This section of the Draft EIR (DEIR) describes transportation and circulation conditions in the area of the proposed project and identifies impacts associated with the development of the proposed project. The analysis focuses on potential impacts to the roadway, transit, internal site circulation, and bicycle/pedestrian systems, and evaluates the project's consistency with the City of Pittsburg General Plan transportation policies. Significant impacts are identified for each system and, as necessary, mitigation measures are identified to address those impacts. All technical analyses related to this section are contained in **Appendix J.** The analysis in this section was prepared by Fehr & Peers.

3.7.1 EXISTING SETTING

STUDY AREA

The Transportation Impact Analysis prepared for the proposed project (see **Appendix J**) analyzed the following study intersections, which are shown on **Figure 3.7-1**.

1. East Leland Road/Loveridge Road
2. SR 4 Eastbound Ramps/Loveridge Road
3. California Avenue/Northpark Boulevard/Loveridge Road
4. SR 4 Westbound Ramps/California Avenue
5. Pittsburg-Antioch Highway/Loveridge Road
6. Buchanan Road/Loveridge Road
7. W 10th Street/Auto Center Drive (Antioch)
8. Loveridge Road/Project South Driveway
9. Loveridge Road/Project North Driveway

EXISTING CONDITIONS

Roadway System

The project site is located on the west side of Loveridge Road, primarily surrounded by industrial uses. The roadways in the study area are described below, and their locations in relation to the site are shown on **Figure 3.7-1**.

SR 4 is an east–west divided highway that provides regional access to East Contra Costa County. SR 4 stretches from Interstate 80 (I-80) to the west to Alpine County to the east. In the vicinity of the project site, it serves approximately 110,000 vehicles per day (vpd) and provides two lanes in each direction. However, construction is currently under way to widen SR 4 to provide four lanes in each direction between Railroad Avenue and Hillcrest Avenue.

The SR 4 corridor widening project, which will widen the highway from four to eight lanes between the Railroad Avenue and Hillcrest Road interchanges, is currently under construction. The segment between Railroad Avenue and Somersville Road has been completed, and the segment from Somersville Road to Hillcrest Avenue in Antioch is scheduled for completion in late 2015. This project has affected the study intersections as follows:

1. SR 4 Eastbound Ramps/Loveridge Road (Intersection #2) – The intersection is modified from being a "T" intersection to a four-leg intersection. The eastbound approach (SR 4 Eastbound Off-Ramp) is widened to accommodate an additional left-turn lane, providing two left-turn lanes and one right-turn lane. Previously, two SR 4 Eastbound On-Ramps provided access from northbound and southbound Loveridge Road. Those are now consolidated into one on-ramp, which is aligned with the off-ramp. Additionally, the new on-ramp is widened to three lanes, with two lanes for mixed flow traffic and one lane for high occupancy vehicle (HOV) traffic. The southbound approach is widened from two lanes to four lanes, providing two left-turn lanes and two through lanes. The northbound approach is widened to accommodate a new right-turn pocket, providing two through lanes and one right-turn lane.

2. California Avenue/North Park Boulevard/Loveridge Road (Intersection #3) – The westbound approach is modified to convert the shared through/right-turn lane into a dedicated right-turn lane, providing two left-turn lanes, one through lane, and one right-turn lane. The northbound approach is modified from its current configuration, which provides one left-turn lane, one shared left-turn/through lane, one through lane, and one right-turn lane to provide two left-turn lanes, one through lane, and one shared through/right-turn lane. Additionally, the pork-chop islands which currently allow free right turns at the eastbound and southbound approaches are removed.

3. SR4 Westbound Ramps/California Avenue (Intersection #4) – The westbound approach is widened to accommodate a new through lane, providing two left-turn lanes, two through lanes, and one right-turn lane. The eastbound approach is widened to accommodate a new through lane, providing one left-turn lane, one through lane, and one shared through/right-turn lane.

Loveridge Road is a north–south arterial roadway that provides direct access to the project site. Loveridge Road stretches from the Pittsburg Waterfront to the north to Buchanan Road to the south. North of the SR 4 Interchange, it is an undivided roadway with two lanes in each direction. South of the SR 4 Interchange, it is a divided roadway with two lanes in each direction. There is an on-street bike lane on the east side of Loveridge Road north of the SR 4 Interchange and along both sides of the street to the south. Loveridge Road has a posted speed limit of 40 miles per hour (mph) north of Pittsburg-Antioch Highway, and a posted speed of 35 mph south of Pittsburg-Antioch Highway.

Pittsburg-Antioch Highway is an east–west arterial roadway located just south of the project site. Pittsburg-Antioch Highway stretches from Harbor Street to the west to Auto Center Drive in Antioch to the east, where it becomes West 10th Street. In the vicinity of the project site, it is an undivided roadway with one lane in each direction and has a posted speed limit of 45 mph.

Auto Center Drive is a north–south arterial roadway located east of the project site. Auto Center Drive stretches from West 10th Street to the north, where it becomes West 4th Street. To the south, it becomes Somersville Road at the SR 4 Interchange. In the vicinity of the project site, it provides two lanes in each direction with a center two-way left-turn lane (TWLTL) and has a posted speed limit of 35 mph.

Buchanan Road is an east–west arterial roadway located south of the project site. Buchanan Road stretches from Railroad Avenue to the west to Contra Loma Boulevard in Antioch to the east. In the vicinity of the project site, it provides one lane in each direction with a painted median. The roadway has a posted speed limit of 35 mph. There is an on-street bike lane on both sides of Buchanan Road.

FIGURE 3.7-1 PROJECT STUDY ROADWAYS AND INTERSECTIONS TIA, FIGURE 3

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California Avenue is an east–west collector roadway located south of the project site. California Avenue is a two-lane roadway (one lane in each direction) that stretches from Railroad Avenue to the west to Harbor Street where it becomes two lanes in each direction to Loveridge Road. The roadway then continues east of Loveridge Road (700-foot offset/north on Loveridge Road) with one lane in each direction to Markstein Road.

Leland Road is an east–west arterial roadway located south of the project site. Leland Road stretches from San Marco Boulevard in the west to Century Boulevard in the east, where it becomes Delta Fair Boulevard. In the vicinity of the project site, it provides two lanes in each direction with a landscaped center median and has a posted speed limit of 35 mph. There is an on-street bike lane on both sides of East Leland Road.

Existing Traffic Volumes

Weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak period intersection turning movement counts were collected at all study intersections in October 2011 as part of the traffic study prepared for the proposed project. The existing peak period traffic counts are provided in Appendix A of **Appendix J**. For each intersection count period, the hour with the highest traffic volume was identified as the peak hour. The peak hour turning movement volumes are represented on **Figure 3.7-2**. These volumes are used in the intersection operations analysis. **Figure 3.7-2** also presents the intersection lane configurations and traffic control devices.

Existing Intersection Operations

Existing intersection operations, which are based upon the conditions at the time the Notice of Preparation (NOP) was circulated, were evaluated for the weekday AM and PM peak hours at all study intersections. **Table 3.7-1** summarizes the intersection analysis results.

As shown, all study intersections and project driveways operate at acceptable levels except for the Pittsburg-Antioch Highway/Loveridge Road intersection, which operates at level of service (LOS) E during the PM peak hour based on the Contra Costa Transportation Authority (CCTA) methodology and LOS F during both peak hours based on the Highway Capacity Manual (HCM) method. Poor operations are primarily experienced for the westbound left-turn and through movements in the AM peak hour and the northbound right-turn and eastbound through movements in the PM peak hour. These movements accommodate heavy demand for traffic avoiding the congested SR 4 corridor. Because the conditions evaluated in this Draft EIR are based upon the conditions at the time the NOP was circulated, actual conditions would likely be better than disclosed below. For instance, improvements recently completed and those currently under construction on SR 4 are expected to reduce cut-through traffic at this intersection as well as at other local intersections along parallel routes, resulting in improved operations when completed. Detailed intersection LOS calculation worksheets are presented in Appendix B of **Appendix J**.

TABLE 3.7-1
EXISTING INTERSECTION PEAK HOUR LEVELS OF SERVICE

Location	Control[1]	Peak Hour	Delay[2]	LOS[3] (HCM)	V/C[4]	LOS[3] (CCTA)
1. East Leland Road/Loveridge Road	Signal	AM	41	D	0.515	A
		PM	43	D	0.6929	A
2. SR 4 Eastbound Ramps/Loveridge Road	Signal	AM	23	C	0.504	A
		PM	57	E	0.768	C
3. California Avenue/North Park Boulevard/Loveridge Road	Signal	AM	21	C	0.639	A
		PM	31	C	0.506	A
4. SR 4 Westbound Ramps/California Avenue	Signal	AM	30	C	0.550	A
		PM	29	C	0.649	A
5. Pittsburg-Antioch Highway/Loveridge Road	Signal	AM	100	F	0.687	B
		PM	101	F	**0.968**	E
6. Buchanan Road/Loveridge Road	Signal	AM	48	D	0.609	B
		PM	28	C	0.616	B
7. W 10th Street/Auto Center Drive	Signal	AM	20	B	0.395	B
		PM	19	B	0.507	A
8. Loveridge Road/Project South Driveway	SSSC	AM	2 (9)	A (A)	–	–
		PM	2 (9)	A (A)		
9. Loveridge Road/Project North Driveway	SSSC	AM	0 (9)	A (A)	–	–
		PM	1 (9)	A (A)		

Source: Fehr & Peers 2011

Notes:

1. *Signal = signalized Intersection; SSSC = side-street stop-controlled intersection*
2. *Delay presented as seconds per vehicle; for side-street stop-controlled intersections, delay presented as intersection average (worst approach).*
3. *LOS = level of service*
4. *CCTA volume-to-capacity (V/C) ratios. Signalized intersection level of service based on Technical Procedures (Contra Costa Transportation Authority 2006).*

FIGURE 3.7-2 EXISTING CONDITIONS:
PEAK HOUR TRAFFIC VOLUMES, LANE CONFIGURATION AND TRAFFIC CONTROL TIA

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Existing Site Trips

The City's traffic consultant collected manual vehicle counts at the Loveridge Road driveways to estimate existing vehicle trips generated by the site. Daily and peak hour car and truck counts were collected on Thursday, January 27, 2011. The existing site trips are shown in **Table 3.7-2**.

TABLE 3.7-2
EXISTING TRIP GENERATION

Vehicle Type	Daily[1]	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Car[2]	900	42	37	79	32	31	63
Truck[3]	300	14	12	26	11	10	21
TOTAL	1,200	56	49	105	43	41	84

Source: Fehr & Peers 2011

Notes:

1. *Based on transactional information provided to Fehr & Peers, and represents total trips, including inbound and outbound trips. For CalRecycle permitting, one round trip is equal to 2 of these daily trips.*
2. *Car is defined as a private, two-axle vehicle, including pickup trucks and employee vehicles.*
3. *Truck is defined as a transfer truck or refuse truck.*

As shown in **Table 3.7-2**, the existing operation on the site generates 1,200 total daily trips, with 105 trips occurring during the AM peak hour and 84 trips occurring during the PM peak hour.

Bicycle and Pedestrian Facilities

The California Department of Transportation (Caltrans) standards provide for three distinct types of bikeway facilities, as generally described below:

- Class I Bikeway (Bike Path) provides a completely separate right-of-way for the exclusive use of bicycles and pedestrians. Vehicle and pedestrian cross-flow is minimized.

- Class II Bikeway (Bike Lane) provides a restricted right-of-way designated for the use of bicycles with a striped lane on a street or highway. Bike lanes are generally 5 feet wide. Vehicle and pedestrian cross-flow is permitted. In some cases, vehicle parking is permitted adjacent to bike lanes.

- Class III Bikeway (Bike Route) provides a right-of-way designated by signs of pavement markings for shared use between bicyclists and motor vehicles.

In the vicinity of the project site, there are Class II bike lanes along Loveridge Road, East Leland Road, and Buchanan Road. Additionally, there is a Class I bike path along the Delta De Anza Regional Trail, which is located south of the project site between East Leland Road and Buchanan Road. As part of the East County Bikeway Plan, a bicycle facility is planned along Auto Center Drive and Somersville Road.

Sidewalks are not provided along Loveridge Road north of the SR 4 Interchange, including along the project frontage. However, sidewalks are generally provided along the roadways south of SR 4 within the project site.

Transit Access

Tri Delta Transit is the transit provider in the area serving East Contra Costa County, including Brentwood, Oakley, Pittsburg, and Bay Point. In addition, Tri Delta Transit provides a connection to the Bay Area Rapid Transit (BART) station at Pittsburg/Bay Point. **Figure 3.7-3** shows the existing transit services provided in the project area. The characteristics of the Tri Delta Transit routes operating in the area are summarized in Table 3 of **Appendix J**.

3.7.2 REGULATORY FRAMEWORK

STATE

Caltrans

Caltrans owns, operates, and maintains SR 4, which provides the primary access to eastern Contra Costa County, including the project site. Caltrans works with the Contra Costa Transportation Authority (CCTA) to monitor and implement improvements on SR 4.

REGIONAL

Contra Costa Transportation Authority

The first Congestion Management Program (CMP) for Contra Costa County was adopted in 1991 and has been updated every two years. The most recent update is the 2009 CMP. The CMP is administered by the CCTA and specifies that the transportation system within the county be monitored biennially for compliance with LOS standards. The LOS standard for the County CMP facilities has been set at LOS E for all roadways except those that were operating at LOS F when the first CMP was prepared. The CMP transportation system includes all of the state routes in the county and other Routes of Regional Significance.

The 2009 update of the Countywide Comprehensive Transportation Plan includes Action Plans for each sub-area within Contra Costa County. These Action Plans include planned Multimodal Transportation Service Objectives (MTSOs) for Routes of Regional Significance.

East County Action Plan for Routes of Regional Significance

Adopted in August 2009, the East Contra Costa Action Plan for Routes of Regional Significance establishes the MTSOs for routes of regional significance in eastern Contra Costa County. The only MTSO applicable to the proposed project is:

- SR 4 – the Delay Index (DI) should not exceed 2.5 during the AM or PM peak hour

LOCAL

City of Pittsburg General Plan

The City adopted its current General Plan in 2001. **Appendix F** provides those General Plan policies relevant to transportation and circulation and to the proposed project as well as a preliminary evaluation of the project's consistency with these policies. While this DEIR discusses the project's consistency with the General Plan pursuant to California Environmental Quality Act (CEQA) Guidelines Section 15125(d), the appropriate reviewing authority will ultimately make the determination of the project's consistency with the General Plan.

FIGURE 3.7-3 EXISTING TRANSIT ROUTES TIA, FIGURE 4

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City of Pittsburg Municipal Code

Chapter 18.78 – Off-Street Parking and Loading

Chapter 18.78 of the Pittsburg Municipal Code provides general parking standards as well as minimum parking space requirements by type of land use. According to this chapter, large recycling facilities, such as the proposed project, are required to provide six spaces plus one additional space per 1,000 square feet of gross floor area.

A parking variance for the existing facility was approved on June 10, 2008 (Resolution No. 9759) to allow a reduction in required on-site parking from 150 parking stalls to 79 stalls or a minimum standard of one parking stall per 2,450 square feet of building area. Based on this standard, the expanded project would require a total of 86 parking stalls. The project would add 41 parking stalls at the proposed truck maintenance facility as well as 60 parking stalls in the western portion of the site adjacent the proposed commodity storage areas. With these additional parking stalls, the facility would have a total of 180 stalls, which exceeds the minimum standard by 88 stalls.

Fee Programs

The proposed project will be subject to impact fees used to fund transportation improvements. Some of these improvements, such as the widening of SR 4, will benefit the project. Others improvements may be identified in the City's Five Year Capital Improvement Program or scheduled for eventual construction.

Fee programs affecting the project include:

- Local Transportation Mitigation Fee (LTMF), as described in Pittsburg Municipal Code Chapter 15.90, to fund local projects identified in the Capital Improvement Program
- Pittsburg Regional Transportation Development Impact Mitigation (PRTDIM), as described in Pittsburg Municipal Code Chapter 15.103, to fund local and regional-serving projects

3.7.3 IMPACTS AND MITIGATION MEASURES

LEVEL OF SERVICE CRITERIA

To measure and describe the operational status of a local roadway network, transportation engineers and planners commonly use a grading system called level of service (LOS). LOS is a description of a transportation facility's operation, ranging from LOS A, indicating free-flow traffic conditions with little or no delay experienced by motorists, to LOS F, which describes congested conditions where traffic flows exceed design capacity, resulting in long queues and delays.

As required for compliance with the East Contra Costa County Action Plan and the County's Congestion Management and Growth Management programs, the analysis method outlined in the Technical Procedures update prepared by the Contra Costa Transportation Authority, known as CCTALOS, was utilized to analyze all signalized study intersections. To augment this analysis, the Transportation Research Board's 2000 Highway Capacity Manual (HCM) method and Synchro software were also used to analyze intersection operations at both signalized and unsignalized study intersections. This type of supplemental analysis is explicitly allowed in the CCTA's Technical Procedures, as the two methods are different in estimating intersection LOS.

For signalized intersections, only the CCTALOS-based analysis is used herein to identify project impacts and determine mitigation measures, according to the requirements of the City.

Signalized Intersections

At each signalized study intersection, traffic conditions were evaluated using the CCTALOS method. The CCTALOS planning-level analysis uses various intersection characteristics (i.e., traffic volumes, lane geometry, and signal phasing) to estimate the volume-to-capacity (V/C) ratio of an intersection.

Unsignalized Intersections

For unsignalized (side-street stop-controlled) intersections, the method outlined in Chapter 17 of the Transportation Research Board's 2000 HCM was used. This method estimates the worst-approach total delay (measured in seconds per vehicle) experienced by motorists traveling through an intersection. Total delay is defined as the amount of time required for a driver to stop at the back of the queue, move to the first-in-queue position, and depart from the queue into the intersection.

Delay Index

The East Contra Costa Action Plan for Routes of Regional Significance establishes multimodal traffic service objectives (MTSOs) for routes of regional significance in eastern Contra Costa County. The MTSO used to measure freeway operations is peak hour Delay Index, as calculated by the methods prescribed by the CCTA. Delay Index is defined as the ratio of the peak hour congested travel time to free-flow travel time on each roadway segment. For example, a Delay Index of 2.0 means that it takes twice as long to travel a particular segment during the peak commute hour as during non-commute hours when traffic moves at free-flow speeds.

THRESHOLDS OF SIGNIFICANCE

The following thresholds are based on the adopted policies of the CCTA and the cities of Pittsburg and Antioch, which are more appropriate for use in the City of Pittsburg than those contained in Guidelines Appendix G. Based on these policies, a significant traffic impact would occur if the addition of project-generated traffic would result in any of the effects listed below:

1. Intersections

The proposed project would have a significant impact on intersections if one of the following occurs:

- Operations of a study intersection to decline from LOS low-D (a volume-to-capacity ratio of 0.84 for signalized intersections or an average delay of 45 seconds for unsignalized) or better to LOS high-D, E, or F.
- Deterioration in already unacceptable operations at a signalized intersection by a change in V/C ratio of more than 0.01 or a change in average delay of more than 5 seconds.
- Operations of an unsignalized study intersection to decline from an acceptable level to an unacceptable level, and the need for installation of a traffic signal at an unsignalized intersection, based on the Manual on Uniform Traffic Control Devices (MUTCD) Peak Hour Signal Warrant (Warrant 3).

2. Transit System

Transit impacts would be considered significant if any of the following occur:

- The project or any project-related mitigation measure disrupts existing transit services or facilities. This includes disruptions caused by proposed project driveways on transit streets, impacts to transit stops/shelters, and impacts to transit operations from traffic improvements proposed or resulting from the project.
- The project interferes with planned transit services or facilities.
- The project creates demand for public transit services above that which is provided or planned.
- The project conflicts or creates inconsistencies with adopted transit system plans, guidelines, policies, or standards.

3. Bicycle System

Bicycle impacts would be considered significant if any of the following occur:

- The project disrupts existing bicycle facilities.
- The project interferes with planned bicycle facilities. This includes failure to dedicate right-of-way for planned on- and off-street bicycle facilities included in an adopted Bicycle Master Plan.
- The project conflicts or creates inconsistencies with adopted bicycle system plans, guidelines, policies, or standards.

4. Pedestrian System

Pedestrian impacts would be considered significant if any of the following occur:

- The project disrupts existing pedestrian facilities. This includes adding new vehicular, pedestrian, or bicycle traffic to a facility already experiencing pedestrian safety concerns such as an adjacent crosswalk or school.
- The project interferes with planned pedestrian facilities.
- The project conflicts or creates inconsistencies with adopted pedestrian system plans, guidelines, policies, or standards.

5. Site Access and Parking

A site access or parking impact would be considered significant if the project would result in any of the following:

- An insufficient quantity of on-site parking for vehicles.
- Increases in off-site parking demand above that which is provided in the immediate project area.
- An insufficient quantity of on-site parking for bicycles.

- Lack of or inaccessible and/or unsafe pedestrian connections between buildings and adjacent streets and transit facilities.
- Lack of or an insufficient ingress left-turn lane length at a driveway, causing the ingress left-turn vehicle queue to spill out onto the street's through travel lane.
- Lack of or an insufficient ingress right-turn lane length at a driveway, causing the ingress vehicle queue to spill out onto the street's through travel lane.

The Initial Study prepared for the proposed project (see **Appendix A**) determined that there would be no impact to air traffic patterns and a less than significant impact to public transit, bicycle, and pedestrian facilities (significance thresholds 2, 3, and 4). Access to the site is currently provided by side-street stop-controlled four driveways on Loveridge Road. No changes are proposed to the driveway location, traffic control or access restrictions as part of the Project, so there would be no change with regard to access impacts (significance threshold 5). As discussed above, the facility would provide 180 parking stalls, which exceeds the minimum standard by 88 stalls. There would be no impact related to parking (significance threshold 5). Therefore, these issues are not discussed further in this section.

METHODOLOGY

Trip Generation

Trip generation rates were calculated based on the existing site trips and the actual tonnage processed at the site. The actual tonnage processed on the day the driveway counts were collected is presented in **Table 3.7-3**. As shown, the tonnage processed at the existing site on this date was 1,181 tons per day (TPD).

TABLE 3.7-3
ACTUAL TONNAGE PROCESSED AT EXISTING SITE

Existing Facility	Thursday, Jan. 27, 2011 (TPD[1])
Mt. Diablo Recycling Facility (MDRF)	98
Recycling Center and Transfer Station (RCTS)	782
Green Material Processing Operations Area	51
Mixed Construction and Demolition Processing Area	250
TOTAL	**1,181**

Source: Fehr & Peers 2012
Notes:
1. TPD = tons per day

Based on the existing trip generation characteristics of the site, the tons processed, and the ratio of cars versus truck traffic at the site, the following trip rates (listed by vehicle type) were calculated:

Daily: 762.07 car trips per 1,000 TPD
254.02 truck trips per 1,000 TPD

AM Peak Hour: 66.89 car trips per 1,000 TPD (53% in/47% out)
22.02 truck trips per 1,000 TPD (54% in/46% out)

PM Peak Hour: 53.34 car trips per 1,000 TPD (51% in/49% out)
17.78 truck trips per 1,000 TPD (52% in/48% out)

The estimated trip generation for the proposed project was derived using the calculated trip rates for cars and trucks, as well as the maximum permitted capacity information of the expanded facility as contained in the project description (see Section 2.0). For purposes of this analysis, trucks are defined as large haul vehicles such as refuse and transfer trucks, and cars are defined as private vehicles, including automobiles and pickup trucks. Using these classifications, approximately 75 percent of the traffic generated by the project site is from cars and 25 percent from large trucks. **Table 3.7-4** presents the site trip generation of the existing facility and expanded site under maximum permitted operating conditions as well as the net new project trips. Trip generation estimates are provided for both cars and trucks under daily, AM peak hour, and PM peak hour conditions.

TABLE 3.7-4
PROJECT TRIP GENERATION UNDER MAXIMUM PERMITTED OPERATING CONDITIONS

Vehicle Type	Units[1]	Daily[4]	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Existing Operations								
Car[2]	1.18	900	42	37	79	32	31	63
Truck[3]	1.18	300	14	12	26	11	10	21
TOTAL		1,200	56	49	105	43	41	84
Expanded Site Under Maximum Permitted Operating Conditions								
Car[2]	5.54	4,220	197	174	371	150	145	295
Truck[3]	5.54	1,400	65	57	122	51	47	98
TOTAL		5,620	262	231	493	201	192	393
Net New Project Trips								
Car		3,320	155	137	292	118	114	232
Truck		1,100	51	45	96	40	37	77
TOTAL		**4,420**	**206**	**182**	**388**	**158**	**151**	**309**

Source: Fehr & Peers 2012

Notes:

1. *Unit = thousand tons per day*
2. *Calculated car trip generation rates:*
   Daily rate = 308.77
   AM rate = 12.49; Enter = 57%, Exit = 43%
   PM rate = 14.28; Enter = 50%, Exit = 50%
3. *Calculated truck trip generation rates:*
   Daily rate = 1,360.03
   AM rate = 81.21; Enter = 53%, Exit = 47%
   PM rate = 60.68; enter = 51%, Exit = 49%
4. *Based on transactional information provided to Fehr & Peers, and represents total trips, including inbound and outbound trips. For CalRecycle permitting, one round trip is equal to 2 of these daily trips.*

As shown in **Table 3.7-4**, under maximum permitted operating conditions, the project could increase the total number of vehicles on the roadway network by approximately 4,420 vehicles per day, adding approximately 388 vehicles during the AM peak hour and 309 vehicles during the PM peak hour.

Typical Operating Conditions

The trip generation estimates presented in **Table 3.7-4** assumes that the expanded facility would operate at the maximum permitted level (5,500 TPD) every day, which in reality is likely to occur only a few days per year. Operating at a full-time maximum capacity level is unlikely as evidenced by current conditions that show a much lower volume of traffic. During the day when the driveway counts were taken, the actual average tonnage processed represented approximately 50 percent of the total permitted capacity (1,181 TPD processed with 2,200 TPD maximum permitted capacity). Because of the difference between permitted capacity and processing based on observed conditions, this DEIR also illustrates environmental impacts from a more realistic, typical operating condition.

Although the facility currently processes only 50 percent of the maximum processing capacity, recognizing the anticipated improvements associated with the project and the expectations of the applicant for additional tonnage at the facility, Fehr & Peers prepared a model of traffic where the facility receives 55 percent of expanded maximum permitted capacity. Fifty percent of the proposed maximum permitted capacity of the expanded site is approximately 2,770 TPD; therefore, the operating condition of the facility operating at 55 percent of the maximum permitted level would be 3,050 TPD.

Table 3.7-5 presents the trip generation of the existing site as well as the proposed expansion of the site under typical operating conditions, as well as the net new project trips.

TABLE 3.7-5
PROJECT TRIP GENERATION UNDER TYPICAL OPERATING CONDITIONS

Vehicle Type	Units[1]	Daily[4]	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Existing Operations								
Car[2]	1.18	900	42	37	79	32	31	63
Truck[3]	1.18	300	414	12	26	11	10	21
TOTAL		1,200	56	49	105	43	41	84
Expanded Site Under Typical Permitted Operating Conditions								
Car[2]	3.05	2,320	108	96	204	83	80	163
Truck[3]	3.05	770	36	31	67	28	26	53
TOTAL		3,090	144	127	271	111	105	216
Net New Project Trips								
Car		1,420	66	59	125	51	49	100
Truck		470	22	19	41	17	15	32
TOTAL		**1,890**	**88**	**78**	**166**	**68**	**65**	**132**

Source: Fehr & Peers 2012

Notes:

1. *Unit = Thousand tons per day*
2. *Calculated car trip generation rates:*
   Daily rate = 308.77
   AM rate = 12.49; Enter = 57%, Exit = 43%
   PM rate = 14.28; Enter = 50%, Exit = 50%
3. *Calculated truck trip generation rates:*
   Daily rate = 1,360.03

AM rate = 81.21; Enter = 53%, Exit = 47%

PM rate = 60.68; enter = 51%, Exit = 49%

4. *Based on transactional information provided to Fehr & Peers, and represents total trips, including inbound and outbound trips. For CalRecycle permitting, one round trip is equal to 2 of these daily trips.*

As shown in **Table 3.7-5**, under potential typical operating conditions, the project is expected to increase the total number of vehicles on the roadway network by approximately 1,890 vehicles per day, including approximately 166 vehicles during the AM peak hour and 132 vehicles during the PM peak hour.

Passenger Car Equivalent

Large trucks, such as those that currently serve the site, operate differently on the roadway system than passenger vehicles. They take longer to accelerate and decelerate, and occupy a physically larger space. Due to the large percentage of truck traffic generated by the site, truck-trips were converted into passenger car equivalents (PCEs) to account for their impact on roadway operations. PCE rates are based on the size and carrying capacity of the vehicle. According to the Transportation Research Board's Special Report 223, heavy vehicles range from 1.5 to 3.7 PCEs. An average PCE rate of 3.7 was conservatively applied for large haul trucks used for this analysis, as it includes only the largest types of trucks, (garbage/recycling collection trucks, large self-haul vehicles, and transfer trailer trucks), while pickup trucks were included in the "car" vehicle type defined for this project. This rate has been used in previous studies prepared by Fehr & Peers for similar facilities.

The PCE rate was multiplied by the total number of anticipated net new truck trips as a result of the project, as summarized in **Table 3.7-6**, to determine the passenger-car-equivalent trip generation. The total project PCE trips are presented for both project scenarios.

TABLE 3.7-6
NET NEW PROJECT TRIP GENERATION USING PASSENGER CAR EQUIVALENTS (PCE)

Vehicle Type	PCE Rate[1]	Daily[2]	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Net New Project Trips Under Maximum Permitted Operating Conditions								
Cars	1.0 – 1.5	4,770	220	206	426	177	140	317
Trucks	2.7 – 3.7	3,410	156	137	293	126	115	241
TOTAL PROJECT PCE TRIPS		8,180	376	343	719	303	255	558
Net New Project Trips Under Typical Operating Conditions								
Cars	1.0 – 1.5	1,940	89	89	178	76	54	130
Trucks	2.7 – 3.7	1,460	68	57	125	54	46	100
TOTAL PROJECT PCE TRIPS		3,400	157	146	303	130	100	230

Source: Fehr & Peers 2012

Notes:

1. *PCE = passenger car equivalent; Cars: Employee/ Visitor = 1.0, Self Haul = 1.5; Trucks: Collection Truck = 2.7, Long Haul = 3.7*
2. *Total trips, including inbound and outbound trips. For CalRecycle permitting, one round trip is equal to 2 of these daily trips.*

As shown in **Table 3.7-6**, under maximum permitted operating conditions, the project is estimated to generate 8,180 new daily PCE trips, with approximately 719 PCE trips occurring during the AM peak hour and 558 PCE trips occurring during the PM peak hour. Under typical operating conditions, the project is estimated to generate 3,400 new daily PCE trips, with approximately 303 PCE trips occurring during the AM peak hour and 230 PCE trips occurring during the PM peak hour.

Trip Distribution and Assignment

Trip distribution is defined as the direction of approach and departure that vehicles would use to arrive at and depart from the site. An estimated distribution of project trips based on existing travel patterns, general service area of the facility, and relative locations of other similar uses in the region is presented on **Figure 3.7-4.** New trips generated by the project under both maximum permitted and typical operating conditions, as shown in **Table 3.7-6**, were assigned to the roadway network according to the trip distribution shown on **Figure 3.7-4.** The resulting trip assignment by intersection is presented on **Figure 3.7-5** and **Figure 3.7-6** for maximum permitted and typical operating conditions, respectively.

PROJECT IMPACTS AND MITIGATION MEASURES

Exceedence of LOS Thresholds at Study Intersections (Standard of Significance 1)

Impact 3.7.1 Implementation of the proposed project would result in the degradation of operations at two study intersections. This would be a **significant** impact.

The peak hour project volumes were added to the existing traffic volumes to determine Existing Plus Project traffic volumes. **Table 3.7-7** provides the results of the Existing and Existing Plus Project intersection analyses. Under Existing Conditions, all study intersections and project driveways operate at acceptable levels except for the Pittsburg-Antioch Highway/Loveridge Road intersection, which operates at LOS E during the PM peak hour based on the CCTA methodology. Impacts for the signalized intersections are identified based on the CCTA LOS method.

Typical Operating Conditions

Table 3.7-7, indicates that based on CCTA methodology with the addition of project traffic under typical operating conditions, the Pittsburg-Antioch Highway/Loveridge Road intersection would degrade from LOS B to a LOS high-D during the AM peak hour, and would degrade from LOS E to LOS F (an increase in V/C of more than 0.01) during the PM peak hour, thus resulting in a significant impact.

Based on the HCM methodology, both SR 4 Eastbound Ramps/Loveridge Road and the Pittsburg-Antioch Highway/Loveridge Road intersections would operate at LOS E or F during at least one of the peak hours with the addition of project traffic under typical operating conditions. The project driveways would continue to operate at acceptable service levels.

FIGURE 3.7-4, TRIP DISTRIBUTION TIA, FIGURE 6

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FIGURE 3.7-5: AM/PM TRIP ASSIGNMENT: MAXIMUM PERMITTED OPERATING CONDITIONS TIA, FIGURE 7

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FIGURE 3.7-6: AM/PM TRIP ASSIGNMENT: TYPICAL OPERATING CONDITIONS TIA, FIGURE 8

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Maximum Permitted Operating Conditions

Table 3.7-7, indicates that based on CCTA methodology with the addition of project traffic under maximum permitted operating conditions, the SR 4 Eastbound Ramps/Loveridge Road intersection would degrade to a LOS high-D (V/C of 0.85 to 0.90) during the PM peak hour, thus resulting in a significant impact. Additionally, the Pittsburg-Antioch Highway/Loveridge Road intersection would degrade from LOS B to LOS F during the AM peak hour and would degrade from LOS E to LOS F (an increase in V/C of more than 0.01) during the PM peak hour, thus resulting in a significant impact.

Based on the HCM methodology, both the SR 4 Eastbound Ramps/Loveridge Road and Pittsburg-Antioch Highway/Loveridge Road intersections would operate at LOS F during at least one of the peak hours with the addition of project traffic under maximum permitted operating conditions. The project driveways would continue to operate at acceptable service levels.

Mitigation Measures

MM 3.7.1a The proposed project shall contribute their fair share to implement the SR 4 widening project, which would result in improvements at the SR 4 Eastbound Ramps/Loveridge Road intersection that would increase capacity. These improvements include:

- Convert the existing configuration from a "T" intersection to a four-leg intersection.
- Modify eastbound approach from its current configuration which provides one shared left-turn/through lane and one right-turn lane to provide two left-turn lanes and one right-turn lane.
- Modify southbound approach from its current configuration which provides one through lane and one shared through/right-turn lane to provide two left-turn lanes and two through lanes.
- Modify northbound approach from its current configuration which provides one through lane and one shared through/right-turn lane to provide two through lanes and one right-turn lane.

Timing/Implementation: *Payment of fees shall be included as a condition of approval of a Conditional Use Permit*

Enforcement/Monitoring: *City of Pittsburg Development Services Department*

The proposed project will contribute their fair share to implement these improvements through the payment of local and regional traffic impact fees already in place. As noted above, the improvements, which are within the Caltrans right-of-way, are currently under construction and are projected to be completed by late 2014. As shown on **Table 3.7-8**, after implementation of these improvements, the intersection would improve to LOS B during the PM peak hour, reducing this impact to a level of less than significant.

TABLE 3.7-7
EXISTING AND EXISTING PLUS PROJECT PEAK HOUR INTERSECTION LEVEL OF SERVICE

Intersection	Control[1]	Peak Hour	Existing Conditions				Existing Plus Project (Maximum Permitted Operating Conditions)				Existing Plus Project (Typical Operating Conditions)			
			Delay[2]	LOS[3] HCM	V/C[4]	LOS[3] CCTA	Delay[2]	LOS[3] HCM	V/C[4]	LOS[3] CCTA	Delay[2]	LOS[3] HCM	V/C[4]	LOS[3] CCTA
1. East Leland Rd/ Loveridge Rd	Signal	AM	41	D	0.515	A	42	D	0.539	A	41	D	0.525	A
		PM	43	D	0.629	A	44	D	0.642	B	44	D	0.635	B
2. SR 4 Eastbound Ramps/ Loveridge Rd	Signal	AM	23	C	0.504	A	44	D	0.562	A	27	C	0.514	A
		PM	57	E	0.768	C	***86***	***F***	***0.865***	***D***	69	E	0.810	D
3. California Ave/Northpark Blvd/Loveridge Rd	Signal	AM	21	C	0.639	A	34	C	0.788	C	26	C	0.697	B
		PM	31	C	0.506	A	38	D	0.595	A	34	C	0.539	A
4. SR 4 Westbound Ramps/California Ave	Signal	AM	30	C	0.550	A	27	C	0.606	B	29	C	0.574	A
		PM	29	C	0.649	A	29	C	0.694	B	29	C	0.669	B
5. Pittsburg-Antioch Hwy/ Loveridge Rd	Signal	AM	100	F	0.687	B	***> 200***	***F***	***1.100***	***F***	***> 200***	***F***	***0.866***	***D***
		PM	101	F	0.968	E	***> 200***	***F***	***1.185***	***F***	***189***	***F***	***1.064***	***F***
6. Buchanan Rd/Loveridge Rd	Signal	AM	48	D	0.609	B	54	D	0.633	B	50	D	0.620	B
		PM	28	C	0.616	B	30	C	0.623	B	29	C	0.619	B
7. W 10th St/Auto Center Dr	Signal	AM	20	B	0.395	B	21	C	0.412	A	21	C	0.402	A
		PM	19	B	0.507	A	20	C	0.514	A	19	B	0.510	A
8. Loveridge Rd/Project South Driveway	SSSC	AM	2 (9)	A (A)	–	–	8 (13)	A (B)	–	–	5 (10)	A (A)	–	–
		PM	2 (9)	A (A)			8 (13)	A (B)			5 (10)	A (A)		
9. Loveridge Rd/Project North Driveway	SSSC	AM	0 (9)	A (A)	–	–	2 (9)	A (A)	–	–	1 (9)	A (A)	–	–
		PM	1 (9)	A (A)			2 (9)	A (A)			1 (9)	A (A)		

Source: Fehr & Peers 2011

Notes:

1. Signal = signalized intersection; SSSC = side-street stop-controlled intersection

2. Delay presented as seconds per vehicle; for side-street stop=controlled intersections, delay presented as intersection average (worst approach)

3. LOS = level of service

4. CCTA volume-to-capacity (V/C) ratios. Signalized intersection level of service based on Technical Procedures (Contra Costa Transportation Authority 2006).

MM 3.7.1b The proposed project shall contribute their fair share to implement the following measures at the Pittsburg-Antioch Highway/Loveridge Road intersection:

- Install a dedicated eastbound right-turn lane on Pittsburg-Antioch Highway.
- Install a second westbound left-turn lane on Pittsburg-Antioch Highway.
- Upgrade existing traffic signal equipment to accommodate the changed intersection lane configurations.

Timing/Implementation: *Payment of fees shall be included as a condition of approval of a Conditional Use Permit*

Enforcement/Monitoring: *City of Pittsburg Development Services Department*

The proposed project shall contribute their fair share to implement these improvements through the payment of local and regional traffic impact fees. The widening of Pittsburg-Antioch Highway from a two-lane roadway to a four-lane roadway is identified in the City of Pittsburg's Capital Improvement Program (CIP) as project ST-59. Additionally, the reconfiguration of the eastbound approach, as documented above, is consistent with an improvement project included in the CIP. Further, the project is on the Traffic Mitigation Fee (TMF) list, which makes it eligible to receive local and regional traffic mitigation funds. As shown on **Table 3.7-8**, after implementation of this measure, the intersection would improve to LOS C during the AM peak hour and result in a lower V/C than without project conditions during the PM peak hour. Therefore, this mitigation measure would reduce this impact to less than significant. However, while the improvement is listed in the CIP, there is no funding plan identified. Since funding for the full improvement is not certain it is unlikely that this improvement will be in place before the project is completed; therefore this impact remains **significant and unavoidable.**

3.7.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

Cumulative (Year 2030) traffic volumes were derived from the Contra Costa County Travel Demand Model (TDM) and include planned roadway improvements. The model volumes and existing turning movement count data were used to estimate future intersection turn movements using the Furness method. The resulting traffic volumes are shown on **Figure 3.7-7**.

Cumulative Intersection Operations

The Cumulative and Cumulative Plus Project intersection analysis results are provided in **Table 3.7-8**. As shown, under cumulative conditions, all study intersections and project driveways are projected to operate at acceptable levels. Detailed intersection LOS calculation worksheets are provided in Appendix C of **Appendix J**.

Typical Operating Conditions

With the addition of project traffic under typical operating conditions based on the CCTA methodology, all study intersections and project driveways are projected to operate at acceptable levels. However, based on the HCM methodology, the Pittsburg-Antioch Highway/ Loveridge Road intersection would operate at LOS F during both AM and PM peak hours with the addition of typical operating condition project traffic, creating a significant impact.

Maximum Permitted Operating Conditions

With the addition of project traffic under maximum permitted operating conditions based on CCTA methodology, the Pittsburg-Antioch Highway/Loveridge Road intersection would degrade to LOS D during the AM peak hour and to LOS E during the PM peak hour. Based on the HCM methodology, the Pittsburg-Antioch Highway/Loveridge Road intersection would operate at LOS F during both AM and PM peak hours with the addition of project traffic under maximum permitted and typical operating conditions.

The driveways would continue to operate at acceptable service levels.

Cumulative Traffic Impacts

Impact 3.7.2 Operations at the Pittsburg-Antioch Highway/Loveridge Road intersection are projected to degrade with the addition of project traffic. This would result in a **cumulatively considerable** impact.

Based on the HCM methodology, the Pittsburg-Antioch Highway/Loveridge Road intersection would operate at LOS F during both AM and PM peak hours with the addition of typical operating condition project traffic, creating a significant impact.

With the addition of project traffic under maximum permitted operating conditions based on CCTA methodology, the Pittsburg-Antioch Highway/Loveridge Road intersection would degrade to LOS D during the AM peak hour and to LOS E during the PM peak hour. Based on the HCM methodology, the Pittsburg-Antioch Highway/Loveridge Road intersection would operate at LOS F during both AM and PM peak hours with the addition of project traffic under maximum permitted and typical operating conditions.

FIGURE 3.7-7: CUMULATIVE CONDITIONS:
PEAK HOUR TRAFFIC VOLUMES, LANE CONFIGURATION AND TRAFFIC CONTROL TIA, FIGURE 11

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Mitigation Measures

MM 3.7.2 The project applicant shall pay the project's fair share of the cost to implement the following measures at the Pittsburg-Antioch Highway/Loveridge Road intersection:

- Install an additional left-turn lane on the westbound Pittsburg-Antioch Highway approach.
- Install a dedicated left-turn lane on the northbound Loveridge Road approach.
- Convert the existing shared left-turn/through lane on the northbound Loveridge Road approach to be a through-only lane.
- Modify signal phasing in the north/south direction from split phase to having protected left-turns.
- Upgrade existing traffic signal equipment to accommodate the recommended intersection lane configurations.

Timing/Implementation: *Payment of fees shall be included as a condition of approval of a Conditional Use Permit*

Enforcement/Monitoring: *City of Pittsburg Development Services Department*

As shown in **Table 3.7-8**, under typical operating conditions, the proposed project would have a less than significant impact on the operations at this intersection. As shown on **Table 3.7-9**, after implementation of this measure, the intersection would improve to LOS B and C during the AM and PM peak hours, respectively. However, widening along Loveridge Road to accommodate an additional northbound lane is constrained due to proximity to the railroad crossing, so improvements to this portion of Loveridge Road would likely be infeasible. Therefore, the operating conditions at this intersection remain significant and unavoidable, and the project's contribution to the impact under maximum permitted conditions would be **cumulatively considerable**.

TABLE 3.7-8
CUMULATIVE (2030) AND CUMULATIVE (2030) PLUS PROJECT PEAK HOUR INTERSECTION LEVEL OF SERVICE

Intersection	Control	Peak Hour	Cumulative Conditions				Cumulative Plus Project (Maximum Permitted Operating Conditions)				Cumulative Plus Project (Typical Operating Conditions)			
			Delay[2]	LOS[3] HCM	V/C[4]	LOS[3] CCTA	Delay[2]	LOS[3] HCM	V/C[4]	LOS[3] CCTA	Delay[2]	LOS[3] HCM	V/C[4]	LOS[3] CCTA
1. East Leland Road/ Loveridge Road	Signal	AM	48	D	0.689	B	49	D	0.713	C	48	D	0.699	B
		PM	53	D	0.825	D	54	D	0.838	D	53	D	0.831	D
2. SR 4 Eastbound Ramps/ Loveridge Road	Signal	AM	27	C	0.587	A	37	D	0.670	B	31	C	0.623	B
		PM	25	C	0.648	B	31	C	0.697	B	28	C	0.669	B
3. California Avenue/ North Park Boulevard/ Loveridge Road	Signal	AM	37	D	0.603	B	59	E	0.704	C	34	C	0.646	B
		PM	32	C	0.532	A	33	C	0.586	A	31	C	0.552	A
4. SR 4 Westbound Ramps/ California Avenue	Signal	AM	27	C	0.494	A	28	C	0.549	A	27	C	0.518	A
		PM	26	C	0.488	A	29	C	0.561	A	27	C	0.508	A
5. Pittsburg-Antioch Highway/Loveridge Road	Signal	AM	61	E	0.615	B	***180***	***F***	***0.895***	***D***	***107***	***F***	0.737	C
		PM	58	E	0.782	C	***136***	***F***	***0.922***	***E***	***86***	***F***	0.829	D
6. Buchanan Road/ Loveridge Road	Signal	AM	38	D	0.576	A	45	D	0.599	A	41	D	0.586	A
		PM	34	C	0.715	C	35	D	0.722	C	35	C	0.718	C
7. W 10th Street/ Auto Center Drive	Signal	AM	31	C	0.473	A	32	C	0.489	A	31	C	0.480	A
		PM	26	C	0.600	B	27	C	0.607	B	26	C	0.603	B
8. Loveridge Road/ Project South Driveway	SSSC	AM	1 (9)	A (A)	–	–	6 (13)	A (B)	–	-	3 (10)	A (A)	–	–
		PM	1 (10)	A (A)			7 (15)	A (B)			4 (11)	A (B)		
9. Loveridge Road/ Project North Driveway	SSSC	AM	0 (9)	A (A)	–	–	8 (9)	A (A)	–	–	8 (9)	A (A)	-	–
		PM	0 (10)	A (A)			8 (9)	A (A)			8 (8)	A (A)		

Source: Fehr & Peers 2011

*Note: Results in **bold** represent unacceptable levels of service, **bold italics** represent significant impact.*

1. Signal = signalized intersection; SSSC = side-street stop-controlled intersection

2. Delay presented as seconds per vehicle; for side-street stop-controlled intersections, delay presented as Intersection average (worst approach).

3. LOS = level of service

4. CCTA volume- to- capacity (V/C) ratios. Signalized intersection level of service based on Technical Procedures (Contra Costa Transportation Authority 2006)

TABLE 3.7-9
CUMULATIVE PLUS PROJECT MITIGATED PEAK HOUR INTERSECTION LEVEL OF SERVICE

Intersection	Control[1]	Peak Hour	Without Project				Plus Project				Plus Project Mitigated			
			Delay[2]	LOS[3] HCM	V/C[4]	LOS[3] CCTA	Delay[2]	LOS[3] HCM	V/C[4]	LOS[3] CCTA	Delay[2]	LOS[3] HCM	V/C[4]	LOS[3] CCTA
Maximum Permitted Operating Conditions														
5. Pittsburg-Antioch Highway/Loveridge Road	Signal	AM	61	E	0.615	B	180	F	***0.895***	***D***	55	D	0.625	B
		PM	58	E	0.782	C	136	F	***0.922***	***E***	63	E	0.742	C

Source: Fehr & Peers, 2011.

*Note: Results in **bold** represent unacceptable levels of service, **bold italics** represent significant impact.*

1. Signal = signalized intersection.

2. Delay presented as seconds per vehicle.

3. LOS = level of service

4. CCTA volume-to-capacity (V/C) ratios. Signalized intersection level of service based on Technical Procedures (Contra Costa Transportation Authority 2006).

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