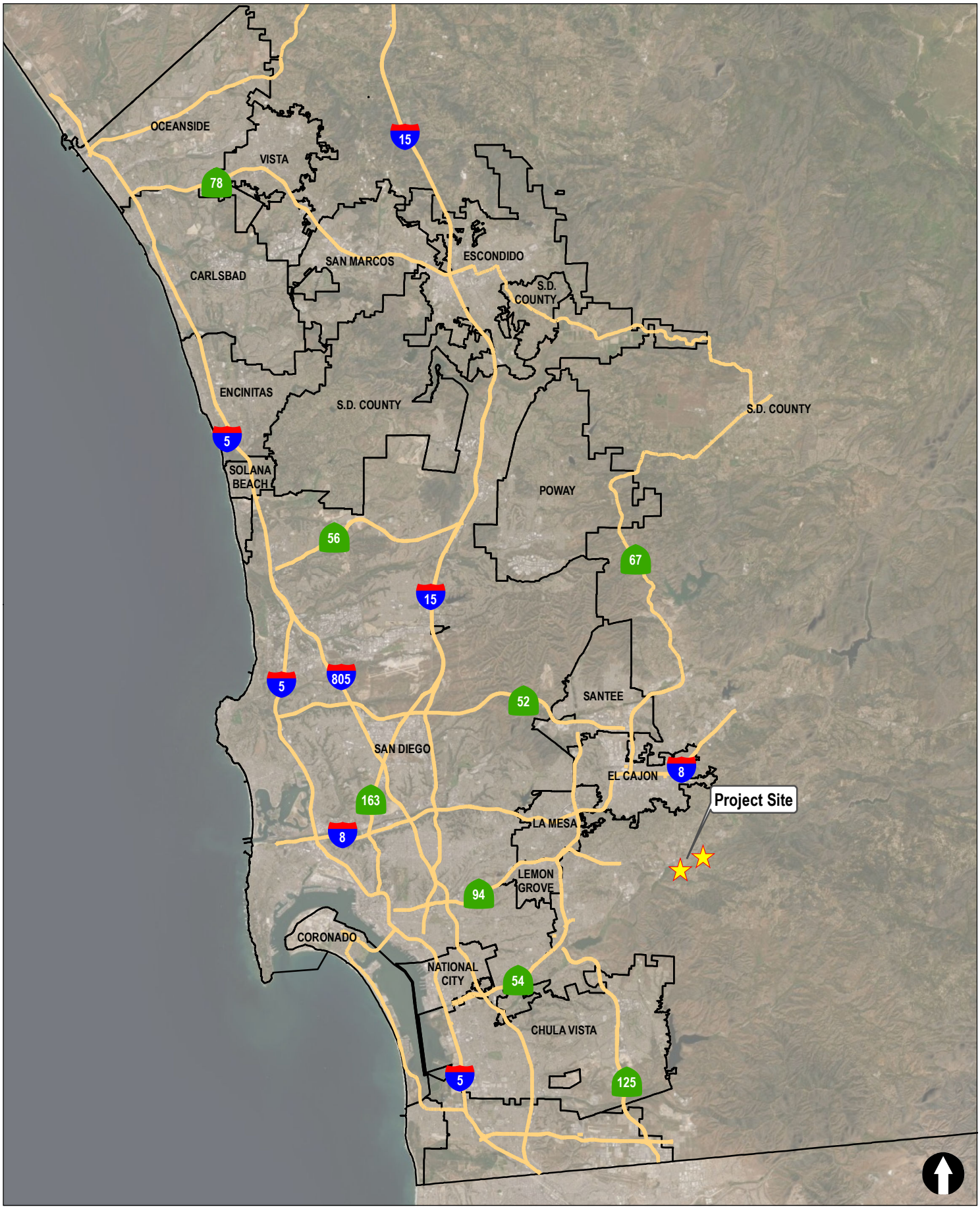
proposes to restripe Willow Glen Drive between Steele Canyon Road and the Project ingress driveway to provide Class II buffered bike lanes on both sides of the roadway per the County Roadway Standards. To facilitate deceleration of right-turning vehicles into the project ingress driveway, a dedicated right-turn lane would also be constructed, which would serve as the primary access for mining operations, material sales, employees, and vendors. A new egress point would be established in the approximate center of the existing parking lot. The project also proposes to construct a two-way left-turn lane between the ingress and egress driveways, which would serve as a refuge lane for trucks to complete their outbound maneuver. A pedestrian pathway would be provided along the northern project frontage/Willow Glen Drive east of Steele Canyon Road to provide pedestrian access within the project vicinity where there are no existing sidewalks. In addition, a new access point to the property from Willow Glen Drive west of the Steele Canyon Road (Phase 1 area) would be necessary as the clearance height of the bridge that crosses the Sweetwater River on Steele Canyon Road would not allow most large trucks used by service vendors to pass beneath the bridge. This additional access point is proposed to be constructed at the intersection of Willow Glen Drive and Muirfield Drive and would be restricted to use by service vendors only.

2.3 Project Phasing

The project will be developed in three continuous mining phases, with 20- to 30-acre sub-phases in each major phase and a fourth (4^{th}) phase for final reclamation. Operations would commence west of the Steele Canyon Road bridge on the closed Lakes course, and then generally proceed in a southwest-to-northeast direction across the project site. Processing facilities would be located near the center of the Project area, adjacent to Willow Glen Drive and west of the existing golf course parking lot. A portable conveyor line would be installed to minimize the use of on-site roads to transport excavated materials to the processing plant from the excavation areas.

Phase 1 would include site development for the construction of the access road and processing plant pad, as well as installation of screening berms, the conveyor line, and the processing plant. Sand extraction during Phase 1 would be located within the area currently occupied by the closed Lakes course to the west of Steele Canyon Road. Phase 2 would be located in the center of the site, east of Steele Canyon Road, on the currently operating Ivanhoe course. Public use of the Ivanhoe golf course would cease upon approval of the project/major use permit. Phase 3 mining operations would encompass the remaining acreage of the project site located to the east of Phase 2. Each phase would include three to four sub-phases that are less than 30 acres each to begin reclamation as soon as possible. Excavation in each sub-phase would be completed before moving the conveyor and excavation equipment to the next sub-phase and reclamation would begin in the completed sub-phase. Areas disturbed by resource extraction would be progressively reclaimed as mine operations within a given sub-phase area are completed. Phase 4 would consist of removal of the processing plant, grading to final contours, final reclamation and revegetation efforts, cleanup, and equipment removal. Revegetation monitoring will continue for a minimum of five years or until revegetation standards are met after this final phase.

Figure 2–3 shows a project phasing plan.



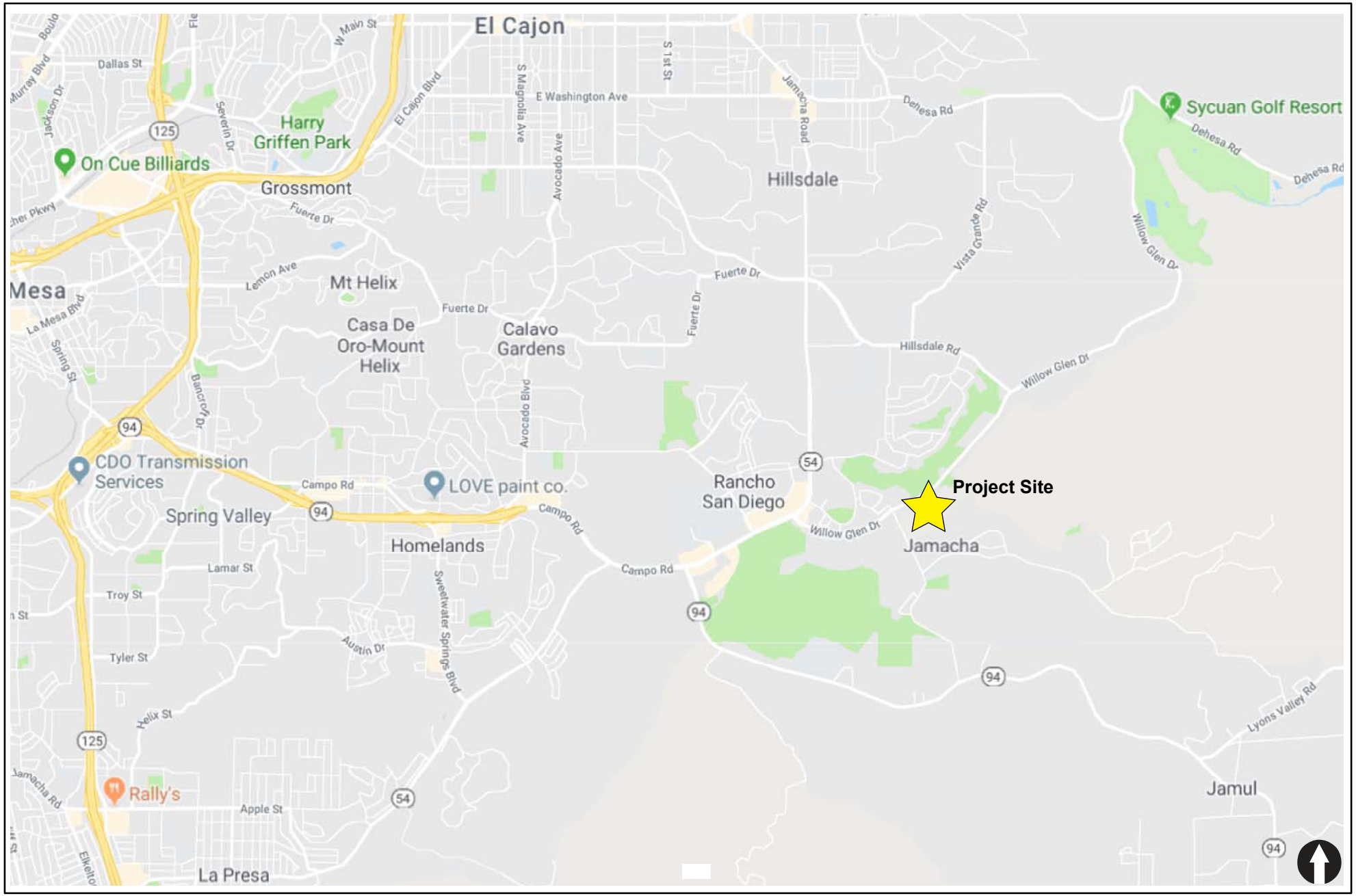
LINSCOTT LAW & GREENSPAN engineers

N:\2958\Figures
Date: 10/26/2020
Time: 11:18 AM

Figure 2-1

Vicinity Map

Cottonwood Sand Mine

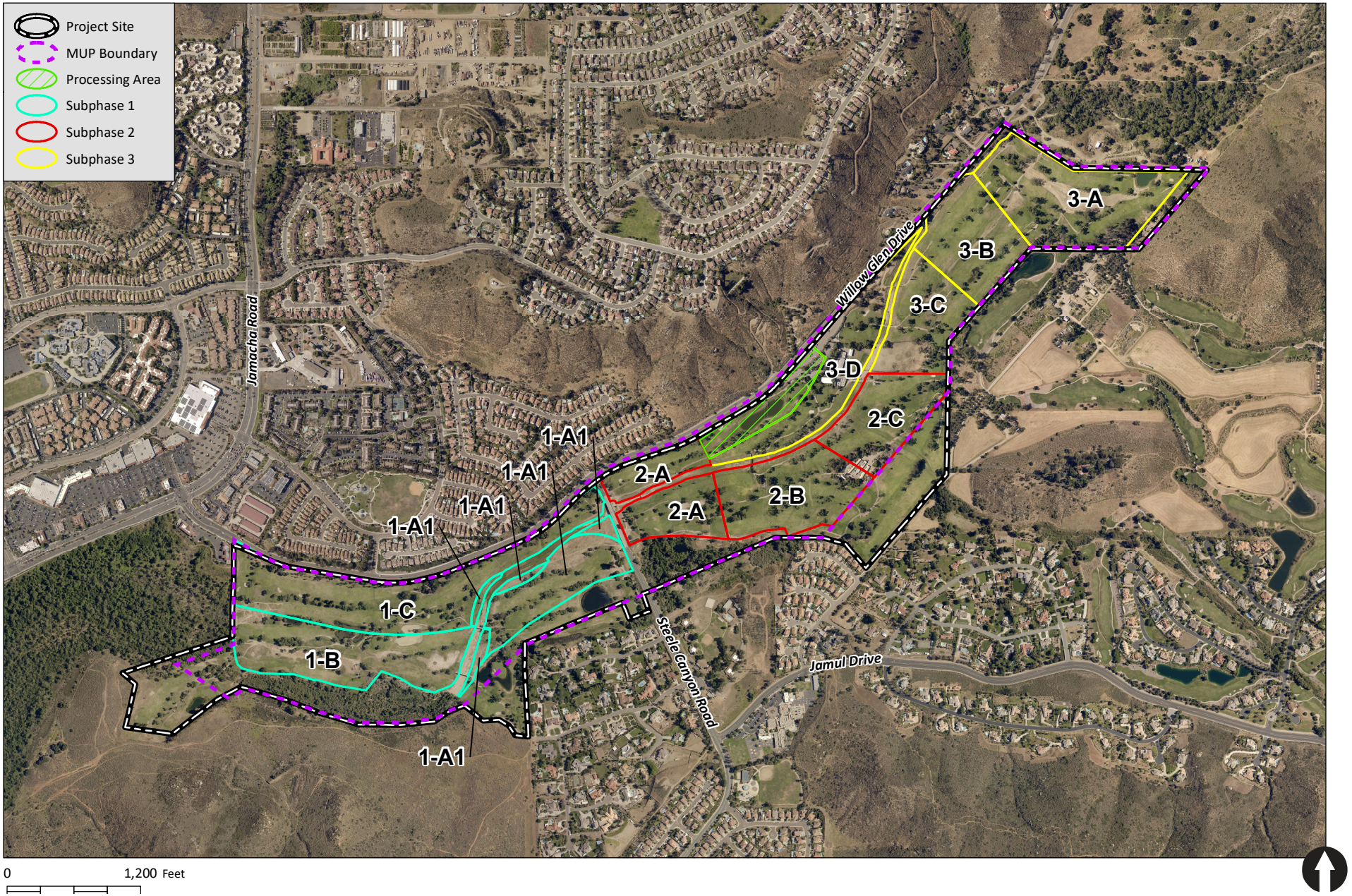


N:\2958\Figures
Date: 10/26/20

Figure 2-2

Project Area Map

COTTONWOOD SAND MINE



LINSCOTT LAW & GREENSPAN engineers

N:\2958\Figures
Date: 10/26/20

Figure 2-3

Project Phasing Plan

COTTONWOOD SAND MINE

3.0 ASSESSMENT APPROACH AND METHODOLOGY

3.1 Level of Service

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 assessment 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 designations are reported differently for signalized intersections, unsignalized intersections and roadway segments.

3.2 Intersections

Signalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay and LOS were determined utilizing the methodology found in *Highway Capacity Manual 6th edition (HCM),* with the assistance of the *Synchro* (version 10.0) computer software. The delay values (represented in seconds) were qualified with a corresponding intersection LOS. Signalized intersection calculation worksheets and a more detailed explanation of the methodology are attached in ***Appendix A***.

Unsignalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay and LOS were determined based upon the procedures found in Volume 3: Interrupted Flow, Chapter 19 for two-way stop-controlled intersections of the *Highway Capacity Manual 6th edition (HCM),* with the assistance of the *Synchro* (version 10.0) computer software. Unsignalized intersection calculation worksheets and a more detailed explanation of the methodology are attached in *Appendix A.*

4.0 VEHICULAR MOBILITY CRITERIA

The following project-specific criteria were utilized to evaluate potential vehicular mobility improvements.

4.1 Signalized Intersections

An improvement is required at a signalized intersection if any of the following are triggered:

- Consistent with County General Plan Policy, any intersection that is operating at an acceptable LOS or better without project traffic in which the addition of project traffic causes the intersection to degrade to an LOS E or F should identify improvements to improve operations to LOS D or better.
- Any signalized study intersection that is operating at LOS E or F without project traffic where the project increased delay by 5.0 or more seconds should identify improvements to offset the increase in delay.

4.2 Unsignalized Intersections

An improvement is required at an unsignalized intersection if any of the following are triggered:

4.2.1 *Side Street Stop Controlled*

- The project causes the average intersection delay to be LOS E or F during the peak hour.
- If the worst-case movement is currently operating at LOS E or F:
  - The project adds 5 or more seconds of overall intersection AND
  - The project adds ten (10) or more trips to the worst-case movement OR 50 or more trips to the overall intersection

4.2.2 *All-Way Stop Controlled*

- The project causes the average intersection delay to be LOS E or F during the peak hour.
- The project adds 5 or more seconds of delay to an intersection that is currently operating at LOS E or F during the peak hour.

5.0 EXISTING CONDITIONS

5.1 Study Area

The following intersections were included in the study area and listed below.

1. Jamacha Road / Willow Glen Drive
2. Willow Glen Drive / Muirfield Drive / Project Driveway
3. Willow Glen Drive / Steele Canyon Road
4. Willow Glen Drive / Project Driveway (West)
5. Willow Glen Drive / Project Driveway (East)

5.2 Existing Roadway Conditions

The following is a description of the major roadways located within the immediate vicinity of the Project site at the time of the existing counts. ***Figure 5–1*** depicts the existing traffic conditions and the study area intersections.

Campo Road (SR 94) is classified as a Freeway/6.1 Expressway from La Mesa City limits to Jamacha Road on the County of San Diego General Plan, Valle de Oro Mobility Element Network. Campo Road is currently constructed as a five-lane divided roadway, west of Jamacha Boulevard, and as a six-lane divided roadway between Jamacha Boulevard and Jamacha Road. Bike lanes and bus stops are provided on Campo Road in the study area. On street parking is not permitted.

Jamacha Road is classified as a 6.2 Prime Arterial from SR 94/ Campo Road to Chase Avenue on the County of San Diego General Plan, Valle de Oro Mobility Element Network. Jamacha Road is currently constructed as a six-lane divided roadway in the project study area. Bike lanes and bus stops are provided on Jamacha Road in the study area. On street parking is not permitted. It should be noted that the General Plan has identified and accepted Jamacha Road between SR 94 / Campo Road and Fury Lane as operating at a future LOS F.

Jamacha Boulevard is classified as a 4.1A Major Road from Spring Valley to SR 94/ Campo Road on the County of San Diego General Plan, Valle de Oro Mobility Element Network. Jamacha Boulevard is currently constructed as a four-lane undivided roadway in the project study area. Bike lanes and bus stops are provided on Jamacha Boulevard in the study area. On street parking is not permitted.

Willow Glen Drive is classified as a 4.1B Major Road on the County of San Diego General Plan, Valle de Oro Mobility Element Network. Willow Glen Drive is currently constructed as a four-lane undivided roadway between Jamacha Road and Steele Canyon Road and as a three-lane roadway with a two-way left-turn lane between Steele Canyon Road and the east project boundary. Bus stops are not provided and on street parking is not permitted.

5.3 Existing Intersection Traffic Volumes

Weekday AM/PM peak hour intersection turning movement volume counts were commissioned on Thursday, August 30, 2018. The intersection counts were conducted between the hours of 7:00-9:00 AM and 4:00-6:00 PM to capture peak commuter activity. Area schools were in session during the time of the counts.

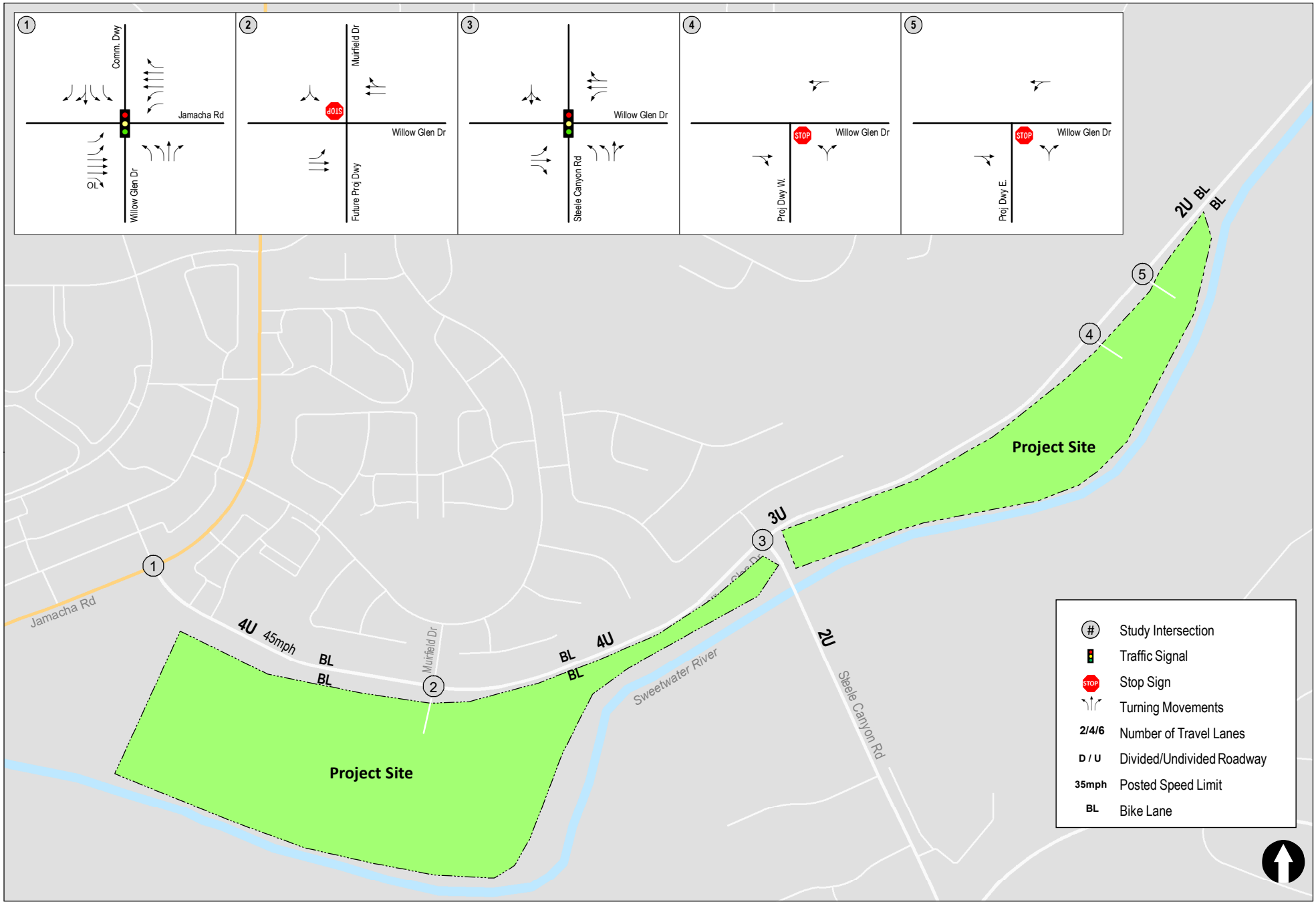
Appendix B contains the peak hour intersection count sheets. ***Figure 5–2*** shows the existing traffic volumes.

5.4 Existing Bicycle Network

Currently, Class II bike lanes are provided on both sides of Willow Glen Drive within the study area.

5.5 Existing Pedestrian Conditions

Pedestrian sidewalks are intermittently provided on both sides of Willow Glen Drive within the study area.



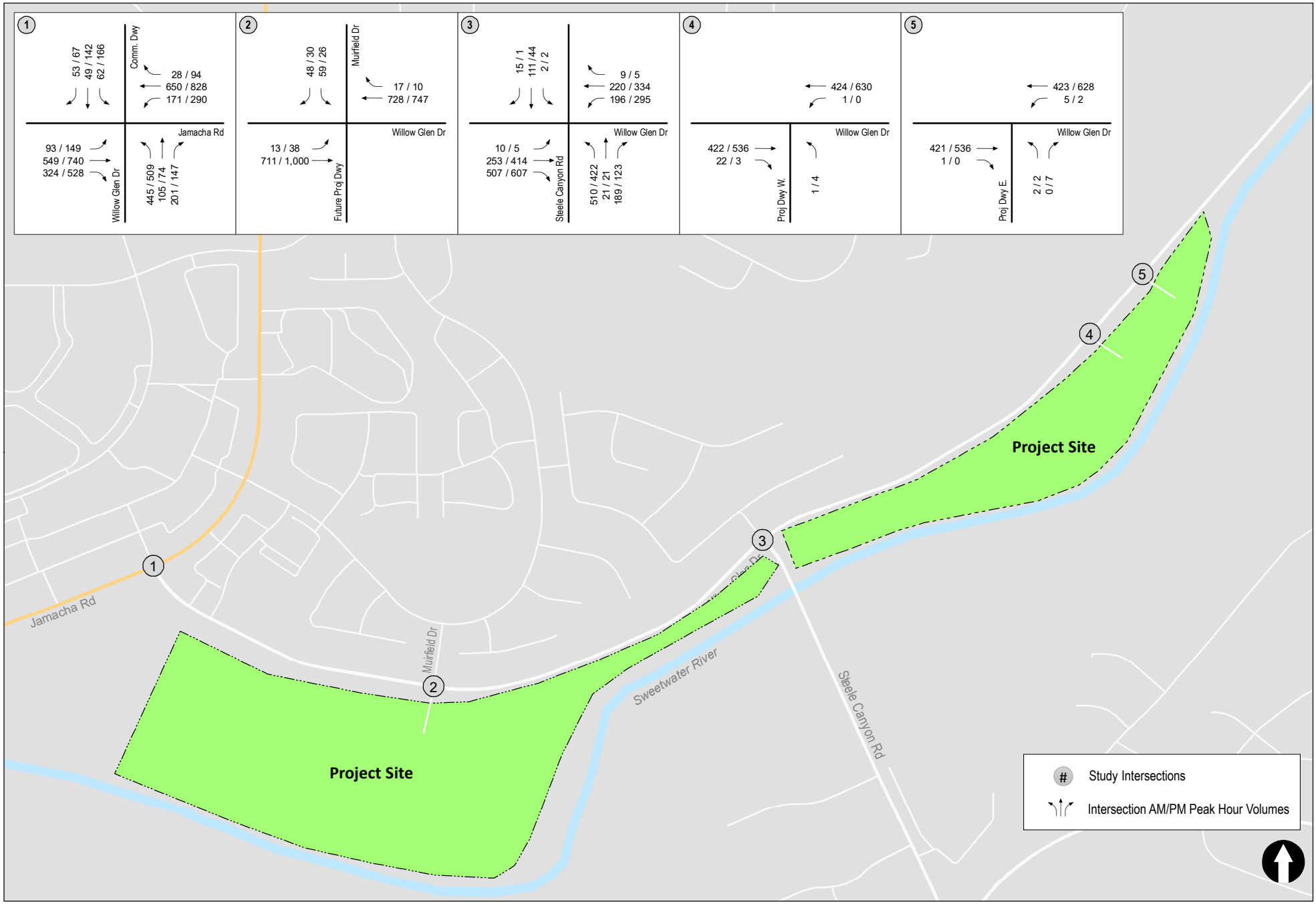
LINSCOTT LAW & GREENSPAN engineers

N:\2958\Figures
Date: 10/26/2020
Time: 11:22 AM

Figure 5-1

Existing Conditions Diagram

Cottonwood Sand Mine



LINSCOTT LAW & GREENSPAN engineers

N:\2958\Figures
Date: 10/26/2020
Time: 11:23 AM

Figure 5-2

Existing Traffic Volumes

Cottonwood Sand Mine

6.0 ASSESSMENT OF EXISTING VEHICULAR CONDITIONS

Table 6–1 summarizes the existing intersection operations in the project vicinity. As seen in *Table 6–1*, all intersections are calculated to currently operate at LOS D or better except for the following intersection:

- Willow Glen Drive / Muirfield Drive (LOS E during AM and PM peak periods)

Appendix C contains the existing intersection assessment worksheets.

TABLE 6–1
EXISTING INTERSECTION OPERATIONS

Intersection	Control Type	Jurisdiction	Peak Hour	Existing	
				Delay[a]	LOS[b]
1. Jamacha Road / Willow Glen Drive	Signal	County	AM PM	33.1 38.0	C D
2. Willow Glen Drive / Muirfield Drive	TWSC[c,d]	County	AM PM	**49.6** **35.1**	**E** **E**
3. Willow Glen Drive / Steele Canyon Road	Signal	County	AM PM	34.3 38.0	C D
4. Willow Glen Drive / Project Drwy (West)	TWSC[c,d]	County	AM PM	20.9 24.3	C C
5. Willow Glen Drive / Project Drwy (East)	TWSC[c,d]	County	AM PM	21.3 14.9	C B

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. TWSC – Two-Way Stop-Controlled intersection
d. Delay is reported for minor street left-turn movement.

General Notes:
1. **Bold** typeface indicates intersections operating at LOS E or F.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

7.0 TRIP GENERATION, DISTRIBUTION AND ASSIGNMENT

7.1 Construction Project Trip Generation

This report analyzes the potential impacts of the daily construction trips during the mining period. Construction trips include construction worker (employee) trips in passenger vehicles/light trucks, as well as material export trips made in heavy vehicles (haul trucks) to/from and around the excavation site. The traffic analyses in this report analyze the potential impacts of these trips during the construction period.

The project is expected to be fully completed in 12 years with mining anticipated for 10 years and reclamation commencing 2 years after the start of mining.

Based on coordination with the client, the construction workforce on a typical day was identified based on the maximum production and a typical truck tonnage capacity. A typical mining day would include a maximum of 88 heavy vehicles accessing the project site, spread between the hours of 9:00 am to 3:30 pm. In addition to the heavy vehicle trips, a total of 14 employee and visitor light vehicles and 4 vendors were assumed to access the project site on a typical day. This represents a conservative assumption as only 9 employees are expected.

7.1.1 *Heavy Vehicle Traffic*

Heavy vehicle traffic would include trucks carrying loads of construction aggregate, supplies, fuel, parts, etc. The weight capacity of a standard heavy vehicle for outgoing loads is approximately 25 tons per truck. A maximum construction day would include 88 one-way heavy vehicles accessing the project site. Trucking operations during the week will operate from 9:00 am to 3:30 pm to avoid peak traffic periods in the area.

According to Highway Capacity Manual 6th edition, Passenger Car Equivalence (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, which cannot always be effectively filled by normal passing maneuvers.

Exhibit 12–25, PCE's for Heavy Vehicles in General Terrain Segments, (obtained from "Highway Capacity Manual prepared by Transportation Research Board) summarizes PCE factors for trucks. The type of terrain in the project area is level, which corresponds to a PCE factor of 2.0 However, to be conservative, a PCE factor of 2.5 for trucks was used.

7.1.2 *Light Vehicle Traffic*

Light vehicle traffic would include vehicles used by employees and miscellaneous visitors such as cars, pick-up trucks and small service vehicles. A total of 14 mining employees and visitors were conservatively assumed to access the project site on a typical day. To estimate the employee trips, LLG assumed that all the light vehicle traffic occurs during the commuter peak hours. This is

considered conservative as the trip generation for light vehicles does not account for workers using other modes of transportation to reach the site or carpooling, which could occur.

7.1.3 *Vendor Traffic*

Vendor trips (fuel, supplies, service companies, etc.) were also included. A total of 4 vendors are expected to access the project site on a typical day. To estimate the vendor trips, LLG assumed that some vendor traffic does occur during the commuter peak hours with approximately 15% in each peak hour. This is considered conservative as majority of the vendor vehicles are expected to arrive/depart during the non-commute peak hours.

Table 7–1 tabulates the project traffic generation for Phase 1. The project is calculated to generate approximately 476 ADT (PCE adjusted), 15 trips (14 inbound, 1 outbound) during AM peak period and 15 trips (2 inbound, 13 outbound) during PM peak period. The currently operating Ivanhoe golf course would be completely closed during the project Phase 1. However, to be conservative, no existing traffic credit associated with this closure was assumed.

For project Phases 2 and 3, the same construction workforce as Phase 1 was assumed. However, during Phases 2 and 3, an existing traffic credit commensurate with the golf course closure was included based on existing driveway counts. While the golf course would be closed during Phase 1 as well, no existing trip credit was taken to be conservative. ***Table 7–2*** tabulates the total project traffic generation for Phases 2 and 3. The project is calculated to generate approximately 342 ADT, zero (0) trips during AM peak period and 6 trips (0 inbound, 6 outbound) during PM peak period.

The traffic assessment in this report was conducted for Phase 1 of the project Phase 1 given that the project trip generation in Phases 2 and 3 is lower than Phase 1. The assessment in Phase 1 is conservative in that respect.

7.2 Project Traffic Distribution

LLG developed the project traffic distribution based on coordination with the applicant regarding the potential truck routes using the location of the various concrete batch plants (which are spread across San Diego County) to which the material will be delivered, existing roadway classifications and traffic in the project area etc.

Figure 7–1 shows project trip distribution.

7.3 Project Traffic Assignment

The project traffic was assigned for the trucks, employees and vendors based on the trips shown in *Table 7–1* and the project trip distribution. The primary access to the project site is via the existing driveways on Willow Glen Drive, east of Steele Canyon Road. The westerly golf club driveway would serve inbound movements for both trucks and light vehicles while the easterly driveway would serve outbound movements. A secondary driveway on Willow Glen Drive, south of Muirfield Drive is also proposed but the traffic anticipated at this driveway is assumed to be nominal as the

driveways east of Steele Canyon Road would serve as the major driveway. ***Figure 7–2*** shows project trip assignment for Phase 1. ***Figure 7–3*** shows Existing + Project Phase 1 traffic volumes.

TABLE 7–1
TRIP GENERATION – PHASE 1

Use	Quantity	PCE[a]	Daily Trips		AM Peak Hour					PM Peak Hour				
			Rate	ADT[b]	% of ADT	In : Out Split	Volume In	Volume Out	Volume Total	% of ADT	In : Out Split	Volume In	Volume Out	Volume Total
Mining Traffic														
Heavy Vehicle (trucks)[c, d]	88	2.5	2 /veh	440	0%	50% : 50%	0	0	0	0%	50% : 50%	0	0	0
Light Vehicles (Employees)[e]	14	1.0	2 /veh	28	50%	90% : 10%	13	1	14	50%	10% : 90%	1	13	14
Vendors [d,f]	4	1.0	2 /veh	8	15%	50% : 50%	1	0	1	15%	50% : 50%	1	0	1
Net New Traffic				***476***			***14***	***1***	***15***			***2***	***13***	***15***

Footnotes:

g. PCE – Passenger car equivalence.
h. ADT – Average daily traffic.
i. Heavy vehicle traffic includes trucks carrying loads of construction aggregate, fuel, parts, etc.
j. Trucking operations for material sales would occur from 9:00 a.m. to 3:30 p.m. Monday through Friday to avoid peak traffic periods.
k. Light vehicle traffic includes vehicles used by approximately 9 employees and 5 miscellaneous visitors such as cars, pick-up trucks and small service vehicles.
l. Vendor trips include fuel, supplies, service companies, etc.

General Notes:

2. The currently operating Ivanhoe golf course would be completely closed during the project Phase 1. However, to be conservative, no existing traffic credit associated with this closure was assumed.

TABLE 7–2
TRIP GENERATION - PHASES 2 AND 3

Use	Quantity	PCE	Daily Trips		AM Peak Hour					PM Peak Hour				
			Rate	ADT[a]	% of ADT	In : Out Split	Volume In	Volume Out	Volume Total	% of ADT	In : Out Split	Volume In	Volume Out	Volume Total
Mining Traffic														
Heavy Vehicles (trucks)[b, c]	88	2.5	2 /veh	440	0%	50% : 50%	0	0	0	0%	50% : 50%	0	0	0
Light Vehicles (Employees)[d]	14	1.0	2 /veh	28	50%	90% : 10%	13	1	14	50%	10% : 90%	1	13	14
Vendors[c,e]	4	1.0	2 /veh	8	15%	50% : 50%	1	0	1	15%	50% : 50%	1	0	1
Subtotal	106		-	476			14	1	15			2	13	15
Existing Traffic To Be Removed														
Golf Course (holes)[f]	9	1.0	per count[g]	(134)	11%	93% : 7%	(14)	(1)	(15)	7%	22% : 78%	(2)	(7)	(9)
Net New Traffic				***342***			***0***	***0***	***0***			***0***	***6***	***6***

Footnotes:

h. ADT – Average daily traffic.
i. Heavy vehicle traffic includes trucks carrying loads of construction aggregate, fuel, parts, etc.
j. Trucking operations for material sales would occur from 9:00 a.m. to 3:30 p.m. Monday through Friday to avoid peak traffic periods.
k. Light vehicle traffic includes vehicles used by approximately 9 employees and miscellaneous visitors such as cars, pick-up trucks and small service vehicles.
l. Vendor trips include fuel, supplies, service companies, etc.
m. In phases 2 and 3, the 18-hole golf course is assumed to be closed. To be conservative, a traffic credit for 9 holes were taken.
n. A traffic count at the golf course driveway was taken, which showed 269 ADT for 18-holes. The existing credit was calculated for 9 holes (i.e. half of 269 ADT)

LINSCOTT LAW & GREENSPAN engineers

N:\2958\Figures
Date: 10/26/2020
Time: 11:24 AM

Figure 7-1

Project Traffic Distribution

Cottonwood Sand Mine

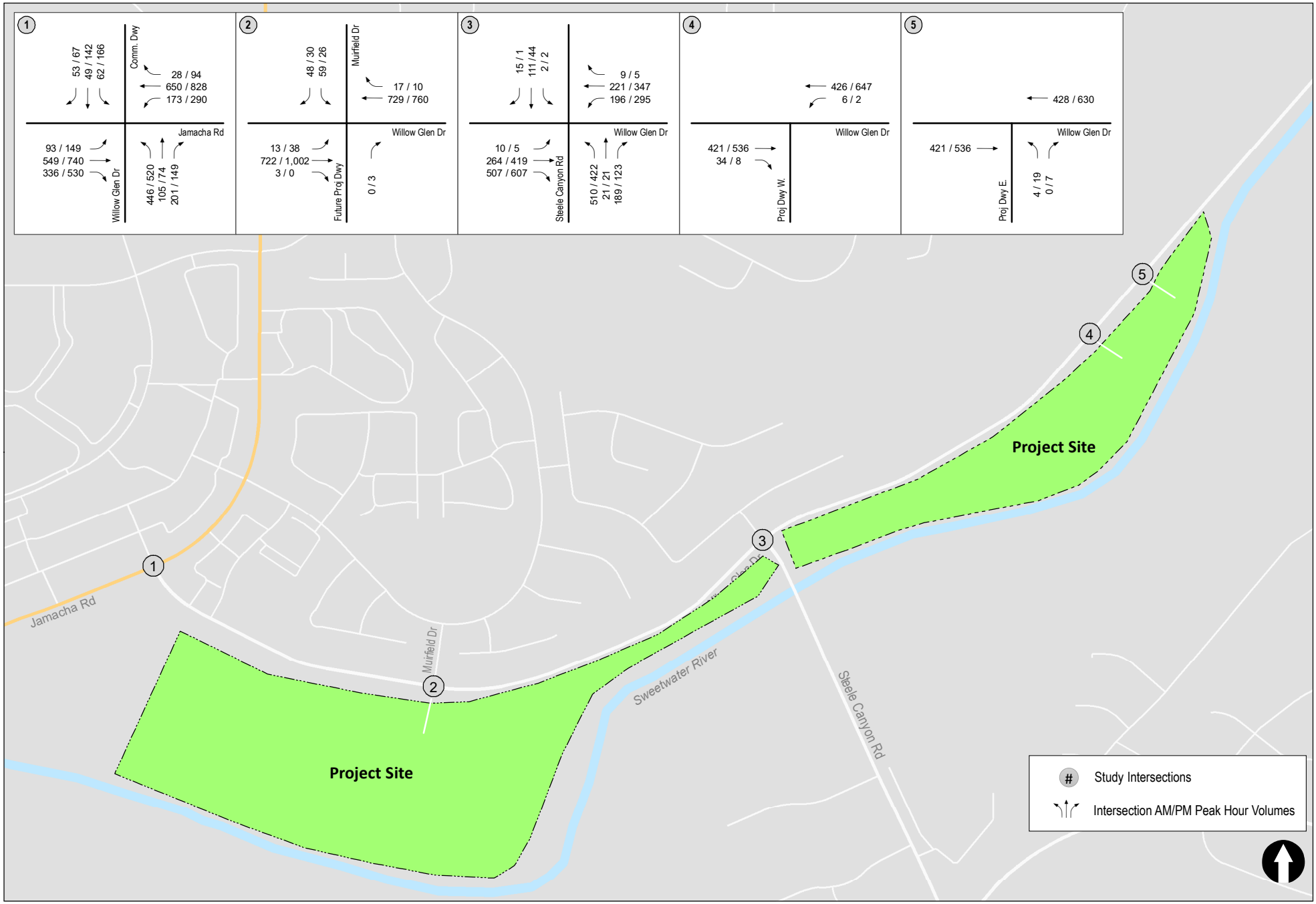
LINSCOTT LAW & GREENSPAN engineers

N:\2958\Figures
Date: 10/26/2020
Time: 11:25 AM

Figure 7-2

Project Traffic Volumes (Phase 1)

Cottonwood Sand Mine



LINSCOTT LAW & GREENSPAN engineers

N:\2958\Figures
Date: 10/26/2020
Time: 11:26 AM

Figure 7-3

Existing + Phase 1 Project Traffic Volumes

Cottonwood Sand Mine

8.0 ASSESSMENT OF NEAR-TERM VEHICULAR CONDITIONS

8.1 Existing + Project Phase 1 Intersection Assessment

Table 8–1 summarizes the Existing + Phase 1 Project intersections LOS. As seen in *Table 8–1*, the following intersection is calculated to operate at LOS E or worse:

- Willow Glen Drive / Muirfield Drive (LOS F during AM and LOS E during PM peak period)

Based on the criteria discussed in *Section 4.0*, no vehicular mobility deficiencies are calculated to occur at the listed intersection since the project contribution does not exceed the allowable thresholds.

Appendix D contains the Existing + Project Phase 1 intersection assessment worksheets.

8.2 Near-Term Traffic Forecasting

To forecast near-term traffic volumes, based on discussions with County staff, a review was conducted of the cumulative project development and the regional traffic growth contained in the SANDAG Series 13 Model within the project area.

Within the project area, the highest traffic growth shown in the model was about 0.5% per year as shown in ***Appendix E.*** To be conservative, a 1% per year growth factor for three (3) years was applied to the existing volumes to forecast Near-Term traffic volumes. Traffic volumes from the nearby Ivanhoe Ranch project and the Cuyamaca College Master Plan project were also accounted for and included in addition to the 1% growth to be conservative.

Figure 8–1 shows Near-Term traffic volumes. ***Figure 8–2*** shows Near-Term + Project Phase 1 traffic volumes.

8.3 Near-Term without Project Intersection Assessment

Table 8–2 summarizes the Near-Term without Project intersections LOS. As seen in *Table 8–2*, the following intersection is calculated to operate at LOS E or worse:

- Willow Glen Drive / Muirfield Drive (LOS F during AM and LOS E during PM peak period)

Appendix F contains the Near-Term without Project intersection assessment worksheets.

8.4 Near-Term + Project Phase 1 Intersection Assessment

Table 8–2 summarizes the Near-Term + Phase 1 Project intersections LOS. As seen in *Table 8–2*, the following intersection is calculated to operate at LOS E or worse:

- Willow Glen Drive / Muirfield Drive (LOS F during AM and LOS E during PM peak period)

Based on the criteria discussed in *Section 4.0*, no vehicular mobility deficiencies are calculated to occur at the listed intersection since the project contribution does not exceed the allowable thresholds.

Appendix G contains the Near-Term + Project Phase 1 intersection assessment worksheets.

TABLE 8–1
EXISTING INTERSECTION OPERATIONS - PHASE 1

Intersection	Control Type	Peak Hour	Existing		Existing + Phase 1 Project		Δ[c]	Deficiency
			Delay[a]	LOS[b]	Delay	LOS		
1. Jamacha Road / Willow Glen Drive	Signal	AM	33.1	C	33.2	C	0.1	No
		PM	38.0	D	38.3	D	0.3	No
2. Willow Glen Drive / Muirfield Drive	TWSC[d]	AM	49.6	**E**	50.1	**F**	0.5	No
		PM	35.1	**E**	35.7	**E**	0.6	No
3. Willow Glen Drive / Steele Canyon Road	Signal	AM	34.3	C	34.6	C	0.3	No
		PM	38.0	D	38.5	D	0.5	No
4. Willow Glen Drive / Project Drwy (West)	TWSC[d]	AM	20.9	C	8.7	A	(12.2)[e]	No
		PM	24.3	C	8.7	A	(15.6)[e]	No
5. Willow Glen Drive / Project Drwy (East)	TWSC[d]	AM	21.3	C	21.2	C	(0.1)[e]	No
		PM	14.9	B	22.4	C	7.5[e]	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. "Δ" denotes the project-induced increase in delay.
d. TWSC – Two-Way Stop-Controlled intersection. Minor street left-turn delay is reported.
e. With the proposed project, access to the project site will be limited to inbound only at Project Driveway (West) and outbound only at Project Driveway (East).

General Notes:

1. **Bold** typeface indicates intersections operating at LOS E or worse.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

TABLE 8–2
NEAR-TERM INTERSECTION OPERATIONS - PHASE 1

Intersection	Control Type	Peak Hour	Near-Term without Project		Near-Term + Phase 1 Project		Δ	Deficiency
			Delay[a]	LOS[b]	Delay	LOS		
1. Jamacha Road / Willow Glen Drive	Signal	AM	35.2	D	35.4	D	0.2	No
		PM	40.8	D	41.2	D	0.4	No
2. Willow Glen Drive / Muirfield Drive	TWSC[d]	AM	78.1	**F**	80.4	**F**	2.3	No
		PM	44.2	**E**	45.5	**E**	1.3	No
3. Willow Glen Drive / Steele Canyon Road	Signal	AM	37.2	D	37.3	D	0.1	No
		PM	44.6	D	44.9	D	0.3	No
4. Willow Glen Drive / Project Drwy (West)	TWSC[d]	AM	22.2	C	8.8	A	(13.4)[e]	No
		PM	26.1	D	8.7	A	(17.4)[e]	No
5. Willow Glen Drive / Project Drwy (East)	TWSC[d]	AM	22.6	C	22.5	C	(0.1)[e]	No
		PM	15.4	C	24.0	C	8.6	No

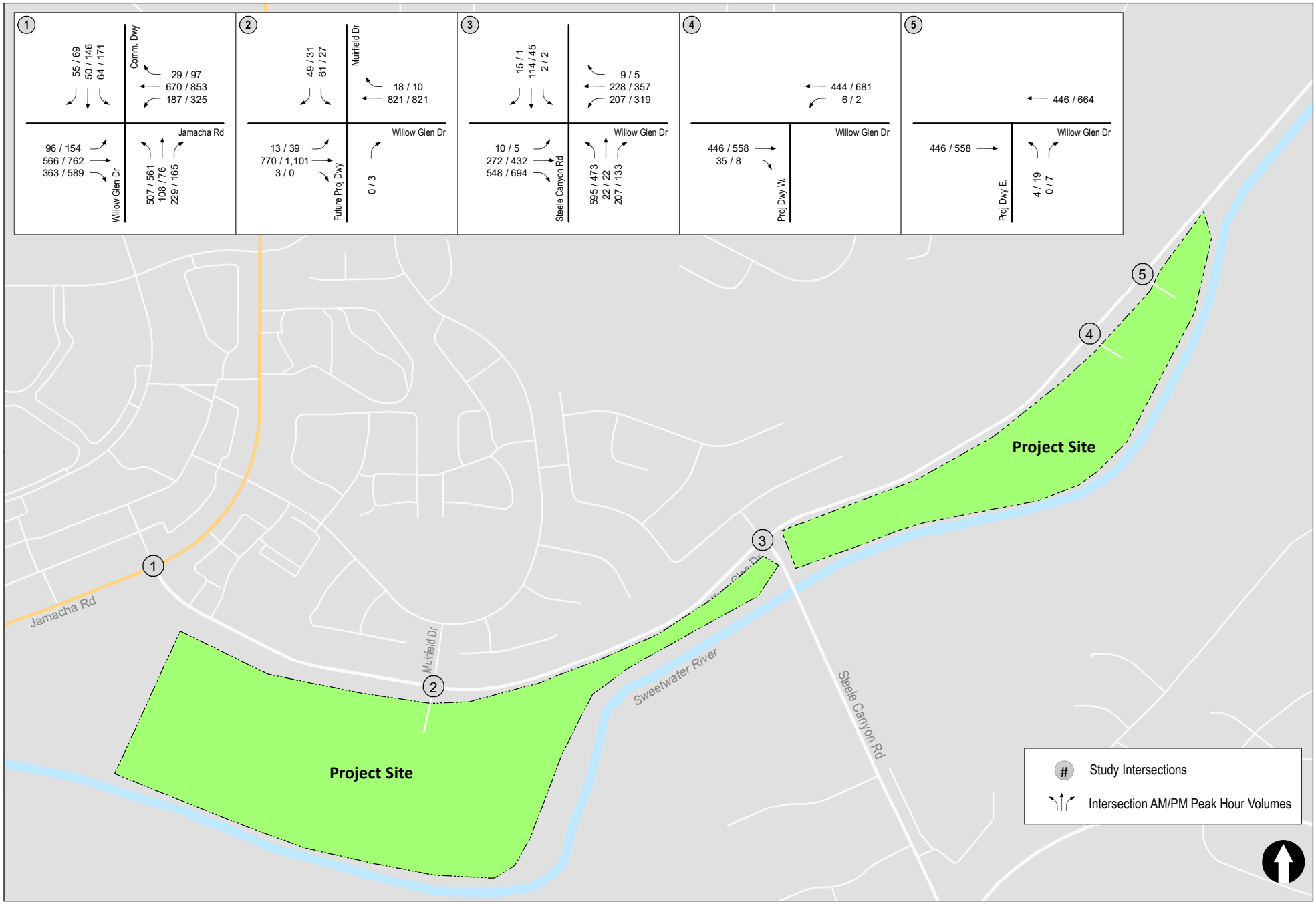
Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. "Δ" denotes the project-induced increase in delay.
d. TWSC – Two-Way Stop-Controlled intersection. Minor street left-turn delay is reported.
e. With the proposed project, access to the project site will be limited to inbound only at Project Driveway (West) and outbound only at Project Driveway (East).

General Notes:

1. **Bold** typeface indicates intersections operating at LOS E or worse.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F



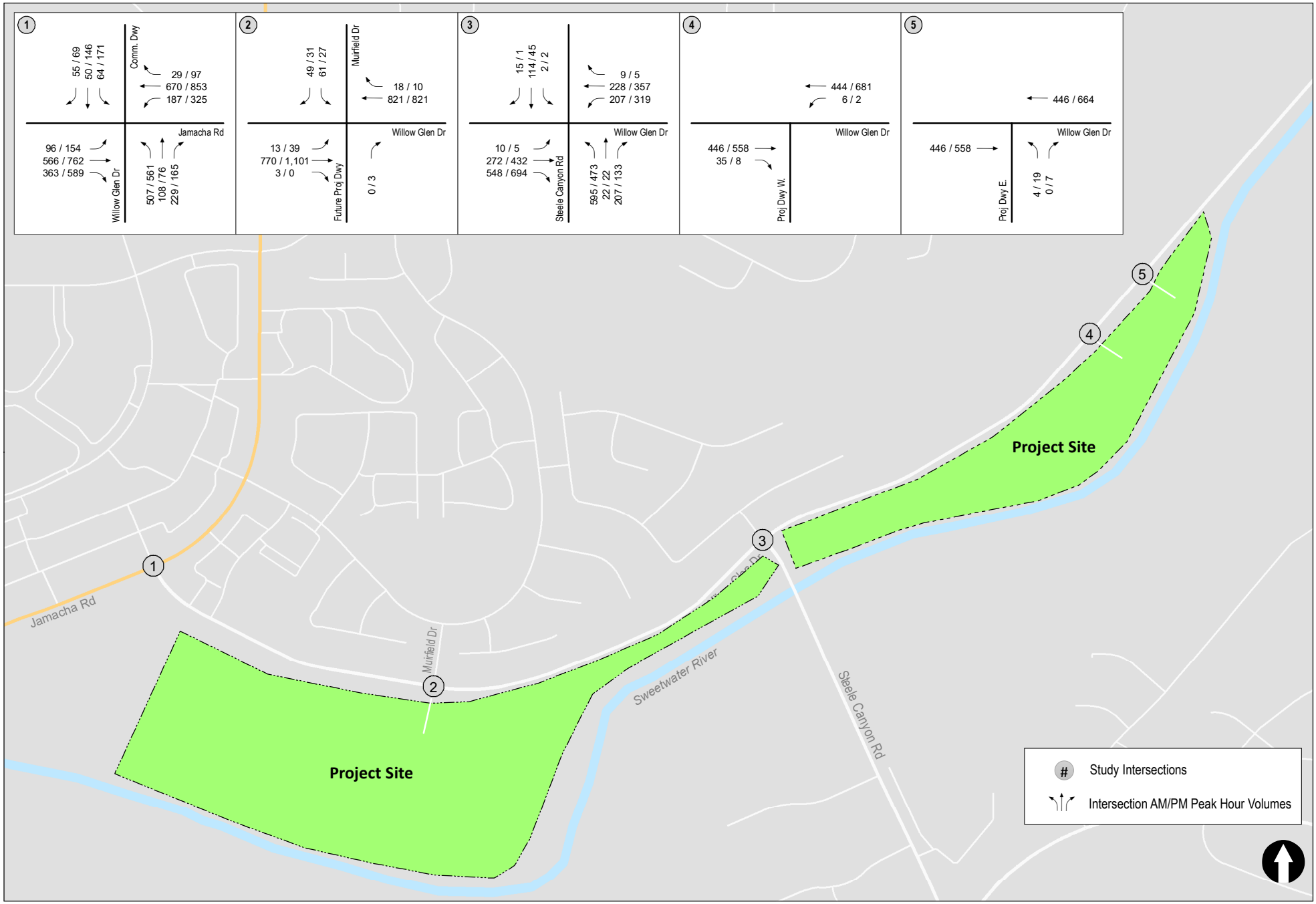
LINSCOTT LAW & GREENSPAN engineers

N:\2958\Figures
Date: 10/26/2020
Time: 11:39 AM

Figure 8-1

Near-Term Traffic Volumes

Cottonwood Sand Mine



LINSCOTT LAW & GREENSPAN engineers

N:\2958\Figures
Date: 10/26/2020
Time: 11:39 AM

Figure 8-2

Near-Term + Phase 1 Projects Traffic Volumes

Cottonwood Sand Mine

9.0 VEHICULAR MOBILITY IMPROVEMENTS

9.1 Vehicular Mobility Deficiencies

Per the criteria and the assessment methodology presented in this report, under the Existing and Near-Term conditions, project-related traffic would cause no deficiencies within the study area. Therefore, no off-site improvements are required. The following section identifies recommended frontage improvements.

9.2 Recommended Frontage Improvements

Based on discussions with the County staff, the following frontage improvements will be provided by the project.

- Willow Glen Drive – east of Steele Canyon Road:

  The project will restripe Willow Glen Drive between Steele Canyon Road and the project ingress driveway to provide Class II buffered bike lanes on both sides of the roadway. To facilitate deceleration of right-turning vehicles into the project ingress driveway, a dedicated right-turn lane will also be constructed. The project will also construct a two-way left-turn lane between the ingress and egress project driveways, which will serve as a refuge lane for trucks to complete their outbound maneuver. Willow Glen Drive between Steele Canyon Road and Hillsdale Road is classified in the Mobility Element as a 4*.1B: Major Road with Intermittent Turn lanes.* The project frontage along this stretch extends between Steele Canyon Road to approximately 1000' west of Hillsdale Road. In addition to the above improvements, the project proposes to provide an Irrevocable Offer of Dedication along the project frontage as needed to accommodate the ultimate roadway classification of Willow Glen Drive.

- Willow Glen Drive/ Steele Canyon Road Intersection – The project will also restripe the northbound approach of the Willow Glen Drive / Steele Canyon Road intersection to provide one dedicated left-turn lane and one shared left-through-right lane.

End of Report