

## **3.6 TRAFFIC AND CIRCULATION**

This section discusses the circulation impacts of the project on the surrounding street system, along the access routes between the mining extraction sites and the Syar aggregate plant in Healdsburg. Specific attention was given to the connections from private roads to those under the jurisdiction of the Sonoma County (County) and/or the City of Healdsburg.

### **A. Setting**

#### **LOCAL AND REGIONAL ROADWAY SYSTEM**

The project is located in and along the Russian River in Sonoma County generally east of the community of Geyserville. Figures 1-1 through 1-4 in Chapter 1, "Introduction and Project Description," show the local and regional roadway system and the proposed private and public truck routes in the vicinity of the study area. A primary haul route is identified for each of the gravel bars. All of the routes access the bars from U.S. Highway 101 (U.S. 101) along County and local community roadways.

#### ***U.S. 101***

U.S. 101 consists of two travel lanes in each direction in the Geyserville and Healdsburg area near the access routes to the Russian River. The Syar processing plant is accessed via the Old Redwood Highway/Healdsburg Avenue interchange on U.S. 101. The plant is located between Healdsburg Avenue and U.S. 101 just north of the interchange. According to Caltrans Traffic and Vehicle Data System, the average daily traffic volume on U.S. 101 is about 53,000 vehicles per day near the Syar plant at the southern end of Healdsburg and 27,000 vehicles just north of the U.S. 101/Canyon Road interchange. The posted speed limit is 65 mph throughout the access area.

#### ***State Route 128***

State Route (SR) 128 has one travel lane in each direction and connects U.S. 101 at Canyon Road in Geyserville to SR 29 in Calistoga southeast of the study area. SR 128 is located east of the Russian River between Alexander Valley Road to the south and the Geyserville Bridge at the north end of the mining area. The posted speed limit is 45 mph through the access area.

#### ***Banti Lane***

Banti Lane is a short local road that extends south of Geyserville Avenue just east of the U.S. 101/Geyserville interchange. Banti Lane is utilized as part of Haul Route 4. At its southern terminus, Banti Lane is a private gravel road.

#### ***Bill Ferguson Road***

Bill Ferguson Road is a short undeveloped two-lane rural roadway that extends north of Geyserville Avenue between Lytton Springs Road and the City of Geyserville. About 600 feet north of Geyserville Avenue, the roadway becomes gravel and crosses the former Northwestern Pacific railroad tracks. The crossing is narrow and the tracks are elevated approximately 10 feet above the roadway. Bill Ferguson Road is a private road near its northern terminus.

### ***Canyon Road***

Canyon Road is a paved roadway that has one travel lane in each direction and connects Geyserville Road to the U.S. 101 access ramps. A length of not more than 800 feet would be utilized as a portion of haul routes 6, 7, and 8.

### ***Geyserville Avenue***

Geyserville Avenue is a local two-lane rural roadway, adjacent to and east of U.S. 101. It stretches from Lytton Springs Road on the south to Barilani Road near the community of Asti north of Geyserville. The posted speed limit is 45 mph.

### ***Hamilton Lane***

Hamilton Lane is a short local two-lane gravel roadway that extends north of Geyserville Avenue in the City of Geyserville south of SR 128. About 600 feet north of Geyserville Avenue, the roadway crosses the former Northwestern Pacific railroad tracks. Haul route 5 uses Hamilton Lane.

### ***Hassett Lane***

Hassett Lane is a two-lane rural road that extends north of Lytton Station Road. It is roughly parallel to U.S. 101. Route 2 uses Hassett Lane.

### ***Healdsburg Avenue***

Healdsburg Avenue is a major roadway serving Healdsburg. It is a two-lane roadway with a posted speed limit between 25 and 35 mph. Healdsburg Avenue near its southern terminus would be utilized to carry project traffic between the Healdsburg Avenue/U.S. 101 interchange and the Syar Plant.

### ***Independence Lane***

Independence Lane is a paved roadway that has one travel lane in each direction and connects Geyserville Avenue to the U.S. 101 access ramps. A length of not more than 700 feet would be utilized as a portion of haul route 3.

### ***Lytton Springs Road***

Lytton Springs Road is a paved roadway that has one travel lane in each direction and connects Lytton Station Road (Healdsburg Avenue) to the U.S. 101 access ramps. A length of not more than 1000 feet would be utilized as a portion of haul route 2.

### ***Lytton Station Road***

Lytton Station Road is a two-lane local road that extends from Healdsburg Avenue to Alexander Valley Road farther to the east. Lytton Station Road is roughly parallel and north of Alexander Valley Road for most of its length. Route 2 would run along Lytton Station Road from Hassett Lane to Healdsburg Avenue. This segment includes a 90-degree curve along Lytton Station Road.

### ***Olivier Road***

Olivier Road is a short underdeveloped two-lane rural roadway that traverses east from the northern termination of Hassett Lane to the Russian River at the west. Route 2 utilizes Olivier Road from Hassett Lane to approximately 800 feet west where it intersects with a private road running northwards.

### ***River Road***

River Road is a two-lane rural roadway east of the Russian River that intersects with SR 128 near the Geyserville Bridge. River Road proceeds north of SR 128 and terminates near Gill Creek. The posted speed limit for River Road varies from 20 to 45 mph.

### ***Private Access Routes***

Generally, private roads used to access the proposed bars are not paved. Most of these roads are composed of either loose gravel or dirt. On Geyserville Avenue north of Canyon Road, the access points have some limited paving on the approaches to Geyserville Avenue.

### ***Bicycle Facilities***

The Sonoma County Bikeways Plan (Sonoma County Bicycle and Pedestrian Advisory Committee 1997) establishes as a goal to provide a safe and supportive environment for bicycle transportation providing standards for bike facilities and identifying improvements. Bikeways are designated according to the physical characteristics of the facility.

Class I bikeways are paved pathways that are separated and generally inaccessible to vehicular traffic. Class II bikeways are those provided along roadways and marked along the edge of the vehicular travel way. Class III bikeways are designated and mapped along streets that satisfy minimum design criteria but where vehicular traffic is otherwise normal.

The Sonoma County Bikeways Plan describes a proposed class II bikeway that is located continuously along the U.S. 101 corridor on Geyserville Avenue from Lytton Springs Road at the southern end of the project extent (Haul Route 2) to Kelly Road north of the project site. These roadways have been identified as proposed improvement projects to receive class II bikeway upgrades and shoulder improvements.

### ***Railroad Crossings***

All of the proposed haul routes cross over railroad tracks owned by the North Coast Railroad Authority (NCRA). The crossing on route 2 is a public roadway crossing located on Lytton Springs Road just west of Healdsburg Avenue. This crossing is equipped with lighted warning signals. The crossings on routes 3, 4, 5, 6, 7, and 8 are private road crossings located along the private access routes currently used to access vineyard parcels or homes, and are signed with stop signs.

There is currently no active rail service within the project limits. However, Sonoma Marin Area Transit (SMART) plans to open commuter rail service to Cloverdale in 2014 on the NCRA tracks. (SMART 2009). NCRA also hopes to resume freight service within the timeframe for the project (Peltz, pers. comm. 2009).

## ANALYSIS INTERSECTIONS

Fifteen intersections were selected for analysis because they would be used by project-generated traffic. These locations are identified in Figure 3.6-1 and listed below. Figure 3.6-1 also shows the access routes to the gravel bars.

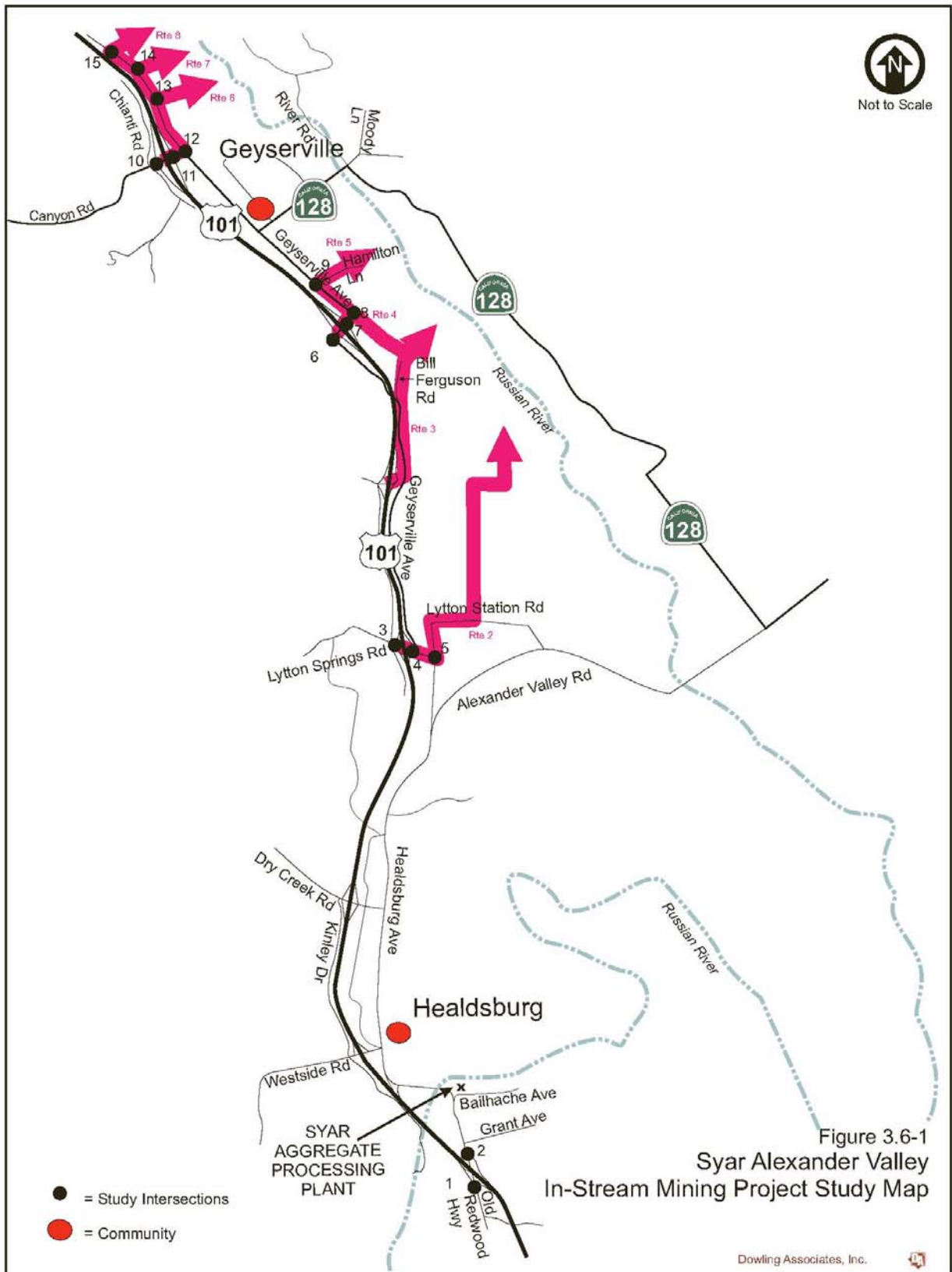
1. U.S. 101 southbound off-ramp at Healdsburg Avenue/Old Redwood Highway
2. U.S. 101 northbound off-ramp at Healdsburg Avenue/Old Redwood Highway
3. U.S. 101 southbound off-ramp at Lytton Springs Road
4. U.S. 101 northbound off-ramp at Lytton Springs Road
5. Healdsburg Avenue at Lytton Springs Road
6. U.S. 101 southbound off-ramp at Geyserville Avenue
7. U.S. 101 northbound off-ramp at Geyserville Avenue
8. Geyserville Avenue at Banti Lane
9. Geyserville Avenue at Hamilton Lane
10. U.S. 101 southbound off-ramp at Canyon Road
11. U.S. 101 northbound off-ramp at Canyon Road
12. Geyserville Avenue at Canyon Road
13. Geyserville Avenue at access to Route 6
14. Geyserville Avenue at access to Route 7
15. Geyserville Avenue at access to Route 8

Each of the access routes to the proposed gravel bars would use one or more of the analysis intersections. The intersections used by each route are listed below. The route previously designated as Route 1 is no longer under consideration.

- Route 2—intersections = 1, 2, 3, 4, 5
- Route 3—intersections<sup>1</sup> = 1, 2
- Route 4—intersections = 1, 2, 6, 7, 8
- Route 5—intersections = 1, 2, 6, 7, 8, 9
- Route 6—intersections = 1, 2, 10, 11, 12, 13
- Route 7—intersections = 1, 2, 10, 11, 12, 13, 14
- Route 8—intersections = 1, 2, 10, 11, 12, 13, 14, 15

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<sup>1</sup> Route 3 accesses the U.S. 101 ramps at Geyserville Avenue near Independence Avenue, including both the northbound and southbound ramp intersections. The existing traffic volumes at these locations were observed to be very low at both intersections and operating at LOS A or B during the weekday peak hours. Therefore, traffic counts were not conducted and these intersections were not included in the analysis.



## EXISTING TRAFFIC VOLUMES AND LEVEL OF SERVICE

Traffic conditions on roads and at intersections are generally characterized by their level of service (LOS). LOS is a convenient way to express the ratio between volume and capacity on a given road segment or at a given intersection, and is expressed as a letter grade ranging from LOS A through LOS F. Each level of service is generally described as follows:

- *LOS A*: Free-flowing travel with an excellent level of comfort and convenience and freedom to maneuver.
- *LOS B*: Stable operating conditions, but the presence of other road users causes a noticeable, though slight, reduction in comfort, convenience, and maneuvering freedom.
- *LOS C*: Stable operating conditions, but the operation of individual users is substantially affected by the interaction with others in the traffic stream.
- *LOS D*: High-density, but stable flow. Users experience severe restrictions in speed and freedom to maneuver, with poor levels of comfort and convenience.
- *LOS E*: Operating conditions at or near capacity. Speeds are reduced to a low but relatively uniform value. Freedom to maneuver is difficult with users experiencing frustration and poor comfort and convenience. Unstable operation is frequent, and minor disturbances in traffic flow can cause breakdown conditions.
- *LOS F*: Forced or breakdown conditions. This condition exists wherever the volume of traffic exceeds the capacity of the roadway. Long queues can form behind these bottleneck points with queued traffic traveling in a stop-and-go fashion.

## INTERSECTION LEVEL-OF-SERVICE CRITERIA

Intersections, rather than roadway segments, are generally the capacity-controlling locations for a roadway network. The existing and projected intersection operations have been analyzed using the Transportation Research Board's 2000 *Highway Capacity Manual* LOS computation methodologies for both signalized and stop-controlled intersections. The TRAFFIX™ software package was employed to assist in the computation.

The LOS computation for signalized intersections is based on the average amount of vehicle delay at all intersection approaches. For unsignalized (stop sign-controlled) intersections, the LOS computation is based on the duration of delay for the worst approach. The thresholds for the LOS are shown in Table 3.6-1. As shown in the table, LOS A represents very slight or no delay, LOS E represents intolerable delay (up to several signal cycles), and LOS F represents excessive delay.

The standards of significance that relate to all Level of Service criteria are discussed in subsection 3.6-C, "Potential Impacts and Mitigation Measures."

## ROADWAY LEVEL-OF-SERVICE CRITERIA

Roadway levels of service are determined by comparing one-way peak hour volumes against thresholds established in Table CT-2 of the 1989 Sonoma County General Plan. The thresholds determine the maximum volume at which a roadway operates at LOS C or better and the maximum at which it operates at LOS D. Table 3.6-2 reproduces the thresholds from the General Plan.

LOS	Delay	Signalized Average Delay (seconds)	Unsignalized Average Delay (seconds)
A	Very slight or no delay. If signalized, conditions are such that no approach phase is fully utilized by traffic and no vehicle waits longer than one red indication.	≤10	≤10
B	Slight delay. If signalized, an occasional approach phase is fully utilized.	>10 and ≤20	>10 and ≤15
C	Acceptable delay. If signalized, a few drivers arriving at the end of a queue may occasionally have to wait through one signal cycle.	>20 and ≤35	>15 and ≤25
D	Tolerable delay. Delays may be substantial during short periods, but excessive backups do not occur.	>35 and ≤55	>25 and ≤35
E	Intolerable delay. Delay may be great—up to several signal cycles.	>55 and ≤80	>35 and ≤50
F	Excessive delay	>80	>50

Note: LOS = level of service  
 Source: Transportation Research Board 2000

Type Facility	Lanes	Max. Vehicles per Hour in Heavier Direction	
		LOS C Thresholds	LOS D Thresholds
Rural Road	1	100	120
Rural Road (w/ good geometrics)	2	1,000	1,200
Residential Street	2	80	140
Major Collector	2	500	560
	4	1,100	1,230
Minor Collector	2	400	450
Secondary Arterials	2	700	780
	4	1,500	1,680
Major Arterials	2	900	1,010
	4	2,000	2,240
Divided Expressway	4	2,400	2,700
Freeway	4	3,000	3,240
	6	4,500	4,860

Source: Sonoma County

### EXISTING TRAFFIC CONDITIONS

Traffic counts were conducted from 7:00 to 9:00 a.m. and from 3:30 to 5:30 p.m. on Tuesday, May 15, 2007, at each of the analysis intersections noted above; these hours correspond to the a.m. and p.m. peak traffic hours, respectively. Figure 3.6-2 shows the existing a.m. and p.m. peak-hour traffic volumes at the analysis intersections. Existing a.m. and p.m. peak-hour levels of service at each of the analysis locations is shown in Table 3.6-3. The existing levels of service during the a.m. and p.m. peak hours range from LOS A to LOS B at all intersections.

**Table 3.6-3  
 Existing a.m. and p.m. Peak-Hour LOS at Proposed Project Intersections**

Intersection #	Location	Peak Hour LOS Level (average delay in seconds)	
		a.m.	p.m.
1	U.S. 101 southbound off-ramp at Healdsburg Avenue/Old Redwood Highway	B (11.8)	B (11.4)
2	U.S. 101 northbound off-ramp at Healdsburg Avenue/Old Redwood Highway	B (11.6)	B (11.4)
3	U.S. 101 southbound off-ramp at Lytton Springs Road	B (10.5)	B (12.7)
4	U.S. 101 northbound off-ramp at Lytton Springs Road	A (9.7)	B (10.3)
5	Healdsburg Avenue at Lytton Springs Road (access to Route 2)	B (10.7)	B (10.8)
6	U.S. 101 southbound off-ramp at Geyserville Avenue	B (10.3)	B (10.4)
7	U.S. 101 northbound off-ramp at Geyserville Avenue (access to Route 3)	A (9.1)	A (9.2)
8	Geyserville Avenue at Banti Lane (access to Route 4)	A (10)	B (10.1)
9	Geyserville Avenue at Hamilton Lane (access to Route 5)	A (9.8)	B (10.2)
10	U.S. 101 southbound off-ramp at Canyon Road	A (9.7)	A (9.8)
11	U.S. 101 northbound off-ramp at Canyon Road	A (9.5)	A (9.6)
12	Geyserville Avenue at Canyon Road	A (7.4)	A (7.7)

Note: Numbers in parentheses indicate seconds of average delay overall at all-way stop controlled intersections and for the worst affected approach at side street controlled intersections

To evaluate the LOS on the roadway system, peak-hour traffic volumes are compared to maximum threshold volumes to indicate level of service (LOS). Table 3.6-4a presents the results of state highway segment LOS analysis and relates cumulative freeway volumes to County General Plan LOS thresholds. The level of service thresholds are established by Table CT-2 of the 1989 Sonoma County General Plan. No thresholds are specified for LOS A or LOS B explicitly and therefore a single classification of LOS C or better is used for LOS A, LOS B, and LOS C, cumulatively.

3.0 Environmental Setting, Impacts, and Mitigation Measures  
 3.6 Traffic and Circulation

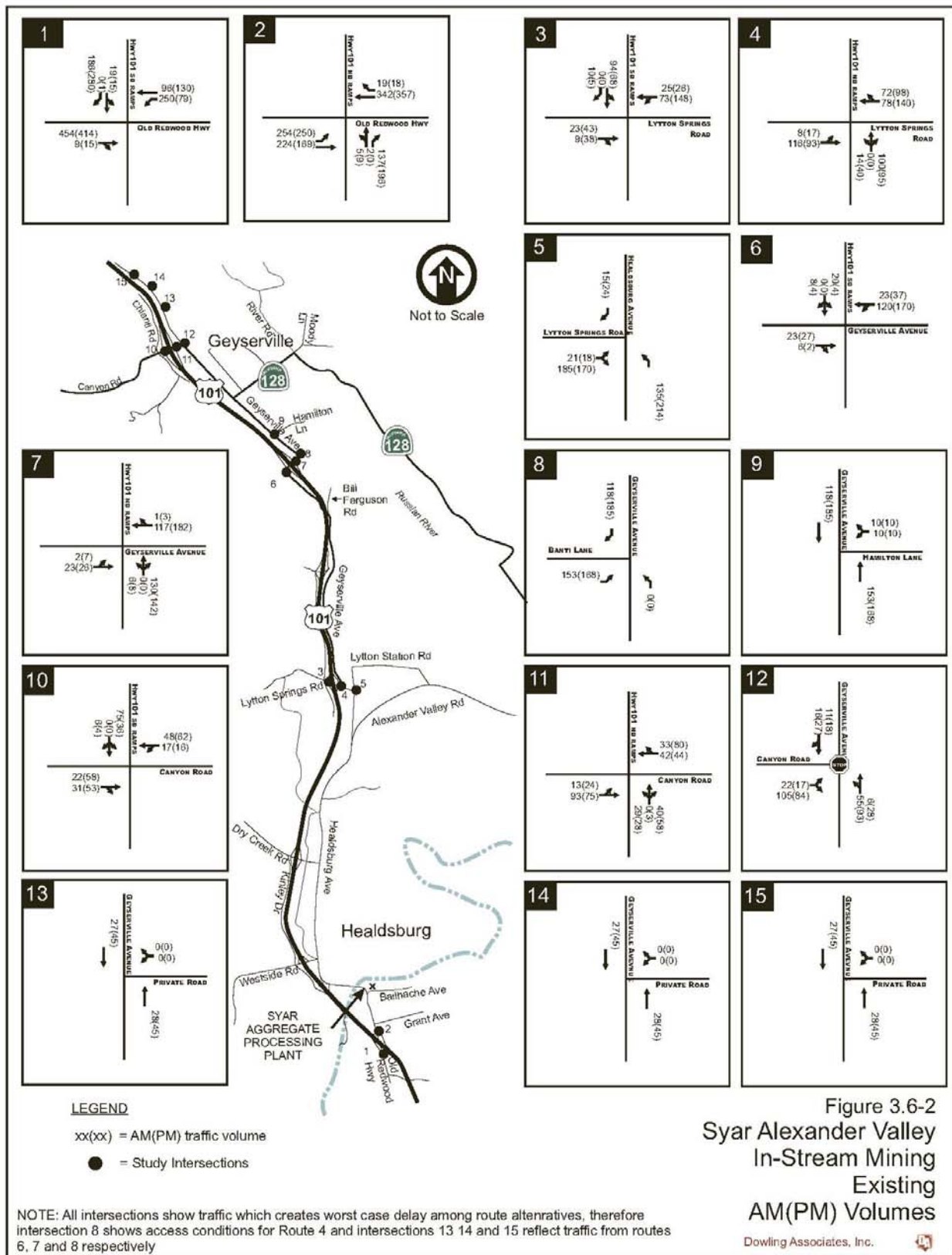


Table 3.6-4b presents the results of LOS analysis on County roads. The thresholds for county road LOS are established in Table CT-2 of the 1989 Sonoma County General Plan. Thresholds for County roads are not specified for LOS A or B and like state highway segment LOS analysis, a LOS C or better is used for LOS A, LOS B, and LOS C, cumulatively.

The highest traffic volumes near the site occur on U.S. 101 between Healdsburg and Geyserville. Traffic count data was extracted from the California Department of Transportation (Caltrans) Traffic and Vehicle Data System (Caltrans 2007). The peak hour is not indicated by Caltrans but is assumed to represent p.m. conditions, because p.m. conditions are higher than a.m. traffic volumes for locations observed both north and south of the segments included in the study.

<b>Table 3.6-4a Existing State Highway Segment Levels of Service</b>					
	Facility Class	LOS C Maximum Threshold Volume	LOS D Maximum Threshold Volume	Max. 1-way Peak Hour Volume	LOS
U.S. 101 North of Geyserville Avenue	4-Lane Freeway	3000	3240	1080	C*
U.S. 101 North of Lytton Springs Road	4-Lane Freeway	3000	3240	1320	C*
U.S. 101 North of Healdsburg Avenue	4-Lane Freeway	3000	3240	1830	C*

Notes: LOS = level of service; C\* = LOS at C or better

Source: California Department of Transportation, Traffic and Vehicle Data System

(<http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2007all.htm>). Directional factor assumed to be 60 percent based on Highway Capacity Manual default guidance. Caltrans does not distinguish between a.m. and p.m.

<b>Table 3.6-4b Existing County Road Segment Levels of Service</b>					
	Facility Class	LOS C Maximum Threshold Volume	LOS D Maximum Threshold Volume	Max. 1-way Peak Hour Volume	LOS
Geyserville Avenue East of U.S. 101	2-Lane Rural Road	1000	1200	185 (NB PM)	C*
Healdsburg Avenue North of U.S. 101	2-Lane Primary Arterial	900	1010	446 (SB PM)	C*
Lytton Springs Road East of U.S. 101	2-Lane Rural Road	1000	1200	238 (WB PM)	C*
Canyon Road East of U.S. 101	2-Lane Rural Arterial	1000	1200	125 (EB AM)	C*

Notes: LOS = level of service; C\* = LOS at C or better

Source: California Department of Transportation, Traffic and Vehicle Data System

(<http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2007all.htm>). Directional factor assumed to be 60 percent based on Highway Capacity Manual default guidance. Caltrans does not distinguish between a.m. and p.m.

All segments operate at acceptable peak-hour LOS between the south end of Healdsburg near the Syar Aggregate Plant and the Canyon Road interchange to the north.

### **HISTORICAL COLLISION DATA**

Caltrans and the California Highway Patrol provided historical accident traffic data for the period from 2002 through June 1, 2007 for U.S. 101 and the most significant surface roads used for each of the haul routes. The total accidents each year are presented in Table 3.6-5 along with the peak 3-year accident rate. Annual totals are provided for the number of accidents, number of fatal accidents, and number of injuries.

Three year peak accident rates are determined by estimating the annual traffic over the segments of these roads in the study area and comparing this to the incidence of accidents over consecutive 3-year periods. Based on Caltrans Collision Data on California State Highways (Caltrans 2005) freeway class facilities can be expected to have accident rates over 1 per million vehicle miles, rural collectors are expected to have rates over 3 per million vehicle miles and conventional two lane urban roads are expected to have rates around 5 per million vehicle miles. The segment of Healdsburg Avenue from U.S. 101 to the processing plant is treated as an urban road as this is a significant gateway to the City of Healdsburg.

### **B. Regulatory Framework**

Caltrans has jurisdiction over U.S. 101 and SR 128, including all freeway interchanges. Roadways within the city limits of Healdsburg are controlled by the City of Healdsburg. Within the unincorporated County areas, including the community of Geyserville, roadways are within County jurisdiction.

### **C. Potential Impacts and Mitigation Measures**

#### **CEQA CRITERIA USED FOR DETERMINING IMPACT SIGNIFICANCE**

According to Appendix G of the CEQA Guidelines, a project would typically have a significant impact if it would:

- cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, or congestion at intersections);
- exceed, either individually or cumulatively, a LOS standard established by the County congestion management agency or the County for designated roads or highways;
- result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- increase substantially hazards because of a design feature (i.e., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- result in inadequate emergency access;
- result in inadequate parking capacity; or
- conflict with adopted policies, plans, or programs supporting alternative transportation.

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<b>Table 3.6-5 Historical Accident Data for Select Project Roadways</b>			
Roadway and Year	Number of Collisions	Number of Fatal Collisions	Number of Injuries
<b>U.S. 101 – Old Redwood Highway to Canyon Road</b> (Peak 3-year Accident Rate = 0.68 per Million Vehicle Miles)			
2002	29	0	18
2003	33	0	28
2004	42	2	44
2005	41	4	22
2006	21	0	19
2007*	1	1	1
<b>Healdsburg Avenue – Bailhache Road to U.S 101</b> (Peak 3-year Accident Rate = 4.58 per MVM)			
2002	8	0	3
2003	6	0	1
2004	8	0	1
2005	4	0	0
2006	4	0	1
2007*	2	0	4
<b>State Route 128 – Geyserville Avenue to Russian River</b> (Peak 3-year Accident Rate = 1.77 per MVM)			
2002	3	0	3
2003	7	0	5
2004	3	0	4
2005	2	0	3
2006	4	0	2
2007*	0	0	0
<b>Lytton Station Road – Geyserville Avenue to Alexander Valley Road</b> (Peak 3-year Accident Rate = 1.13 per MVM)			
2002	3	0	2
2003	5	0	4
2004	4	0	5
2005	2	0	0
2006	3	0	1
2007*	1	0	1
<b>Canyon Road – Graymont Drive to Geyserville Avenue</b> (Peak 3-year Accident Rate = 2.23 per MVM)			
2002	3	0	1
2003	3	0	2
2004	1	0	0
2005	2	0	1
2006	0	0	0
2007*	0	0	0
SOURCE: California Highway Patrol 2007 * = partial year data to June, 1 2007			

## COUNTY GENERAL PLAN GOALS OBJECTIVES

The 1989 Sonoma County General Plan and the Sonoma County Traffic Study Guidelines (PRMD, n.d.) establish specific significance criteria used to determine the transportation impacts. Caltrans significance criteria are referenced in the county Guidelines.

### **Goal CT-2: Provide and maintain a highway system capacity to serve projected highway travel demand in 2005 at acceptable levels of service.**

The Sonoma County General Plan contains several objectives related to Goal CT-2 which concerns the County Highway System:

**Objective CT-2.1:** Reduce congestion on the countywide highway system by maintaining a "C" level of service or better on designated arterial and collector roadways unless a lower level of service is shown [in the general plan]<sup>2</sup>, a lower level of service is determined to be acceptable due to environmental or community values existing in some portions of the County, or the project(s) which would cause the lower level of service has an overriding public benefit which outweighs the increased congestion that would result.

**Objective CT-2.2:** Correlate new development with roadway improvements necessary to maintain the countywide levels of service set forth in Objective CT-2.1 or better on arterial and collector roadways as is more fully explained in policy CT-2b.

The Sonoma County General Plan contains several policies directly related to Goal CT-2.

**Policy CT-2a:** Use the levels of service shown [in the general plan]<sup>3</sup> to determine whether or not congestion is exceeding the desired level of service on the countywide highway system. Use area and/or project traffic analyses to determine whether intersection impacts or other localized congestion may also affect these desired levels of service.

**Policy CT-2b:** Assure that new development occurs only when a funding mechanism is available for improvements needed to achieve these levels of service specified in CT-2a above. If the Board determines that a project will provide significant overriding public benefit, the project may be exempt from this requirement.

**Policy CT-2c:** General Plan tables<sup>4</sup> define levels of service "C" and "D" on a peak hour and average daily basis and should be used as a guideline for measurement of roadway congestion.

## COUNTY TRAFFIC STUDY GUIDELINES

The County traffic study guidelines provide specific impact criteria for traffic impacts relating to twelve types of conditions:

County traffic study guidelines are consistent with County General Plan guidelines and are treated as an elaboration of the latter. State Highway standards of significance are consistent with Caltrans guidelines and apply only to state highways.

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<sup>2</sup> 1989 Sonoma General Plan, Figures CT-2c and CT-2d on pages 289 - 291.

<sup>3</sup> Ibid.

<sup>4</sup> Tables CT-1 and CT-2 on pages 298 and 299. Table CT-2 for peak hours is reproduced as Table 3.6-2 in this report

The County traffic study guidelines indicate that a project would result in a significant impact if it failed to meet minimum standards for any of the following areas of analysis.

- **On-site & Frontage Improvements** - Proposed on-site circulation and street frontage would not meet the County's minimum standards for roadway or driveway design, or potentially result in safety hazards, as determined by the County in consultation with a registered traffic engineer.
- **Parking** - Proposed on-site parking supply would not be adequate to accommodate parking demand.
- **Emergency Access** - The project site would have inadequate emergency access.
- **Alternative Transportation** - The project provides inadequate facilities for alternative transportation modes (e.g., bus turnouts, bicycle racks, pedestrian pathways) and/or the project creates potential conflicts with adopted policies, plans, or programs supporting alternative transportation.
- **Road Hazards** - Hazards are increased due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment, heavy pedestrian or truck traffic).
- **Vehicle Queues** - The addition of project traffic causes the 95<sup>th</sup> percentile queue length to exceed roadway turn lane storage capacity <sup>1</sup>.
- **Signal Warrants** - The addition of the project's vehicle or pedestrian traffic causes an intersection to meet or exceed Caltrans signal warrant criteria.
- **Turn Lanes** - The addition of project traffic causes an intersection to meet or exceed criteria for provision of a right or left turn lane on an intersection approach <sup>2</sup>.
- **Sight Lines** - The project constructs an unsignalized intersection (including driveways) or adds traffic to an existing unsignalized intersection approach that does not have adequate sight lines based upon Caltrans criteria for state highway intersections and County criteria for County roadway intersections.
- **County Intersections** - The County Level of Service standard for intersections is Level of Service D or better. The project would have a significant traffic impact if the project's traffic would cause an intersection currently operating at an acceptable level of service (LOS D or better) to operate below the standard (LOS E or F).

If the intersection currently operates or is projected to operate below the County standard (at LOS E or F), the project's impact is significant and cumulatively considerable if it causes the delay<sup>5</sup> to increase by five seconds or more. The delay will be determined by comparing intersection operations with and without the project's traffic for both the existing baseline and project future conditions

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<sup>5</sup> Average delay shall be used as defined in the year 2000 Highway Capacity Manual for the signalized and all-way stop intersections and delay for any approach or turning movement shall be used for side street stop sign controlled intersections.

The above criteria apply to all signalized, all-way stop controlled, and side street controlled intersections with project traffic volumes over 30 vehicles per hour per approach or per exclusive left turn movement.

- **County Roadways** - The traffic added by the project would cause the segment to operate below 1) LOS C or 2) a specific threshold identified explicitly for a given road in the Sonoma County General Plan.
- **State Highways** - Level of service criteria for state facilities are provided by the Caltrans publication "Guide for the Preparation of Traffic Impact Studies", as interpreted in the County traffic study guidelines. This states that Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D and that if the existing condition is below LOS C, then the existing average travel speed should be maintained.

## PROJECT IMPACTS

### *Findings in the ARM Plan PEIR*

The ARM Plan PEIR disclosed, analyzed, and mitigated potential traffic-related impacts in Sections 8.9, "Traffic and Circulation," and 8.14, "Public Services and Utilities." Section 8.9 explained that with mitigation, additional instream mining operations would result in traffic levels on public roadways that would be less than significant, and similar to levels that existed in 1994. The PEIR also noted that the ARM Plan required participation in the Aggregate Road Mitigation Fund to help maintain and improve public roadways and reduce potentially significant cumulative operational and safety impacts to less-than-significant. Section 8.14 similarly identified potentially significant impacts associated with the degradation of roadways, but referenced ARM Plan provisions and required additional mitigation measures that would reduce all such impacts to less-than-significant.

### *Project Impacts Not Discussed Further*

The following section describes possible project generated traffic and circulation impacts that were considered, but are not expected to occur.

The project would not result in a change in air traffic patterns. The project proposes mining activities along the Russian River and does not propose construction of any structures that would be located within a flight zone. Additionally, no air transportation facilities are located within the study area and the project would have no discernable impact on air travel. The Healdsburg Municipal Airport is the closest air transportation facility to the project study site and is located approximately 3 miles southwest of the project study area. Neither this facility nor its operation would be impacted by the project activities. As no impact would occur, no further discussion is needed.

The Sonoma County Transit Route 60 bus line provides service between Healdsburg and Cloverdale. The route runs along portions of Healdsburg Avenue and Lytton Station Road between Healdsburg and Lytton Springs Road, along Fredson Road from Lytton Springs Road to Independence Lane along Geyserville Road from Lytton Springs Road past Canyon Road to Cloverdale. As of 2010 the route provides express service on 20 minute to 1 hour headways during the peak hour. Given the low volume of bus traffic the project would not result in impacts to bus traffic operations. Transit service along railways is addressed under impacts to rail circulation.

The project would not result in inadequate emergency access because any existing roadways serving the various instream mining sites would not be closed or obstructed. Further, none of the public roadway intersections would be blocked during the hauling periods.

The project does not involve on-site circulation or street frontage that do not meet minimum standards for roadway or drainage design. Based on the locations of the gravel bars there are no relevant issues related to project frontages.

The project would not result in inadequate parking capacity. Five full-time workers would be onsite daily during the mining operation season. These workers would park their vehicles on the terrace above the gravel bars or at the previously described staging area. Similarly, unused extraction and loading equipment would also be staged on the terraces or at the staging area. No vehicle parking would occur outside of the equipment parking and storage areas.

The project would not trigger the need for intersection geometric design improvements. The existing roadways are predominantly single lane with no turning lanes or signals. The volumes along the subject roads and the incremental truck traffic would not trigger signal warrants. Given the dispersion of project traffic, the effects on queuing and turning-lane requirements would be negligible resulting in no impacts<sup>6</sup>.

The project would not create impacts related to access to the processing plant. Project traffic would access the plant by making a left turn west off of Healdsburg Avenue, via a left-turn pocket located 530 feet south of the intersection with Bailhache Avenue. Trucks would then travel north under Healdsburg Avenue (west of the intersection with Bailhache Avenue) to access the main plant. The relevant section of Healdsburg Avenue is suitable for truck traffic and currently provides access to large industrial, distribution and warehousing activities. The project's incremental truck traffic would not result in any significant impacts to the existing traffic mix. In addition, the presence of the left turn pocket would avoid the potential for delays on Healdsburg Avenue or other impacts.

### ***Project Impacts***

The following section describes the project's traffic-generated impacts.

**Impact 3.6-1 The project would substantially increase traffic in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, or congestion at intersections).**

#### *Project Trip Generation Assumptions*

The following procedures and assumptions were used to calculate the weekday truck and employee traffic associated with a peak mining production maximum of 350,000 tons per year.

#### Peak Truck Trips between Aggregate Mining Sites and the Syar Aggregate Processing Plant

As described in Chapter 1, "Introduction and Project Description," mining operations would occur between June 1 and November 1 each year, and extend over a maximum period from 6 a.m. to 9:30 p.m. Truck operations would vary during the course of the year and trucks could only travel from 30 minutes after sunrise to 30 minutes before sunset. With allowances for

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<sup>6</sup> Intersection level of service impacts identified at the SB 101 off ramp at Old Redwood Highway would not result in significant queuing because off-ramp storage exceeds 1000 feet and 95<sup>th</sup> percentile queuing would be less than 600 feet assuming 25 feet per passenger car and 60 feet per truck during the most congested peak of traffic.

meals, refueling and a shift change each day, there would effectively be a maximum of 12 hours of traffic generation.

The round-trip travel time between the sites and Syar plant in Healdsburg is about 1 hour. Travel times may vary slightly depending on the bars mined and the routes taken to and from the processing plant from year to year, however, one hour is an reasonable and conservative number for this analysis.

No more than 20 trucks per hour can access the site, load with gravel, and depart the site for the plant. As such, 20 vehicles could access the roadways and intersections leading to the site and 20 vehicles could access the roadways and intersections leading to the plant per hour. Given that the hauling operation could last for a maximum of 12 hours per day, a total of 480 daily one-way trips could occur (40 peak hour one-way trips times 12 hours of operation per day) which is the equivalent of 240 daily round trips. This estimate of 480 one-way trips is based on a peak truck loading scenario of trucks accessing the site, being fully loaded, and exiting in just 3 minutes each. This scenario is a conservative worst-case approach that overstates likely truck trips and their resulting impacts.

#### Site Staff Trip Generation

A total of five employees would be needed to operate the mining equipment. They would access the site in the morning, eat lunch at the site, and leave after their shift at the end of the day. One of these employees, the operations foreman, would supervise daily operations. The operations foreman is assumed to make two trips to the gravel site each day, once in the morning and once in the afternoon. In addition, one inbound and one outbound trip each could occur due to the lube truck and maintenance vehicle. If both vehicles plus the foreman access and leave the site within the same hour, a total of 3 inbound and 3 outbound trips could occur. It is conservative to assume that staff arrivals and departures occur within the same hour that hauling occurs; therefore the peak hour would include staff and haul truck trips.

#### Total Trip Generation

Based on the above assumptions, the project is estimated to generate 502 daily trips (480 trucks plus 22 staff and maintenance trips) on the surrounding street system. This means that during both the a.m. and p.m. peak hours, up to 51 one-way trips could occur along the route between any gravel bar site and the Syar plant. Table 3.6-6 summarizes these assumptions.

Although this study assumes an a.m. peak period from 7:00 to 9:00 a.m. and a p.m. peak period is from 3:30 p.m. to 5:30 p.m., the actual peak hour varies at each intersection based on the observations of traffic counts. It is conservative to assume that at each of the study intersections the peak condition is represented by the overlap of peak project generated traffic and the peak hour background traffic, regardless of precisely when the peak hour of background traffic occurs during the a.m. and p.m. commute periods.

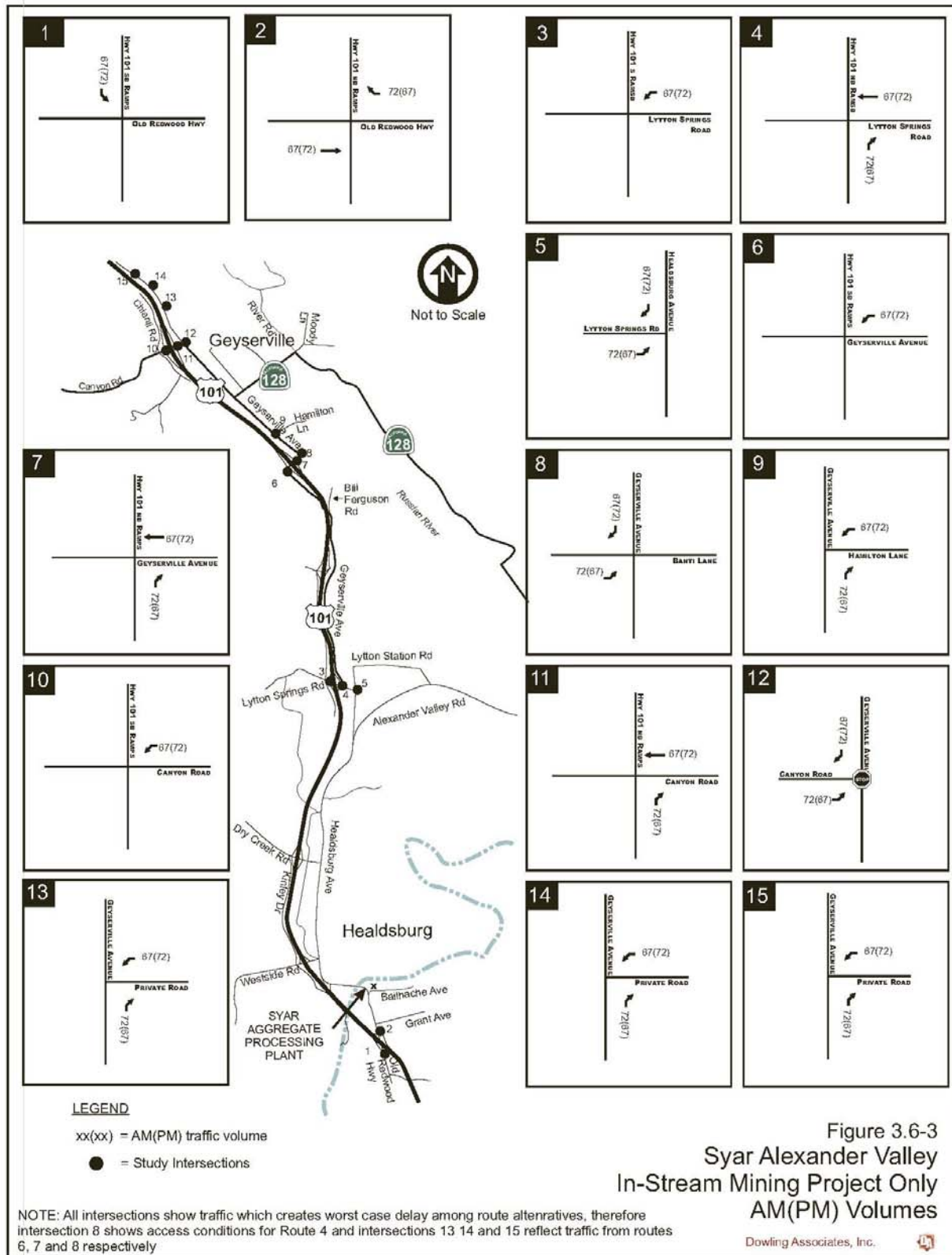
As part of the level of service calculations, a passenger car equivalent (PCE) factor of 3.0 was applied to haul truck trips, lube truck and maintenance truck trips. The lube truck and maintenance truck will be light trucks so a factor of 3.0 is conservative. The resulting passenger car equivalent of the project trip generation is 1,478 one-way daily PCE-trips including 139 one-way peak hour PCE-trips<sup>7</sup>.

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<sup>7</sup> Hereafter the term 'trip' implies 'PCE-trip.'

Figure 3.6-3 shows project-only turning movements for each intersection with turns shown only for the route resulting in the highest delay at each location. The turning movement data presented in this figure does not necessarily occur during each mining season for any given intersection, but are dependent upon which bars are mined in any given season.

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 3.6 Traffic and Circulation

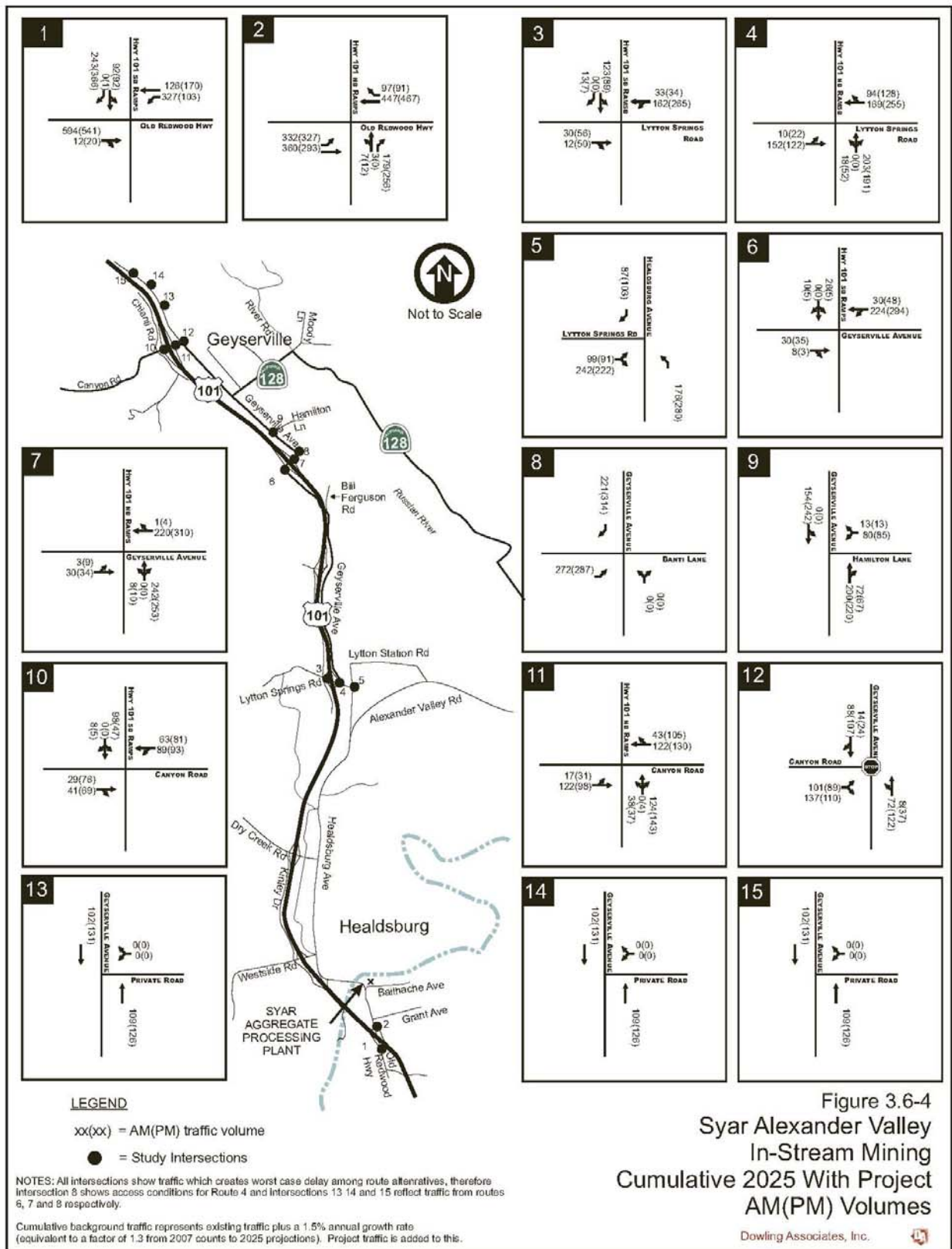


<b>Table 3.6-6 Project Trip Generation Assumptions in Trips and Passenger Car Equivalent Trips</b>							
Activity	Daily	a.m. peak hour		p.m. peak hour			
<b>Trips</b>							
	Total	In	Out	Total	In	Out	Total
Haul Truck	480	20	20	40	20	20	40
Site Staff	10	5	0	5	0	5	5
Supervisor	4	1	1	2	1	1	2
Maintenance Truck	4	1	1	2	1	1	2
Lube Truck	4	1	1	2	1	1	2
<b>Total</b>	<b>502</b>	<b>28</b>	<b>23</b>	<b>51</b>	<b>23</b>	<b>28</b>	<b>51</b>
<b>Passenger Car Equivalents</b>							
	Total	In	Out	Total	In	Out	Total
Haul Truck	1,440	60	60	120	60	60	120
Site Staff	10	5	0	5	0	5	5
Supervisor	4	1	1	2	1	1	2
Maintenance Truck	12	3	3	6	3	3	6
Lube Truck	12	3	3	6	3	3	6
<b>Total</b>	<b>1,478</b>	<b>72</b>	<b>67</b>	<b>139</b>	<b>67</b>	<b>72</b>	<b>139</b>

Note: Each truck = 3 passenger car equivalents based on County Guidelines.

The cumulative traffic represents 18 years of background traffic growth to the year 2025 at an annual rate of 1.5%. Figure 3.6-4 shows the Cumulative 2025 With Project turning movements for each intersection assuming utilization of the project gravel bar access route that generates the highest delay in each case.

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### *REP Trip Generation and Traffic Impacts*

Based on anticipated improvements, and the amount of material involved, periodic activity related to the REP improvements will generate a maximum of 60 vehicles trips per season and a maximum of 10 vehicle trips per day. REP hauling would occur during periods when crews and equipment would not be engaged in aggregate mining activity. Therefore, these periods would coincide with a reduction in aggregate mining related trip generation that is offset by an equal number of trips generated while moving this equipment and material to and from REP improvement sites.

The maximum daily REP trip generation of 10 trips per day would equate to a total of 30 passenger car equivalent (PCE) trips per day. This low volume falls far below the County's 30-car per hour minimum threshold for considering intersection or roadway traffic impacts.

Access by vehicles other than haul trucks (e.g., re-vegetation crews) would also be required, but would not add significantly to existing road traffic because the REP activities would occur over short time periods and generate negligible traffic volumes with an average volume of less than one trip per hour.

### *Peak Hour Intersection Level of Service*

Table 3.6-7 shows the modeled a.m. and p.m. peak-hour LOS at study intersections resulting from the project using the proposed haul routes. As described above, a significant impact would occur if the project lowers an intersection to LOS E. Because the model assumes a 1.5% annual growth rate, and a peak number of truck trips travelling through the study intersections during the peak hour, the modeling results are very conservative and overstate the impacts of project implementation. Nevertheless, as shown in Table 3.6-7, all intersections used by the project would experience LOS C or better conditions except the intersection of U.S. 101 southbound off-ramp at Healdsburg Avenue/Old Redwood Highway, where the left turn movements would result in a LOS of F in 2025, which is considered a significant impact.

This impact would occur if the maximum amount of traffic – 20 haul trucks plus lube truck, maintenance truck, and supervisor – all left the site within the same peak hour and made the most congested movement (i.e., the southbound left turn from the ramp onto Old Redwood Highway). This left turn movement would result in delay because drivers must wait for a gap in all cross traffic, which includes separate northbound and southbound traffic on Old Redwood highway and a third lane of traffic turning from Old Redwood Highway onto the southbound U.S. 101 on-ramp. As noted above, this impact is conservative and likely overstated in part because it incorporates a peak hour factor of 0.88, consistent with Caltrans Traffic Analysis guidelines. The peak hour factor accounts for the most congested 15 minutes of the peak hour, which is when capacity constraints can cause the breakdown in flow that affect the rest of the peak periods. According to the Highway Capacity Manual methodologies, delay at minor street turning movements is very sensitive when the demand for turns reaches or exceeds the available gaps. This means that very small changes in volume can have a large impact on delay.<sup>8</sup>

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<sup>8</sup> As explained in Note 6, the project would not result in spillover congestion because of length of the off-ramp. At the 95<sup>th</sup> percentile, queuing would require less than 600 feet of more than 1,000-foot ramp. The calculated queue is 11.4 vehicles rounded to 12 which would consist of 4 passenger cars requiring less than 25 feet of storage each and 8 haul trucks requiring less than 60 feet of storage each.

Table 3.6-8 shows that the intersection would not drop below LOS D until 2015, and, to maintain an LOS D or better. Syar would need to reduce the number of truck trips at this intersection during the am peak hour by one trip per year from 2015 to 2025 (or the expiration of the Use Permit).

Impacts due to REP traffic would only occur where REP generated trips result in unacceptable conditions along routes not addressed by the impact analysis of mining routes given normal aggregate mining activity. Analysis of the trip generation assumptions indicates that there are no such impacts.

### ***Mitigation Measures***

**3.6-1 Restrict Peak Hour Traffic.** Syar shall prohibit project trucks from traveling through the Hwy 101 southbound off-ramp at Healdsburg Avenue/Old Redwood Highway during the AM peak from 7:00-9:00 AM in accordance with Table 3.6-8. Syar shall monitor and document compliance with this measure, and submit monthly reports during the mining season to PRMD demonstrating compliance.

Alternatively, in 2015 or thereafter, Syar may submit to PRMD a traffic study with updated traffic counts at the southbound off-ramp of Hwy 101 and Healdsburg Avenue/Old Redwood Highway. If the study finds that traffic has not grown as quickly as predicted above, and that the intersection has and will operate at LOS D or better during the am peak of 7:00-9:00 AM with more Syar trucks than authorized above, then Syar shall comply with all limits identified in the traffic study to maintain LOS D or better. At no time may Syar exceed 22 truck trips per hour (20 gravel trucks and 2 miscellaneous vehicles).

### ***Significance after Mitigation***

Implementation of Mitigation Measure 3.6-1 would result in no worse than LOS D (with off ramp left turning delay of approximately 34.5 seconds in each case), a less-than-significant impact.

**Impact 3.6-2 The project would not exceed the Roadway LOS standard for designated roads or highways.**

Table 3.6-9a analyzes state highway roadway volumes with implementation of the project, against the relevant County General Plan LOS thresholds. The project traffic includes the passenger car equivalent factor of 3.0 for each truck from project operations. Table 3.6-9b relates cumulative freeway volumes to County General Plan LOS thresholds for county roads.



Table 3.6-7  
 Peak Hour Level of Service at Existing Condition, Cumulative 2025 No Project and Cumulative 2025 With Project Impacts along Haul Routes 2 – 8

#	Intersection Location	Peak Hour LOS Level (average delay in seconds) at Intersections																	
		Existing Condition		Cumulative 2025 No Project		Cumulative 2025 Haul Route 2		Cumulative 2025 Haul Route 3		Cumulative 2025 Haul Route 4		Cumulative 2025 Haul Route 5		Cumulative 2025 Haul Route 6		Cumulative 2025 Haul Route 7		Cumulative 2025 Haul Route 8	
		A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak
1	U.S. 101 southbound off-ramp at Healdsburg Avenue/Old Redwood Highway	B ( 11.8)	B ( 11.4)	C ( 15.9)	B ( 13.7)	F ( 79.8)	C ( 17.3)	F ( 79.8)	C ( 17.3)	F ( 79.8)	C ( 17.3)	F ( 79.8)	C ( 17.3)	F ( 79.8)	C ( 17.3)	F ( 79.8)	C ( 17.3)	F ( 79.8)	C ( 17.3)
2	U.S. 101 northbound off-ramp at Healdsburg Avenue/Old Redwood Highway	B ( 11.6)	B ( 11.4)	B ( 14.3)	B ( 13.8)	C ( 16.1)	C ( 15.6)	C ( 16.1)	C ( 15.6)	C ( 16.1)	C ( 15.6)	C ( 16.1)	C ( 15.6)	C ( 16.1)	C ( 15.6)	C ( 16.1)	C ( 15.6)	C ( 16.1)	C ( 15.6)
3	U.S. 101 southbound off-ramp at Lytton Springs Road	B ( 10.5)	B ( 12.7)	B ( 11.6)	C ( 15.6)	B ( 14)	C ( 20.7)	B ( 13.4)	C ( 21.9)	B ( 13.4)	C ( 21.9)	B ( 13.4)	C ( 21.9)	B ( 13.4)	C ( 21.9)	B ( 13.4)	C ( 21.9)	B ( 13.4)	C ( 21.9)
4	U.S. 101 northbound off-ramp at Lytton Springs Road	A ( 9.7)	B ( 10.3)	B ( 10.4)	B ( 11.4)	B ( 11.1)	B ( 12.3)	B ( 13)	B ( 15)	B ( 13)	B ( 15)	B ( 13)	B ( 15)	B ( 13)	B ( 15)	B ( 13)	B ( 15)	B ( 13)	B ( 15)
5	Healdsburg Avenue at Lytton Springs Road (access to Route 2)	B ( 10.7)	B ( 10.8)	B ( 11.7)	B ( 12)	B ( 14.6)	C ( 17.5)												
6	U.S. 101 southbound off-ramp at Geyserville Avenue	B ( 10.3)	B ( 10.4)	B ( 11.3)	B ( 11.4)					B ( 12.9)	B ( 13)	B ( 12.9)	B ( 13)	B ( 14.4)	C ( 18.6)	B ( 14.4)	C ( 18.6)	B ( 14.4)	C ( 18.6)
7	U.S. 101 northbound off-ramp at Geyserville Avenue (access to Route 3)	A ( 9.1)	A ( 9.2)	A ( 9.4)	A ( 9.6)					A ( 9.8)	B ( 10.1)	A ( 9.8)	B ( 10.1)	B ( 10.8)	B ( 11.5)	B ( 10.8)	B ( 11.5)	B ( 10.8)	B ( 11.5)
8	Geyserville Avenue at Banti Lane (access to Route 4)	A ( 10.0)	B ( 10.1)	B ( 10.3)	B ( 10.5)					B ( 11.9)	B ( 12.3)	B ( 11.1)	B ( 11.3)						
9	Geyserville Avenue at Hamilton Lane (access to Route 5)	A ( 9.8)	B ( 10.2)	B ( 10.4)	B ( 11)							B ( 12.3)	B ( 13.9)						
10	U.S. 101 southbound off-ramp at Canyon Road	A ( 9.7)	A ( 9.8)	B ( 10.2)	B ( 10.3)									B ( 11.8)	B ( 12)	B ( 11.8)	B ( 12)	B ( 11.8)	B ( 12)
11	U.S. 101 northbound off-ramp at Canyon Road	A ( 9.5)	A ( 9.6)	A ( 10)	B ( 10.2)									B ( 10.5)	B ( 10.7)	B ( 10.5)	B ( 10.7)	B ( 10.5)	B ( 10.7)
12	Geyserville Avenue at Canyon Road	A ( 7.4)	A ( 7.7)	A ( 7.7)	A ( 8.1)									A ( 8.5)	A ( 8.8)	A ( 8.5)	A ( 8.8)	A ( 8.5)	A ( 8.8)
13	Geyserville Avenue at access to Route 6																	A ( 9.5)	A ( 9.9)
14	Geyserville Avenue at access to Route 7																	A ( 9.5)	A ( 9.9)
15	Geyserville Avenue at access to Route 8													A ( 9.5)	A ( 9.9)				

Note: Numbers in parentheses indicate seconds of average delay overall at all-way stop controlled intersections and for the worst affected approach at side street controlled intersections  
 Shaded cells indicate no change from no project condition  
 N/A = The proposed intersections do not currently exist at this time. They would be connected to public roadways for the purposes of the project.



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Year	Traffic Growth above 2007 Counts	Maximum Truck Trips (including maintenance & lube trucks)	Reduction from Total
2008	1.5%	22	0
2009	3.0%	22	0
2010	4.6%	22	0
2011	6.1%	22	0
2012	7.7%	22	0
2013	9.3%	22	0
2014	11.0%	22	0
2015	12.6%	21	1
2016	14.3%	20	2
2017	16.1%	19	3
2018	17.8%	18	4
2019	19.6%	17	5
2020	21.4%	16	6
2021	23.2%	15	7
2022	25.0%	14	8
2023	26.9%	13	9
2024	28.8%	12	10
2025	30.7%	11	11

Segment	Facility Class	LOS C Threshold Volume	LOS D Threshold Volume	Existing		Cumulative 2025 No Project		Cumulative 2025 With Project	
				Max. 1-way Peak Hour Volume	LOS	Max. 1-way Peak Hour Volume	LOS	Max. 1-way Peak Hour Volume	LOS
US 101 North of Geyserville Avenue	4-Lane Freeway	3000	3240	1080	C*	1415	C*	1490	C*
US 101 North of Lytton Springs Road	4-Lane Freeway	3000	3240	1320	C*	1729	C*	1804	C*
US 101 North of Healdsburg Avenue	4-Lane Freeway	3000	3240	1830	C*	2397	C*	2472	C*

Source: California Department of Transportation, Traffic and Vehicle Data System (<http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2007all.htm>). Directional factor assumed to be 60 percent based on Highway Capacity Manual default guidance. Caltrans does not distinguish between a.m. and p.m.

Notes: LOS = level of service; C\* = LOS at C or better

Segment	Facility Class	LOS C Threshold Volume	LOS D Threshold Volume	Existing		Cumulative 2025 No Project		Cumulative 2025 With Project	
				Max. 1-way Peak Hour Volume	LOS	Max. 1-way Peak Hour Volume	LOS	Max. 1-way Peak Hour Volume	LOS
Geyserville Avenue East of U.S. 101	2-Lane Rural Road	1000	1200	185 (NB PM)	C*	242 (NB PM)	C*	317 (NB PM)	C*
Healdsburg Avenue North of U.S. 101	2-Lane Primary Arterial	900	1010	446 (SB PM)	C*	584 (SB PM)	C*	659 (SB PM)	C*
Lytton Springs Road East of U.S. 101	2-Lane Rural Road	1000	1200	238 (WB PM)	C*	312 (WB PM)	C*	387 (WB PM)	C*
Canyon Road East of U.S. 101	2-Lane Rural Arterial	1000	1200	125 (EB AM)	C*	164 (EB AM)	C*	239 (EB AM)	C*

Source: California Department of Transportation, Traffic and Vehicle Data System (<http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2007all.htm>). Directional factor assumed to be 60 percent based on Highway Capacity Manual default guidance. Caltrans does not distinguish between a.m. and p.m.  
 Notes: LOS = level of service; C\* = LOS at C or better

As shown in Tables 3.6-9a and 3.6-9b, the project would not result in traffic exceeding the relevant threshold for highway level of service. As a result, the project would result in a less-than-significant impact.

**Traffic Safety**

**Impact 3.6-3 The project would substantially increase hazards due to a design feature (i.e., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).**

General Access Conditions

The use of large haul trucks on public roads could reduce safety along roadways and at intersections where sight distances and other physical design features do not conform to local and regional agency design standards. Truck traffic from the project must access public roadways on many of the proposed routes. A field evaluation of all of the access points was conducted during June 2007 by John Dowden (Dowling Associates, Inc.).

The quality of access at those locations where trucks enter public roadways from private roads, coupled with the larger turning radii and slower movement of trucks, could create conflicts with other drivers and bicyclists using the roadways.

### ***Mitigation Measures***

- 3.6-3a**      **Develop a Traffic Control Plan.** Syar shall retain a professional engineer to develop a traffic control plan for each haul route. The plan at minimum shall include the provision of warning signs and other informational devices to alert other drivers of the presence of trucks entering the major roadways; plans for any usage of traffic lane changes; and locations for any required personnel such as flagmen or personal directing traffic.
- 3.6-3b**      **Educate Truck Drivers.** As per ARM Plan standards, Syar shall develop a truck driver education program that includes posting details on haul routes and informing drivers of procedures established to reduce public conflicts. Syar shall monitor driver compliance and respond to any complaints about gravel trucks operations.

### Curvature on Lytton Station Road

The Lytton Station Road curve was identified by Carlenzoli and Associates (2008), and concurred with by the County, as not being able to safely accommodate the wider turning radius of haul trucks. The curve may need improvement to the radius in order to allow haul trucks to trucks to negotiate the curve without tracking into the opposing lane and creating conflicts with existing traffic.

### ***Mitigation Measures***

- 3.6-3c**      **Improve Curve on Lytton Station Road.** Prior to use of Haul Route 2, Syar shall purchase required right of way and design and construct a widening improvement of Lytton Station Road sufficient to meet applicable Caltrans and AASHTO standards and keep project haul trucks from crossing the center line. The Sonoma County Department of Transportation and Public Works has developed a preliminary concept for lane widening that would expand the paved area of the interior south east quadrant of the curve by approximately 10 feet at the apex. This preliminary concept appears to be the most efficient and cost-effective means of meeting this requirement, although widening to the outside of the curve could also meet this requirement. If right of way is required for the improvements and Syar is unable to acquire the necessary right-of-way to construct the improvements, the implementation of Mitigation Measure 3.6-3c may not be feasible. If the identified improvement in Mitigation Measure 3.6-3c is infeasible, the roadway impact would be significant and unavoidable.

### Sight Distance

Carlenzoli and Associates (2008) obtained data and evaluated impacts in a report, entitled *Syar Industries Incorporated Alexander Valley In-Stream Mining Project*. The County reviewed the report and concurred with the findings, and included several additional recommendations developed by the Department of Transportation and Public Works.

*Haul route 3 stop at Independence Lane at Geyserville Avenue:* Sight distance for the stop at Independence Lane turning north on Geyserville Avenue is 260 feet, less than the minimum stopping sight distance of 300 feet, as a result of overhanging vegetation obstructing the view. This is a potentially significant impact.

*Haul route 5 access from Hamilton Lane to Geyserville Avenue:* Sight distance for the stop at Hamilton Lane turning south onto Geyserville Avenue is 300 feet, as a result of overhanging vegetation obstructing the view. The stopping sight distance of 300 feet is exactly equal to the minimum stopping sight distance. This may be a potentially significant impact.

***Mitigation Measure***

3.6-3d **Trim Vegetation to Increase Stopping Sight Distances.** Prior to using Geyserville Avenue as a haul route, Syar shall ensure that shrubs and other vegetation are trimmed in the County right of way to provide more than 300 feet of stopping sight distance along:

- Geyserville Avenue southeast of Hamilton Lane; and
- Geyserville Avenue north of Independence Lane.

***Significance after Mitigation***

Mitigation Measures 3.6-3a through 3.6-3d would reduce potential traffic-related hazards due to design features or incompatible use to less-than-significant levels.

***Road Preparation and Wear***

**Impact 3.6-4. The project would increase wear and tear of existing private and public roadways used as haul routes for the project.**

The use of large trucks to transport material to and from the study area to the processing plant would adversely affect road conditions on the designated haul routes by increasing the rate of road wear. The degree to which this impact would occur depends on the design (pavement type and thickness) and the existing condition of the road. Some existing streets may not be designed with a pavement thickness that would withstand substantial truck traffic volumes. In addition, the proposed number of truck trips per day (up to 480), for up to 5 months per year, is expected to contribute to wear and tear and damage to both public and private roads.

Syar retained a professional civil engineer to evaluate the condition of roads along the proposed haul routes (Carlenzoli and Associates 2008). Table 3.6-10 presents the road condition analysis as presented in that engineering report with some additions made by the County, which reviewed that report and concurred with the findings otherwise.

<b>Table 3.6-10 Civil Engineering Review of Road Conditions</b>		
Road	Route(s)	Condition
Geyserville Avenue	6, 7 & 8	Generally in good condition with adequate shoulders.
Hamilton Lane	5	Generally in fair condition. No shoulders.
Geyserville Avenue	5	Generally in good condition. Adequate shoulders on south half, but shoulders should be widened on north half.
Banti Lane	5	Generally in good condition. Presently a locked gate at Geyserville Avenue.
Bill Ferguson Road	3	Generally in fair condition.
Geyserville Avenue	3	Generally in good condition. Adequate shoulders on north half, but shoulders should be widened on south half.
Healdsburg Avenue	2	Generally in fair condition except the portion within the railroad right-of-way is in very poor condition.
Lytton Station	2	Generally in fair condition except some patches which are primarily in the center 10 feet of the road.
Hassett Lane	2	Generally in poor condition with numerous patches. The existing bridge at the north end is 19 feet wide.

Source, Carlenzoli and Associates 2008.

### ***Mitigation Measures***

3.6-4a      **Enter into a Roadway Maintenance Agreement with Sonoma County.** Prior to first mining season, Syar shall enter into a Roadway Maintenance Agreement with Sonoma County providing its proportionate share of the responsibility to maintain the proposed haul roads.

3.6-4b      **Implement roadway preparation work.** Prior to use of a Haul Route that utilizes one of the following roads, Syar shall implement roadway preparation work and construct pavement improvements, as described below, prior to the use of relevant road.

- Bill Ferguson Road shall receive a new chip seal.
- Hassett Lane and Lytton Station Road shall receive a new asphalt overlay.
- Healdsburg Avenue shall receive a new chip seal on the portion adjacent to Lytton Station Road.
- Banti Lane shall receive a new chip seal.

- Prior to proposed roadwork on Lytton Station Road, Hassett Lane and, Healdsburg Avenue, Syar shall perform excavation and pavement repair at locations on the haul route portions of those roads specified by the County Department of Transportation and Public Works to address road base failure.

3.6-4c **Document road conditions and repair roads.** Syar shall document road conditions prior to and after the mining season and repair any damage caused by Syar each year.

### ***Significance after Mitigation***

Mitigation Measures 3.6-4a through 3.6-4c would reduce potential project traffic-related roadway damage impacts to less-than-significant levels.

### ***Railway Safety***

**Impact 3.6-5 The project could result in damage to existing rail crossings, or result in conflicts between trucks and future rail traffic.**

The California Public Utilities Commission (CPUC) requires that all at-grade crossings be subjected to on-site reviews in the course of permitting. These reviews establish the adequacy of crossing provisions, including warning devices consistent with the CPUC general orders and Caltrans standards. County staff, Syar representatives, and representatives of NCRA and CPUC met on-site on November 29, 2007 and inspected crossings on Routes 2, 3, 4, 5, 6 and 7. Route 8 was not proposed as part of the project at that time, but is similar to the other private crossings. NCRA and CPUC indicated during the site visit, and in correspondence with the County (NCRA 2007, CPUC 2007), that improvements will be required at all crossings. Improvements may include track work, track roadbed improvement, approach roadway improvements, and warning device upgrades commensurate with the level of rail service and volume of truck traffic being proposed. Syar would be required to enter into a lease agreement with the NCRA for private crossings that would include crossing improvements and maintenance requirements. Improvements to the public crossing on Lytton Station Road would require coordination with NCRA, CPUC and the County.

### ***Mitigation Measures***

3.6-5 **Improve Railroad Crossings.** Syar shall improve railroad track crossings at Lytton Springs Road (Route 2) and the private crossings on Routes 3, 4, 5, 6, 7, and 8 to meet all applicable safety standards as required by the CPUC and NCRA. For Routes 3, 4, 5, 6, 7, and 8, Syar shall obtain an encroachment permit and enter into a lease agreement with NRCA for installation of improvements. This encroachment permit would obligate Syar for ongoing maintenance of the railroad crossings. For Lytton Springs Road, Syar shall coordinate with the County, CPUC, and NCRA to repair the pavement.

### ***Significance after Mitigation***

Mitigation Measure 3.6-5 would reduce potential impacts of traffic induced damage to existing rail crossings and reduce potential impacts of conflicts between trucks and future rail traffic to less-than-significant levels.

### ***Alternative Modes of Transportation***

**Impact 3.6-6 Mining of certain bars would add truck traffic to Geyserville Avenue, which is designated as a proposed bikeway, and is currently used by bicyclists. Portions of Geyserville Avenue do not meet current County roadway design standards and the addition of truck traffic could cause potential conflicts between project traffic and bicyclists and pedestrians.**

Although there are no existing designated bicycle routes on any of the proposed haul routes, Geyserville Avenue has been proposed as a future Class II bicycle route. In addition, given the popularity of cycling in Sonoma County, it is assumed that bicyclists use Geyserville Avenue. The portions of Geyserville Avenue to be used as a haul route do not appear to have any significant pedestrian use. Some sections of Geyserville Avenue proposed as a haul route have adequate shoulder widths for a class II bikeway, while other sections do not. The addition of truck traffic on Geyserville Avenue could increase conflicts between project traffic and bicyclists and/or pedestrians. This potential for conflicts would be considered greatest where the haul route would be regularly used by bicyclists or pedestrians and is designated a proposed bikeway, and the road does not meet current County roadway design standards (including paved shoulders of sufficient width for use by bicycles).

### ***Mitigation Measures***

- 3.6-6a      **Where necessary, widen all the portions of Geyserville Avenue used as a haul route for the project.** Syar shall widen all portions of Geyserville Avenue used as a haul route to five feet of paved shoulder. Syar shall provide a minimum of 3 feet of paved shoulder in areas with legal, physical and/or environmental constraints (e.g., lack of right of way, creek crossings, slopes, and trees).
- 3.6-6b      **Educate Truck Drivers.** Syar shall provide information on proposed bike routes in any driver education or training associated with Mitigation Measure 3.6-3b.

### ***Significance after Mitigation***

Mitigation Measures 3.6-6a and 3.6-6b would reduce potential project-related hazards to bicyclists due to the project to a less-than-significant level.

### ***Secondary Impacts Resulting from Implementing Transportation Mitigation Measures***

**Impact 3.6-7 Implementation of Mitigation Measures 3.6-3c, 3.6-3d, and 3.6-6a, could potentially result in secondary impacts in terms of loss of biological resources from vegetation pruning and/or tree removal.**

Widening of the curve along Lytton Station Road for Mitigation Measure 3.6-3c may require tree pruning and/or removal; the widening of portions of Geyserville Road for Mitigation Measure 3.6-6a may require tree/vegetation pruning; and Mitigation Measure 3.6-3d will require vegetation pruning on Geyserville Avenue at two locations for sight distance, could result in potential biologic impacts. These potential impacts are addressed in Section 3.3, 'Vegetation and Wildlife'.

***Mitigation Measures***

The mitigation measures in Section 3.3, "Vegetation and Wildlife", including measures 3.3-4, 3.3-6, 3.3-7, and 3.3-10b shall apply equally to the implementation of traffic mitigation measures.

***Significance after Mitigation***

Implementation of the above-identified mitigation measures would reduce all secondary impacts to a less-than-significant level.