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NOTICE OF AVAILABILITY

August 19, 2009

To: Interested Parties

From: Tahoe Regional Planning Agency

Re: Kings Beach Commercial Core Improvement Project, Draft Supplemental Environmental Impact Statement (DSEIS), Notice of Availability and Public Comment Period

Placer County is proposing a partial reconstruction of a portion of State Route 28 and other improvements within portions of Kings Beach, California. The proposed project, called the Kings Beach Commercial Core Improvement Project, involves the following components:

1. Roadway Improvements
2. Pedestrian and Bicycle Access Improvements
3. Water Quality Improvements
4. Aesthetic Improvements
5. Replacement Parking
6. A Traffic Management Plan for the Kings Beach residential "grid" area

The Tahoe Regional Planning Agency (TRPA) Governing Board certified the Final EA/EIR/EIS for the Kings Beach Commercial Core Improvement Project on June 25, 2008. However, the TRPA Governing Board failed to approve the preferred "hybrid" project alternative and the corresponding community plan amendments recognizing State Route 28 as a 3-lane facility through Kings Beach. On July 23, 2008, the TRPA Governing Board voted to reconsider their decision on the project.

After looking at a more thorough analysis of the traffic volumes, TRPA determined that additional traffic in the Kings Beach "grid" neighborhood could affect noise levels and air quality; these environmental resources were evaluated in the Final EA/EIR/EIS, but not necessarily across a geographic area that included the residential "grid" area of Kings Beach where cut-through traffic was expected to occur. As a result, TRPA determined that a supplement to the Final EIS should be prepared to examine the effects of noise and air quality as related to and identified with the project's preferred alternative.

This notice is to inform you that a 60-day public comment period for the Kings Beach Commercial Core Improvement Project Supplemental Draft Environmental Impact Statement (SDEIS) began on August 19, 2009 and will conclude on October 18, 2009. Comments will be solicited during this time frame and will be incorporated into the final document. Comments received after the conclusion of the comment period may not be included in the final document.

The SDEIS is available for the public to review at: TRPA (128 Market Street, Stateline, NV); Kings Beach Library (301 Secline Drive, Kings Beach, CA); Tahoe City Library (740 North Lake Blvd., Tahoe City, CA); Incline Library (845 Alder Ave, Incline Village, NV); Placer County Public Works (10825 Pioneer Trail, Suite 105, Truckee, CA); Placer County Tahoe City Offices (565 West Lake Blvd., Tahoe City, CA); Placer County Carnelian Bay Offices (5225 North Lake Blvd., Carnelian Bay, CA); North Tahoe Conference Center (8318 North Lake Blvd., Kings Beach, CA); and North Tahoe PUD (875 National Avenue, Tahoe Vista, CA). In addition the document can be found on TRPA's website (www.trpa.org).

Please contact one of the following agency contacts with any questions:

TRPA, Jeanne McNamara, (775)589-5252, email: jmcnamara@trpa.org
Placer County Public Works, Dan LaPlante, (530)581-6231, email: dlaplant@placer.ca.gov

Draft

**Supplemental Environmental Impact
Statement**

**Kings Beach Commercial Core
Improvement Project**

Prepared for:

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August 2009

ICF Jones & Stokes. 2009. *Supplemental Environmental Impact Statement*.
Draft. August. (ICF J&S 06676.06.) Sacramento, CA. Prepared for: Placer
County Department of Public Works.

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List of Acronyms

Assembly Bill 32	California Global Warming Solutions Act of 2006
BMPs	best management practices
BPMP	Lake Tahoe Regional Bicycle and Pedestrian Master Plan
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CEQA	California Environmental Quality Act
CH ₄	methane
CNEL	community noise equivalent level
CO ₂	carbon dioxide
CO ₂ eq	CO ₂ equivalent
CP	Community Plan
DEIS	Draft EIS
DSEIS	Draft Supplemental EIS
EA/EIR/EIS	environmental assessment/environmental impact report/environmental impact statement
EIP	Environmental Improvement Project
EIS	Environmental Impact Statement
FEIS	Final EIS
FONSI	Finding of No Significant Impact
GHG	greenhouse gas
KBCCIP	Kings Beach Commercial Core Improvement Project
KBCP	Kings Beach Community Plan
LCFS	low carbon fuel standard
LDL	Larson Davis Laboratories
N ₂ O	nitrous oxide
NEPA	National Environmental Policy Act
NOP	Notice of Preparation
proposed action	Kings Beach Commercial Core Improvement Project
TRPA	Tahoe Regional Planning Agency
VMT	vehicle miles traveled

Executive Summary

This public document, prepared in conformance with the Tahoe Regional Planning Agency (TRPA) Compact and all relevant TRPA environmental rules and regulations, serves as a Draft Supplement to the Final Environmental Assessment/Environmental Impact Report/Environmental Impact Statement (Final EA/EIR/EIS) prepared for the Kings Beach Commercial Core Improvement Project (KBCCIP). TRPA previously certified the Final EA/EIR/EIS for the KBCCIP on June 25, 2008. However, since certification of the environmental document, TRPA requested additional information relating to the project, and TRPA has determined such information warrants the creation and distribution of this Draft Supplemental EIS to satisfy TRPA environmental documentation requirements.

ES.1 Project Description

The Kings Beach Commercial Core Improvement Project (proposed action) is located in the community of Kings Beach, which is situated along the north shore of Lake Tahoe in Placer County, California. Specifically, the proposed action is located in portions of the Northeast ¼ of Section 13, Township 16 North, Range 17 East, Mount Diablo Baseline and Meridian and the West ½ of Section 19, Township 16 North, Range 18 East, MDB&M.

The purpose of the proposed action is to address bicycle and pedestrian circulation, preservation of scenery, and water quality needs within the Kings Beach Commercial Core area in a manner consistent with the Kings Beach Community Plan (KBCP).

As currently proposed, elements of the proposed action include roadway improvements to SR 28 to accommodate anticipated future transit and pedestrian needs; the installation of sidewalks, curbs, gutters, storm drains, and water quality facilities at specific locations; drainage ditch lining and revegetation at specific locations; streetscaping; the designation of specific road sites as on-street parking; and the construction of new, off-street parking

lots at specific locations within the action area. The project is included in the Lake Tahoe Regional Transportation Plan, “Mobility 2030”, and the 2008 Federal Transportation Improvement Program.

Placer County initially studied four alternatives for the improvements to SR 28 within the Draft environmental assessment/environmental impact report/environmental impact statement (EA/EIR/EIS). Two of the build alternatives propose to change the existing four lane roadway to a three lane roadway, while one build alternative maintains a four lane configuration.

In the Final EA/EIR/EIS, Placer County identified a “Hybrid Alternative” as the preferred alternative that includes three travel lanes, bike lanes, seasonal on-street parking and sidewalks. Roundabouts are included at the intersections of SR 28/Bear Street and SR 28/Coon Street. The Hybrid Alternative includes a Neighborhood Traffic Management Plan that incorporates traffic calming and noise-reducing improvements in the adjacent neighborhood to minimize some effects of anticipated cut through traffic identified in the Final EA/EIR/EIS.

ES.2 Project Background and Status

A joint draft EA/EIR/EIS that assessed the potential adverse effects of the Kings Beach Commercial Core Improvement Project was circulated for public review and comment from March 2007, through June 2007. A Final EA/EIR/EIS was completed in May 2008. The draft and final documents were prepared in accordance with the National Environmental Policy Act (NEPA), the California Environmental Quality Act (CEQA), and the TRPA Compact and all relevant TRPA environmental rules and regulations. The draft and final documents were also prepared in compliance with the Council on Environmental Quality Guidelines (*40 Code of Federal Regulations [CFR] 1500 to 1508*), State CEQA Guidelines (*14 California Code of Regulations [CCR] 14000 et seq.*), and the U.S. Department of Transportation’s Environmental Impact and Related Procedures (*23 CFR 771*).

Although the improvement project is on the State Highway System, Caltrans delegated its CEQA lead agency role to Placer County, and Placer County is the project proponent and the lead agency under CEQA. FHWA's responsibility for environmental review, consultation, and any other action required in accordance with applicable federal laws for this project is being, or has been, carried out by California Department of Transportation (Caltrans) under its assumption of responsibility pursuant to *23 U.S. Government Code (U.S.C) 327*. Caltrans is the lead agency under NEPA.

Placer County certified the Final EA/EIR/EIS and approved the preferred project alternative (3-lane hybrid) on July 22, 2008, adopted the Final Findings of Fact and Statement of Overriding Considerations for the 3-lane hybrid on September 23, 2008, and approved a community plan amendment recognizing State Route 28 as a 3-lane facility through Kings Beach on September 23, 2008. Placer County (CEQA lead agency) does not have additional discretionary approvals regarding this project and, pursuant to State CEQA Guidelines Section 15162(c), does not intend this document to supplement or augment the already certified CEQA document.

The TRPA Governing Board certified the Final EA/EIR/EIS on June 25, 2008. However, at that meeting, the TRPA Governing Board chose not to approve the preferred "hybrid" project alternative and the corresponding community plan amendments recognizing State Route 28 as a 3-lane facility through Kings Beach. Then, on July 23, 2008, the TRPA Governing Board voted to reconsider their decision on the project.

During deliberations regarding possible reconsideration of the project, TRPA expressed concern that additional traffic in the Kings Beach "grid" neighborhood could affect noise levels and air quality relating to both criteria pollutants within the grid neighborhood and greenhouse gas (GHG) emissions relating to the project as a whole. These environmental resources were evaluated in the Final EA/EIR/EIS, but not necessarily across the geographic area that included the residential "grid" area of Kings Beach where cut-through traffic was expected to occur. TRPA determined that a supplement to the Final EIS should be prepared to examine the effects of noise and air quality identified with the

project's preferred alternative. Related to this concern, TRPA requested additional information relating to key elements of the Neighborhood Traffic Management Plan (NTMP) and asked for more detailed discussion of measures that may be contained within the NTMP.

In the capacity as an applicant, Placer County has agreed to prepare this Draft Supplemental EIS to specifically comply with TRPA requests and requirements. With the creation of this document, TRPA intends to comply with all recirculation requirements of the TRPA Compact and all relevant TRPA environmental rules and regulations. The Draft Supplemental EIS clarifies the EIS previously certified by TRPA and supplements the analyses of noise and air quality in the previously certified EIS. Placer County (CEQA lead agency) does not have additional discretionary approvals regarding this project and, pursuant to State CEQA Guidelines Section 15162(c), does not intend this document to supplement or augment the already certified CEQA document.

ES.3 Purpose and Need for Supplemental EIS

Since certification of the environmental document, TRPA requested additional information relating to the project with regards to noise levels. In addition, language relating to air quality has been included in the Draft Supplemental EIS to clarify impacts on air quality within the grid neighborhood. As such, TRPA has determined such information warrants the creation and distribution of this Draft Supplemental EIS to satisfy TRPA environmental documentation requirements.

ES.4 Public Review Process

In accordance with TRPA Code 5.8.A (4), this Draft Supplemental EIS is being distributed for a 60-day public comment period. Comments on the Draft Supplemental EIS may be made either in writing before the end of the review period. Written comments on the Draft Supplemental EIS should be forwarded to:

Ms. Jeanne McNamara
Tahoe Regional Planning Agency
Post Office Box 5310
Stateline, NV 89449-5310
Email: jmcnamara@trpa.org

The public review period provides the opportunity for agencies, organizations, and members of the public to provide comments on the new analysis and information published in the Draft Supplemental EIS only. Because this is a supplement document and is not a recirculation of the Draft or Final EA/EIR/EIS, TRPA is not obligated to accept comments on the previously published Draft or Final EA/EIR/EIS; the Draft EA/EIR/EIS document was circulated for a 90-day public comment period, which closed May 26, 2007 to fulfill CEQA and NEPA requirements and June 18, 2007 to fulfill TRPA requirements, and the Final EA/EIR/EIS document was published in May 2008. The comment period for this Draft Supplemental EIS, beginning on August 19, 2009, and ending on October 18, 2009, is limited only to the new information presented in this Draft Supplemental EIS.

Written comments on the Draft Supplemental EIS will be responded to in a Final Supplemental EIS. Any revisions to this Draft Supplemental EIS, made in response to the received comments, will be considered by the TRPA Governing Board prior to rendering a decision on certification of the Final Supplemental EIS and a decision on the preferred project alternative (3-lane hybrid).

ES.5 Key Environmental Issues Addressed

The following key issues are evaluated in this Draft Supplemental EIS.

- **Air Quality**—Issues raised include: consideration of emissions from diverted or cut-through traffic in the grid neighborhood of Kings Beach forecasted to occur during high traffic volume periods. Another air quality concern from a cumulative perspective analyzed in the Draft Supplemental EIS includes minor amounts of GHG)

emissions when compared to existing and future no-build conditions. The evaluation of GHG impacts is evaluated from a cumulative perspective.

- **Noise**—Issues raised include: potential noise impacts associated with cut-through or diverted traffic in the grid neighborhood as a result of forecasted delays in travel times as associated with some of the project alternatives including the preferred alternative.
- **NTMP**—Issues raised include: TRPA requested that the NTMP be developed to a conceptual level before approval of the project, rather than left to the final design stages of the project development as described within the Final EA/EIR/EIS. Consequently, a Conceptual NTMP was drafted, and this Draft Supplemental EIS includes an environmental impact analysis of that Plan.

ES.6 Significant Impacts and Mitigation Summary

As stated above, this Draft Supplemental EIS has been prepared to evaluate the potential for significant adverse effects on the environment that had not been considered previously in the Final EA/EIR/EIS relating to noise and air quality.

The Draft Supplemental EIS analysis concludes that there is the potential for significant noise impacts due to diverted or cut-through traffic in “the grid” neighborhood of Kings Beach. The potential noise impacts are expected to occur during the forecasted high traffic volume periods in 2028 after buildout of the community plans within the region. To mitigate the potential noise impacts, the Draft Supplemental EIS suggests overlaying certain roads within “the grid” neighborhood with noise-reducing asphalt material to reduce this impact to less than significant.

Two aspects of air quality have been covered by this Draft Supplemental EIS. First, the potential for greenhouse gas emissions impacts caused by the project has been analyzed. In order to adequately consider this issue some information within the Air Quality chapter of the document has been updated to clarify impacts on air quality within the grid neighborhood. The analysis found that there is no significant impact from the project on

air quality related to green house gas emissions. Second, it has been determined that clarification is needed to explicitly address air quality impacts within the grid neighborhood finds that no air quality impacts would occur within the grid neighborhood. This supplement concludes that there are no significant air quality impacts will occur within the grid neighborhood. Note that all new analysis done (and included herein) does not change any conclusions within the Air Quality or Cumulative Impacts chapters of the Final EA/EIR/EIS as approved by TRPA June 25, 2008. No impacts identified in the Draft Supplemental EIS were more severe than those identified in the Final EA/EIR/EIS.

Table ES-1 presents a summary of potential impacts identified, and if there are required mitigation measures based on the analysis presented in the Draft Supplemental EIS.

Table ES-1. Significant Impacts and Mitigation Summary

Significant Impacts	Mitigation Measures
Air Quality	
No Impact/less than significant.	No mitigation required.
Noise	
Impact 4-1: Alternative 3 would result in significant noise levels in excess of TRPA standards.	Mitigation Measure 4-1a: Employ Traffic Noise-Reduction Design Features into Design of the Proposed Project.

Chapter 1. Introduction

1.1 Project Overview and Status

This public document, prepared in conformance with the TRPA Compact and all relevant TRPA environmental rules and regulations, serves as a Draft Supplemental to the Final EA/EIR/EIS prepared for the KBCCIP. TRPA certified the Final EA/EIR/EIS for the KBCCIP on June 25, 2008. However, since certification of the environmental document, TRPA requested additional information relating to the project, and TRPA has determined such information warrants the creation and distribution of this Draft Supplemental EIS to satisfy TRPA environmental documentation requirements.

A joint Draft EA/EIR/EIS that assessed the potential adverse effects of the Kings Beach Commercial Core Improvement Project was circulated for public review and comment from March, 2007, through June, 2007. A Final EA/EIR/EIS was completed in May 2008. Placer County certified the Final EA/EIR/EIS and approved the preferred project alternative (3-lane hybrid) on July 22, 2008, adopted the Final Findings of Fact and Statement of Overriding Considerations for the 3-lane hybrid on September 23, 2008, and approved a community plan amendment recognizing State Route 28 as a 3-lane facility through Kings Beach on September 23, 2008.

The TRPA Governing Board certified the Final EA/EIR/EIS on June 25, 2008. However, at that meeting, the TRPA Governing Board chose not to approve the preferred “hybrid” project alternative and the corresponding community plan amendments recognizing State Route 28 as a 3-lane facility through Kings Beach. Then, on July 23, 2008, the TRPA Governing Board voted to reconsider their decision on the project.

During deliberations regarding possible reconsideration of the project, TRPA expressed concern that additional traffic in the Kings Beach “grid” neighborhood could affect noise levels and air quality relating to both criteria pollutants within the grid neighborhood and GHG emissions relating to the project as a whole. These environmental resources were

evaluated in the Final EA/EIR/EIS, but not necessarily across the geographic area that included the residential “grid” area of Kings Beach where cut-through traffic was expected to occur. As a result, TRPA determined that a supplement to the Final EA/EIR/EIS should be prepared to examine the effects of noise and air quality as related to and identified with the project’s preferred alternative.

In the capacity as an applicant, Placer County has agreed to prepare this Draft Supplemental EIS to specifically comply with TRPA requests and requirements. With the creation of this document, TRPA intends to comply with all recirculation requirements of the TRPA Compact and all relevant TRPA environmental rules and regulations. The Draft Supplemental EIS clarifies the Final EA/EIR/EIS previously certified by TRPA and supplements the analyses of noise and air quality in the previously certified Final EA/EIR/EIS. Placer County (CEQA lead agency) does not have additional discretionary approvals regarding this project and, pursuant to State CEQA Guidelines Section 15162(c), does not intend this document to supplement or augment the already certified CEQA document.

1.2 Purpose and Need for Supplemental EIS

According to Section 6.15, Article 6 of the TRPA Rules of Procedure, a supplemental EIS is required following preparation of an EIS if any of the following circumstances apply:

- (1) Subsequent changes are proposed in the project which involve new significant adverse effects not considered in the prior EIS; or
- (2) Substantial changes occur with respect to circumstances under which the project is undertaken, which involve new significant adverse effects not considered in the prior EIS; or
- (3) New information of substantial importance becomes available that shows any of the following:

- i. The project may have a significant adverse effect not considered in the prior EIS;
- ii. Significant adverse effects would be substantially more severe than previously discussed in the prior EIS; or
- iii. Mitigation measures or alternatives, previously not found to be feasible or not previously discussed, would substantially reduce a significant adverse effect of the project or matter which has not already been reduced to a less than significant level.

The project's preferred alternative results in potentially high traffic volumes that divert off of SR 28 during certain busy times of the year and use local County roadways to avoid congestion on the highway. Traffic impacts were clearly identified in the Final EA/EIR/EIS as significant, and even with proposed traffic calming mitigation, the impact is still considered significant and unavoidable. As a result, TRPA concluded that certain project resources including noise and air quality should be analyzed in the residential/commercial area of Kings Beach (where diverted traffic is forecasted to occur) that were not evaluated as part of the Draft or Final EA/EIR/EIS documents. TRPA determined that a Draft Supplemental EIS shall be prepared to evaluate the potential for significant adverse effects on the environment that have not been considered previously. No impacts identified in the Draft Supplemental EIS were more severe than those identified in the Final EA/EIR/EIS. The Draft Supplemental EIS is being circulated for public comment, as described in Section 1.4 below.

Section 6.17, Article 6 of the TRPA Rules of Procedure allows that “[a]ll or part of other documents, including prior EISs, may be incorporated for reference in environmental documents.” This Draft Supplemental EIS contains new information regarding environmental impacts not previously evaluated. All information included in the final EA/EIR/EIS, published in May 2008, remains relevant and applicable, unless as noted herein, and is hereby incorporated by reference. This Draft Supplemental EIS adds but does not replace the Final EA/EIR/EIS; it supplements the Final EA/EIR/EIS and is not intended as a stand-alone document. Information provided in the Final EA/EIR/EIS about

environmental conditions and trends, regulatory considerations, thresholds of significance, and environmental impact analysis for the project, remains applicable to the analysis contained in this Draft Supplemental EIS and is referenced throughout this document, unless as specifically noted. The Draft Supplemental EIS does not result in any changes to the Project Description of the Final EA/EIR/EIS. To review the full environmental analysis provided for the project, refer to the Final EA/EIR/EIS along with this Draft Supplemental EIS. The Final EA/EIR/EIS is available at Placer County's Public Works office at 10825 Pioneer Trail, Suite 105, Truckee, CA, and is also available online at

<http://www.placer.ca.gov/Departments/Works/Projects/KingsBeach/KingsBeachCurrentUpdate.aspx>.

1.3 Contents and Format of the Supplemental DEIS

As stated above, this Draft Supplemental EIS has been prepared to evaluate the potential for significant adverse effects on the environment resulting from the increased vehicular traffic forecasted to occur in the residential “grid” area of Kings Beach during periods of high traffic volume on SR28. The document is organized as follows:

- The Executive Summary presents a summary of proposed project, the purpose and need for the project and this Draft Supplemental EIS, and provides a summary of potential environmental impacts and mitigation measures.
- Chapter 1—Introduction: Provides an overview and status of the proposed project, describes the purpose of the original EA/EIR/EIS and the purpose of and need for a Draft Supplemental EIS, and provides information about the public review process for the Draft Supplemental EIS.
- Chapter 2—Project Description: Provides a summary of the purpose and need and description of the proposed project.
- Chapter 3—Air Quality: Provides clarification of air quality impacts (Chapters 3.1, 4, and 5 of the Final EA/EIR/EIS).

- Chapter 4—Neighborhood Traffic Management Plan: Describes the key elements and performance standards of the developed NTMP.
- Chapter 5—Noise: Provides an evaluation of noise impacts within the “grid” neighborhood of Kings Beach (Chapters 3.9, 4, and 5 of the Final EA/EIR/EIS).
- Chapter 6—Cumulative Impacts: Provides an evaluation of cumulative GHG impacts.
- Chapter 7—References Cited: Provides an additional references cited in the Draft Supplemental EIS (Chapter 8 of the Final EA/EIR/EIS).
- Appendices: Various appendices are included to offer additional documentation of resources used in preparing this Draft Supplemental EIS.

Within each chapter, potential environmental impacts for each resource evaluated are identified and discussed. The existing conditions and the standards that were used to identify potential impacts are not described in this Draft Supplemental EIS, unless they differ from the information provided in the original Final EA/EIR/EIS. The information found within this Draft Supplemental EIS is consistent with the related chapters of the Final EA/EIR/EIS, unless otherwise specified. The potential significant impacts for each resource evaluated are presented, along with required mitigation measures, followed by the potential non-significant impacts, and then the potential beneficial impacts.

1.4 Public Review Process

In accordance with TRPA Code 5.8.A (4), this Draft Supplemental EIS is being distributed for a 60-day public comment period. Written comments on the Draft Supplemental EIS should be forwarded to:

Ms. Jeanne McNamara
Tahoe Regional Planning Agency
Post Office Box 5310
Stateline, NV 89449-5310
Email: jmcnamara@trpa.org

The public review period provides the opportunity for agencies, organizations, and members of the public to provide comments on the new analysis and information published in the Draft Supplemental EIS only. Because this is a supplement document and not a recirculation of the Draft or Final EA/EIR/EIS, TRPA is not obligated to accept comments on the previously published Draft or Final EA/EIR/EIS; the Draft EA/EIR/EIS document was circulated for a 90-day public comment period, which closed May 26, 2007 to fulfill CEQA and NEPA requirements and June 18, 2007 to fulfill TRPA requirements, and the Final EA/EIR/EIS document was published in May 2008. The comment period for this Draft Supplemental EIS, beginning on August 19, 2009, and ending on October 18, 2009, is limited only to the new information presented in this Draft Supplemental EIS.

Written comments on the Draft Supplemental EIS will be responded to in a Final Supplemental EIS. Any revisions to this Draft Supplemental EIS, made in response to the received comments, will be considered by the TRPA Governing Board prior to rendering a decision on certification of the Final Supplemental EIS and approval of the preferred project alternative (3-lane hybrid).

Chapter 2. Project Description

2.1 Project Location

The Kings Beach Commercial Core Improvement Project is located in the community of Kings Beach, which is situated along the north shore of Lake Tahoe in Placer County, California. Specifically, the proposed action is located in portions of the Northeast $\frac{1}{4}$ of Section 13, Township 16 North, Range 17 East, Mount Diablo Baseline and Meridian and the West $\frac{1}{2}$ of Section 19, Township 16 North, Range 18 East, MDB&M (Figure 2-1).

2.2 Purpose and Need

In summary, the purpose of the proposed action is to address bicycle and pedestrian circulation, preservation of scenery, and water quality needs within the Kings Beach Commercial Core area in a manner consistent with the KBCP.

2.3 Project Elements and Alternatives Considered

The proposed action is located in the community of Kings Beach, which is situated along the north shore of Lake Tahoe in Placer County, California. The action area contains both residential and commercial properties and receives high vehicular and pedestrian traffic year-round.

As currently proposed, elements of the proposed action include roadway improvements to SR 28 to accommodate anticipated future transit and pedestrian needs; the installation of sidewalks, curbs, gutters, storm drains, and water quality facilities at specific locations; drainage ditch lining and revegetation at specific locations; streetscaping; the designation of specific road sites as on-street parking; and the construction of new, off-street parking lots at specific locations within the action area. The project is included in the Lake Tahoe Regional Transportation Plan “Mobility 2030”, and the 2008 Federal Transportation Improvement Program.

Placer County initially studied four alternatives for the improvements to SR 28 within the Draft EA/EIR/EIS which was reduced to three build alternatives in the Final EA/EIR/EIS. Two of the build alternatives propose to change the existing four lane roadway to a three lane roadway, while one build alternative maintains a four lane configuration. Please see the Final EA/EIR/EIS for figures and full descriptions of the alternatives considered.

As indicated in the Final EA/EIR/EIS, Placer County has identified a “Hybrid Alternative” as the preferred alternative that includes three travel lanes, bike lanes, seasonal on-street parking and sidewalks. Roundabouts are included at the intersections of SR 28/Bear Street and SR 28/Coon Street. The Hybrid Alternative includes a Neighborhood Traffic Management Plan that incorporates traffic calming and noise-reducing improvements in the adjacent neighborhood to minimize some effects of anticipated cut through traffic identified in the Final EA/EIR/EIS.

The Kings Beach Commercial Core Improvement Project (KBCCIP) is identified in and is consistent with the following adopted plans, including, but not limited to:

- Environmental Improvement Project (EIP) Project Numbers: 15,733, 787, and 10060 – Kings Beach Commercial Core
- Tahoe Regional Planning Agency (TRPA) Regional Plan for the Lake Tahoe Basin
- TRPA Lake Tahoe Regional Bicycle and Pedestrian Master Plan (BPMP)
- Placer County Regional Bikeway Plan
- Kings Beach Community Plan (1996)
- North Lake Tahoe Redevelopment Plan (1995)

The Kings Beach Commercial Core environmental process produced a Notice of Preparation (NOP) in December 2002, a Draft EA/EIR/EIS in March 2007, and a Final EA/EIR/EIS in May 2008.



Figure 2-1
Kings Beach Commercial Core Improvement Project
Vicinity and Location Map

Chapter 3. Air Quality

3.1 Introduction

Section 3.1 of the Draft and Final EA/EIR/EIS for the Kings Beach Commercial Core Improvement Project addresses air quality and the findings from the Draft and Final EA/EIR/EIS and are not repeated here. Please refer to the Draft and Final EA/EIR/EIS. This chapter within the Draft Supplemental EIS identifies the potential environmental impacts to air quality from diverted or cut-through traffic in the grid neighborhood of Kings Beach forecasted to occur during high traffic volume periods. This analysis does not conflict with Section 3.1 of the Draft and Final EA/EIR/EIS, unless otherwise noted within this chapter.

TRPA requested clarification relating to impacts on air quality within the grid neighborhood. The document currently states that the worst case scenario does not trigger significance thresholds on the highway itself. Because the source of potential pollutants comes from the highway, moving away from the location of the source will only lessen potential impacts. Therefore, in terms of air quality the grid neighborhood will not be impacted by the project. While this conclusion could be implicitly drawn from the current language within the Final EA/EIR/EIS, TRPA has requested that this analytical step be made explicit with additional clarifying language. Typically this could be done with an addendum to the Final EA/EIR/EIS, but due to the need to discuss noise in a supplemental format, this clarifying language relating to air quality has been included below.

3.2 Changes to Language of Section 3.1 of the Final EA/EIR/EIS

Within Section 3.1 of the Final EA/EIR/EIS, this Draft Supplemental EIS clarifies the implicit conclusion within the Final EA/EIR/EIS that there is no impact on air quality within the grid neighborhood:

The second full paragraph on page 3.1-32 of the Final EA/EIR/EIS shall now read:

Increases of CO concentrations at locations near congested intersections affected by the proposed action were modeled with the CALINE4 dispersion model. The modeling was performed at the intersections of SR 28/SR 267, SR 28/Secline Street, SR 28/Deer Street, SR 28/Bear Street, SR 28/Coon Street, SR 28/Fox Street, and SR 28/Chipmunk Street using the highest winter peak hour traffic data. These intersections have substantially higher traffic volumes and congestion levels than the roadways through the grid neighborhood of Kings Beach. The conditions modeled were existing 2008 with project and 2028 with project. It should be noted that the existing conditions had the highest modeled concentrations; emissions under future conditions are anticipated to be lower because of continuing improvements in engine technology and the retirement of older, higher-emitting vehicles. Modeled CO concentrations plus background CO levels from the nearest monitoring station are presented in Table 3.1-6. As shown, emissions of CO hotspots are not anticipated to exceed the federal or state 1- and 8-hour standards. In addition, as previously indicated, the intersections analyzed in this analysis have substantially higher traffic volumes and congestion levels than the roadways through the grid neighborhood of Kings Beach. This analysis represents a worst-case scenario, and as such, as it is anticipated that CO concentrations within the project as a whole and the grid neighborhood of Kings Beach would be lower than those indicated in Table 3.1-6. Consequently, CO concentrations along roadways in the grid neighborhood of Kings Beach are not anticipated to exceed standards.

The last full paragraph on page 3.1-40 of the Final EA/EIR/EIS shall now read:

Modeled CO concentrations associated with implementation of the alternatives are presented in Table 3.1-6. The modeled CO emissions presented in Table 3.1-6 indicate that emissions of CO hotspots are anticipated to comply with TRPA code for intersections along SR 28 and within the grid neighborhood of Kings Beach.

3.3 Changes to Language of Section 4 of the Final EA/EIR/EIS

Within Section 4 of the Final EA/EIR/EIS, this Draft Supplemental EIS clarifies the implicit conclusion within the Final EA/EIR/EIS that there is no impact on air quality within the grid neighborhood:

The last full paragraph on page 4-8 of the Final EA/EIR/EIS shall now read:

The carbon monoxide modeling for the proposed action found that existing and future concentrations from vehicle idling would not exceed existing state, federal, or TRPA standards intersections along SR 28 and within the grid neighborhood of Kings Beach. This modeling was based on traffic volumes at intersections with the highest traffic volumes and congestion levels in the KBCCIP area that assumed cumulative growth throughout the northern Lake Tahoe area. Consequently, neither of the alternatives would result in a substantial cumulative effect.

3.4 Changes to Language of Section 5 of the Final EA/EIR/EIS

Within Section 5 of the Final EA/EIR/EIS, this Draft Supplemental EIS clarifies the implicit conclusion within the Final EA/EIR/EIS that there is no impact on air quality within the grid neighborhood:

The second full paragraph on page 5-8 of the Final EA/EIR/EIS shall now read:

Table 3.1-6 indicates that CO concentrations resulting from Alternative 1 would not exceed the federal or state 1- and 8- hour standards at intersections along SR 28 and within the grid neighborhood of Kings Beach. Consequently, this impact is considered **less than significant**, and no mitigation is required.

The third full paragraph on page 5-8 of the Final EA/EIR/EIS shall now read:

Modeled CO concentrations plus background CO levels for Alternatives 2, 3, and 4 are presented in Table 3.1-6 and indicate emissions of CO hotspots are not anticipated to exceed the federal or state 1- and 8-hour standards at intersections

along SR 28 and within the grid neighborhood of Kings Beach. Consequently, this impact is considered **less than significant**, and no mitigation is required.

Chapter 4. Neighborhood Traffic Management Plan

4.1 Introduction

Chapter 3.6 of the Final EA/EIR/EIS identified a significant and unavoidable impact in the cumulative condition (2028+) for the proposed project associated with some vehicles choosing to divert through the adjacent residential community in order to avoid traffic congestion on SR 28. While the analysis in Chapter 3.6 indicates that periods when traffic volumes exceed roadway capacity would occur on only a limited number of days per year under current transportation activity levels on State Route 28, potential future growth in traffic volumes could significantly increase the number of hours and days per year that drivers would likely use local streets.

Mitigation measure TRAF-1 identified in the Final EA/EIR/EIS calls for preparation of a NTMP to minimize some of the impacts associated with cut through traffic. The description in the Final EA/EIR/EIS presents some education and enforcement strategies, as well as a general list of potential roadway modifications. Concerns were raised by TRPA relating to the general nature of this Plan. To address this concern, the County added detail to the Plan and completed a more specific conceptual plan in October of 2008. This section of the Draft Supplemental EIS describes the development of the Conceptual NTMP, as well as key elements and performance standards of the Conceptual NTMP. No new additional impacts are anticipated with adoption of the Conceptual NTMP. However, if different activities are determined to be necessary during construction of the project, additional environmental review of those measures may be required. The Conceptual NTMP and this Chapter of the Draft Supplemental EA/EIR/EIS are not in conflict with Chapter 3.6 of the Final EA/EIR/EIS, unless otherwise stated. No changes are needed within the Traffic impacts chapter (Chapter 3.6) of the Final EA/EIR/EIS.

4.2 Development of the Conceptual NTMP

To develop the Conceptual NTMP, a Focus Group was formed with five community members (3-Lane and 4-Lane project advocates), fire officials, transportation professionals, and County staff. This group brainstormed ideas while touring the Kings Beach community that were then incorporated into the NTMP. Although the focus of the NTMP concept was to address the issue of future traffic diverting into the neighborhood, the Focus Group identified current issues that needed to be addressed (particularly in regards to local school traffic). The Conceptual NTMP was developed to enhance current conditions in the residential grid as well as minimize some of the impacts associated with future cut through traffic.

In addition, two public open houses were held in Kings Beach to gain public input on the draft conceptual NTMP. The first, held at the North Tahoe Conference Center on Tuesday, October 7th, 2008, was conducted in English and was attended by approximately 120 persons. A second open house conducted in Spanish was held at the Kings Beach Elementary School on Thursday, October 9th, 2008 and was attended by approximately 15 persons. At both presentations, attendees were encouraged to discuss the conceptual plans with County and consultant staff, and to fill out comment cards. In addition, the draft plan was presented at a meeting of Project MANA at the Family Resource Center on Wednesday, October 16th, 2008. The approximately 80 persons in attendance were given the opportunity to review materials and provide input.

The draft NTMP was subsequently refined based upon the comments received at these public workshops. In particular, additional sidewalks were added along Fox Street, and additional speed humps added along Dolly Varden Avenue and Beaver Street. The draft NTMP, entitled the Conceptual Kings Beach Community Traffic Calming Plan (October 17, 2008) is attached to this Draft Supplemental EIS as Appendix A.

4.3 Provisions of the Conceptual NTMP

The Conceptual NTMP proposes to control traffic speeds, minimize any noise and air impacts, and enhance safety by minimizing conflicts between vehicles, pedestrians, and cyclists. It is also intended to maximize the overall “live-ability” of the residential streets, despite any increase in traffic volumes associated with traffic conditions along SR 28.

The Conceptual NTMP will be implemented, and if site conditions or other issues result in significant modification during project design, then subsequent environmental review may be needed.

The proposed Conceptual NTMP includes the following specific components (Figures 4-1 and 4-2):

- Each street entering the “grid” has some form of traffic control (either a 2-lane choker or a traffic circle) to provide all drivers with a physical indication that they are entering a residential neighborhood. Also at these locations, speed limit signs would be installed and speed legends painted on the pavement in the inbound direction.
- Where grades are too steep for installation of traffic circles and where it is desirable to attain consistent spacing between traffic controls, speed humps or raised crosswalks are provided (where feasible given existing driveway and cross-street locations). These devices could either be installed seasonally, or permanently.
- A raised crosswalk will be installed along Dolly Varden Avenue between Deer Street and Wolf Street, at the location of an existing striped crosswalk providing access to the Kings Beach Elementary School. As there is no sidewalk on either side of Dolly Varden Avenue, this would require ramps between the raised crosswalk and existing grade on either side. To reinforce slower speeds along the section adjacent to the school and playfields, a speed hump is also provided along Dolly Varden Avenue west of Deer Street.
- On Coon Street at Loch Levon Avenue, the existing Stop signs facing Loch Levon are to be relocated to stop traffic on Coon Street, in order avoid a three-block-long

segment on Coon Street without traffic controls, as both traffic circles and speed humps cannot be installed along this section of Coon Street.

- A speed feedback sign would be provided facing eastbound traffic on Speckled Avenue between Wolf and Deer Streets to address the existing speeding observed along this roadway.
- Edge line striping (“fog lines”) along Fox Street, Coon Street, Speckled Avenue, and Dolly Varden Avenue, designating two ten-foot travel lanes along Fox, Coon, and Dolly Varden, and two twelve-foot travel lanes along Speckled Avenue (with the wider lane width reflecting the higher proportion of truck traffic serving the light industrial uses along Speckled Avenue).
- All striped crosswalks in the grid (such as near the Kings Beach Elementary School) would be repainted.
- Increased traffic enforcement will be considered, focusing on peak traffic periods when cut through traffic would be an issue.
- A rubberized asphalt or open gap asphalt overlay to minimize the effects of road noise on the following roads:
 - Beaver Street from SR 28 to Cutthroat Avenue;
 - Chipmunk Street from SR 28 to Salmon Street;
 - Fox Street from Salmon Street to Dolly Varden Street;
 - Salmon Street from Chipmunk Street to Fox Street;
 - Rainbow Avenue from Fox Street to Secline Street;
 - Dolly Varden Street from Fox Street to SR 267
- A pedestrian path/sidewalk, to be installed on Steelhead Avenue, Coon Street, Fox Street and Secline Street (in addition to the sidewalks to be provided along and immediately off of SR 28 as part of the overall project) to provide pedestrian connectivity (north/south as well as east/west) and thereby encourage walking.

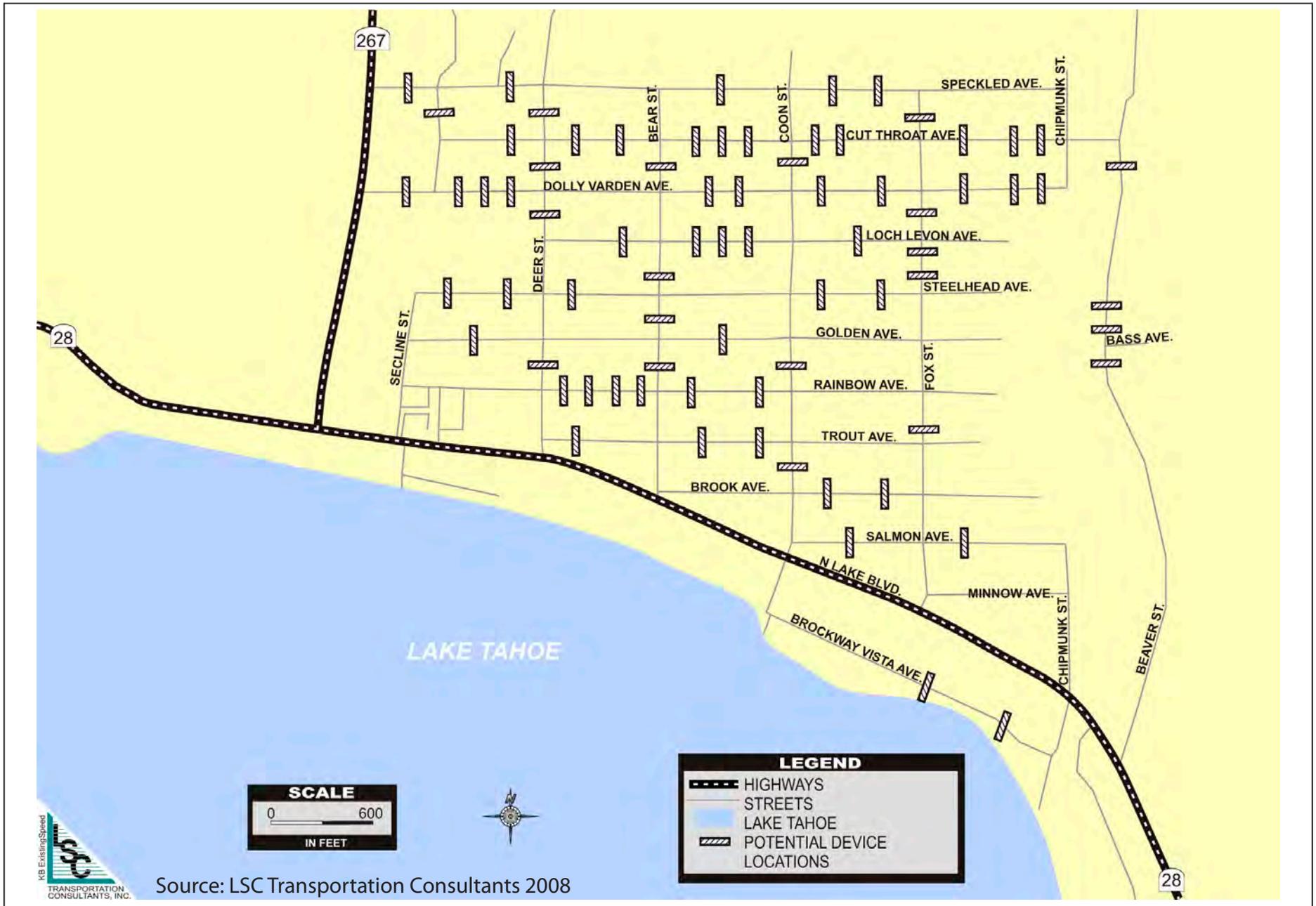


Figure 4-1
Kings Beach Neighborhood Traffic Management Program
Potential Mid-Block Traffic Device Locations



06676.06 (08-09)

Source: LSC Transportation Consultants 2008

Figure 4-2
Conceptual Kings Beach Neighborhood Traffic Calming Plan

- An option for east/west pedestrian connectivity is to install one or two one way streets on Steelhead Avenue and/or Loch Levon Avenue. The area no longer being used by cars could be striped for pedestrians and perhaps bicyclists.

4.4 Potential Impacts Associated with the Conceptual NTMP

The NTMP would include the use of traffic controls (2-lane choker or traffic circle), speed humps or raised crosswalks, relocated stop signs, pavement restriping, installation of pedestrian paths/sidewalks, and other measures designed to help alleviate traffic impacts through the grid neighborhood of Kings Beach. In general, most devices will be non-permanent fixtures. The features implemented as part of the NTMP are not anticipated to result in any potentially significant construction or operational impacts within the grid neighborhood.

However, to the extent that any NTMP components, such as potential sidewalks or traffic circles, result in minor alterations to the land, such alterations would be analyzed through TRPA's ministerial review processes. As such, best management practices (BMPs), minor controls, and other related requirements will be implemented to minimize any potential environmental impacts. For example, routine traffic control will be in place during road construction (Mitigation Measure TRA-3 in Section 3.6, Traffic, and Mitigation Measure UT-1 in Section 3.11, Public Services and Utilities of the Final EA/EIR/EIS) and water quality safeguards (Mitigation Measures WQ-1 and WQ-2 in Section 3.13, Water Quality, of the Final EA/EIR/EIS) will similarly be in place to avoid any erosion or release of soil to waterways. If any of the features of the NTMP go beyond the TRPA's ministerial review requirements, additional environmental review would be required by TRPA for such activities to identify and mitigate any potential significant impacts.

The identified significant and unavoidable impact relating to the cumulative condition (2028+) for the proposed project associated with some vehicles choosing to divert through the adjacent residential community in order to avoid traffic congestion on SR 28

still exists. As described above, the specific additions and changes to the Conceptual NTMP will lessen such impacts, but to be conservative TRPA still considers the impact significant.

Chapter 5. Noise

5.1 Introduction

This chapter identifies the potential environmental noise impacts from diverted or cut-through traffic in the grid neighborhood of Kings Beach forecasted to occur during high traffic volume periods. This assessment is based on the supplemental noise technical study—*Revised Environmental Noise Assessment: State Route 28 Internal Trips* (Appendix B). This analysis does not conflict with Section 3.9 of the Draft and Final EA/EIR/EIS, unless otherwise noted within this chapter. The assessment of traffic noise levels was conducted using the Federal Highway Administration Traffic Noise Prediction Model (FHWA RD77-108) and traffic volumes provided LSC Traffic Consultants.

5.2 Regulatory Considerations and Standards of Significance

TRPA has adopted environmental thresholds for the Lake Tahoe Region. The noise standards, or "Thresholds" as they are commonly referred to, are numerical community noise equivalent level (CNEL) values for various land use categories. The CNEL standard includes noise from all sources and is based on a not-to-exceed noise level at any place or time during a 24-hour period within the applicable Plan Area or Transportation Corridor. The TRPA Regional Plan has a noise element which establishes goals and policies for specific land uses. Table 5-1 summarizes TRPA Regional Plan cumulative noise level standards for various land uses.

Table 5-1. TRPA Regional Plan Cumulative Noise Level Standards

Land Use Category	CNEL, dBA
High Density Residential	55
Low Density Residential	50
Hotel/Motel	60
Commercial	60
Industrial	65
Urban Outdoor Recreation	55
Rural Outdoor Recreation	50
Wilderness and Roadless Areas	45
Critical Wildlife Areas	45
Policy Statement: It shall be a policy of the TRPA Governing Board in the development of the Regional Plan to define, locate, and establish CNEL levels for transportation corridors.	
Transportation Corridors	
Highway 50	65
Highways 89, 207, 28, 267 & 431	55
South Lake Tahoe Airport	60
Transportation Corridors ¹	

As a form of zoning, the TRPA has divided the Lake Tahoe Region into more than 175 separate Plan Areas. Boundaries for each of the Plan Areas have been established based on similar land uses and the unique character of each geographic area. For each Plan Area, a "Statement" is made as to how that particular area should be regulated to achieve regional environmental and land use objectives. As a part of each Statement, an outdoor CNEL standard is established. The project site is located within Plan Area 029 (Kings Beach Commercial, Special Area 2) which is covered by the KBCP. In addition, cut through traffic would also occur in Plan Area 031 (Brockway), Plan Area 028 (Kings Beach Residential), and the Kings Beach Industrial Community Plan Area. TRPA has established maximum noise level criteria, as well as standards for stationary or industrial noise (Table 5-2) and Plan Areas (Table 5-3).

Maximum Community Noise Level

1. Where applicable, a maximum 55 CNEL override for the Highway 28 corridor is permissible;
2. The maximum CNEL for Special Areas 3 and 4 is 55 CNEL;
3. The maximum CNEL for all areas of the Community Plan except as noted in 1 and 2 above is 65 CNEL;
4. The maximum CNEL for shorezone tolerance districts 6 and 7 is 55 CNEL and the maximum for the lake zone is 50 CNEL.

Table 5-2. Kings Beach Commercial Community Plan Stationary and Industrial Noise Sources Standards

Noise Level Descriptor	Daytime (7:00 a.m.–7:00 p.m.)	Nighttime (7:00 p.m.–7:00 a.m.)
Hourly L_{eq} , dB	55	45
Maximum Level, dB	75	65

¹ measured at the property line of a noise-sensitive receiving use

Table 5-3. Kings Beach Commercial Community Plan Area Noise Sources Standards

Plan Area Name	Plan Area #	CNEL Standard
Kings Beach Residential	PAS 028	55 dB
Brockway	PAS 031	55 dB
Kings Beach Industrial Community Plan	–	65 dB

Another means of determining a significant noise impact is to judge a person’s reaction to changes in noise levels due to a project. Table 5-4 is commonly used to show expected public reaction to changes in environmental noise levels. This table was developed on the basis of test subjects' reactions to changes in the levels of steady state pure tones or broad band noise and to changes in levels of a given noise source. It is probably most applicable to noise levels in the range of 50 to 70 dB, which is the usual range of voice and interior

noise levels. The TRPA staff policy is that an increase of +3 dB CNEL or more is considered to be significant.

Table 5-4. Subjective Reaction to Changes in Noise Levels of Similar Sources

Change in Level (dB)	Subjective Reaction	Factor Change In Acoustical Energy
1	Imperceptible (Except for Tones)	1.3
3	Just Barely Perceptible (TRPA Level of Significance)	2.0
6	Clearly Noticeable	4.0
10	About Twice (or Half) as Loud	10.0

Source: Architectural Acoustics, M. David Egan, 1988.

5.3 Existing Noise Conditions and Trends

Existing conditions and trends with respect to noise within “the grid” neighborhood of Kings Beach was evaluated for the Draft Supplemental EIS. Continuous hourly background noise level measurements at seven locations within the area where cut-through traffic may occur were conducted over a 24-hour period. Equipment used for the noise measurement surveys included Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters. The meters were calibrated before use with an LDL Model CA200 acoustical calibrator to ensure the accuracy of the measurements. The results of the 24-hour noise monitoring are summarized in Table 5-5.

Table 5-5. Summary of Ambient Noise Measurement Results

Site	Description	GPS Coord.	Plan Area #/ Community Plan	CNEL Standard (dB)	Measurement Date/Day	Measured CNEL (dB)	Attainment	CNEL Delta (dB)
Continuous Noise Measurement Sites								
A	S. of Minnow Ave. and 175' N. of SR 28	39°14'6.76"N 120° 1'6.48"W	K.B. C.P.	65	April 19, 2006/Wednesday	58.0	Yes	-7
B	N. of Salmon St. between Coon and Fox	39°14'10.90"N 120° 1'16.53"W	K.B. C.P.	65	April 21, 2006/Friday	62.3	Yes	-2.7
C	North of Salmon St. between Coon St. and Fox St.	39°14'10.59"N 120° 1'14.18"W	K.B. C.P.	65	Feb. 16, 2008/Saturday	51.9	Yes	-13.1
					Feb. 17, 2008/Sunday	51.5	Yes	-13.5
					Feb. 18, 2008/Monday	50.3	Yes	-14.7
					July 21-22, 2008/Monday/Tuesday	54.1	Yes	-10.9
D	North of Cutthroat Ave. between Deer St. and Bear St.	39°14'33.71"N 120° 1'33.87"W	K.B. Indust. C.P.	65	Feb. 16, 2008/Saturday	46.0	Yes	-19
					Feb. 17, 2008/Sunday	45.1	Yes	-19.1
					Feb. 18, 2008/Monday	44.7	Yes	-20.3
E*	75' N. of SR 28 and S. of Minnow Ave. and E. of Fox St.	39°14'4.58"N 120° 1'2.82"W	K.B. C.P. SR 28 Corridor	65 55	June 25-26, 2008/Wed./Thursday	65.2	No*	0.2
					June 26-27, 2008/Thursday/Friday	65.4	No*	0.4
F	475 Beaver St.	39°14'17.74"N 120° 0'55.72"W	031	55	Dec. 29-30, 2008/Monday/Tuesday	46.9	Yes	-8.1
G	Northeast corner of Golden Ave. and Coon St.	39°14'22.21"N 120° 1'17.91"W	028	55	Dec. 29-30, 2008/Monday/Tuesday	50.4	Yes	-4.6

Source - j.c. brennan & associates, Inc. 2006, 2008, 2009

* This noise measurement site was located inside of the SR 28 300 foot corridor.

5.4 Potential Noise Impacts and Required Mitigation

Impact 5-1: Exposure of Noise Sensitive Land Uses in the Grid Neighborhood to Traffic Noise in Excess of Standards

Traffic noise modeling was performed for roadways within the grid neighborhood of Kings Beach. Table 5-6 summarizes the results traffic noise modeling for Existing No Project and Alternative 2 (Existing + 3 Lane Alternative) conditions, Table 5-7 summarizes the results of traffic noise modeling for the Year 2028 Alternative 1 (No Project) and Year 2028 Alternative 2 (Existing + 3 Lane Alternative) conditions, and Table 5-8 summarizes the results of traffic noise modeling for the Year 2028 Plus 10% Growth for the Year 2028 Alternative 1 (No Project), and the Year 2028 Plus 10% Growth for the Year 2028 Alternative 2 (Existing + 3 Lane Alternative) conditions.

Table 5-6. Predicted Existing and Existing Plus Project Traffic Noise Levels

Roadway	Segment	Distance ¹ (feet)	Traffic Noise Levels (dBA, CNEL)				Distance to Traffic Noise Contours, CNEL (feet) Existing			Distance to Traffic Noise Contours, CNEL (feet) Existing Plus Project		
			Standard (dB)	Existing (dB)	Existing Plus Project (dB)	Change (dB)	70 dB	65 dB	60 dB	70 dB	65 dB	60 dB
Rainbow Ave.	Secline St. to Deer St.	50	55/65 ²	47.5	47.5	0.0	2	3	7	2	3	7
Deer St.	Trout Ave. to Rainbow Ave.	50	65	48.2	48.2	0.0	2	4	8	2	4	8
Bear St.	Trout Ave. to Rainbow Ave.	50	55/65 ²	50.9	51.4	0.5	3	6	12	3	6	13
Coon St.	Trout Ave. to Rainbow Ave.	50	55	49.8	49.5	-0.3	2	5	10	2	5	10
Fox St.	Minnow Ave to Salmon St.	50	65	52.8	52.8	0.0	4	8	16	4	8	16
Fox St.	Brook Ave. to Trout Ave.	50	65	50.2	50.2	0.0	2	5	11	2	5	11
Chipmunk St.	SR 28 to Minnow Ave	50	65	48.8	48.8	0.0	2	4	9	2	4	9
Speckeled Ave.	Secline St. to Deer St.	50	65	47.5	47.5	0.0	2	3	7	2	3	7
Speckeled Ave.	Coon St. to Fox St.	50	55/65 ²	44.5	44.5	0.0	1	2	5	1	2	5
Dolly Varden Ave.	Secline St. to Deer St.	50	55	45.8	45.8	0.0	1	3	6	1	3	6
Dolly Varden Ave.	Coon St. to Fox St.	50	55	42.8	42.8	0.0	1	2	4	1	2	4
Beaver St.	SR 28 to Cutthroat Ave.	50	55/65 ²	47.5	47.5	0.0	2	3	7	2	3	7

¹ Distances are measured in feet from the centerline of the roadway.

² In these instances, these roadway segments traverse through more than one Plan Area or Community Plan which have different CNEL standards.

Table 5-7. Predicted Average August Saturday 2028 Alternatives 1 and 2 Traffic Noise Levels

Roadway	Segment	Distance ¹ (feet)	Traffic Noise Levels (dBA, CNEL)*				Distance to Traffic Noise Contours, CNEL (feet) Alternative 1			Distance to Traffic Noise Contours, CNEL (feet) Alternative 2		
			Standard (dB)	Alt. 1* (dB)	Alt. 2* (dB)	Change (dB)	70 dB	65 dB	60 dB	70 dB	65 dB	60 dB
Rainbow Ave.	Secline St. to Deer St.	50	55/65 ²	48.8	52.5	3.7	2	4	9	3	7	16
Deer St.	Trout Ave. to Rainbow Ave.	50	65	50.2	50.2	0.0	2	5	11	2	5	11
Bear St.	Trout Ave. to Rainbow Ave.	50	55/65 ²	53.0	53.0	0.0	4	8	17	4	8	17
Coon St.	Trout Ave. to Rainbow Ave.	50	55	50.6	52.9	2.3	3	5	12	4	8	17
Fox St.	Minnow Ave to Salmon St.	50	65	54.2	55.9	1.7	4	10	21	6	12	27
Fox St.	Brook Ave. to Trout Ave.	50	65	51.5	54.7	3.2	3	6	14	5	10	22
Chipmunk St.	SR 28 to Minnow Ave	50	65	50.9	54.0	3.1	3	6	12	4	9	20
Speckeled Ave	Secline St. to Deer St.	50	65	49.8	52.6	2.8	2	5	10	3	7	16
Speckeled Ave	Coon St. to Fox St.	50	55/65 ²	46.7	49.1	2.4	1	3	7	2	4	9
Dolly Varden Ave	Secline St. to Deer St.	50	55	46.7	51.1	4.4	1	3	7	3	6	13
Dolly Varden Ave	Coon St. to Fox St.	50	55	42.8	46.7	3.9	1	2	4	1	3	7
Beaver St.	SR 28 to Cutthroat Ave.	50	55/65 ²	47.5	50.6	3.1	2	3	7	3	5	12

¹Distances are measured in feet from the centerline of the roadway.

² In these instances, these roadway segments traverse through more than one Plan Area or Community Plan which have different CNEL standards.

* Alt. 1 is No Project Scenario and Alt. 2 is Plus Project Scenario

Table 5-8. Predicted Average August 2028 Plus 10% Growth Alternatives 1 and 2 Traffic Noise Levels

Roadway	Segment	Distance ¹ (feet)	Traffic Noise Levels (dBA, CNEL)*				Distance to Traffic Noise Contours, CNEL (feet) Alternative 1			Distance to Traffic Noise Contours, CNEL (feet) Alternative 2		
			Standard (dB)	Alt. 1* (dB)	Alt. 2* (dB)	Change (dB)	70 dB	65 dB	60 dB	70 dB	65 dB	60 dB
Rainbow Ave.	Secline St. to Deer St.	50	55/65 ²	48.8	49.3	0.5	2	4	9	2	5	10
Deer St.	Trout Ave. to Rainbow Ave.	50	65	50.2	50.2	0.0	2	5	11	2	5	11
Bear St.	Trout Ave. to Rainbow Ave.	50	55/65 ²	53.0	53.0	0.0	4	8	17	4	8	17
Coon St.	Trout Ave. to Rainbow Ave.	50	55	50.6	50.7	0.1	3	5	12	3	6	12
Fox St.	Minnow Ave to Salmon St.	50	65	54.2	54.5	0.3	4	10	21	5	10	22
Fox St.	Brook Ave. to Trout Ave.	50	65	51.5	51.6	0.1	3	6	14	3	6	14
Chipmunk St.	SR 28 to Minnow Ave	50	65	50.9	51.3	0.4	3	6	12	3	6	13
Speckeled Ave.	Secline St. to Deer St.	50	65	49.8	50.0	0.2	0	1	2	2	5	11
Speckeled Ave.	Coon St. to Fox St.	50	55/65 ²	46.7	46.7	0.0	1	3	7	1	3	7
Dolly Varden Ave	Secline St. to Deer St.	50	55	46.7	47.1	0.4	1	3	7	1	3	7
Dolly Varden Ave	Coon St. to Fox St.	50	55	42.8	42.8	0.0	1	2	4	1	2	4
Beaver St.	SR 28 to Cutthroat Ave.	50	55/65 ²	47.5	48.0	0.5	2	3	7	2	4	8

¹Distances are measured in feet from the centerline of the roadway.

² In these instances, these roadway segments traverse through more than one Plan Area or Community Plan which have different CNEL standards.

* Alt. 1 is No Project Scenario and Alt. 2 is Plus Project Scenario

Based on the results presented in Table 5-7, six roadway segments may experience a 3 dB or more increase in noise levels. This is considered a significant impact by TRPA. Table 5-7, which reflects full buildout of the region's community plans by 2028, indicates that significant noise impacts (an increase of 3 dB or more) may occur on the following roadway sections:

- Beaver Street from SR 28 to Cutthroat Avenue;
- Chipmunk Street from SR 28 to Salmon Street;
- Fox Street from Salmon Street to Dolly Varden Street;
- Salmon Street from Chipmunk Street to Fox Street;
- Rainbow Avenue from Fox Street to Secline Street;
- Dolly Varden Street from Fox Street to SR 267.

Implementation of Mitigation Measure 5-1, paving roadways with rubberized asphalt or open gap asphalt overlays, would reduce this potential impact to less than significant levels. This is because rubberized asphalt or open gap asphalt overlays can achieve a 3-5 dB decrease in traffic-related noise when compared to typical asphalt concrete or Portland cement concrete. Rubberized asphalt consists of regular asphalt concrete mixed ground rubber, while open gap asphalt is porous asphalt that typically has specific aggregate size and cut that helps serve to reduce roadway noise.

Table 5-8 indicates that Year 2028 (+ 10% Growth) and Year 2028 (+ 10% Growth with the project) conditions would result in traffic noise increases less than 1 dBA, which is not considered to be noticeable.

Mitigation Measure 5-1: Employ Traffic Noise-Reduction Design Features into Design of the Proposed Project

The following roadways shall be paved with rubberized asphalt or open gap asphalt overlays.

- Beaver Street from SR 28 to Cutthroat Avenue;

- Chipmunk Street from SR 28 to Salmon Street;
- Fox Street from Salmon Street to Dolly Varden Street;
- Salmon Street from Chipmunk Street to Fox Street;
- Rainbow Avenue from Fox Street to Secline Street;
- Dolly Varden Street from Fox Street to SR 267.

5.4.1 Beneficial Noise Impacts

There would be no beneficial noise impacts.

5.5 Changes to Language of Section 3.9 of the Final EA/EIR/EIS

Within Section 3.9 of the Final EA/EIR/EIS, this Draft Supplemental EIS presents additional analysis for the evaluation of noise impacts within the grid neighborhood of Kings Beach:

The bulleted list on page 3.9-13 of the Final EA/EIR/EIS shall now read:

The KBCP establishes maximum noise level standards for the following areas within the Kings Beach area:

- SR 28 corridor: 55 dBA, CNEL (where applicable);
- Special Areas 3 and 4: 55 dBA, CNEL;
- All areas of the KBCP area (except the SR 28 Corridor and Special Areas 3 and 4): 65 dBA, CNEL;
- Shorezone tolerance districts 6 and 7: 55 dBA, CNEL; and
- Lakezone district: ~~55~~55 dBA, CNEL.

The last paragraph on page 3.9-15 of the Final EA/EIR/EIS shall now read:

As a form of zoning, the TRPA has divided the Lake Tahoe Region into more than 175 separate plan areas. Boundaries for each plan area have been established



based upon similar land uses and the unique character of each geographic area. For each plan area, a “Statement” (PAS) is made as to how that particular area should be regulated to achieve regional environmental and land uses objectives. As a part of each Statement, an outdoor CNEL standard is established. The project corridor is located within Plan Areas 029 (Kings Beach Commercial, Special Area 2) which is covered by the KBCP. In addition, cut through traffic would also occur in Plan Area 031 (Brockway), Plan Area 028 (Kings Beach Residential), and the Kings Beach Industrial Community Plan Area. As part of each “Statement,” an outdoor standard of 60 dBA, CNEL is established based upon the “Thresholds.” However, the PAS noise level criterion is the ultimate standard.

Another means of determining a significant noise impact is to judge a person’s reaction to changes in noise levels due to a project. Table 3.9-7 is commonly used to show expected public reaction to changes in environmental noise levels. This table was developed on the basis of test subjects' reactions to changes in the levels of steady state pure tones or broad band noise and to changes in levels of a given noise source. It is probably most applicable to noise levels in the range of 50 to 70 dB, which is the usual range of voice and interior noise levels. The TRPA staff policy is that an increase of +3 dB CNEL or more is considered to be significant.

Table 3.9-7. Subjective Reaction to Changes in Noise Levels of Similar Sources

<u>Change in Level (dB)</u>	<u>Subjective Reaction</u>	<u>Factor Change In Acoustical Energy</u>
<u>1</u>	<u>Imperceptible (Except for Tones)</u>	<u>1.3</u>
<u>3</u>	<u>Just Barely Perceptible (TRPA Level of Significance)</u>	<u>2.0</u>
<u>6</u>	<u>Clearly Noticeable</u>	<u>4.0</u>
<u>10</u>	<u>About Twice (or Half) as Loud</u>	<u>10.0</u>

Source: Architectural Acoustics, M. David Egan, 1988.

The following text will be added after the second full paragraph on page 3.9-23 of the Final EA/EIR/EIS:

Impact 3.9-3: Exposure of Noise Sensitive Land Uses in the Grid Neighborhood to Traffic Noise in Excess of Standards

Traffic noise modeling was performed for roadways within the grid neighborhood of Kings Beach. Table 3.9-10 summarizes the results traffic noise modeling for Existing No Project and Alternative 2 (Existing + 3 Lane Alternative) conditions, Table 3.9-11 summarizes the results of traffic noise modeling for the Year 2028 Alternative 1 (No Project) and Year 2028 Alternative 2 (Existing + 3 Lane Alternative) conditions, and Table 3.9-12 summarizes the results of traffic noise modeling for the Year 2028 Plus 10% Growth for the Year 2028 Alternative 1 (No Project), and the Year 2028 Plus 10% Growth for the Year 2028 Alternative 2 (Existing + 3 Lane Alternative) conditions.

Table 3.9-10. Predicted Existing and Existing Plus Project Traffic Noise Levels

Roadway	Segment	Distance ¹ (feet)	Traffic Noise Levels (dBA, CNEL)				Distance to Traffic Noise Contours, CNEL (feet) Existing			Distance to Traffic Noise Contours, CNEL (feet) Existing Plus Project		
			Standard (dB)	Existing (dB)	Existing Plus Project (dB)	Change (dB)	70 dB	65 dB	60 dB	70 dB	65 dB	60 dB
Rainbow Ave.	Secline St. to Deer St.	50	55/65 ²	47.5	47.5	0.0	2	3	7	2	3	7
Deer St.	Trout Ave. to Rainbow Ave.	50	65	48.2	48.2	0.0	2	4	8	2	4	8
Bear St.	Trout Ave. to Rainbow Ave.	50	55/65 ²	50.9	51.4	0.5	3	6	12	3	6	13
Coon St.	Trout Ave. to Rainbow Ave.	50	55	49.8	49.5	-0.3	2	5	10	2	5	10
Fox St.	Minnow Ave to Salmon St.	50	65	52.8	52.8	0.0	4	8	16	4	8	16
Fox St.	Brook Ave. to Trout Ave.	50	65	50.2	50.2	0.0	2	5	11	2	5	11
Chipmunk St.	SR 28 to Minnow Ave	50	65	48.8	48.8	0.0	2	4	9	2	4	9
Speckeled Ave.	Secline St. to Deer St.	50	65	47.5	47.5	0.0	2	3	7	2	3	7
Speckeled Ave.	Coon St. to Fox St.	50	55/65 ²	44.5	44.5	0.0	1	2	5	1	2	5
Dolly Varden Ave.	Secline St. to Deer St.	50	55	45.8	45.8	0.0	1	3	6	1	3	6
Dolly Varden Ave.	Coon St. to Fox St.	50	55	42.8	42.8	0.0	1	2	4	1	2	4
Beaver St.	SR 28 to Cutthroat Ave.	50	55/65 ²	47.5	47.5	0.0	2	3	7	2	3	7

¹ Distances are measured in feet from the centerline of the roadway.

² In these instances, these roadway segments traverse through more than one Plan Area or Community Plan which have different CNEL standards.

Table 3.9-11. Predicted Average August Saturday 2028 Alternatives 1 and 2 Traffic Noise Levels

Roadway	Segment	Distance ¹ (feet)	Traffic Noise Levels (dBA, CNEL)*				Distance to Traffic Noise Contours, CNEL (feet) Alternative 1			Distance to Traffic Noise Contours, CNEL (feet) Alternative 2		
			Standard (dB)	Alt. 1* (dB)	Alt. 2* (dB)	Change (dB)	70 dB	65 dB	60 dB	70 dB	65 dB	60 dB
Rainbow Ave.	Secline St. to Deer St.	50	55/65 ²	48.8	52.5	3.7	2	4	9	3	7	16
Deer St.	Trout Ave. to Rainbow Ave.	50	65	50.2	50.2	0.0	2	5	11	2	5	11
Bear St.	Trout Ave. to Rainbow Ave.	50	55/65 ²	53.0	53.0	0.0	4	8	17	4	8	17
Coon St.	Trout Ave. to Rainbow Ave.	50	55	50.6	52.9	2.3	3	5	12	4	8	17
Fox St.	Minnow Ave to Salmon St.	50	65	54.2	55.9	1.7	4	10	21	6	12	27
Fox St.	Brook Ave. to Trout Ave.	50	65	51.5	54.7	3.2	3	6	14	5	10	22
Chipmunk St.	SR 28 to Minnow Ave	50	65	50.9	54.0	3.1	3	6	12	4	9	20
Speckeled Ave	Secline St. to Deer St.	50	65	49.8	52.6	2.8	2	5	10	3	7	16
Speckeled Ave	Coon St. to Fox St.	50	55/65 ²	46.7	49.1	2.4	1	3	7	2	4	9
Dolly Varden Ave	Secline St. to Deer St.	50	55	46.7	51.1	4.4	1	3	7	3	6	13
Dolly Varden Ave	Coon St. to Fox St.	50	55	42.8	46.7	3.9	1	2	4	1	3	7
Beaver St.	SR 28 to Cutthroat Ave.	50	55/65 ²	47.5	50.6	3.1	2	3	7	3	5	12

¹Distances are measured in feet from the centerline of the roadway.

² In these instances, these roadway segments traverse through more than one Plan Area or Community Plan which have different CNEL standards.

* Alt. 1 is No Project Scenario and Alt. 2 is Plus Project Scenario

Table 3.9-12. Predicted Average August 2028 Plus 10% Growth Alternatives 1 and 2 Traffic Noise Levels

Roadway	Segment	Distance ¹ (feet)	Traffic Noise Levels (dBA, CNEL)*				Distance to Traffic Noise Contours, CNEL (feet) Alternative 1			Distance to Traffic Noise Contours, CNEL (feet) Alternative 2		
			Standard (dB)	Alt. 1* (dB)	Alt. 2* (dB)	Change (dB)	70 dB	65 dB	60 dB	70 dB	65 dB	60 dB
Rainbow Ave.	Secline St. to Deer St.	50	55/65 ²	48.8	49.3	0.5	2	4	9	2	5	10
Deer St.	Trout Ave. to Rainbow Ave.	50	65	50.2	50.2	0.0	2	5	11	2	5	11
Bear St.	Trout Ave. to Rainbow Ave.	50	55/65 ²	53.0	53.0	0.0	4	8	17	4	8	17
Coon St.	Trout Ave. to Rainbow Ave.	50	55	50.6	50.7	0.1	3	5	12	3	6	12
Fox St.	Minnow Ave to Salmon St.	50	65	54.2	54.5	0.3	4	10	21	5	10	22
Fox St.	Brook Ave. to Trout Ave.	50	65	51.5	51.6	0.1	3	6	14	3	6	14
Chipmunk St.	SR 28 to Minnow Ave	50	65	50.9	51.3	0.4	3	6	12	3	6	13
Speckeled Ave.	Secline St. to Deer St.	50	65	49.8	50.0	0.2	0	1	2	2	5	11
Speckeled Ave.	Coon St. to Fox St.	50	55/65 ²	46.7	46.7	0.0	1	3	7	1	3	7
Dolly Varden Ave	Secline St. to Deer St.	50	55	46.7	47.1	0.4	1	3	7	1	3	7
Dolly Varden Ave	Coon St. to Fox St.	50	55	42.8	42.8	0.0	1	2	4	1	2	4
Beaver St.	SR 28 to Cutthroat Ave.	50	55/65 ²	47.5	48.0	0.5	2	3	7	2	4	8

¹Distances are measured in feet from the centerline of the roadway.

² In these instances, these roadway segments traverse through more than one Plan Area or Community Plan which have different CNEL standards.

* Alt. 1 is No Project Scenario and Alt. 2 is Plus Project Scenario

Based on the results presented in Table 3.9-11, six roadway segments may experience a 3 dB or more increase in noise levels. This is considered a significant impact by TRPA. Table 3.9-11, which reflects full buildout of the region's community plans by 2028, indicates that significant noise impacts (an increase of 3 dB or more) may occur on the following roadway sections:

- Beaver Street from SR 28 to Cutthroat Avenue;
- Chipmunk Street from SR 28 to Salmon Street;
- Fox Street from Salmon Street to Dolly Varden Street;
- Salmon Street from Chipmunk Street to Fox Street;
- Rainbow Avenue from Fox Street to Secline Street;
- Dolly Varden Street from Fox Street to SR 267.

Implementation of Mitigation Measure NZ-4, paving roadways with rubberized asphalt or open gap asphalt overlays, would reduce this potential impact to less than significant levels. This is because rubberized asphalt or open gap asphalt overlays can achieve a 3-5 dB decrease in traffic-related noise when compared to typical asphalt concrete or Portland cement concrete. Rubberized asphalt consists of regular asphalt concrete mixed ground rubber, while open gap asphalt is porous asphalt that typically has specific aggregate size and cut that helps serve to reduce roadway noise.

Table 3.9-12 indicates that Year 2028 (+ 10% Growth) and Year 2028 (+ 10% Growth with the project) conditions would result in traffic noise increases less than 1 dBA, which is not considered to be noticeable.

Mitigation Measure NZ-4: Employ Traffic Noise-Reduction Design Features into Design of the Proposed Project

The following roadways shall be paved with rubberized asphalt or open gap asphalt overlays.

- Beaver Street from SR 28 to Cutthroat Avenue;
- Chipmunk Street from SR 28 to Salmon Street;
- Fox Street from Salmon Street to Dolly Varden Street;
- Salmon Street from Chipmunk Street to Fox Street;

- Rainbow Avenue from Fox Street to Secline Street;
- Dolly Varden Street from Fox Street to SR 267

5.6 Changes to Language of Section 4 of the Final EA/EIR/EIS

Within Section 4.3.2.9 of the Final EA/EIR/EIS, this Draft Supplemental EIS presents additional analysis for the evaluation of noise impacts within the grid neighborhood of Kings Beach:

The following paragraph will be revised in Section 4.3.2.9 on page 4-12 of the Final EA/EIR/EIS:

The noise analysis (*Section 3.9*) was based primarily on traffic volumes estimated for the traffic analysis (*Section 3.6*). The traffic volumes in the traffic analysis were based on cumulative growth in the northern Lake Tahoe area.

Consequently, the noise analysis was also based on cumulative growth and represents cumulative effect conditions. As indicated in Tables 3.9-7 and 3.9-8, implementation of the build alternatives is not expected to result in noise increases relative to the no-project alternative. However, Table 3.9-11, indicates six roadway segments in the grid neighborhood of Kings Beach may experience a significant noise increase of 3 dB or more with regards to TRPA standards.

Consequently, implementation of Mitigation Measure NZ-4 is required to mitigate this cumulative impact to less than significant~~because no noise increases are associated with the build alternatives, implementation of the proposed project would not result in a cumulative increase in traffic noise.~~

5.7 Changes to Language of Section 5 of the Final EA/EIR/EIS

Within Section 5 of the Final EA/EIR/EIS, this Draft Supplemental EIS presents additional analysis for the evaluation of noise impacts within the grid neighborhood of Kings Beach:

The following paragraph will be added after the last paragraph on page 5-58 of the Final EA/EIR/EIS:

The results of future-year traffic noise modeling for the grid neighborhood of Kings Beach indicates that six roadway segments may experience a significant noise increase of 3 dB or more with regards to TRPA standards. Consequently, implementation of Mitigation Measure NZ-4 is required to mitigate this cumulative impact to less than significant.

Mitigation Measure NZ-4: Employ Traffic Noise-Reduction Design Features into Design of the Proposed Project

The following roadways shall be paved with rubberized asphalt or open gap asphalt overlays.

- Beaver Street from SR 28 to Cutthroat Avenue;
- Chipmunk Street from SR 28 to Salmon Street;
- Fox Street from Salmon Street to Dolly Varden Street;
- Salmon Street from Chipmunk Street to Fox Street;
- Rainbow Avenue from Fox Street to Secline Street;
- Dolly Varden Street from Fox Street to SR 267.

Chapter 6. Cumulative Impacts

6.1 Introduction

Section 5.5 of the Draft and Final EA/EIR/EIS for the Kings Beach Commercial Core Improvement Project addresses GHG emissions. TRPA has requested the cumulative impacts analysis of the Draft Supplemental EIS examine and disclose GHG emissions in more detail. The information provided in this analysis augments, and is in addition to, the existing information found in the cumulative impacts section of the Draft and Final EA/EIR/EIS. No changes are needed within the Cumulative Impacts chapter (Chapter 4) of the Final EA/EIR/EIS.

This chapter provides a discussion on the potential GHG emissions from the Kings Beach Commercial Core Improvement Project. This assessment is based on the supplemental GHG emissions technical study—*Kings Beach Commercial Core Improvement Project, Climate Change Analysis* (Appendix C). This analysis does not conflict with Section 5.5 of the Draft and Final EA/EIR/EIS. Normally the addition of this information could be done with an addendum to the Final EA/EIR/EIS, but due to the need to discuss noise in a supplemental format, this clarifying language relating to GHG emissions has been included below.

6.2 Regulatory Considerations

Gases that trap heat in the atmosphere are often called greenhouse gases. Both natural processes and human activities emit GHGs. The accumulation of GHGs in the atmosphere regulates the earth's temperature; however, emissions of GHGs from human activities such as electricity production and the burning of fossil fuel in vehicles have elevated the concentration of these gases in the atmosphere. This accumulation of GHGs may have contributed to an increase in the temperature of the earth's atmosphere and played a part in climate change. The principal GHGs are carbon dioxide (CO₂), methane

(CH₄), nitrous oxide (N₂O), ozone, and water vapor. Carbon dioxide is the reference gas for climate change and is expressed as CO₂ equivalent (CO₂eq).

6.2.1 Federal

There are no federal regulations regarding GHG, per se. In April 2007, the U.S. Supreme Court ruled 5-4 in the case of *Massachusetts v. EPA* that the U.S. EPA has the authority under the Clean Air Act to regulate GHG emissions from new motor vehicles. However, as of this writing (August 2009), the U.S. EPA has not enacted any such regulations.

On June 30, 2009, the U.S. EPA granted California's waiver of Clean Air Act preemption to enforce new GHG emission standards for passenger cars and light-duty trucks beginning with the 2009 model year. The new regulations add four new GHG pollutants (CO₂, CH₄, N₂O), and hydrofluorocarbons to the existing regulations for criteria, criteria-precursor, and Toxic Air Contaminants. On July 11, 2008, U.S. EPA issued an Advance Notice of Proposed Rulemaking soliciting public comment to address concerns from other federal agencies as to whether global warming poses a threat to people's health within the meaning of the Clean Air Act. The public comment period ended on November 28, 2008 and the EPA is reviewing the comments.

6.2.2 State

In 2005, Governor Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide emission of GHGs would be progressively reduced, as follows:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

In 2006, California passed Assembly Bill No. 32, the California Global Warming Solutions Act of 2006 (California Health and Safety Code Division 25.5, Sections 38500, et seq.). The regulation requires ARB to reduce statewide GHG emissions to 1990 levels

by 2020 through feasible and cost-effective means. The ARB has estimated that California's 1990 GHG emissions totaled 470 million tons and that "business as usual" will result in 2020 emissions of 661 million tons (California Air Resources Board 2007). The ARB will design and implement emission limits, regulations, and other measures to accomplish this reduction in emissions.

The California Global Warming Solutions Act of 2006 establishes a timetable for the ARB to adopt emission limits, rules, and regulations designed to achieve the intent of the Act, as follows:

- Publish a list of discrete early action GHG emission reduction measures by June 30, 2007.
- Establish a statewide GHG emissions cap for 2020, equivalent to the 1990 emissions level by January 1, 2008.
- Adopt mandatory reporting rules for significant sources of GHGs by January 1, 2008.
- Adopt a scoping plan by January 1, 2009, indicating how GHG emission reductions will be achieved from significant GHG sources via regulations, market-based compliance mechanisms and other actions, including the recommendation of a *de minimus* threshold for GHG emissions, below which emission reduction requirements would not apply.

Adopt regulations by January 1, 2011 to achieve the maximum technologically feasible and cost-effective reductions in GHGs, including provisions for using both market-based and alternative compliance mechanisms.

- Establish January 1, 2012 as the date by which all regulations adopted prior to January 1, 2010 are to become operative (enforceable).

The ARB has proposed "Early Action Measures" in three groups, and together these measures will make a substantial contribution to the overall 2020 statewide GHG

emission reduction goal of approximately 174 million metric tons (tonnes) of CO₂eq gases. These measures are summarized as follows:

Group 1: Three new GHG-only regulations are proposed to meet the narrow legal definition of “discrete early action GHG reduction measures”: a low-carbon fuel standard, reduction of refrigerant losses from motor vehicle air conditioning system maintenance, and increased CH₄ capture from landfills. These regulations are expected to take effect by January 1, 2010.

Group 2: The ARB is initiating work on 23 other GHG emission-reducing measures between 2007 and 2009. Applicable rulemaking will occur as soon as possible. These GHG measures relate to the following sectors: agriculture, commerce, education, energy efficiency, fire suppression, forestry, oil and gas, and transportation.

Group 3: The ARB is initiating work on 10 conventional air pollution controls aimed at criteria and toxic air pollutants, but with concurrent climate co-benefits through reductions in CO₂ or non-Kyoto pollutants (i.e., diesel particulate matter, other light-absorbing compounds, and/or ozone precursors) that contribute to global warming.

None of the Group 1 measures specifically relates to construction or operation of infrastructure projects, such as the proposed project. Proposed Groups 2 and 3 measures that could become effective during implementation of the proposed project and could pertain to construction-related equipment operations include the following actions:

- Measure 2-6, Education: guidance/protocols for local governments to facilitate GHG emission reductions;
- Measures 2-14, 3-2, 3-4, Transportation: emission reductions for heavy-duty vehicles, on-road diesel trucks, and off-road diesel equipment (non-agricultural); efficiency improvements;
- Measure 2-20, Transportation: tire inflation program; and

- Measure 3-10, Fuels: evaporative standards for aboveground tanks.

Some proposed measures will require new legislation for implementation; some will require subsidies; some are already developed; some will require additional effort to evaluate and quantify. Applicable early action measures that are ultimately adopted from Groups 2 and 3 may become effective during implementation of the proposed project and the proposed project may be subject to these requirements, depending on their timing.

Pursuant to Senate Bill 97 (Chapter 185, 2007) the Natural Resources Agency is developing CEQA guidelines “for the mitigation of GHG emissions or the effects of GHG emissions.” The draft guidelines are now proceeding through the regulatory rulemaking process. The Resources Agency is to certify and adopt the guidelines on or before January 1, 2010.

6.2.3 Tahoe Regional Planning Agency

The TRPA has not adopted environmental thresholds or regulations with respect to GHG emissions. Currently, regulatory efforts to control and reduce greenhouse emissions are being developed by local, state, and federal agencies. However, the TRPA is currently implementing programs and strategies (ex. expanded public transit, sidewalks, bike lanes) to reduce reliance on the automobile, which should also result in reduced GHG emissions.

While the TRPA does not have specific standards on GHG emissions, the TRPA recognizes the growing concern over increased GHG emissions, and has requested Placer County examine and disclose the potential for such emissions as a part of this Draft Supplemental EIS.

TRPA has previously evaluated impacts associated with GHG emissions in the Sierra Colina Village Project Final EIS (EDAW 2009) and the Addendum to the EIS for the Lake Tahoe Shorezone Ordinance Amendments (Tahoe Regional Planning Agency 2008). These two documents also state that TRPA has not adopted thresholds or regulations with respect to GHG emissions. The Sierra Colina Village Project Final EIS

found that construction activities would be temporary and would not result in a considerable contribution to GHG impacts (EDAW 2009), while the evaluation of operational impacts analyzed in the Addendum to the EIS for the Lake Tahoe Shorezone Ordinance Amendments found that GHG impacts would be less than significant (Tahoe Regional Planning Agency 2008). It should be noted that construction and operational GHG emissions associated with the KBCCIP are less than those associated with the Sierra Colina Village and Tahoe Shorezone Ordinance projects, respectively.

6.3 Existing Air Quality Conditions and Trends

Existing conditions and trends with respect to GHG emissions were evaluated within the Draft Supplemental EIS. While the Draft Supplemental EIS analysis examines the potential emissions of CO₂, currently there is no available method to model the specific effects of GHG emissions (primarily CO₂) that may result from this proposed project. Modeled emissions of CO₂ within the project area for existing year (2002) are presented in Table 6-1. In addition, a U.C. Davis study in 2001 estimated mobile emissions in the Lake Tahoe Air Basin at 890 tonnes per day (U.C. Davis 2001). This equates to an annual average of 324,850 tonnes per year of CO₂.

Table 6-1. Operational Carbon Dioxide (CO₂) Emissions (tonnes per year)

Traffic Scenario	Future—Base Growth Assumption				Future—10% Growth Assumption		
	Existing	Future No Project	Alternatives 2 and 4 ¹	Alternative 3 ²	Future No Project	Alternatives 2 and 4 ¹	Alternative 3 ²
On SR 28: free flow	2,631	3,697	4,039	3,697	2,918	3,246	2,918
On SR 28: congested flow	0	677	782	677	6	104	6
On SR 267: free flow	394	617	476	617	445	438	445
On local streets	0	0	917	0	0	47	0
Total	3,025	4,991	6,213	4,991	3,368	3,834	3,368
Comparison of Alternatives							
Base growth assumption			Increase in CO₂ emissions		Increase in VMT		
Alternatives 2/4 minus Existing			3,187		3,958,300		
Alternative 3 minus Existing			1,966		3,844,600		
Alternatives 2/4 minus Future no project			1,221		113,700		
Alternative 3 minus Future no project			0		0		
10% Growth assumption							
Alternatives 2/4 minus Existing			809		721,500		
Alternative 3 minus Existing			343		715,600		
Alternatives 2/4 minus Future no project			466		5,900		
Alternative 3 minus Future no project			0		0		

Notes:

Alternatives 2 and 4 represent the 3-lane alternatives.

Alternative 3 represents the 4-lane alternative.

Source: Emissions calculations based on CT-EMFAC Model and traffic data from LSC Transportation Consultants 2009

6.4 Standards of Significance

As previously discussed, no standards of significance currently exist to determine if a project would result in a significant impact with regards to climate change. However, consensus exists within the scientific community that emissions of CO₂ and other GHGs are the prime factors contributing to climate change.

6.5 Evaluation Methodology

The estimation of construction and operational GHG emissions described within Sections 6.5.1 and 6.5.2 are consistent with current accepted professional practices and modeling methodologies.

6.5.1 Construction Emissions

Construction emissions of CO₂ were estimated using the Sacramento Metropolitan Air Quality Management's Road Construction Emissions Model (Version 6.3.1). The model estimates emissions for load hauling (on-road heavy-duty vehicle trips), worker commute trips, construction site fugitive PM10 dust, and off-road construction vehicles. This analysis is based on anticipated construction equipment calculated by the Road Construction Emissions Model, which estimates construction equipment based on project size, duration of construction activities, and level of daily construction activities.

Alternatives 2, 3, and 4 represent the build alternatives. The following discussion focuses on the build alternatives, and it was assumed construction emissions would not differ substantially, as no substantial differences in overall project lengths or area to be paved would occur between the build alternatives. It is anticipated that construction activities would begin in 2010 and would occur for 12 hours per day over a 6-month period for 3 years. The total project length was assumed to be 1.1 miles, with a total acreage of 9.0 acres and a maximum of 1 acre disturbed per day.

6.5.2 Operational Emissions

Modeled traffic volumes and operating conditions were obtained from the traffic data prepared by the project traffic engineers, LSC Transportation Consultants (LSC Transportation Consultants 2009). Emissions of CO₂ were modeled for existing year (2002) and future year (2028) with- and without-project conditions. The future year analysis evaluated future year growth rates associated with full buildout of all general and community plans in the region, and an alternative based on recent trend (0.5% growth per year) of 10% growth over 20 years.

Traffic data used in the CT-EMFAC model include yearly VMT and roadway speeds. The traffic conditions modeled in the analysis included vehicle activity for affected roadways in the immediate project region for a variety of traffic conditions. These conditions include free flow and congested flow conditions on SR 28, free flow conditions on SR 267, and diverted traffic through local streets. The traffic data used for emissions modeling is summarized in Table 6-2.

Vehicle emission rates were determined using Caltrans' CT-EMFAC model. Vehicle speeds were based on traffic data provided by the project traffic engineers, LSC Transportation Consultants (LSC Transportation Consultants 2009), and are presented in Table 6-2. Table 6-3 presents a summary of CO₂ emission rates from the CT-EMFAC model used to estimate project emissions. The CT-EMFAC emission rate data presented in Table 6-3 corresponds with the speed data presented in Table 6-2: emission rates are typically highest at lower and higher speeds, with the lowest emission rate around 40-45 mph.

Table 6-2. Summary of Operational Traffic Data

Traffic Scenario	Existing	Future—Base Growth Assumption			Future—10% Growth Assumption		
		Future No Project	Alternatives 2 and 4 ¹	Alternative 3 ²	Future No Project	Alternatives 2 and 4 ¹	Alternative 3 ²
Vehicle Miles Traveled							
On SR 28: free flow	6,080,400	8,465,500	8,176,300	8,465,500	6,680,600	6,571,000	6,680,600
On SR 28: congested flow	0	958,200	661,800	958,200	7,800	87,700	7,800
On SR 267: free flow	911,700	1,413,000	1,089,600	1,413,000	1,019,300	1,002,900	1,019,300
On local streets	0	0	1,022,700	0	0	52,000	0
Total	6,992,100	10,836,700	10,950,400	10,836,700	7,707,700	7,713,600	7,707,700
Traffic Scenario	Existing	Future—Base Growth Assumption			Future—10% Growth Assumption		
		Existing	Alternatives 2 and 4 ¹	Alternative 3 ²	Existing	Alternatives 2 and 4 ¹	Alternative 3 ²
Speed (miles per hour)							
On SR 28: free flow	30	30	26	32	30	26	32
On SR 28: congested flow	16	16	4	18	16	4	18
On SR 267: free flow	30	30	30	30	30	30	30
On local streets	17	17	13	13	17	13	13

Notes:

¹ Alternatives 2 and 4 represent the 3-lane alternatives.

² Alternative 3 represents the 4-lane alternative.

Source: LSC Transportation Consultants 2009

Table 6-3. Summary of CT-EMFAC Emission Factor Data (grams CO₂ per mile)

Traffic Scenario	Existing	Future—Base Growth Assumption			Future—10% Growth Assumption		
		Future No Project	Alternatives 2 and 4 ¹	Alternative 3 ²	Future No Project	Alternatives 2 and 4 ¹	Alternative 3 ²
Vehicle Miles Traveled							
On SR 28: free flow	432.67	436.72	493.94	436.72	436.72	493.94	436.72
On SR 28: congested flow	0	706.92	1,180.95	706.92	706.92	1,180.95	706.92
On SR 267: free flow	432.67	436.72	436.72	436.72	436.72	436.72	436.72
On local streets	0	0	896.29	0	0	896.29	0

Notes:

¹ Alternatives 2 and 4 represent the 3-lane alternatives.

² Alternative 3 represents the 4-lane alternative.

Source: CT-EMFAC (version 2.6)

6.6 Potential Greenhouse Gas Emissions Impacts

6.6.1 Construction Emissions

Construction modeling results are presented in Table 6-4.

Table 6-4. Construction Emission Estimates (tonnes per year)

Construction Phase	Carbon Dioxide Emissions
Grubbing/land clearing	26.6
Grading/excavation	136.0
Drainage/utilities/sub-grade	74.3
Paving	16.2
Total	253.2

Note: Emissions calculations based on Sacramento Metropolitan Air Quality Management District Road Construction Emissions Model (Version 6.3.1)

Construction GHG emissions include emissions produced as a result of material processing, emissions produced by onsite construction equipment, and emissions arising from traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing traffic management during construction phases which are part of this project. Also, innovations such as longer pavement life, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be minimized. As a result of the features inherent to the project that just have been described, GHG emissions will be minimized to a level that is considered less than significant. While not necessary to reduce the minimal GHG impact caused by construction, Mitigation Measure TRA-3 in Section 3.6, Traffic, Mitigation Measure UT-1 in Section 3.11, Public Services and Utilities, and Mitigation Measures AIR-1 through AIR-4 in Section 3.1, Air Quality, of the Final EA/EIR/EIS would also help to minimize air quality impacts from construction activities. In conclusion, the GHG emissions produced during construction are considered to be less than significant.

6.6.2 Operational Emissions

Modeled emissions of CO₂ for existing year (2002) and future year (2028) with- and without-project conditions (including both sets of growth projections) are presented in Table 6-1.

Table 6-1 indicates that Alternatives 2 and 4 are anticipated to result in an additional 1,221 tonnes per year under the base growth assumption and an additional 466 tonnes per year under the 10 percent growth assumption. This is equivalent to an increase in approximately 235 passenger cars under the base growth assumption and 90 passenger cars under the 10 percent growth assumption, assuming the average United States passenger vehicle emits approximately 5.20 tonnes CO₂ (United States Environmental Protection Agency 2005). The CO₂ emission increases are predominantly the result of increased VMT associated with diverted traffic through the surrounding neighborhood local streets and decreases in overall speeds along SR 28 (Table 6-2).

Currently, no thresholds have been established by ARB, Caltrans, PCAPCD, or the Tahoe Regional Planning Agency to identify significant impacts with regards to GHG emissions. A U.C. Davis study, in 2001, estimated mobile GHG emissions in the Lake Tahoe Air Basin at 890 tonnes per day (U.C. Davis 2001). This equates to an annual average of 324,850 tonnes per year of CO₂. The project will result in an additional 1,221 tonnes per year of additional CO₂ under the Base growth assumption. Under the 10 percent growth assumption, an additional 466 tonnes per year of CO₂ is anticipated. This represents a 0.3 percent increase in CO₂ emissions at buildout and a 0.1 percent increase in CO₂ emissions after experiencing a 10 percent growth in traffic. All of these scenarios assume business as usual, only consider mobile emissions, and assume no other strategies are implemented to minimize GHG emissions.

Other facts that reduce the project's future GHG emissions include:

Carbon dioxide emissions from combustion of fossil fuel are a function of the carbon content of the fuel being burned. The low carbon fuel standard (LCFS) adopted by CARB

on April 23, 2009 establishes performance standards for the amount of carbon in transportation fuels. The LCFS requires reduction of at least 10 percent in the carbon intensity of transportation fuels in California. With the carbon reductions achieved through the LCFS, it is anticipated that any increases in vehicle miles traveled (VMT) would be partially offset by reductions in the CO₂ emission rates from vehicles due to reduced carbon content in the fuels combusted.

A major goal for the project as well as the Regional Plan for the Lake Tahoe Basin is to reduce dependency on the automobile by improving bicycle and pedestrian mobility through downtown Kings Beach. The project's pedestrian and bicycle features and NTMP will encourage walking and bicycling within Kings Beach. The intent is that these improved transportation alternatives will reduce and shorten some vehicle trips (reduction of VMT) thereby reducing some GHG emissions.

The KBCP specifically calls out VMT reduction measures that would have a direct effect on GHG emissions. Two key strategies described in the CP include constructing pedestrian improvements on SR28 and the back streets, and constructing bike/recreation trails on SR28. These two VMT reduction strategies comprise major elements of the project and should translate into future GHG emissions as well.

The California Air Pollution Control Officers Association (CAPCOA) produced a white paper (California Air Pollution Control Officers Association 2008) which discusses a variety of potential significance thresholds based largely on requirements of the California Global Warming Solutions Act of 2006 (Assembly Bill 32). Assembly Bill 32 is anticipated to require a 28-33 percent reduction in emissions below "business as usual" in 2020. The CAPCOA white paper discusses the merits of various non-zero thresholds that could be implemented for environmental purposes. One element of their alternatives included a "green list" of projects that would be deemed, by definition, as having an impact as less than significant. The CAPCOA initial list of green list projects includes "development of bicycle, pedestrian, or zero-emission transportation infrastructure to serve existing regions". The major project element is the installation of bicycle and

pedestrian (sidewalks) facilities along SR 28. Although not quantified, the green list recognizes the need to encourage alternative modes of transportation as a significant strategy in reducing GHG emissions.

- In addition, agencies, including Placer County, will need to develop climate action plans pursuant to SB 375 and AB 32, particularly as more guidance is provided by ARB, to comprehensively address how GHG targets will be addressed and met.

In conclusion, while no thresholds current exist, based on the above analysis and minor amounts of emissions associated with implementation of the build alternatives (Table 6-1), this impact is considered less than significant.

6.6.3 Beneficial Greenhouse Gas Impacts

There would be no beneficial GHG emissions impacts.

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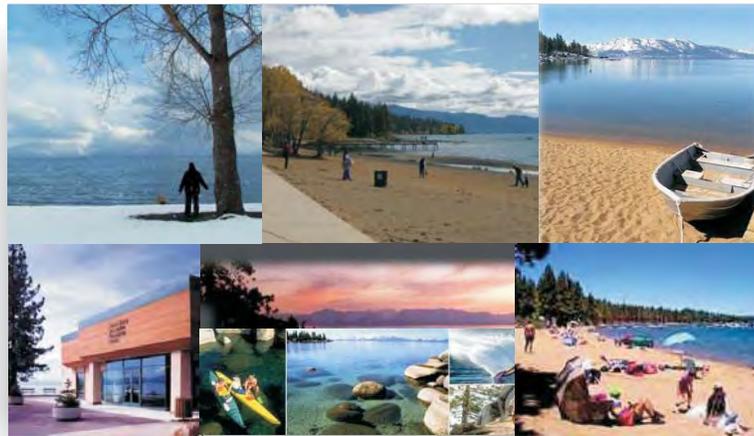
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**Appendix A. Conceptual Kings Beach
Community Traffic Calming
Plan**

Conceptual Kings Beach Neighborhood TRAFFIC CALMING PLAN



Prepared for the

Placer County Department of Public Works

Prepared by

LSC Transportation Consultants, Inc.

CONCEPTUAL KINGS BEACH NEIGHBORHOOD TRAFFIC CALMING PLAN

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October 17, 2008

LSC # 087210

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INTRODUCTION - EXECUTIVE SUMMARY

The Kings Beach Commercial Core Improvement Project (KBCCIP) Environmental Impact Report (EIR) identified a significant and unavoidable impact in the cumulative condition (2028+) for the proposed project associated with traffic congestion on State Route (SR) 28 leading to some vehicles choosing to divert through the adjacent residential community. While analysis indicates that periods when volumes exceed capacity would be limited to only a limited number of days per year under current transportation activity levels, potential future growth in traffic volumes could significantly increase the number of hours and days per year that drivers would be tempted to use local streets.

The *Final Environmental Assessment/Environmental Impact Report/Environmental Impact Statement* for the KBCCIP identifies a mitigation measure (TRAF-1) that calls for preparation of a Neighborhood Traffic Management Plan (NTMP) to minimize some of the impacts associated with the contemplated cut through traffic. The description in the environmental document presents some education and enforcement strategies, as well as a generic list of potential roadway modifications. This proposed traffic calming plan was developed to provide a draft mitigation plan that would be implemented after further public input (and possible modification) during project design.

The proposed plan will not stop cut through traffic from occurring. Strategies to accomplish this (such as seasonal closures or diversions) were evaluated as part of the KBCCIP process, and found to be infeasible. Specifically, these infeasible strategies would concentrate remaining traffic on specific streets by forcing a redistribution of traffic through the neighborhood. For instance, closing Speckled Avenue and Dolly Varden Avenue at SR 267 would require the commercial traffic generated by the light industrial land uses in the northern portion of the grid to use the north-south streets to access SR 28.

Instead, this plan is intended to minimize some of the side effects of the cut through traffic. The plan proposes to control traffic speeds, minimize any noise and air impacts, and enhance safety by minimizing conflicts between vehicles, pedestrians, and cyclists. It is also intended to maximize the overall “live-ability” of the residential streets, despite any increase in traffic volumes associated with traffic conditions along SR 28.

To develop the plan, a Focus Group was formed with five community members (3-Lane and 4-Lane project advocates), fire officials, transportation professionals, and County staff. This group brainstormed ideas while touring the Kings Beach community that were then incorporated into the Plan. Although the focus of the Plan is to address the issue of future traffic diverting into the neighborhood, the Focus Group identified current issues that needed to be addressed (particularly in regards to local school traffic). The Plan was developed to enhance current conditions in the residential grid as well as minimize some of the impacts associated with future cut through traffic.

In addition, two public open houses were held in Kings Beach to gain public input on the draft conceptual plan. The first, held at the North Tahoe Conference Center on Tuesday, October 7th, was conducted in English and was attended by approximately 120 persons. A second open house conducted in Spanish was held at the Kings Beach Elementary School on Thursday, October 9th and was attended by approximately 15 persons. At both presentations, attendees were encouraged to discuss the conceptual plans with County and consultant staff, and to fill

out comment cards. In addition, the draft plan was presented at a meeting of Project MANA at the Family Resource Center on Wednesday October 16th. Approximately 80 persons were provided with the opportunity to review materials and provide input. A summary of all written comments received through this process is presented as Appendix A to this document.

The draft plan was subsequently refined based upon comments received. In particular, additional sidewalks were added along Fox Street, and additional speed humps added along Dolly Varden Avenue and Beaver Street.

The proposed traffic calming plan (see Figure 8) focuses on placing traffic calming devices (gateway constriction and traffic circles) at all community entries and additional devices (traffic circles, raised crosswalks and speed humps) regularly along streets receiving the most traffic. Existing stop signs combined with the new devices are intended to slow drivers down. Roads receiving the greatest traffic increases will receive a rubberized asphalt overlay to minimize any effects of road noise. Pedestrian connectivity (north/south as well as east/west) is realized with the installation of a pedestrian path/sidewalk on Steelhead Avenue, Coon Street, Fox Street and Secline Street (in addition to the sidewalks to be provided along and immediately off of SR 28 as part of the overall project). An option for east/west pedestrian connectivity is to install one or two one way streets on Steelhead Avenue and/or Loch Levon Avenue. The area no longer being used by cars could be striped for pedestrians and maybe bicyclists.

The proposed traffic calming plan, with or without the proposed one way street option, could be implemented as proposed but could be made stronger with more broad public involvement and continued monitoring. Public Works has indicated that it believes the plan may be further refined with community involvement during the project design phase.

Section II

REVIEW OF EXISTING NEIGHBORHOOD ROADWAY CONDITIONS

Kings Beach's neighborhood streets ("the grid") consist of a series of north-south streets (named after mammal species) and east-west streets (named after fish species) that largely result in an interconnected grid network roughly four blocks (east-west) by nine blocks (north-south) north of SR 28 and east of SR 267. In addition, Brockway Vista Avenue parallels SR 28 one block to the south between Coon Street and Chipmunk Street.

These streets largely serve low to mid-density residential land uses. The preponderance of commercial land uses are located along SR 28, or within one block of the state highway. Other important traffic and pedestrian trip generators consist of:

- ♦ The Kings Beach Elementary School and adjacent Boys and Girls Club, along the west side of Deer Street between Steelhead Avenue and Dolly Varden Avenue.
- ♦ Light industrial land uses along Speckled Avenue and Cut Throat Avenue.
- ♦ The State Recreation Area and public boat launch ramp at the south end of Coon Street.
- ♦ Several small churches.

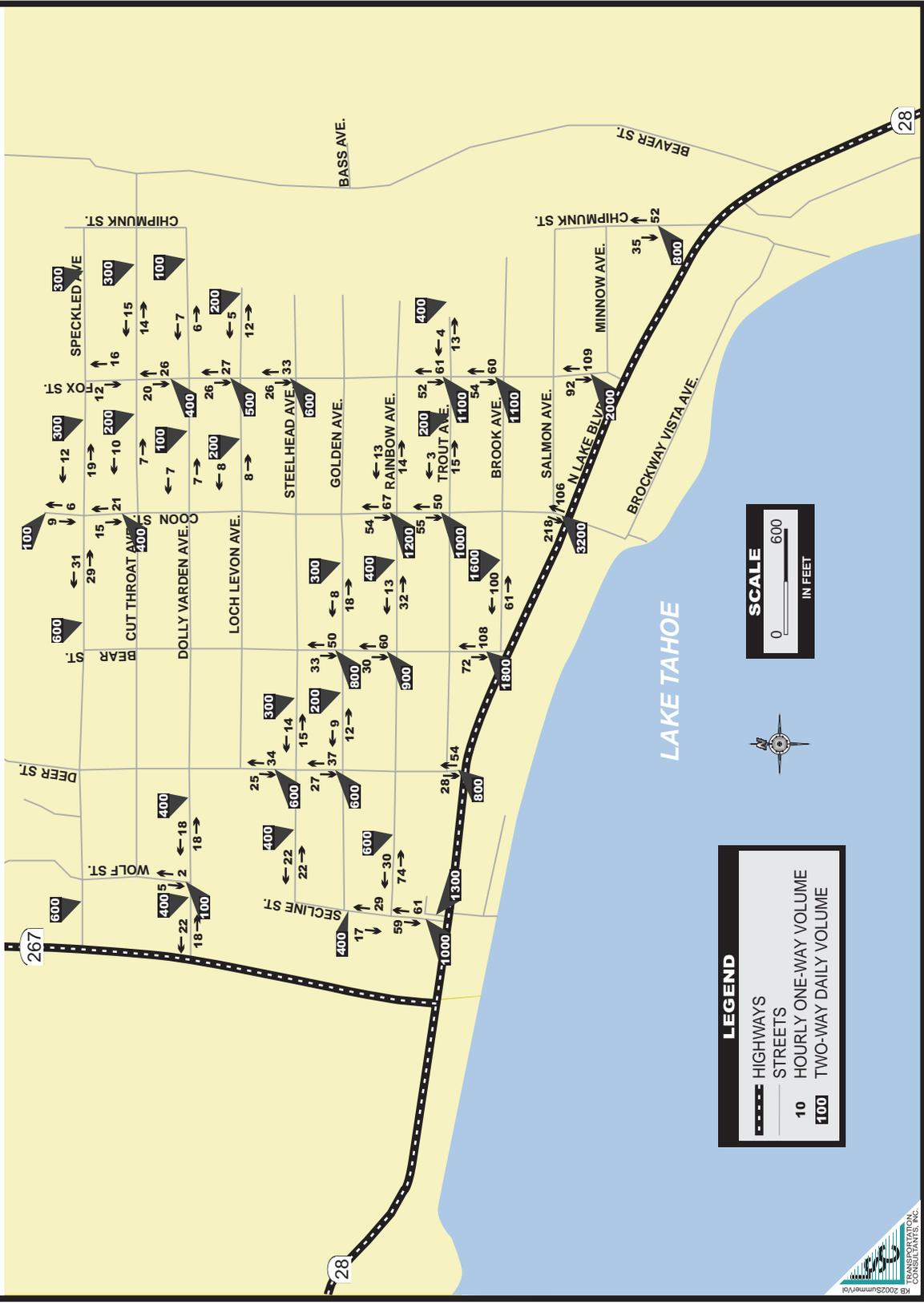
Block size in the grid area averages roughly 785 feet in the east-west direction and 285 feet in the north-south direction.

The configuration of this local roadway network tends to make the neighborhood streets relatively susceptible to cut through traffic. A high proportion of traffic passing through Kings Beach travels between SR 267 to the north (serving Truckee and Interstate 80) and SR 28 to the east (serving Crystal Bay and Incline Village). Total travel distance via the state highways for this "diagonal" travel pattern is not much shorter than the travel distance via the local streets. As a result, if travel times were to increase along the state highways, through drivers may be motivated to use neighborhood streets to seek travel time savings.

Existing Traffic Volumes

The most recent comprehensive traffic count effort in the Kings Beach neighborhood streets was conducted by Placer County Department of Public Works in 2002, and included both roadway and intersection counts during the summer months of June, July and August. Figure 1 presents this count information. Of the locations counted, traffic volumes are relatively high closest to SR 28. Volumes are relatively high on Coon Street (up to 3,200 vehicles per day) followed by Fox Street (2,000 vehicles per day). Away from the highway, volumes tend to fall in the range of 200 to 1,200 vehicles per day (total of both directions). A comparison of these volumes with the traffic volumes estimated to be generated by the existing land uses indicates that existing cut through traffic activity is low (not more than a few hundred vehicles per day).

FIGURE 1
Kings Beach 2002 Summer Hourly and Daily Traffic Volumes



Existing Pedestrian and Bicycle Activity

As part of this study, limited bicycle and pedestrian activity counts were conducted July 17-18, 2008, at a total of ten locations, as shown in Figure 2. Counts were conducted for 30 to 60 minutes depending on volume (lower volume sites were counted longer). Adjusted to reflect an hour-long period, along any one street segment up to roughly 40 pedestrians and 14 cyclists per hour were observed. As these counts were conducted in summer, they do not reflect the substantial pedestrian activity generated by the elementary school.

Existing Traffic Control

Beyond the two existing traffic signals (at SR 28/SR 267 and SR 28/Coon Street), traffic control in Kings Beach consists largely of Stop signs on side street approaches. As shown in Figure 3, these Stop signs are largely oriented facing the east-west streets, leaving relatively long stretches of the north-south streets between Stop signs.

Figure 3 also shows existing posted traffic speeds. As shown, all neighborhood streets are posted at 25 miles per hour. This is also the “prima facie” speed limit in California on residential streets not otherwise posted and as defined in the California Vehicle Code.

Existing Pavement Width and Right-Of-Way Width

Figure 4 presents the existing pavement width of each roadway block in Kings Beach. As indicated, the majority of the roadways are 20 to 28 feet in width. Some blocks just off of SR 28 and Speckled Avenue are relatively wide (up to 38 feet in width), while Beaver Street and the eastern portion of Chipmunk Avenue are relatively narrow (as small as 18 feet). The neighborhood roadways in Kings Beach are generally platted to provide 50 feet of right-of-way for the north-south streets and 40 feet of right-of-way for the east-west streets.

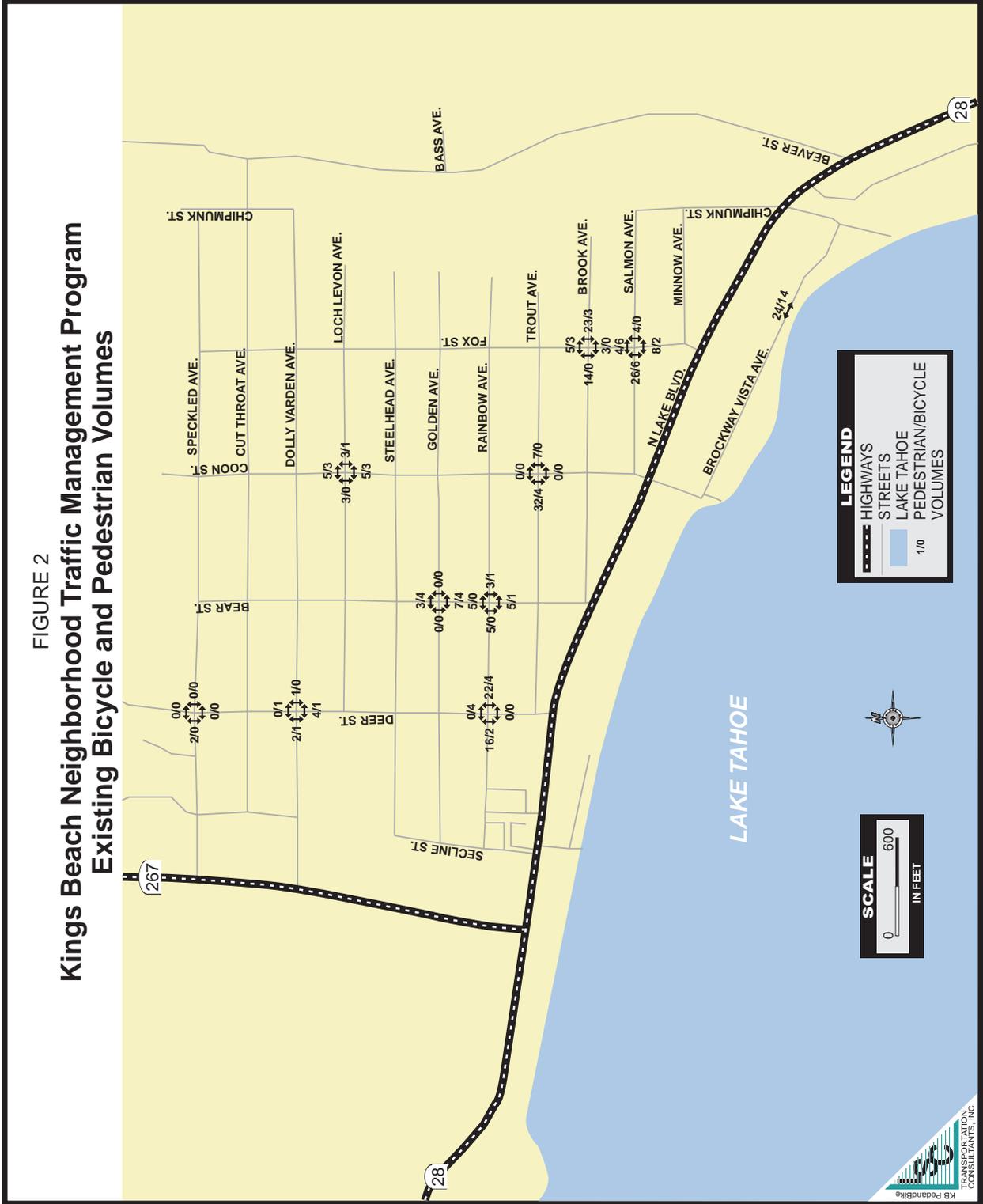
Existing Roadway Grades

The grade of a neighborhood street is important in traffic management, in part because it may limit the feasibility of some traffic control devices. Grades were evaluated on a block-by-block basis; as not all blocks are of a consistent grade, detailed design of traffic controls would require a more detailed evaluation of grade. As shown in Figure 5, overall grades are relatively slight in the western and southern portions of the grid (less than 5 percent grades). In the northeastern portion of the area, however, grades are as high as 12 percent.

Existing Traffic Speeds

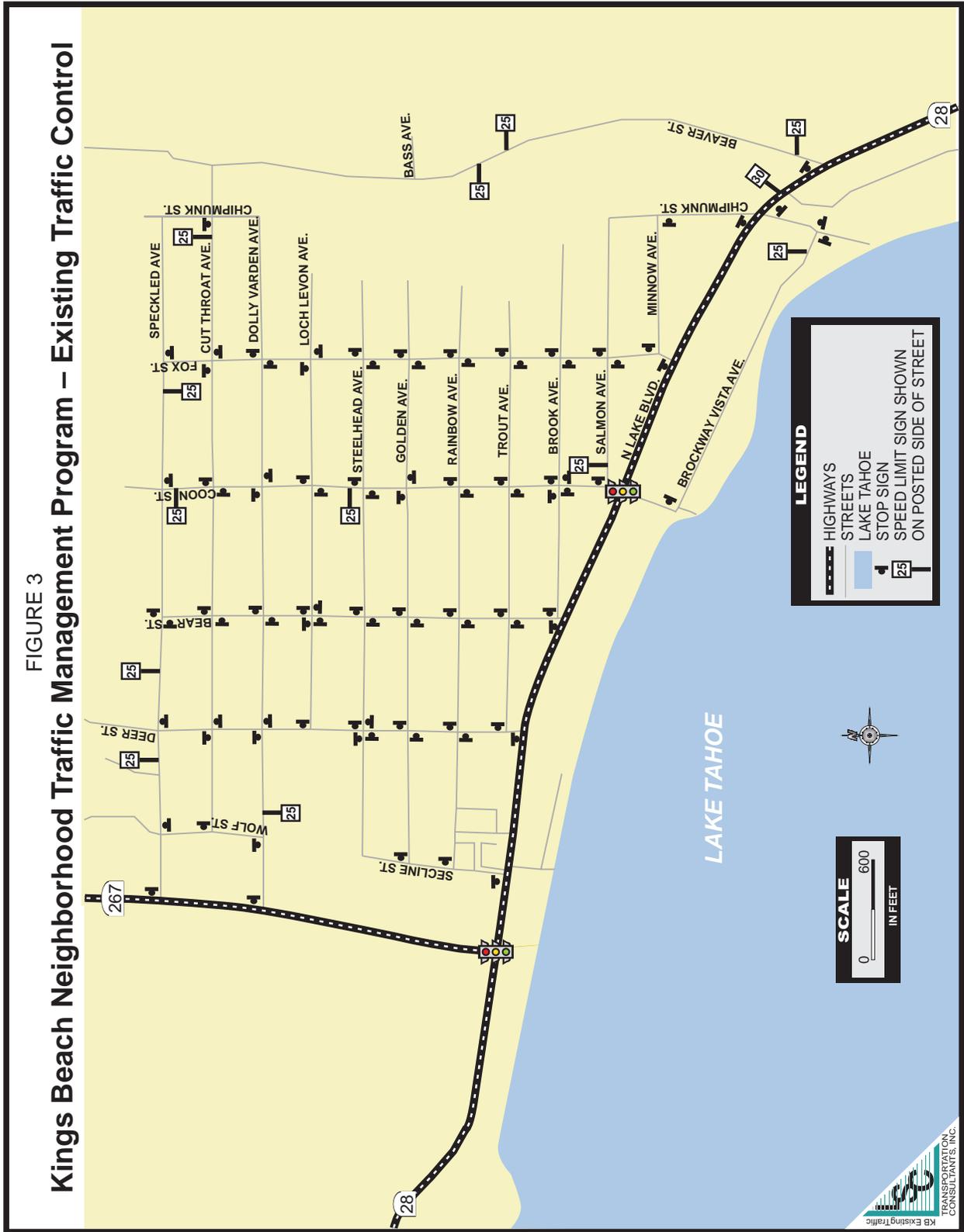
Two limited surveys of existing traffic speeds were conducted as part of this study. Short surveys were conducted using a radar gun at a total of ten locations on July 17-18, 2008. A minimum of 40 observations were made in each location. In addition, 24-hour counts of traffic speeds were conducted at 3 locations using a pole-mounted radar device. Figure 6 presents a summary of this speed survey. For each location, first the 85th percentile speed is reported, followed by the observed maximum speed. The 85th percentile speed (that speed at which 85 percent of all drivers travel at or below) is important as it is the accepted level used by traffic engineers to set speed limits. As shown, the 85th percentile speed is within 5 miles per hour of the established speed limit at all locations, with the exception of Speckled Avenue (33 miles

FIGURE 2
Kings Beach Neighborhood Traffic Management Program
Existing Bicycle and Pedestrian Volumes



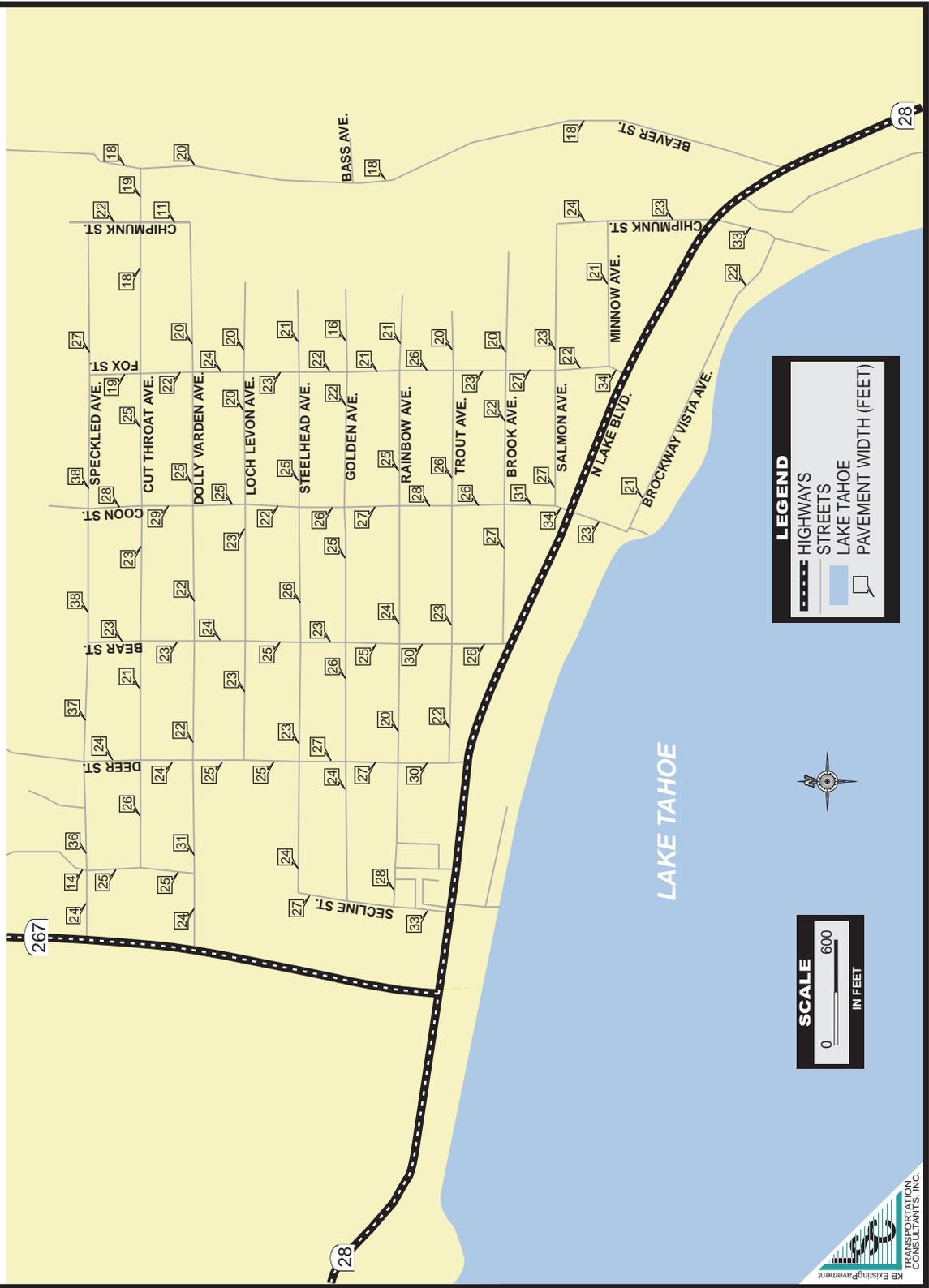
Kings Beach Neighborhood Traffic Management Program – Existing Traffic Control

FIGURE 3



Kings Beach Neighborhood Traffic Management Program - Existing Pavement Width

FIGURE 4

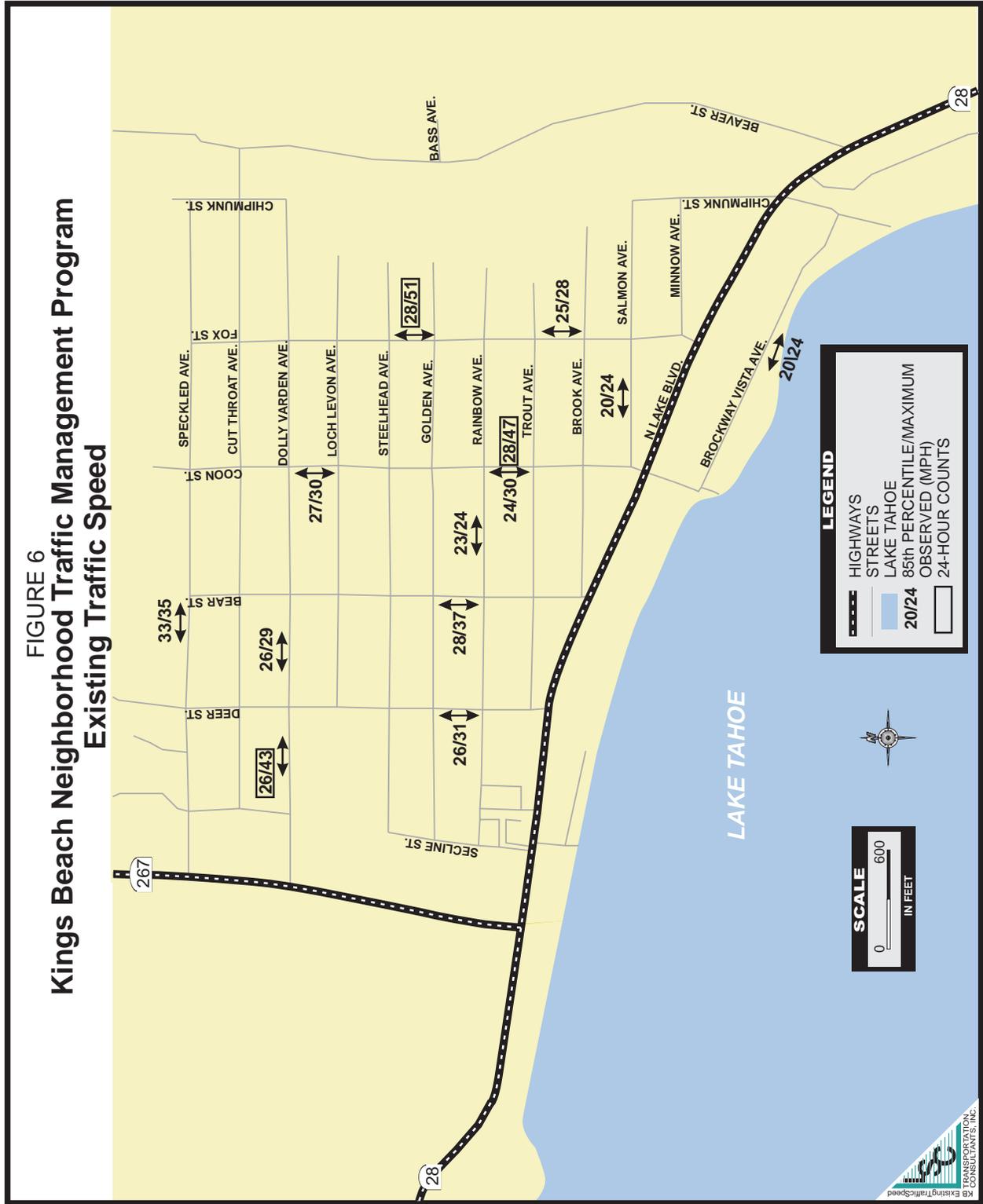


Kings Beach Neighborhood Traffic Management Program - Existing Roadway Grade

FIGURE 5



FIGURE 6
Kings Beach Neighborhood Traffic Management Program
Existing Traffic Speed



per hour). The highest observed speed (51 miles per hour) was observed along Fox Street between Golden and Steelhead Avenues. In general, the 24-hour counts indicated that the maximum speeds occurred in the evenings or in the middle of the night.

This limited speed survey data indicates that, at present, excessive speeding is not a widespread problem on Kings Beach neighborhood streets. However, given the high level of bicycle and pedestrian activity combined with narrow roadway widths shared by all modes, the prospect of increased speeds is of concern. In addition, if traffic congestion occurs along SR 28 in the future, it can be expected that some drivers frustrated by the delay will divert to residential streets and may speed, which would increase both 85th percentile as well as maximum speeds.

Existing Potential Locations for Mid-Block Traffic Control Device Locations

Some potential neighborhood traffic control devices (such as speed humps) are installed along blocks away from intersections. It is important that these devices allow drivers turning onto the roadway adequate time to observe and adjust their driving to the presence of the device in a safe manner. These devices also should not be installed immediately adjacent to a driveway. Kings Beach neighborhood streets were surveyed to identify those locations that meet the following typical criteria for speed humps:

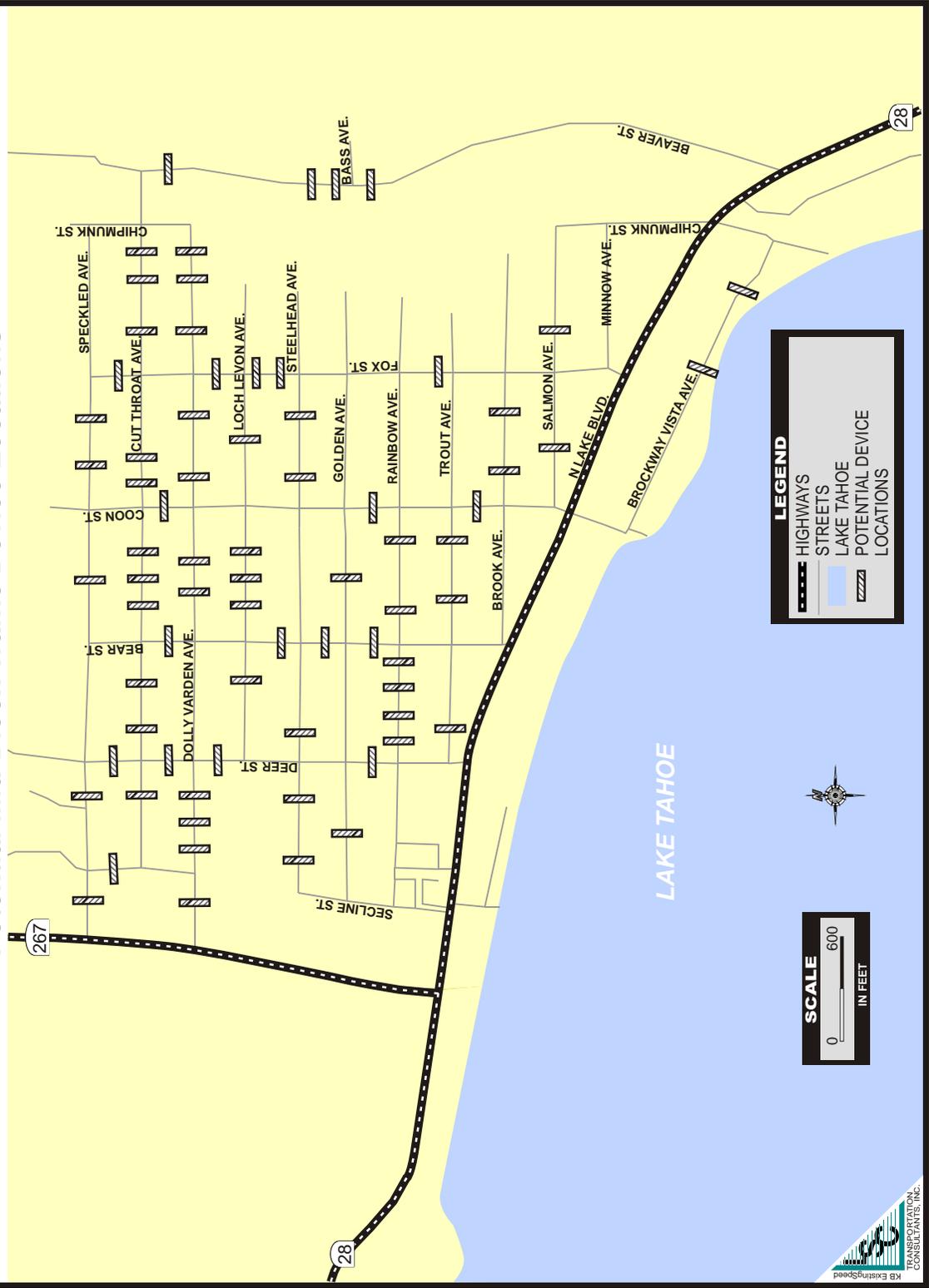
- ♦ At least 100 feet from a public street intersection.
- ♦ A minimum of 30 feet of roadway length between driveway locations on either side. (Note: A typical speed hump is 12 feet in the direction of travel. 30 feet provides room for the device and maneuvering room for driveway access.)

Figure 7 shows the locations that meet these criteria, which provides an initial indication where speed humps may be feasible.

As indicated, there are several relatively long roadway segments where it appears that no mid-block devices could be installed based on the criteria above, including the following:

- ♦ Deer Street from south of Golden Avenue to north of Loch Levon Avenue
- ♦ Coon Street from south of Golden Avenue to north of Dolly Varden Venue
- ♦ Fox Street from Minnow Avenue to north of Trout Avenue, and from south of Rainbow Avenue to north of Steelhead Avenue
- ♦ Chipmunk Street between SR 28 and Salmon Street.
- ♦ The southern half of Beaver Street
- ♦ Golden Avenue from west of Deer Street to east of Bear Street
- ♦ Golden Avenue from west of Coon Street to east of Fox Street
- ♦ Steelhead Avenue from west of Bear Street to East of Coon Street
- ♦ Dolly Varden Avenue from west of Deer Street to east of Bear Street
- ♦ Speckled Avenue from west of Deer Street to east of Bear Street

FIGURE 7
Kings Beach Neighborhood Traffic Management Program
Potential Mid-Block Traffic Device Locations



POTENTIAL TRAFFIC CALMING STRATEGIES

This section includes a “toolbox” of traffic calming measures for traffic control in Kings Beach based on a review of standard practice in the field, experience in peer communities that have used various potential measures, as well as the specific characteristics of Kings Beach.

General Strategies

As discussed in greater detail below, traffic management strategies can be considered in the following general categories:

- ♦ **Enforcement/Education** – This includes focused enforcement of traffic laws (particularly with regards to speeding). Educating the driving public (such as through distribution of flyers or advisory signs) can also help to address specific problems.
- ♦ **Regulation** – This includes changing traffic regulations (such as modifying speed limits or prohibiting heavy vehicles).
- ♦ **Changes in Vertical Roadway Alignment** – Speed humps are an example of changing the vertical alignment of a roadway to reduce the comfortable travel speed.
- ♦ **Changes in Horizontal Roadway Alignment** – There are a wide variety of options, such as small traffic circles and chicanes, which slow traffic by requiring drivers to maneuver through a constriction.

Review of Traffic Management in Similar Mountain Resort Communities

A review of neighborhood traffic management strategies in similar settings can provide some insight into what has proven successful and not successful. The following “peer” communities were reviewed:

- ♦ **Vail, Colorado** – The Town of Vail has implemented raised crosswalks at various locations. While the initial installations were 4-inches in height, the Town found that a 2 to 3-inch increase in height provided better traffic flow and still reduced speeds and encouraged yielding to pedestrians. The Town has not seriously considered any chicanes, bulb outs, or speed humps because of snow plowing issues.
- ♦ **Ketchum, Idaho** – The City of Ketchum has instituted an extensive traffic calming program, including the following measures:
 - Raised Crosswalks
 - Back-in diagonal parking
 - Parallel parking on one side of the street and diagonal parking on the other, with this pattern alternating along the street
 - Permanent radar speed signs at sites with heavy pedestrian traffic including schools
 - Bulbouts at intersections

- Pedestrian flag stands at crosswalks
- Pavement marking at Stop signs on roadways and on multi-use paths (Stop bar “triangle”)

The City previously attempted temporary speed humps, but found that they were vandalized by residents. As a result, they are no longer used. In addition, the City found that graders caused damage to curb bulbouts during snow removal, which has been an ongoing maintenance headache. Ketchum established a “Traffic Authority” made up of public figures that meet monthly to discuss and plan traffic calming measures.

- ♦ **Aspen, Colorado** – The City of Aspen has implemented permanent speed humps, and found them to be an effective means of reducing traffic speed. The City found that a 4-inch height with an elliptical profile is the best configuration. They attempted “speed dips,” but found these to be ineffective as drivers could actually reduce their vertical displacement by speeding up.
- ♦ **Avon, Colorado** – The Town of Avon, Colorado, the gateway to Beaver Creek ski area, has implemented several traffic calming measures:
 - Angled parking on one side of the street that alternates sides
 - Roundabouts with slightly raised brick-paved crosswalks (1.5-2 inches)
 - Lane striping which narrowed lanes from 12 feet to 10 feet each and additional pavement to include a pedestrian lane separated by a cutout rumble strip

The Town also has future plans to implement raised intersections in redevelopment areas, to add a raised landscaped median, and to potentially provide intersection bulbouts.

- ♦ **Summit County, Colorado** – The Summit County Engineering Department has an official set of guidelines for how and when to install speed humps. Their criteria includes community support identified through a petition, effect of the humps on surrounding traffic flow, effect on local and emergency services, and a speed study of existing conditions. The County’s speed hump program was able to overcome the initial and continuing resistance from snowplow drivers. The County specifically requires that all costs be borne by the adjacent property owners. The County has also implemented roundabouts.
- ♦ **Park City, Utah** – Park City has implemented a gateway treatment to the historic highway entering the community, which consists of a raised, landscaped median along the roadway edge. The community also has several landscaped medians along residential streets as well as a roundabout.

Potential Measures Appropriate for the Kings Beach Residential Streets

The Placer County Department of Public Works conducted a study of traffic management strategies appropriate in Placer County. As documented in the *Placer County Neighborhood Traffic Management Program* (February 28, 2007), the following traffic calming devices were identified as potentially appropriate in “snow country:”

- | | |
|------------------|---------------------|
| ♦ Traffic Circle | ♦ Textured Pavement |
| ♦ Roundabout | ♦ Rumble Strips |

- ♦ Chicane
- ♦ Realigned Intersection
- ♦ Two-lane Gateway Restriction “choker”
- ♦ Full Street Closure
- ♦ Radar Speed Signs
- ♦ Non-physical measures (such as edge line striping, speed enforcement, etc.)

In reviewing this list, the following devices are considered to not be applicable to the Kings Beach residential streets:

- ♦ Roundabouts are not warranted by the relatively low traffic volumes in Kings Beach, and also could not be implemented without acquisition of right-of-way from each corner as well as loss of property access and parking.
- ♦ Chicanes would be difficult to fit into the Kings Beach grid. Without curb/gutter and sidewalks along the streets, they would also inhibit pedestrian travel.
- ♦ Realigning intersections would probably require right-of-way.
- ♦ Textured pavement and rumble strips can be an impediment to bicycle travel, and can increase noise near residences.
- ♦ Full street closures would not be consistent with the goal of not diverting traffic from one residential street to another.

On the other hand, the review of successful traffic calming strategies in similar mountain communities indicates that speed humps and raised crosswalks (if properly designed) have been effectively used in areas similar to Kings Beach. These devices are not currently in the County’s NTMP program for “snow country” because of concerns during icy conditions and ability to plow snow, but could be reevaluated based upon the information found in this report and the experience of peer jurisdictions. These devices could also be placed seasonally as some jurisdictions have found seasonal placement to be effective. Based on this review, the following physical measures are considered to be potentially applicable to the Kings Beach grid:

- ♦ Speed Hump
- ♦ Traffic Circle
- ♦ Gateway Constriction (Two-lane Choker)
- ♦ Raised Crosswalks
- ♦ Speed Feedback Signs
- ♦ Non-physical measures

Appendix B provides excerpts from the *Placer County Neighborhood Traffic Management Program Final Report*, which provides more detailed description of these devices.

As an aside, it is important to recognize that the following are **not appropriate** as traffic calming strategies:

- ♦ **Arbitrarily Reducing Speed Limits** – Setting lower speed limits is controlled by state law, except on local streets “primarily serving abutting residential property.” While this indicates the County could reduce speed limits on some (but not all) Kings Beach streets, research has shown that arbitrary low speed limits are largely ignored and can lead to erratic driver behavior that increases the potential for accidents.

- ♦ **Adding Stop Signs** – While the public often suggests installing additional Stop signs as a traffic calming measure, several studies have found this to be largely counterproductive. Faced with a line of Stop signs, drivers tend to “roll” the stop sign, and this result has been shown to actually increase mid-block speeds as they attempt to make up for lost time. In addition, by placing Stop signs at locations where they are not needed, drivers tend to pay less attention to the Stops signs that must be obeyed. While Stop signs are effective in assigning right-of-way, they should not be used simply for traffic calming purposes.

Section IV

CONCEPTUAL KINGS BEACH NEIGHBORHOOD TRAFFIC CALMING PLAN

This plan is based upon the following considerations and concepts:

- ♦ Uninterrupted street length is one factor to consider when considering strategies to control overall vehicle travel speeds on residential streets. In general, speed control measures placed 350 to 750 feet from another measure or stop control have been found to offer consistent speed reduction. In Kings Beach, this translates to providing a measure roughly every two blocks in the north-south direction and every block in the east-west direction. Existing roadway lengths exceeding this range consist of the following:

Speckled Ave.	SR 267 to Bear Street	1,600 feet
Speckled Ave.	Coon Street to Chipmunk Street	2,100 feet
Cut Throat Ave.	Coon Street to Chipmunk Street	1,500 feet
Cut Throat Ave.	Wolf Street to Bear Street	1,200 feet
Dolly Varden Ave.	SR 267 to Bear Street	1,600 feet
Dolly Varden Ave.	Bear Street to Fox Street	1,400 feet
Loch Levon Ave.	Coon Street to eastern terminus	1,000 feet
Golden Avenue	Bear Street to Fox Street	1,400 feet
Brockway Vista Ave.	Coon Street to Chipmunk Street	1,800 feet
Deer Street	Steelhead Ave. to SR 28	1,000 feet
Bear Street	Speckled Ave. to Loch Levon Ave.	900 feet
Bear Street	Loch Levon Street to SR 28	1,500 feet
Coon Street	Golden Ave. to Brook Ave.	900 feet
Coon Street	Dolly Varden Ave. to Golden Ave.	900 feet
Fox Street	Loch Levon Ave. to SR 28	2,100 feet
Chipmunk Street	Salmon Street to SR 28	900 feet
Beaver Street	Cut Throat Ave. to SR 28	3,500 feet

- ♦ As documented in the *Kings Beach Urban Improvement Project Traffic Report*, cut through traffic is expected to be concentrated along Coon Street, Chipmunk Street, and Fox Street in the north-south direction and along Speckled Avenue and Dolly Varden Avenue in the east-west direction. While all through streets could potentially see some diverted traffic, traffic calming strategies should focus on these streets.
- ♦ Many of the roadway grades in the northeastern portion of the grid area exceed the 4 percent maximum recommended for use of traffic circles, indicating that other measures would be required in this area. It should be noted that the grades shown in Figure 5 are overall (or average) grades between adjacent intersections, while the actual slope at intersections or potential device locations may be considerably different.

Draft Proposed Plan

Figure 8 presents a draft of a proposed Neighborhood Traffic Control Plan for the Kings Beach residential streets. This plan incorporates the following elements:

- ♦ Each street entering the “grid” has some form of traffic control (either a 2-lane choker or a traffic circle) to provide all drivers with a physical indication that they are entering a residential neighborhood.
 - Each north-south street has a traffic circle roughly two blocks north of SR 28, just north of the commercial land uses. These circles could either be installed seasonally, or permanent.
 - Gateway constrictions (Two-lane chokers) are installed along Speckled Avenue and Dolly Varden Avenue just east of SR 267 (at or near Griff Creek) and along Bear Street just north of SR 267 to reduce traffic speeds and provide a sense of entry to the neighborhood. While these streets are already relatively narrow at the entrance locations (limiting the amount of narrowing that could occur, these chokers should be signed and landscaped (including vertical elements) to reduce the attractiveness of these streets as potential diversion routes to drivers waiting in traffic queues on the state highways.

Also at these locations, speed limit signs would be installed and speed legends painted on the pavement in the inbound direction.

- ♦ Where grades are too steep for installation of traffic circles and where it is desirable to attain consistent spacing between traffic controls, speed humps or raised crosswalks are provided (where feasible given existing driveway and cross-street locations). These devices could either be installed seasonally, or permanently.
- ♦ The sole raised crosswalk along Dolly Varden Avenue between Deer Street and Wolf Street, is the location of an existing striped crosswalk providing access to the Kings Beach Elementary School. As there is no sidewalk on either side of Dolly Varden Avenue, this would require ramps between the raised crosswalk and existing grade on either side. To reinforce slower speeds along the section adjacent to the school and playfields, a speed hump is also provided along Dolly Varden Avenue west of Deer Street.
- ♦ On Coon Street at Loch Levon Avenue, the existing Stop signs facing Loch Levon are relocated to stop traffic on Coon Street, in order avoid a three-block-long segment on Coon Street without traffic controls and as both traffic circles and speed humps cannot be installed along this section of Coon Street.
- ♦ A speed feedback sign is provided facing eastbound traffic on Speckled Avenue between Wolf and Deer Streets to address the existing speeding observed along this roadway. (A speed feedback sign is not recommended along Dolly Varden Avenue as there is no current indication of a speeding issue, it would not be consistent with the residential character of the street, and as the existing configuration of the roadway as well as the planned traffic control devices would tend to control speeds.)
- ♦ A five-foot-wide pedestrian path/sidewalk is provided along one side of Coon Street, from SR 28 to Dolly Varden Avenue. This is intended to provide all Kings Beach residents with at least one path by which to use the relatively low-volume east-west residential streets to

FIGURE 8
Conceptual Kings Beach Neighborhood Traffic Calming Plan



access a north-south sidewalk to the commercial uses along SR 28. Coon Street was selected as the appropriate first street to be provided with a full sidewalk to Dolly Varden, due to the following:

- Relatively high existing traffic volumes
- A central location to the overall grid
- Provides the most direct access to the post office
- Directly accesses a controlled (roundabout) crossing of SR 28, as well as the State Recreation Area to the south

Identifying the appropriate side of Coon Street on which to provide this facility would require detailed engineering evaluation, though it's worth noting that there are less existing driveways along the west side. In places, this facility may be directly behind a curb (i.e., a sidewalk) while in other places it may be appropriate to provide a separate pedestrian path in order to minimize construction impacts.

- ♦ A pedestrian path/sidewalk is also provided along one side of the southern portion of Fox Street between SR 28 and Rainbow Avenue, to serve this relatively dense residential area.
- ♦ Although not affected by cut through traffic, a five-foot wide pedestrian path/sidewalk would be desirable along the west side of Secline Street (and around the corner with Steelhead Avenue) from SR 28 to the existing sidewalk by the Kings Beach Elementary School. This is intended to provide a separated pedestrian path between the school and SR 28 as well as to and from the Placer County Library on Secline Street.
- ♦ A five foot wide pedestrian path/sidewalk is also provided along one side of Steelhead Avenue between Deer Street and Fox Street. This is intended to provide east/west pedestrian connectivity between the school and the eastern portion of the community and also providing a pedestrian path to the path along Coon Street.

An option to the pedestrian path/sidewalk could be to convert Loch Levon and/or Steelhead Avenues to one-way streets between Deer and Fox Streets, using the remaining pavement width would be used for a pedestrian path. These streets would be striped for a 10-foot vehicle lane, a 2-foot separation area (potentially textured), and an 8-foot pedestrian pathway. Cyclists would be encouraged to continue to use the travel lane. An advantage would be that the two-way pedestrian path could be easily plowed as part of regular winter snow removal operations, providing additional safety for pedestrians. The disadvantages would be that some current parking would be eliminated, a substantial amount of regulatory signage would be necessary for the one-way street designation, and there would be some modest increase in traffic volumes on the adjacent streets (such as Golden Avenue and Dolly Varden Avenue) as drivers circle the block to enter and leave their homes. It can also be expected that bicyclists may ride against traffic or within the pedestrian path if it provides a shorter route instead of following the one-way road designation. As these converted blocks only serve residential uses, additional traffic volumes on adjacent streets would be low.

- ♦ Edge line striping (“fog lines”) is recommended along Fox Street, Coon Street, Speckled Avenue, and Dolly Varden Avenue, designating two ten-foot travel lanes along Fox, Coon, and Dolly Varden, and two twelve-foot travel lanes along Speckled Avenue (with the wider lane width reflecting the higher proportion of truck traffic serving the light industrial uses along Speckled Avenue).
- ♦ All striped crosswalks in the grid (such as near the Kings Beach Elementary School) should be repainted.
- ♦ Provide specialized paving (rubberized asphalt) on portions of Coon Street, Dolly Varden Avenue, and Fox Street. Rubberized asphalt has proven to reduce traffic noise by roughly 4 to 5 decibels, which is described by noise experts as “clearly noticeable.”
- ♦ Pursue increased traffic enforcement focusing on those peak traffic periods when cut through traffic would be an issue.

Other sidewalk segments would also be provided as part of the overall Kings Beach Commercial Core Improvement Project along the southernmost portions of Deer Street and Bear Street and along Brook Avenue from Bear Street to Coon Street, as well as along SR 28. In addition, as new parking lots are developed as part of the overall Project, additional sidewalk sections will be installed to serve them.

It should be noted that Figure 8 represents a draft traffic calming plan, and that not all of these elements would be necessary initially. (This is particularly true as the traffic analyses indicate that periods of traffic diversion would be relatively limited in the near term). A reasonable first phase, given current traffic conditions and those expected in the near term with the changes to SR 28, consists of the following:

- ♦ “Entry treatments” on each roadway entering the residential area:
 - Gateway Treatment on Speckled Avenue and Dolly Varden Avenue just east of SR 267.
 - Traffic circles at Secline/Golden, Deer/Rainbow, Bear/Rainbow, Coon/Trout, Fox/Brook and Minnow/Chipmunk.
- ♦ The speed feedback sign on Speckled Avenue.
- ♦ Edge line striping along Fox Street, Coon Street, Speckled Avenue, and Dolly Varden Avenue.
- ♦ Sidewalks along Coon Street and Secline Street.
- ♦ A series of two speed humps on Brockway Vista Avenue.

Although other improvements (such as along Beaver Street) could be implemented as monitoring data of volumes and speeds warrant them, the County proposes to construct all of the improvements (phase 1 and 2) as part of the project. The County proposes to construct phase 1 improvements the first year, monitor and with public input refine the phase 2 improvements in the second year and complete the phase 2 improvements in year 3. This is consistent with the KBCCIP schedule which will require two and perhaps up to three construction seasons to complete.

Other Plan Elements

There are other, non-physical elements of an overall Traffic Calming Plan that are recommended:

- ♦ **Community-Based Program Development and Refinement** – The *Placer County Neighborhood Traffic Management Program* provides a detailed process by which specific, final plans should be developed. This includes collection of additional data, notification of affected residents, neighborhood meetings and review, and consultation with affected public agencies.
- ♦ **Ongoing Monitoring** – Traffic patterns in the grid streets can be expected to change over time, due to factors such as growth in highway traffic volumes and changes in driver response to congestion along the highway. While monitoring is an important element of any traffic management plan, it is particularly important in Kings Beach due to these external factors and the numerous potential through travel routes. Periodically monitoring of traffic conditions should be conducted, including the following:
 - Traffic volume counts and speed survey data at one or more locations on each through street.
 - A review of the County’s database system (Crossroads) for traffic accident data.
 - A review of traffic data prior to and after implementation and comparison against project goals to identify further refinements to the program.

Cost Considerations

A planning-level cost estimate of the construction costs for the conceptual plan is shown in Table 1. As indicated, straight construction costs are estimated to total \$1,120,500. Including an additional 30 percent for design, engineering, permitting and construction management (on all elements other than the asphalt pavement that would occur as part of regular pavement maintenance), the total estimated cost of implementing the plan is estimated to equal \$1,334,300.

The ongoing costs associated with the program will depend upon whether the humps and circles are permanent or seasonal (with the seasonal option generating higher costs). A reasonable annual cost for monitoring and maintenance is \$20,000.

Funding for the program is planned by Placer County to be provided as follows:

- ♦ Capital funding would be incorporated into the overall KBCCIP project budget. The County’s Redevelopment Agency has committed an additional \$1M to fund this traffic calming effort as part of the KBCCIP.
- ♦ Most of the cost associated with new asphalt paving would be borne by Placer County’s ongoing countywide roadway resurfacing program.

TABLE 1: Estimated Construction Costs*Kings Beach Neighborhood Traffic Calming Program*

Element	Number		Unit Cost	Total Cost
Traffic Circle	9	Each	\$30,000	\$270,000
Speed Hump	12	Each	\$3,000	\$36,000
Raised Crosswalk	1	Each	\$8,000	\$8,000
Gateway / Choker	3	Each	\$8,000	\$24,000
Speed Feedback Sign	1	Each	\$5,000	\$5,000
Relocate Stop Sign	2	Each	\$100	\$200
Speed Limit Sign	9	Each	\$200	\$1,800
Coon St. Sidewalk / Pedestrian Path (1)	2,020	Linear Ft	\$60	\$121,200
Fox St. Sidewalk / Pedestrian Path (1)	1,130	Linear Ft	\$60	\$67,800
Steelhead Avenue Sidewalk / Pedestrian Path (1)	2,100	Linear Ft	\$60	\$126,000
Secline St. Sidewalk / Pedestrian Path (1)	880	Linear Ft	\$60	\$52,800
Rubberized Asphalt Paving (2)	181,200	Square Ft	\$2.25	\$407,700
<i>Subtotal: Construction Cost</i>				<i>\$1,120,500</i>
Design & Project Management	30%			\$213,800
Total Cost				\$1,334,300

Note 1: Drainage costs associated with pedestrian sidewalk/path construction included in overall project costs.

Note 2: Design and Project Management costs not assigned to asphalt paving, as this work would be conducted as part of regular pavement maintenance.

- ♦ If selected through a competitive selection process, a portion of the capital construction costs could be funded through the state and federal Safe Routes to Schools programs. The state program, originally established in 1999, currently provides \$52M per year in funding statewide for projects enhancing bicycle and pedestrian access to schools. A similar federal program, established under the federal surface transportation act, provides on the order of \$46M across California. The sidewalks along Secline Street, and the bicycle/pedestrian facilities along Steelhead Avenue and Loch Levon Avenue would both be eligible (on a competitive basis, statewide) for possible funding.
- ♦ The relatively low level of ongoing operational funding would be incorporated into Placer County's Public Works maintenance budget.

APPENDIX A

**Public Comments Received in Open House Meetings
Tuesday, October 7, 2008
Thursday, October 9, 2008**

Summary of Written Public Comments

Conceptual Kings Beach Traffic Calming Plan

Comment	Commenter's Residence	Date of Meeting
This project is a good idea, especially any sidewalks and speed bumps. There are streets where you can't even cross because of how fast the cars go.	Not Provided	10/9/08 (Spanish)
It is a good idea to put speed bumps and sidewalks on the boulevard because in front of Las Panchitas it is very narrow to walk with strollers. Also, it would be good to put more cross walks because it is sometimes very difficult to cross the highway.	Not Provided	10/9/08 (Spanish)
I hope that with the changes, the speed limit could be reduced. Also, more pedestrian crossing signs are needed on the highway and speed bumps on the highway because cars go too fast.	Not Provided	10/9/08 (Spanish)
I encourage the grid calming devices to be modular and adaptable with more permanent improvements made after the temporary ones have been in place long enough to have accurately determined specific needs and perhaps seasonality needs. Really like the sidewalks.	Kings Beach	10/7/08 (English)
Can you tell what street will be bypass routes? What is your budget for 15 blocks of sidewalk? Why are you still drawing in roundabouts? How are you planning to load traffic off of Speckled Avenue onto 267 if this is a major bypass route?	Kings Beach	10/7/08 (English)
We need to use these plans on the main street instead of creating the two lane bottleneck. I'm concerned that the streets are too narrow to accommodate this plan. I would like to see more sidewalk roads. Traffic circles, raised crosswalks are hell on snowplows. No need for traffic circles, just a waste of money. The roads are narrow enough. Dolly Varden from 267 to Bear or Deer because of through traffic should have sidewalks. Don't make one-way streets, please.	Kings Beach	10/7/08 (English)
I think that anything you have planned is an improvement. I also think that it will all help to better the community and I approve. Thank you thinking and worrying about us.	Not Provided	10/9/08 (Spanish)
I think this is very good. This would take away many accidents and traffic, and the Kings Beach community would improve.	Kings Beach	10/9/08 (Spanish)
Good start for a traffic calming plan. Would recommend speed mitigating efforts on Beaver and Speckled which is majority of locals cutting through Kings Beach. Majority of the pedestrian traffic is Brook, Salmon at Fox Streets. Can we see sidewalks at some point in time?	Kings Beach	10/7/08 (English)
It's a very good thing to have more safety for the people, and this way the drivers will learn to respect the speed limit.	Kings Beach	10/9/08 (Spanish)
Put roundabouts in to reduce traffic and sidewalks for pedestrians and bicycles. That is my comment.	Kings Beach	10/9/08 (Spanish)
Need another "device" on lower Beaver (slope tolerant). Need existing traffic speed for Beaver - it's the worst. Beaver needs data - it is the primary cut through for Incline to Truckee traffic and drunks at night trying to avoid the CHP (speed feedback sign?). Love the sidewalk/pedestrian paths and traffic circles. Rubberized asphalt is cool. Raised crosswalks are good. Traffic calming in front of school.	Kings Beach	10/7/08 (English)
No one seems to be concerned about the children in the school who will be effected by the traffic on the back streets. See you in court.	Kings Beach	10/7/08 (English)
Major walking/pedestrian use of Dolly Varden. School bus stop on Hwy 267 and Dolly Varden, school, little league, fields. We need sidewalks there from 267 to Coon at least. Otherwise issues: snow storage, snow removal on improvements, maintenance on sidewalks/snow removal - who pays?	Tahoe Vista	10/7/08 (English)
So far so good. I live on Steelhead between Coon and Fox, and I like the idea of a sidewalk on my street; however, I do wonder if it is necessary on my block because the only children who walk to and from school on our block are the ones who live on our block. But, I realize this may change if there is a safe place for kids who live on other arteries to walk.	Kings Beach	10/7/08 (English)
I would like to get updates on the Kings Beach plan via emails. ddaaeslo@att.net *pdf of map of traffic calming	Tahoe Vista	10/9/08 (Spanish)

Summary of Written Public Comments

Conceptual Kings Beach Traffic Calming Plan

Comment	Commenter's Residence	Date of Meeting
I like the one-way streets and think we should look at most of th town that way, ast least the fish streets. This leaves more room for walking and snow storage. In terms of sidewalks, I share the concerns of the cost and maintenance. I heard an idea of doing "trail" or something that would be less developed than a formal sidewalk but still a place to walk. My experience says blacktop holds up the best here for walking surfaces. Not the best looking but longer lasting in the weather.	Kings Beach	10/9/08 (Spanish)
Keep four lanes for safety of our kids. Slow traffic with controls and the laws.	Kings Beach	10/7/08 (English)
This was a good attempt to answer the concerns about traffic. Through the grid, we need more sidewalks than the ones proposed. Painted lines to divide the two sides of streets would be helpful too.	Not Provided	10/7/08 (English)
Not good. The fix is to create a bypass street. Contact me for details.	Kings Beach	10/7/08 (English)
Geothermal - infrastructure put in the ground for many reasons, all positive. Sidewalks on Fish Street. School bus program for pedestrian flow. Many other issues to discuss.	Kings Beach	10/7/08 (English)
Good job. We have needed traffic claming in the grid for years. Excellent side walk on Steelhead for kids. I made suggestions to add some more and change stop signs. Well thought out. Keep it up.	Kings Beach	10/7/08 (English)
More sidewalks throughout grid. More traffic circles throughout grid. More speed bumps throughout grid.	Kings Beach	10/7/08 (English)
Thank you for the work you have begun.	Tahoe Vista	10/7/08 (English)
Seems good. Need a speed bump on Trout Street. Race cars up and down - go to Catholic church. Traffic and kids race up and down fast. Dogs and kids in the way and get hurt now.	Kings Beach	10/7/08 (English)
Phase in improvements in accordance with need. Will sidewalk to Speckled be effective?	Kings Beach	10/7/08 (English)
Great first step. I appreciate that you did more than just put four way stops every where. Please look at the intersection of Coon/Dolly Varden. That stop sign is "run" regularly by those on Fox. They think that the people on Dolly Varden have a stop sign. There are near misses there regularly. Something needs to be done on Dolly Varden between 267 and Deer with the heavy use there. Sidewalks should be put in or no parking on the side of the road to make it safer for pedestrians. Also, something needs to be done around the post office. Heavy traffic volumes and lots of cars. But, great job, Dan.	Kings Beach	10/7/08 (English)
I think you should put speed bumps on every street and roundabouts on the highway.	Kings Beach	10/9/08 (Spanish)
This looks great. Very well thought out.	Kings Beach	10/7/08 (English)
I support the roundabouts on the main highway and providing more sidewalks to our walking community. As a teacher at Kings Beach Elementary School, I am concerned for myself as a walker within my community as well as concerned for my students. We need to address issues around the school - providing sidewalks and "calming" there even though it is not part of the core plan.	Kings Beach	10/7/08 (English)
The plan addresses increased, as well as existing, cut through traffic effectively. The traffic circles will provide for increased safety and an aesthetic improvement. Fox Street is a major artery for cut through traffic. A linkage of sidewalk from lower Fox Street over to Coon Street would be an improvement to the existing plan given the density of development in the lower grid.	Kings Beach	10/7/08 (English)
I think huts are needed for the bus stops. Everything you will do I think is very good. Anything you can do to help the Kings Beach community. Thank you for supporting us.	Not Provided	10/9/08 (Spanish)
Roundabouts and speed bumps. Fix the highway so the cars will respect the speed limit. Separate cars where the white line is. It's good that you've asked for input because this way there is more safety.	Not Provided	10/9/08 (Spanish)

Summary of Written Public Comments

Conceptual Kings Beach Traffic Calming Plan

Comment	Commenter's Residence	Date of Meeting
Put sidewalks on one side of the street and do more streets. Do the project now.	Tahoe Vista	10/7/08 (English)
The plan does not address the density problem in the lower grid. Most of the traffic and safety issues are caused by the vast numbers of residents living in such a tight location. Tourists are not causing the problem. We need a plan that addresses the real issues in Kings Beach.	Kings Beach	10/7/08 (English)
Put more roundabouts for the traffic and put sidewalks for cars and pedestrians.	Kings Beach	10/9/08 (Spanish)
I think we need sidewalks on the boulevard and reduce the speed limit to less than 25 in the neighborhood.	Not Provided	10/9/08 (Spanish)
If the three lane plan gets approved, I think it should be tested with painted lane stripping first to see how it will impact the town.	Kings Beach	10/7/08 (English)
There should be published success criteria for the traffic management plan. It should be adaptive...some ideas: reduction in accident rates (pre & post); reduction in average speeds (pre & post); reduction in peak speeds (pre & post); evaluation of measures - what's working and what's not working and why (post).	Kings Beach	10/7/08 (English)
Should have a sidewalk on Fox Street as the school bus drops kids off on Fox and it could be another pedestrian path to town. Should have a sidewalk down Deer or Bear to town from the school. Should have at least one east/west sidewalk (e.g. Dolly Varden or Steelhead) from school so that kids could walk safely to school. Great that there are traffic circles one to two blocks in to slow traffic and signal a residential neighborhood.	Kings Beach	10/7/08 (English)
I like the plan that is proposed. I think making sure that there is a traffic calming measure including stop signs should exist every two blocks to keep traffic to the speed limit. Consider four-way stops at major intersections within the grid.	Kings Beach	10/7/08 (English)
I see no analysis of Minnow Avenue - grid data. Considering we supported the "Minnow Avenue Public Parking Lot", I was hoping to see some traffic calming ideas for Highway 28/Fox and Minnow. I travel the intersection several times a day. The bus stops there. Traffic whips around off Highway 28 into Fox leaving those merging from Minnow either stopping in the middle of Fox or running to cross Fox to walk down town.	Kings Beach	10/7/08 (English)
Please email compiled comments. If can't email, you can send to Michell Sweeney, 1934 Toppewetah Street, South Lake Tahoe, CA 96150. Thank you.	South Lake Tahoe	10/7/08 (English)
I believe that this is a great start as an example of a community driven process.	Kings Beach	10/9/08 (Spanish)
We do not like this plan because you are not thinking about kids on the streets. Where the money to maintaining will come from. If the speed bumps are so good to calm traffic, why not install them on the main highway? What we don't want is the cut through traffic. How many cars will move around in the grid. I think kids on streets.	Kings Beach	10/7/08 (English)
The density issue, particularly in the Salmon and Brook Avenues needs to be addressed now. They are too many people living in inadequate housing. If the number of people were reduced, traffic in the neighborhood wouldn't be as big a concern. I also believe that a sidewalk should be put in on Salmon, Fox, and Brook.	Kings Beach	10/7/08 (English)
It's a good idea to put speed bumps so cars will slow down. And put white lines to cross the highway where they may be necessary.	Kings Beach	10/9/08 (Spanish)

Summary of Written Public Comments

Conceptual Kings Beach Traffic Calming Plan

Comment	Commenter's Residence	Date of Meeting
<p>Although it is apparent by now that the bureaucracies in charge have little consideration input of the citizens of Kings Beach, I will register mine. The neglect of Placer County in this area of Kings Beach has been historic, especially in the areas inhabited by the poorer residents. Snow removal in these areas is largely an afterthought. I approve of back street speed bumps and especially sidewalks. These items shouldn't have had to have been considered as a response to your Hwy 28 plans but should have been installed years ago. I DO NOT APPROVE OF YOUR TRAFFIC CIRCLES. You do not have enough room to allow vehicular traffic as it is now. Larger vehicles and snow removal equipment will be choked by these. I find it difficult to believe that you have taken a tape measure to the indicated locations. I understand that this "plan" is a response to the residents who objected to the Hwy 28 modifications that were jammed down their throats but it appears to be more of a punishment than a solution. I would have made more considerate response to your plan if consideration had been rendered by the bureaucracies to the community of Kings Beach.</p>	Kings Beach	11/21/2008 via email (English)

APPENDIX B

**Excerpts From "Placer County Neighborhood Traffic Management Program Final Report"
Placer County Department of Public Works
February 28, 2007**

Speed Feedback Signs

Speed feedback signs perform the same functions as radar trailers but are permanent. Real-time speeds are relayed to drivers and flash when speeds exceed the limit. Speed feedback signs are typically mounted on or near speed limit signs.



Approximate Cost: \$3,000 - \$10,000

Centerline/Edgeline Lane Striping

Lane striping can be used to create formal travel lanes, bicycle lanes, parking lanes, or edge lines. As a neighborhood traffic management measure, they are used to narrow the travel lanes for vehicles, thereby inducing drivers to lower their speeds. The past evidence on speed reductions is, however, inconclusive.



Approximate Cost: \$2.00 per linear foot

Advantages

- Real-time speed feedback
- Does not physically slow emergency vehicles or buses
- Permanent installation

Disadvantages

- May require power source
- Only effective for one direction of travel
- Long-term effectiveness uncertain
- Subject to vandalism

Advantages

- Inexpensive
- Can be used to create bicycle lanes or delineate on-street parking
- Does not slow emergency vehicles

Disadvantages

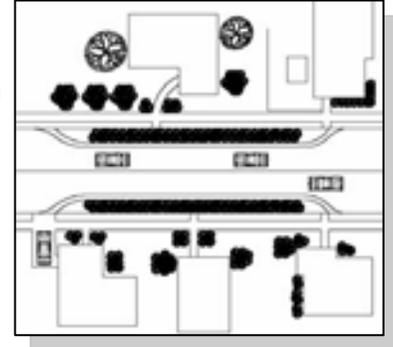
- Has not been shown to significantly reduce travel speeds
- Requires regular maintenance

Two-lane choker

Chokers are curb extensions at midblock that narrow a street. Chokers leave the street cross section with two lanes that are narrower than the normal cross section.

The magnitude of speed reduction is dependent on the spacing of two-lane chokers between points that require drivers to slow (see page 55). On average two-lane chokers achieve a 7 percent reduction in speeds.

Approximate Cost: \$7,000 - \$8,000 per location



Measured Effectiveness		
Speed Reduction	Reduction in 85th Percentile Speeds between Slow Points	-7%
Volume Reduction	Reduction in Vehicles per Day	-10%
Safety Reduction	Reduction in Average Annual Number of Collisions	I/D
Note: I/D = Insufficient Data to predict reduction effect.		
Source: Traffic Calming: State of the Practice, 2000.		



Advantages

- Easily negotiable by emergency vehicles and buses
- Can have positive aesthetic value
- Reduces both speeds and volumes

Disadvantages

- Effect on vehicle speeds is limited by the absence of any vertical or horizontal deflection
- May require bicyclists to briefly merge with vehicular traffic
- Loss of on-street parking
- Build-up of debris in gutter

Traffic Circle

Traffic circles are raised islands, placed in intersections, around which traffic circulates. Stop signs or yield signs can be used as traffic controls at the approaches of the traffic circle. Circles prevent drivers from speeding through intersections by impeding the straight-through movement and forcing drivers to slow down to yield. Depending upon the size of the intersection and circle, trucks may be permitted to turn left in front of the circle.

The magnitude of speed reduction is dependent on the spacing of traffic circles between points that require drivers to slow (see page 55). On average, traffic circles achieve an 11 percent reduction in speeds and a dramatic 71 percent decrease in collisions.

Approximate Cost: \$10,000 - \$25,000 per location



Measured Effectiveness		
Speed Impacts	Reduction in 85th Percentile Speeds between Slow Points	-11%
Volume Impacts	Reduction in Vehicles per Day	-5%
Safety Impacts	Reduction in Average Annual Number of Collisions	-71%
Source: Traffic Calming: State of the Practice, 2000.		



Advantages

- Very effective in moderating speeds and improving safety
- Can have positive aesthetic value

Disadvantages

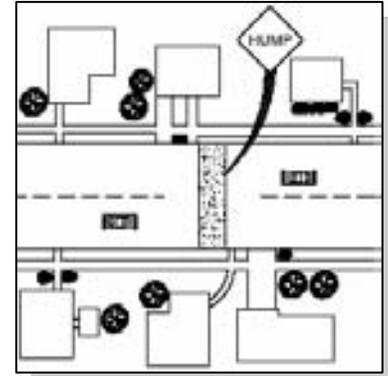
- If not designed properly, difficult for emergency vehicles or large trucks to travel around
- Must be designed so that the circulating traffic does not encroach on crosswalks
- Potential loss of on-street parking

Speed Hump

Speed humps are rounded raised areas placed across the road. They are generally 12 feet long (in the direction of travel), 3 to 3 ½ inches high, parabolic in shape, and have a design speed of 15 to 20 mph. They are usually constructed with a taper on each side to allow unimpeded drainage between the hump and curb. When placed on a street with rolled curbs or no curbs, bollards are placed at the ends of the speed hump to discourage vehicles from veering outside of the travel lane to avoid the device.

The magnitude of reduction in speed is dependent on the spacing of speed humps between points that require drivers to slow (see page 55). On average, speed humps achieve a 22 percent reduction in speeds.

Approximate Cost: \$2,000 - \$3,000 per location



Measured Effectiveness		
Speed Impacts	Reduction in 85th Percentile Speeds between Slow Points	-22%
Volume Impacts	Reduction in Average Daily Traffic	-18%
Safety Impacts	Reduction in Average Annual Number of Collisions	-13%
Source: Traffic Calming: State of the Practice, 2000.		



Advantages

- Relatively inexpensive
- Relatively easy for bicyclists to cross
- Very effective in slowing travel speeds

Disadvantages

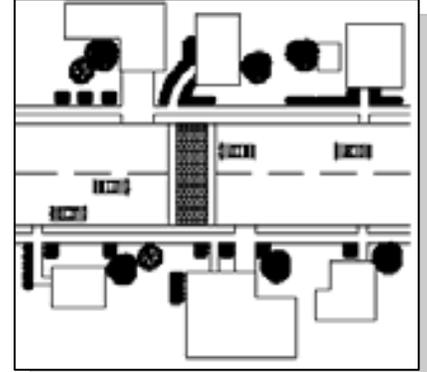
- Causes a “rough ride” for drivers, and can discomfort people with certain skeletal disabilities
- Slows emergency vehicles and buses
- Aesthetics
- Signs may be unwelcome by adjacent residents
- Increased noise for nearby residents

Raised Crosswalk

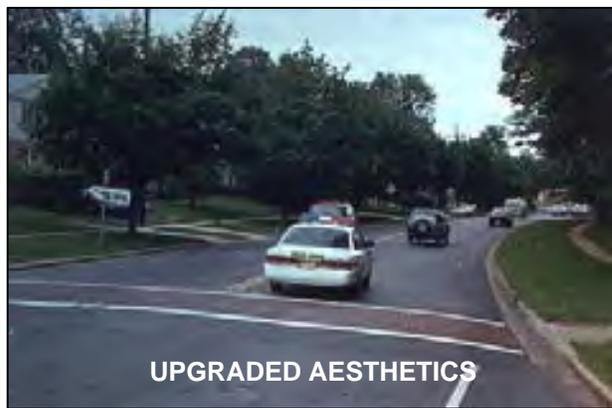
Raised crosswalks are speed tables striped with crosswalk markings and signage to channelize pedestrian crossings, providing pedestrians with a level street crossing. Also, by raising the level of the crossing, pedestrians are more visible to approaching motorists.

The magnitude of speed reduction is dependent on the spacing of raised crosswalks between points that require drivers to slow (see page 55). On average, raised crosswalks achieve an 18 percent reduction in speeds.

Approximate Cost: \$5,000 for basic treatment



Measured Effectiveness		
Speed Impacts	Reduction in 85th Percentile Speeds between Slow Points	-18%
Volume Impacts	Reduction in Vehicles per Day	-12%
Safety Impacts	Reduction in Average Annual Number of Collisions	-45%
Source: Traffic Calming: State of the Practice, 2000.		



Advantages

- Improve safety for both vehicles and pedestrians
- Aesthetic upgrades can have positive aesthetic value
- Effective in reducing speeds, though not to the extent of speed humps

Disadvantages

- Textured materials, if used, can be expensive
- Impact to drainage needs to be considered
- Textured pavement can increase noise to adjacent residents
- Signs may be unwelcome by adjacent residents

**Appendix B. Revised Environmental Noise
Assessment: State Route 28
Internal Trips**

Revised Environmental Noise Assessment

State Route 28 Internal Trips

Placer County, California

Job # 2008-235

Prepared For:

Placer County Public Works

3091 County Center Drive, Suite 220
Auburn, California 95603

Attn: Ken Grehm

Prepared By:

j.c. brennan & associates, Inc.



Jim Brennan
President
Member, Institute of Noise Control Engineering

July 1, 2009



INTRODUCTION

Previously, j.c. brennan & associates, Inc. conducted an Environmental Noise Analysis for the Kings Beach State Route 28 (S.R. 28) corridor project. The noise analysis focused on the traffic noise levels along S.R. 28, as a function of the alternative roadway configurations and alignments. The analysis did not include the potential noise impacts associated with cut-through or diverted traffic through the neighborhoods, due to delays in travel times. The intent of this analysis is to provide a technical noise analysis of the potential cut-through traffic in the residential neighborhoods, for incorporation into a supplemental document. Figure 1 shows the project site. Figure 2 shows the Plan Area Boundaries and adjoining Plan Areas

The intent of this analysis is to quantify existing background noise levels within the project area, and to determine the noise levels due to the project. The predicted project-related noise levels are compared to the Placer County and Tahoe Regional Planning Agency noise level criteria, and to the relative increases in noise levels associated with the project.

ACOUSTIC TERMINOLOGY¹

Fundamentals of Acoustics

Acoustics is the science of sound. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second or Hertz (Hz).

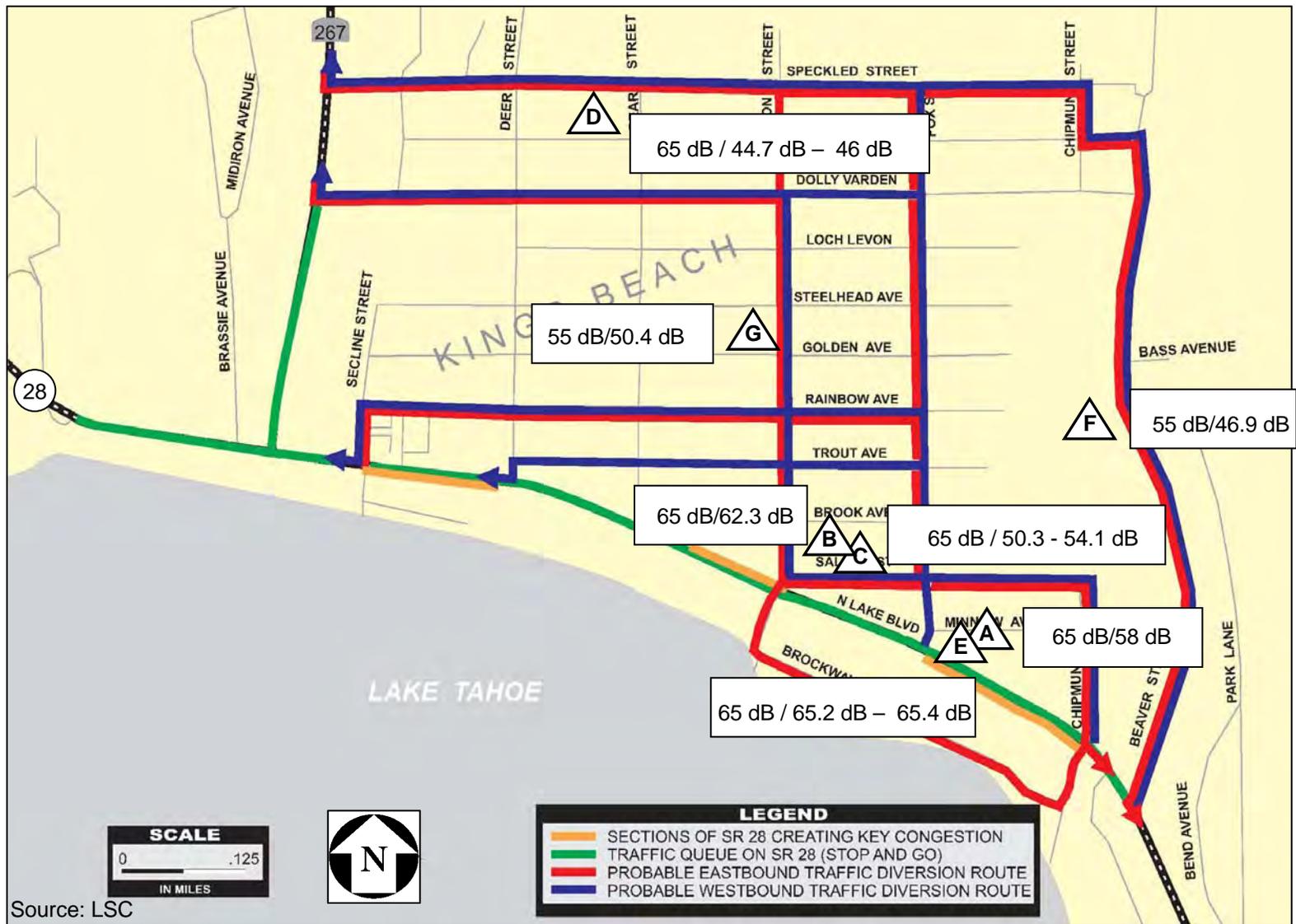
Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective. Often, someone's music is described as noise by another.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels.

¹For an explanation of these terms, see Appendix A: "Acoustical Terminology"

Figure 1
State Route 28 - Placer County, California
Noise Measurement Sites and Cut Through Routes



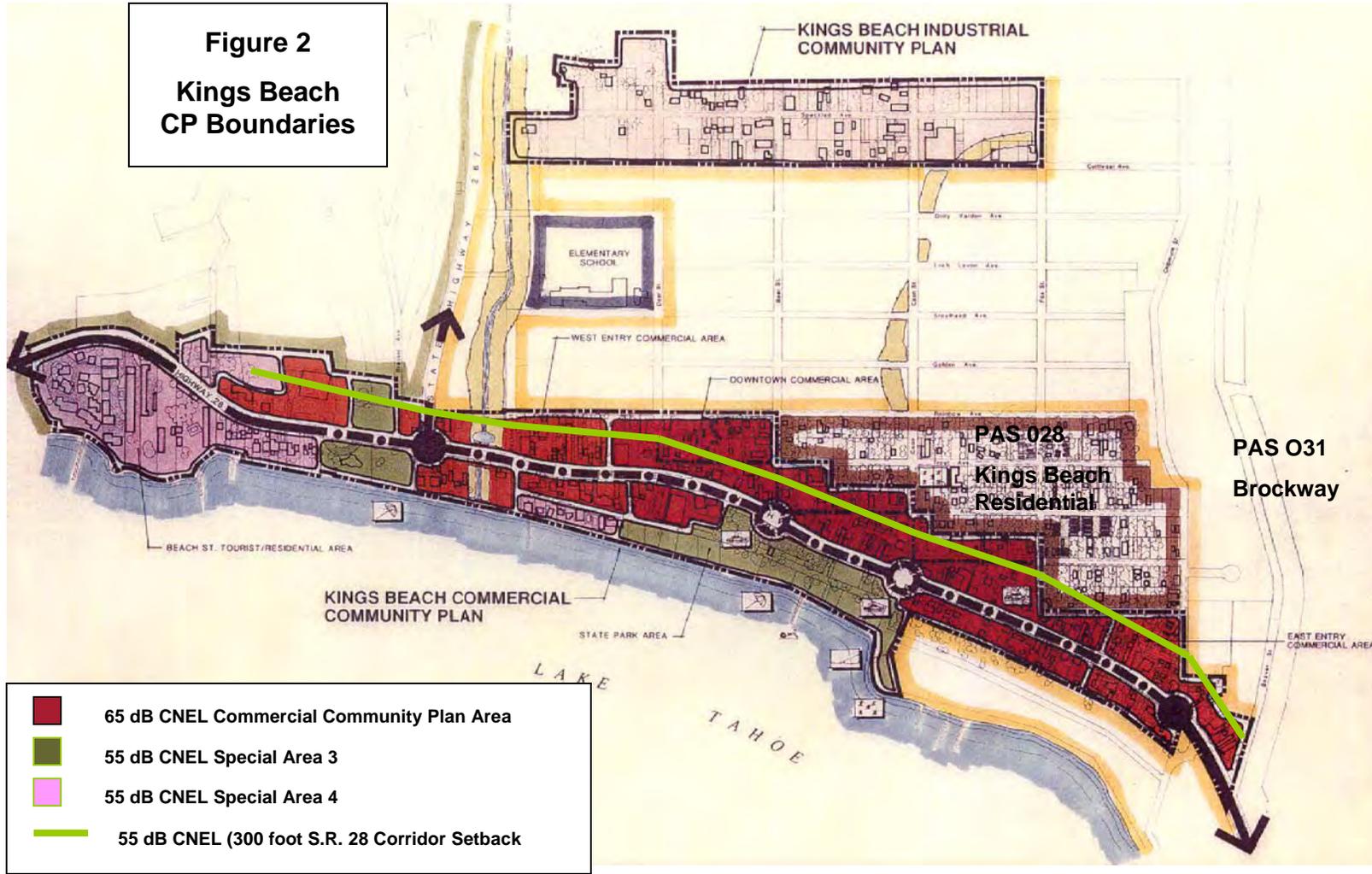
Source: LSC

: Continuous Noise Measurement Site

dB/# dB

CNEL Standard/Measured CNEL

Figure 2
Kings Beach
CP Boundaries



There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels, but are expressed as dB, unless otherwise noted.

The decibel scale is logarithmic, not linear. In other words, two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70 dBA sound is half as loud as an 80 dBA sound, and twice as loud as a 60 dBA sound. A 3 dBA change is considered a perceivable difference.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}), which corresponds to a steady-state A weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptor, CNEL, and shows very good correlation with community response to noise.

The CNEL is the 24 hour average noise level of all hourly L_{eq} measurements with a factor of 10 times (a +10 dB) penalty added to the levels between 2200 and 0700 hours and a factor of 3 times (an approximate +5 dB penalty added to the levels between 1900 and 2200 hours to reflect people's extra sensitivity to noise during the nighttime and evening hours.

Table 1 lists several examples of the noise levels associated with common noise sources.

Effects of Noise on People

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

Table 1 Typical Maximum Noise Levels		
Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	--110--	Rock Band
Jet Fly-over at 300 m (1,000 ft)	--100--	
Gas Lawn Mower at 1 m (3 ft)	--90--	
Diesel Truck at 15 m (50 ft), at 80 km/hr (50 mph)	--80--	Food Blender at 1 m (3 ft) Garbage Disposal at 1 m (3 ft)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 m (100 ft)	--70--	Vacuum Cleaner at 3 m (10 ft)
Commercial Area Heavy Traffic at 90 m (300 ft)	--60--	Normal Speech at 1 m (3 ft)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

Source: Caltrans, Technical Noise Supplement, Traffic Noise Analysis Protocol. October 1998.

With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3 dBA change is considered a perceivable difference;
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10 dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6 dB per doubling of distance from the source, depending on environmental conditions (i.e. atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

CRITERIA

Placer County Noise Element:

Placer County’s General Plan contains policies governing noise related to development within Placer County, as identified below. The maximum allowable noise exposure limits for transportation noise sources in Placer County are summarized in Table 2.

Table 2 Placer County Maximum Allowable Noise Exposure for Transportation Noise Sources			
Land Use	Outdoor Activity Areas¹	Interior Spaces	
	L_{dn}/CNEL	L_{dn}/CNEL	L_{eq}, dB²
Residential	60 ³	45	
Transient Lodging	60 ³	45	
Hospitals, Nursing Homes	60 ³	45	
Theaters, Auditoriums, Music Halls			35
Churches, Meeting Halls	60 ³		40
Office Buildings			45
Schools, Libraries, Museums			45
Playgrounds, Neighborhood Parks	70		

Source: Table 9-3 of the Noise Element of the *Placer County General Plan*

Notes:

CNEL = Community Noise Equivalent Level

¹Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.

²As determined for a typical worst-case hour during periods of use.

³Where it is not possible to reduce noise in outdoor activity areas to 60 L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dn}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Tahoe Regional Planning Agency Criteria:

The Tahoe Regional Planning Agency (TRPA) has adopted environmental thresholds for the

Lake Tahoe Region. The noise standards, or "Thresholds" as they are commonly referred to, are numerical CNEL values for various land use categories. The CNEL standard includes noise from all sources and are based on a not-to-exceed noise level at any place or time during a 24-hour period within the applicable Plan Area or Transportation Corridor. The TRPA Regional Plan has a noise element which establishes goals and policies for specific land uses. The following are the numerical standards for each of the land uses:

TRPA Regional Plan Cumulative Noise Levels	
Land Use Category	CNEL, dBA
High Density Residential	55
Low Density Residential	50
Hotel/Motel	60
Commercial	60
Industrial	65
Urban Outdoor Recreation	55
Rural Outdoor Recreation	50
Wilderness and Roadless Areas	45
Critical Wildlife Areas	45
Policy Statement: It shall be a policy of the TRPA Governing Board in the development of the Regional Plan to define, locate, and establish CNEL levels for transportation corridors.	
Transportation Corridors¹	
Highway 50	65
Highways 89, 207, 28, 267 & 431	55
South Lake Tahoe Airport	60
1. Recommended CNEL levels for transportation corridors	

As a form of zoning, the TRPA has divided the Lake Tahoe Region into more than 175 separate Plan Areas. Boundaries for each of the Plan Areas have been established based on similar land uses and the unique character of each geographic area. For each Plan Area, a "Statement" is made as to how that particular area should be regulated to achieve regional environmental and land use objectives. As a part of each Statement, an outdoor CNEL standard is established. The project site is located within Plan Area 029 (Kings Beach Commercial, Special Area 2), and adjacent to Plan Area 028 (Kings Beach Residential) which is covered by the Kings Beach Community Plan. The Kings Beach Community Plans noise level criteria are as follows.

Maximum Community Noise Level

1. Where applicable, a maximum 55 CNEL override for the Highway 28 corridor is permissible;
2. The maximum CNEL for Special Areas 3 and 4 is 55 CNEL;
3. The maximum CNEL for all areas of the Community Plan except as noted in 1 and 2 above is 65 CNEL;
4. The maximum CNEL for shorezone tolerance districts 6 and 7 is 55 CNEL and the maximum for the lake zone is 50 CNEL.

Based upon discussions with the TRPA staff (phone conversation with Gordon Barrett, June 16, 2009), the 55 dB CNEL Highway 28 corridor override is intended to be applied at 300 feet from the roadway edge of pavement. Noise levels can exceed 55 dB CNEL inside of the 300 foot

contour.

Performance Standards for stationary or industrial noise sources or projects affected by stationary or industrial noise sources (as measured at the property line of a noise-sensitive receiving use)

Noise Level Descriptor	Daytime (7 a.m. – 7 p.m.)	Nighttime (7 p.m. – 7 a.m.)
Hourly Leq, dB	55	45
Maximum Level, dB	75	65

Source: Kings Beach Commercial Community Plan

Other portions of the cut-through trips occur within Plan Areas and Community Plans, which have the following criteria:

Plan Area Name	Plan Area #	CNEL Standard
Kings Beach Residential	PAS 028	55 dB
Brockway	PAS 031	55 dB
Kings Beach Industrial Community Plan	--	65 dB

Subjective Reaction to Changes in Noise Level Criteria:

Another means of determining a significant noise impact is to judge a persons reaction to changes in noise levels due to a project. Table 3 is commonly used to show expected public reaction to changes in environmental noise levels. This table was developed on the basis of test subjects' reactions to changes in the levels of steady-state pure tones or broad-band noise and to changes in levels of a given noise source. It is probably most applicable to noise levels in the range of 50 to 70 dB, which is the usual range of voice and interior noise levels. The TRPA staff policy is that an increase of +3 dB CNEL or more is considered to be significant.

Table 3 Subjective Reaction to Changes in Noise Levels of Similar Sources		
Change in Level, dB	Subjective Reaction	Factor Change In Acoustical Energy
1	Imperceptible (Except for Tones)	1.3
3	Just Barely Perceptible (TRPA Level of Significance)	2.0
6	Clearly Noticeable	4.0
10	About Twice (or Half) as Loud	10.0

Source: Architectural Acoustics, M. David Egan, 1988.

EXISTING AMBIENT NOISE LEVELS

j.c. brennan & associates, Inc., staff conducted continuous hourly background noise level measurements at seven locations within the area where cut-through traffic may occur. The noise measurements were conducted for a minimum of 24-hours, so that the CNEL value could be calculated. Table 4 shows the results of the noise level measurements. Figure 1 shows the location of the noise measurement sites. Appendix B graphically shows the results of the noise

measurements.

Equipment used for the noise measurement surveys included Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters. The meters were calibrated before use with an LDL Model CA200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

Based upon the measured noise level data shown in Table 4, each of the noise measurement sites complied with the TRPA 65 dB CNEL standard, with the exception of Site E, which was located inside of the 300 foot S.R. 28 corridor. The 55 dB CNEL Highway 28 corridor override is intended to be applied within 300 feet from the roadway edge of pavement. Noise levels can exceed 55 dB CNEL inside of the 300 foot contour, as long as they do not exceed the Community Plan noise level standard @ 301 feet.

TRPA staff have requested a discussion on the differences between the measured noise levels at Site C. During the winter months when noise measurements were conducted at Site C, the measured noise levels ranged between 50.3 dB and 51.9 dB CNEL. The measured noise level in July was 54.1 dB CNEL. The difference in measured background noise levels is generally attributed to differences in daily roadway traffic along S.R. 28 and the residential street system. Traffic volumes are generally higher during the summer months. If one compares the higher measured noise level during the winter noise measurement survey (51.9 dB CNEL) to the July measured CNEL level of 54.1 dB, the difference is approximately 2 dB CNEL.

**Table 4
Summary of Ambient Noise Measurement Results**

Site	Description	GPS Coord.	Plan Area #	CNEL Standard	Measurement Date/Day	Measured CNEL	Attainment	CNEL Delta
Continuous Noise Measurement Sites								
A	S. of Minnow Ave. and 175' N. of S.R. 28	39°14'6.76"N 120° 1'6.48"W	K.B. C.P.	65 dB	April 19, 2006/ Wednesday	58.0 dB	Yes	-7 dB
B	N. of Salmon St. between Coon and Fox	39°14'10.90"N 120° 1'16.53"W	K.B. C.P.	65 dB	April 21, 2006/ Friday	62.3 dB	Yes	-2.7 dB
C	North of Salmon St. between Coon St. and Fox St.	39°14'10.59"N 120° 1'14.18"W	K.B. C.P.	65 dB	Feb. 16, 2008/ Saturday	51.9 dB	Yes	-13.1 dB
					Feb. 17, 2008/ Sunday	51.5 dB	Yes	-13.5 dB
					Feb. 18, 2008/ Monday	50.3 dB	Yes	-14.7 dB
					July 21-22, 2008/ Monday/Tuesday	54.1 dB	Yes	-10.9 dB
D	North of Cutthroat Ave. between Deer St. and Bear St.	39°14'33.71"N 120° 1'33.87"W	K.B. Indust. C.P.	65 dB	Feb. 16, 2008/ Saturday	46.0 dB	Yes	-19 dB
					Feb. 17, 2008/ Sunday	45.1 dB	Yes	-19.1 dB
					Feb. 18, 2008/ Monday	44.7 dB	Yes	-20.3 dB
E*	75' N. of S.R. 28 and S. of Minnow Ave. and E. of Fox St.	39°14'4.58"N 120° 1'2.82"W	K.B. C.P. S.R. 28 Corridor	65 dB 55 dB	June 25-26, 2008 Wed./Thursday	65.2 dB	No*	0.2 dB
					June 26-27, 2008 Thursday/Friday	65.4 dB	No*	0.4 dB
F	475 Beaver St.	39°14'17.74"N 120° 0'55.72"W	031	55 dB	Dec. 29-30, 2008/ Monday/Tuesday	46.9 dB	Yes	-8.1 dB
G	Northeast corner of Golden Ave. and Coon St.	39°14'22.21"N 120° 1'17.91"W	028	55 dB	Dec. 29-30, 2008/ Monday/Tuesday	50.4 dB	Yes	-4.6 dB

Source - j.c. brennan & associates, Inc. 2006, 2008, 2009

* This noise measurement site was located inside of the S.R. 28 300 foot corridor..

ANALYSIS

As a means of analyzing the traffic noise levels associated with the potential cut through trips, j.c. brennan & associates, Inc. utilized the Federal Highway Administration (FHWA RD77-108) Traffic Noise Prediction Model. Direct inputs to the FHWA Model included traffic volumes provided LSC Traffic Consultants.

Table 5 shows the results of the FHWA Model for the Existing No Project and the Alternative 2 (Existing + 3 Lane Alternative).

Table 6 shows the results of the FHWA Model for the Year 2028 Alternative 1 (No Project), and Year 2028 Alternative 2 (Existing + 3 Lane Alternative).

Table 7 shows the results of the FHWA Model for the Year 2028 Plus 10% Growth for the Year 2028 Alternative 1 (No Project), and the Year 2028 Plus 10% Growth for the Year 2028 Alternative 2 (Existing + 3 Lane Alternative).

All inputs to the FHWA Model are shown in Appendix C.

**Table 5
 Predicted Existing and Existing Plus Project Traffic Noise Levels
 State Route 28 Internal Trips – Kings Beach Portion of Placer County, California**

Roadway	Segment	Distance ¹	Traffic Noise Levels (dBA, CNEL)				Distance to Traffic Noise Contours, CNEL Existing			Distance to Traffic Noise Contours, CNEL Existing Plus Project		
			Standard	Existing	Existing Plus Project	Change	70 dB	65 dB	60 dB	70 dB	65 dB	60 dB
Rainbow Ave.	Secline St. to Deer St.	50'	55/65 dB ²	47.5 dB	47.5 dB	0.0 dB	2'	3'	7'	2'	3'	7'
Deer St.	Trout Ave. to Rainbow Ave.	50'	65 dB	48.2 dB	48.2 dB	0.0 dB	2'	4'	8'	2'	4'	8'
Bear St.	Trout Ave. to Rainbow Ave.	50'	55/65 dB ²	50.9 dB	51.4 dB	0.5 dB	3'	6'	12'	3'	6'	13'
Coon St.	Trout Ave. to Rainbow Ave.	50'	55 dB	49.8 dB	49.5 dB	-0.3 dB	2'	5'	10'	2'	5'	10'
Fox St.	Minnow Ave to Salmon St.	50'	65 dB	52.8 dB	52.8 dB	0.0 dB	4'	8'	16'	4'	8'	16'
Fox St.	Brook Ave. to Trout Ave.	50'	65 dB	50.2 dB	50.2 dB	0.0 dB	2'	5'	11'	2'	5'	11'
Chipmunk St.	SR 28 to Minnow Ave	50'	65 dB	48.8 dB	48.8 dB	0.0 dB	2'	4'	9'	2'	4'	9'
Speckled Ave.	Secline St. to Deer St.	50'	65 dB	47.5 dB	47.5 dB	0.0 dB	2'	3'	7'	2'	3'	7'
Speckled Ave.	Coon St. to Fox St.	50'	55/65 dB ²	44.5 dB	44.5 dB	0.0 dB	1'	2'	5'	1'	2'	5'
Dolly Varden Ave.	Secline St. to Deer St.	50'	55 dB	45.8 dB	45.8 dB	0.0 dB	1'	3'	6'	1'	3'	6'
Dolly Varden Ave.	Coon St. to Fox St.	50'	55 dB	42.8 dB	42.8 dB	0.0 dB	1'	2'	4'	1'	2'	4'
Beaver St.	SR 28 to Cutthroat Ave.	50'	55/65 dB ²	47.5 dB	47.5 dB	0.0 dB	2'	3'	7'	2'	3'	7'

¹Distances are measured in feet from the centerline of the roadway.

² In these instances, these roadway segments traverse through more than one Plan Area or Community Plan which have different CNEL standards.

Table 6
Predicted Average August Saturday 2028 Alternatives 1 and 2 Traffic Noise Levels
State Route 28 Internal Trips – Kings Beach Portion of Placer County, California

Roadway	Segment	Distance ¹	Traffic Noise Levels (dBA, CNEL)				Distance to Traffic Noise Contours, CNEL Alt. 1			Distance to Traffic Noise Contours, CNEL Alt. 2		
			Standard	Alt. 1*	Alt 2.*	Change	70 dB	65 dB	60 dB	70 dB	65 dB	60 dB
Rainbow Ave.	Secline St. to Deer St.	50'	55/65 dB ²	48.8 dB	52.5 dB	3.7 dB	2'	4'	9'	3'	7'	16'
Deer St.	Trout Ave. to Rainbow Ave.	50'	65 dB	50.2 dB	50.2 dB	0.0 dB	2'	5'	11'	2'	5'	11'
Bear St.	Trout Ave. to Rainbow Ave.	50'	55/65 dB ²	53.0 dB	53.0 dB	0.0 dB	4'	8'	17'	4'	8'	17'
Coon St.	Trout Ave. to Rainbow Ave.	50'	55 dB	50.6 dB	52.9 dB	2.3 dB	3'	5'	12'	4'	8'	17'
Fox St.	Minnow Ave to Salmon St.	50'	65 dB	54.2 dB	55.9 dB	1.7 dB	4'	10'	21'	6'	12'	27'
Fox St.	Brook Ave. to Trout Ave.	50'	65 dB	51.5 dB	54.7 dB	3.2 dB	3'	6'	14'	5'	10'	22'
Chipmunk St.	SR 28 to Minnow Ave	50'	65 dB	50.9 dB	54.0 dB	3.1 dB	3'	6'	12'	4'	9'	20'
Speckeled Ave	Secline St. to Deer St.	50'	65 dB	49.8 dB	52.6 dB	2.8 dB	2'	5'	10'	3'	7'	16'
Speckeled Ave	Coon St. to Fox St.	50'	55/65 dB ²	46.7 dB	49.1 dB	2.4 dB	1'	3'	7'	2'	4'	9'
Dolly Varden Ave	Secline St. to Deer St.	50'	55 dB	46.7 dB	51.1 dB	4.4 dB	1'	3'	7'	3'	6'	13'
Dolly Varden Ave	Coon St. to Fox St.	50'	55 dB	42.8 dB	46.7 dB	3.9 dB	1'	2'	4'	1'	3'	7'
Beaver St.	SR 28 to Cutthroat Ave.	50'	55/65 dB ²	47.5 dB	50.6 dB	3.1 dB	2'	3'	7'	3'	5'	12'

¹Distances are measured in feet from the centerline of the roadway.

² In these instances, these roadway segments traverse through more than one Plan Area or Community Plan which have different CNEL standards.

* Alt. 1 is No Project Scenario and Alt. 2 is Plus Project Scenario

**Table 7
 Predicted Average August 2028 Plus 10% Growth Alternatives 1 and 2 Traffic Noise Levels
 State Route 28 Internal Trips – Kings Beach Portion of Placer County, California**

Roadway	Segment	Distance ¹	Traffic Noise Levels (dBA, CNEL)*				Distance to Traffic Noise Contours, CNEL Alt. 1			Distance to Traffic Noise Contours, CNEL Alt. 2		
			Standard	Alt. 1	Alt. 2	Change	70 dB	65 dB	60 dB	70 dB	65 dB	60 dB
Rainbow Ave.	Secline St. to Deer St.	50'	55/65 dB ²	48.8 dB	49.3 dB	0.5 dB	2'	4'	9'	2'	5'	10'
Deer St.	Trout Ave. to Rainbow Ave.	50'	65 dB	50.2 dB	50.2 dB	0.0 dB	2'	5'	11'	2'	5'	11'
Bear St.	Trout Ave. to Rainbow Ave.	50'	55/65 dB ²	53.0 dB	53.0 dB	0.0 dB	4'	8'	17'	4'	8'	17'
Coon St.	Trout Ave. to Rainbow Ave.	50'	55 dB	50.6 dB	50.7 dB	0.1 dB	3'	5'	12'	3'	6'	12'
Fox St.	Minnow Ave to Salmon St.	50'	65 dB	54.2 dB	54.5 dB	0.3 dB	4'	10'	21'	5'	10'	22'
Fox St.	Brook Ave. to Trout Ave.	50'	65 dB	51.5 dB	51.6 dB	0.1 dB	3'	6'	14'	3'	6'	14'
Chipmunk St.	SR 28 to Minnow Ave	50'	65 dB	50.9 dB	51.3 dB	0.4 dB	3'	6'	12'	3'	6'	13'
Speckled Ave.	Secline St. to Deer St.	50'	65 dB	49.8 dB	50.0 dB	0.2 dB	0'	1'	2'	2'	5'	11'
Speckled Ave.	Coon St. to Fox St.	50'	55/65 dB ²	46.7 dB	46.7 dB	0.0 dB	1'	3'	7'	1'	3'	7'
Dolly Varden Ave	Secline St. to Deer St.	50'	55 dB	46.7 dB	47.1 dB	0.4 dB	1'	3'	7'	1'	3'	7'
Dolly Varden Ave	Coon St. to Fox St.	50'	55 dB	42.8 dB	42.8 dB	0.0 dB	1'	2'	4'	1'	2'	4'
Beaver St.	SR 28 to Cutthroat Ave.	50'	55/65 dB ²	47.5 dB	48.0 dB	0.5 dB	2'	3'	7'	2'	4'	8'

¹Distances are measured in feet from the centerline of the roadway.

² In these instances, these roadway segments traverse through more than one Plan Area or Community Plan which have different CNEL standards.

* Alt. 1 is No Project Scenario and Alt. 2 is Plus Project Scenario

Based upon the analyses contained within Tables 5 through 7, the only significant increase in traffic noise levels associated with the cut through trips occurs in the Year 2028, scenario (Table 6). Six roadway segments had an increase in traffic noise levels of 3 dB CNEL or more.

The analyses indicated that under the Existing and Existing + Project (Table 5), the changes in traffic noise levels associated with the cut through trips would not be noticeable.

The analyses indicated that under the Year 2028 + 10% Growth, and Year 2028 + 10% Growth with the project (Table 7), the changes in traffic noise levels would be less than 1 dB CNEL, and would not generally be considered to be noticeable.

The noise impact on Dolly Varden Street (Secline Street to Deer Street) in the Year 2028 with project (3 lane hybrid alternative) scenario (Table 6) that reflects full buildout of the region's community plans, is greater than a 4 dB CNEL increase and therefore, would result in a potentially significant adverse impact.

It is also important to note that, based upon Tables 3.9-7 and 3.9-8 of the Kings Beach Commercial Core Improvement Project Final EIR, that the project does not contribute to an increase in the CNEL along the S.R. 28 corridor. (*Kings Beach Commercial Core Improvement Project, Placer County California, EA 03-198-0C9300, Final Environmental Assessment, Environmental Impact Report, Final Environmental Impact Statement, Prepared by: Jones & Stokes, for: Placer County Department of Public, Works Tahoe Regional Planning Agency, California Department of Transportation, May 2008*)

MITIGATION MEASURES

One of the means of reducing overall traffic noise levels along the cut through routes is to use a rubberized asphalt pavement or open gap pavement. Studies conducted for the Sacramento County Department of Environmental Review and Assessment and Transportation Department to determine the noise reduction provided by rubberized asphalt have been completed in recent years. Those studies indicate that the use of rubberized asphalt on Sacramento County roadways appears to have resulted in an average traffic noise level reduction of approximately 4 dB over that provided by conventional asphalt. The European Commission Green Paper, published in the June 1997 edition of Noise/News International cites the following on Page 87:

“Low-noise porous road surfaces have been the subject of much research. These porous road surfaces reduce both the generation and propagation of noise by several mechanisms – which can be related to the open structure of the surface layer. Results have shown that the emission noise levels can be reduced from levels generated on equivalent non-porous road surfaces by between 3-5 dB on average; by optimizing the surface design, larger noise reductions are feasible. At present, the cost of porous asphalt surfacing is higher than conventional surfaces (for resurfacing, but for new roads, the cost is minimal), but may drop as contractors gain experience with porous surfaces.”

The use of noise-reducing paving materials on roadways which are used for cut through traffic appears to be a feasible means of achieving a 3-5 dB decrease in traffic-related noise, and reducing project-related traffic noise impacts to a less than significant level.

Although not all roadway segments on the cut-through routes have been identified in the traffic analysis, the traffic analysis and resulting traffic noise analysis does provide a clear indication on the cut-through routes which will experience a 3 dB CNEL increase. The traffic noise analysis indicates that portions of Rainbow Avenue, Fox Street, Chipmunk Street, Dolly Varden Street and Beaver Street will exceed the threshold of a 3 dB CNEL increase in noise levels. Based upon the traffic noise analysis, the following internal roadways are recommended for rubberized asphalt or open gap asphalt overlays:

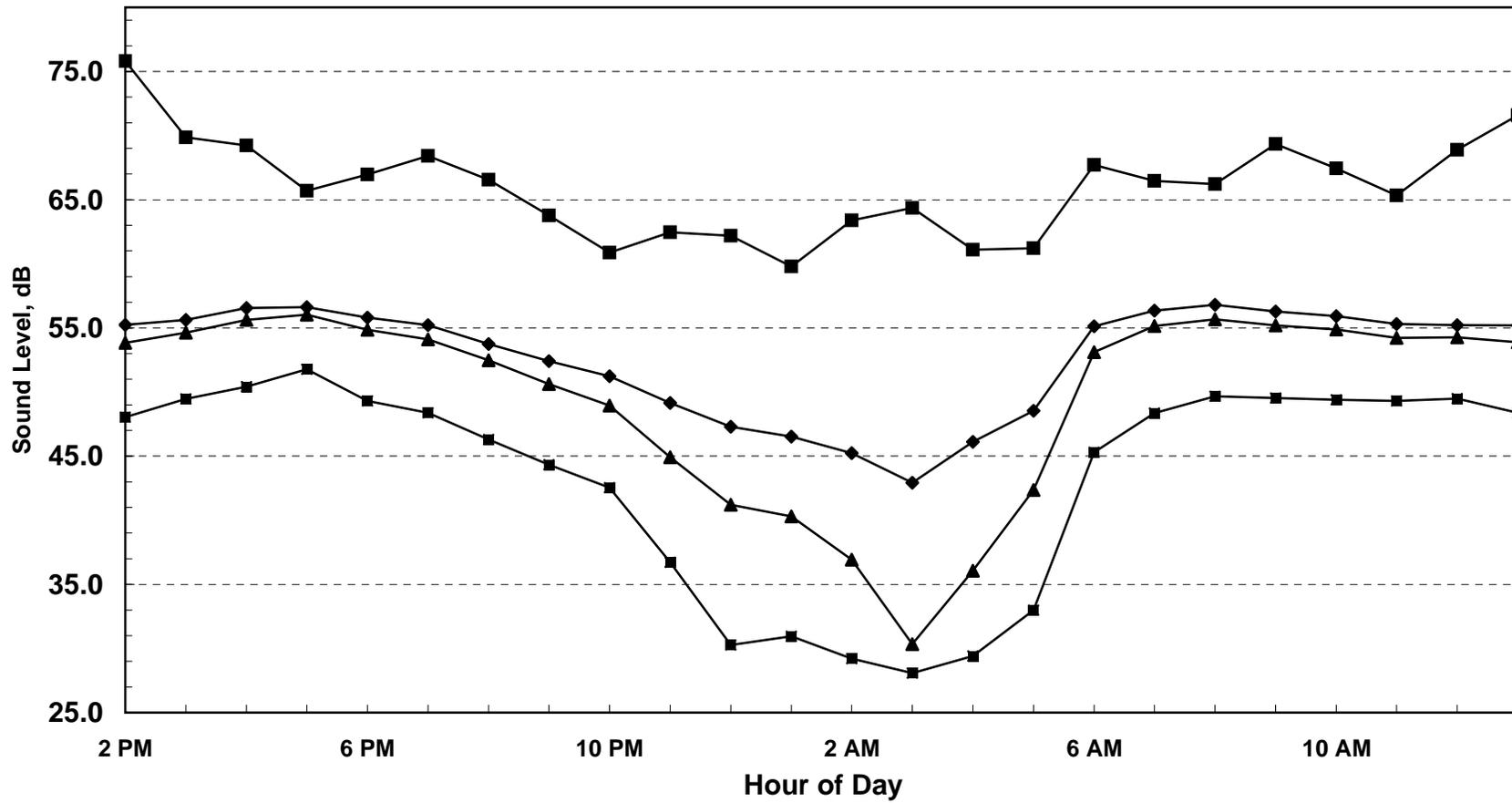
1. Beaver Street from S.R. 28 to Cutthroat Avenue;
2. Chipmunk Street from S.R. 28 to Salmon Street;
3. Fox Street from Salmon Street to Dolly Varden Street;
4. Salmon Street from Chipmunk Street to Fox Street;
5. Rainbow Avenue from Fox Street to Secline Street;
6. Dolly Varden Street from Fox Street to S.R. 267.

Appendix A

Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three (or approximately +5 dB) and nighttime hours weighted by a factor of 10 (or + 10 dB) prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
L(n)	The sound level exceeded a described percentile over a measurement period. For instance, an hourly L50 is the sound level exceeded 50% of the time during the one hour period.
Loudness	A subjective term for the sensation of the magnitude of sound.
Noise	Unwanted sound.
Peak Noise	The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.
RT₆₀	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 sabin.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.
Impulsive	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
Simple Tone	Any sound which can be judged as audible as a single pitch or set of single pitches.

Appendix B
S.R.28 Internal Trips (from 2006-031 Minnow Ave. Parking Lot)
Continuous 24 Hr Monitoring, Site A
April 19, 2006

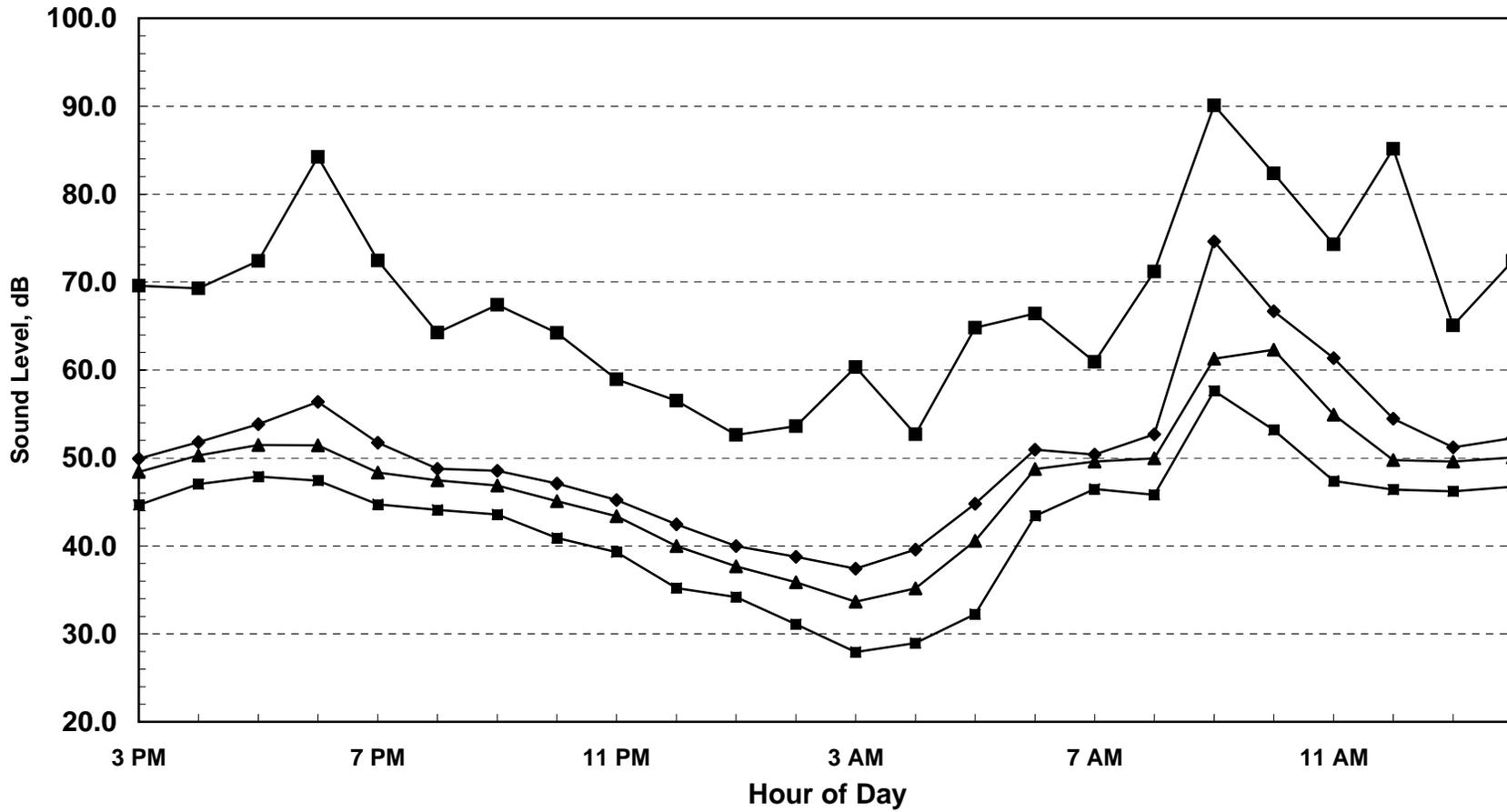


CNEL = 58 dB

Leq Lmax L50 L90



Appendix B
S.R. 28 Internal Trips (from 2006-032 Salmon Ave Parking Lot)
Continuous 24 Hr Monitoring, Site B
April 21, 2006

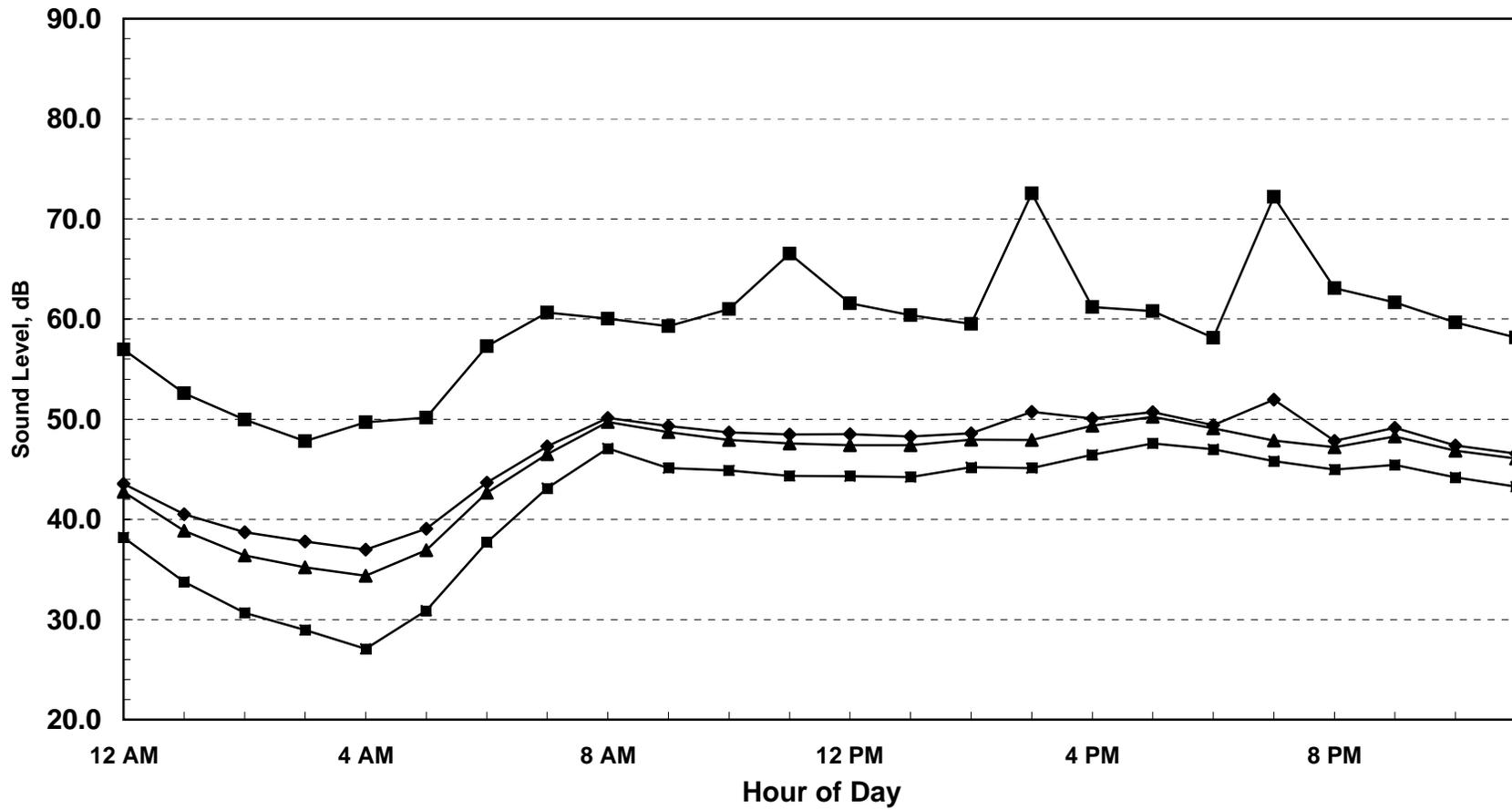


CNEL = 62 dB

Leq
 Lmax
 L50
 L90



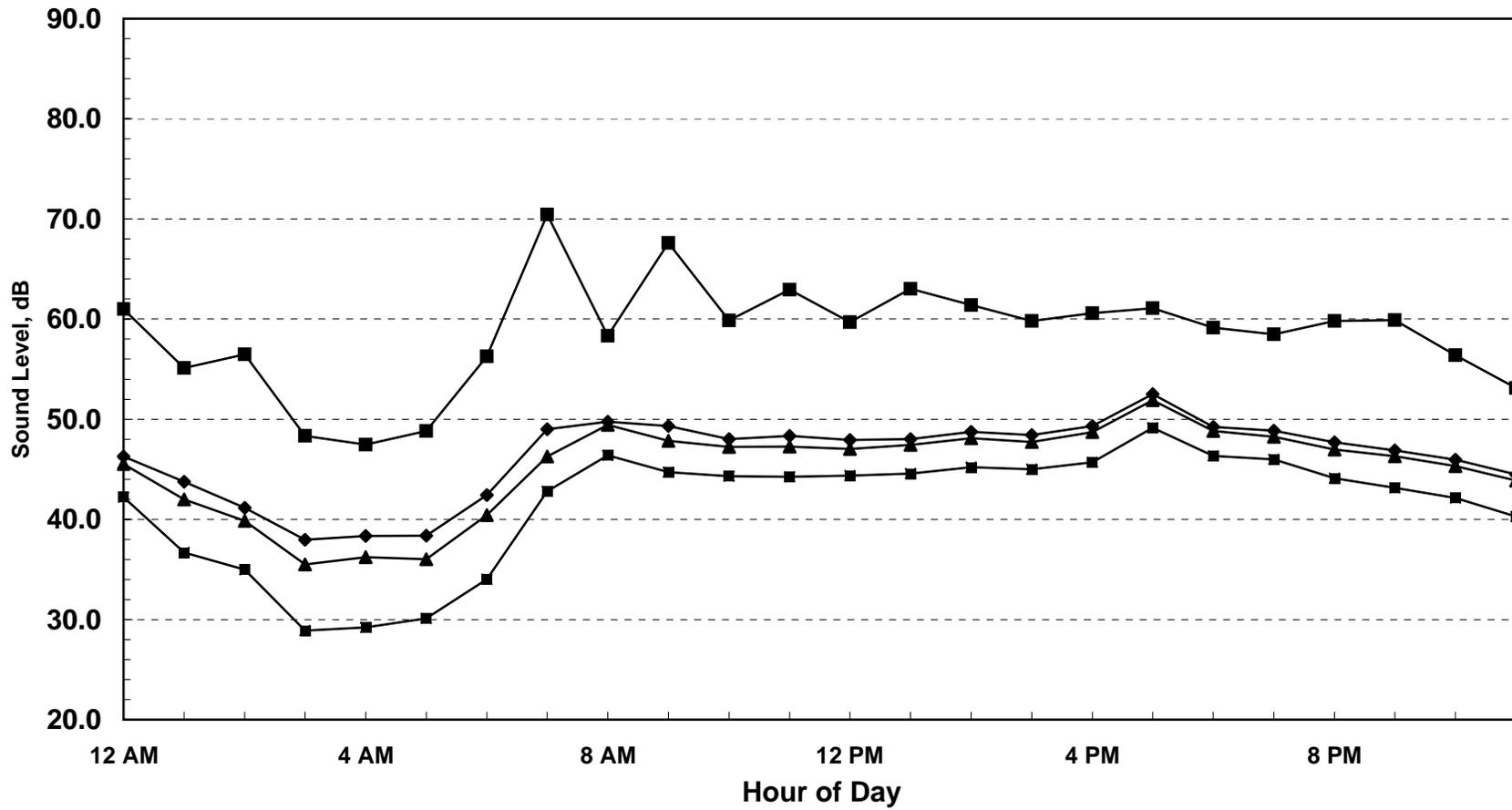
Appendix B
S.R. 28 Internal Trips (from 2007-145 Kings Beach Town Center)
Continuous 24 Hr Monitoring, Site C
Saturday, February 16, 2008



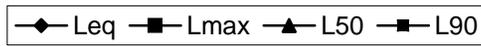
CNEL = 51.9 dB



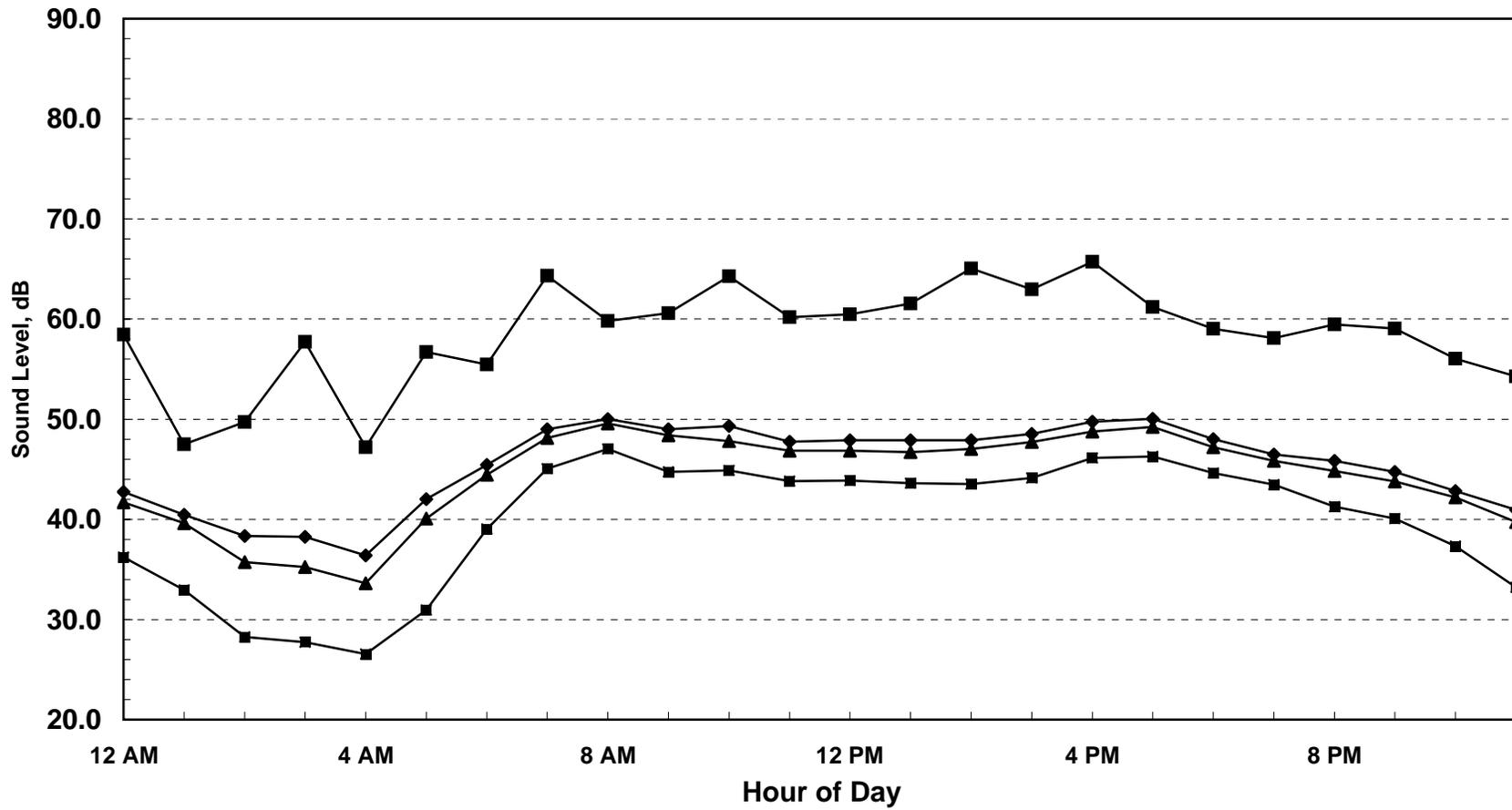
Appendix B
S.R. 28 Internal Trips (from 2007-145 Kings Beach Town Center)
Continuous 24 Hr Monitoring, Site C
Sunday, February 17, 2008



CNEL = 51.5 dB



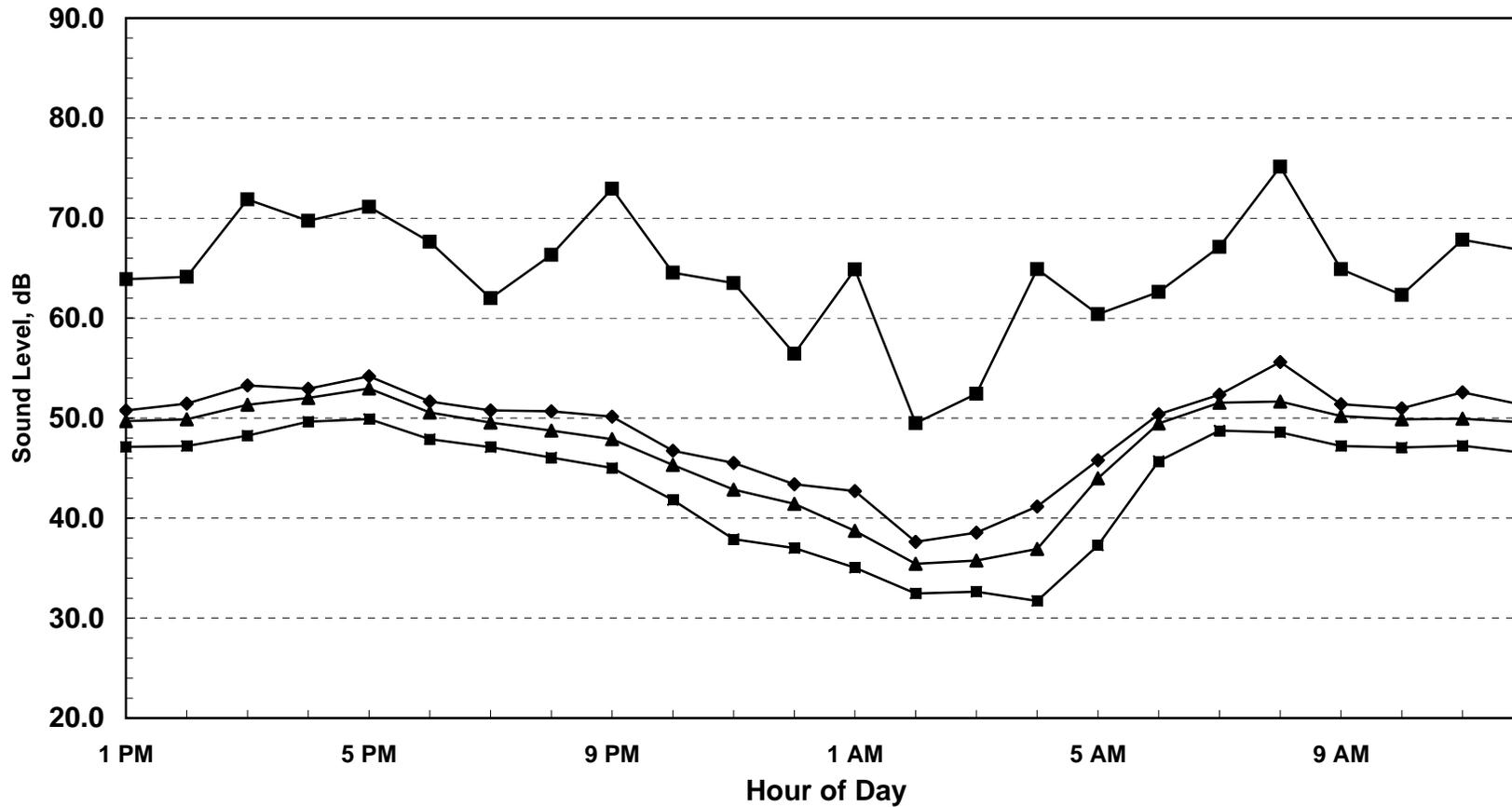
Appendix B
S.R. 28 Internal Trips (from 2007-145 Kings Beach Town Center)
Continuous 24 Hr Monitoring, Site C
Monday, February 18, 2008



CNEL = 50.3 dB



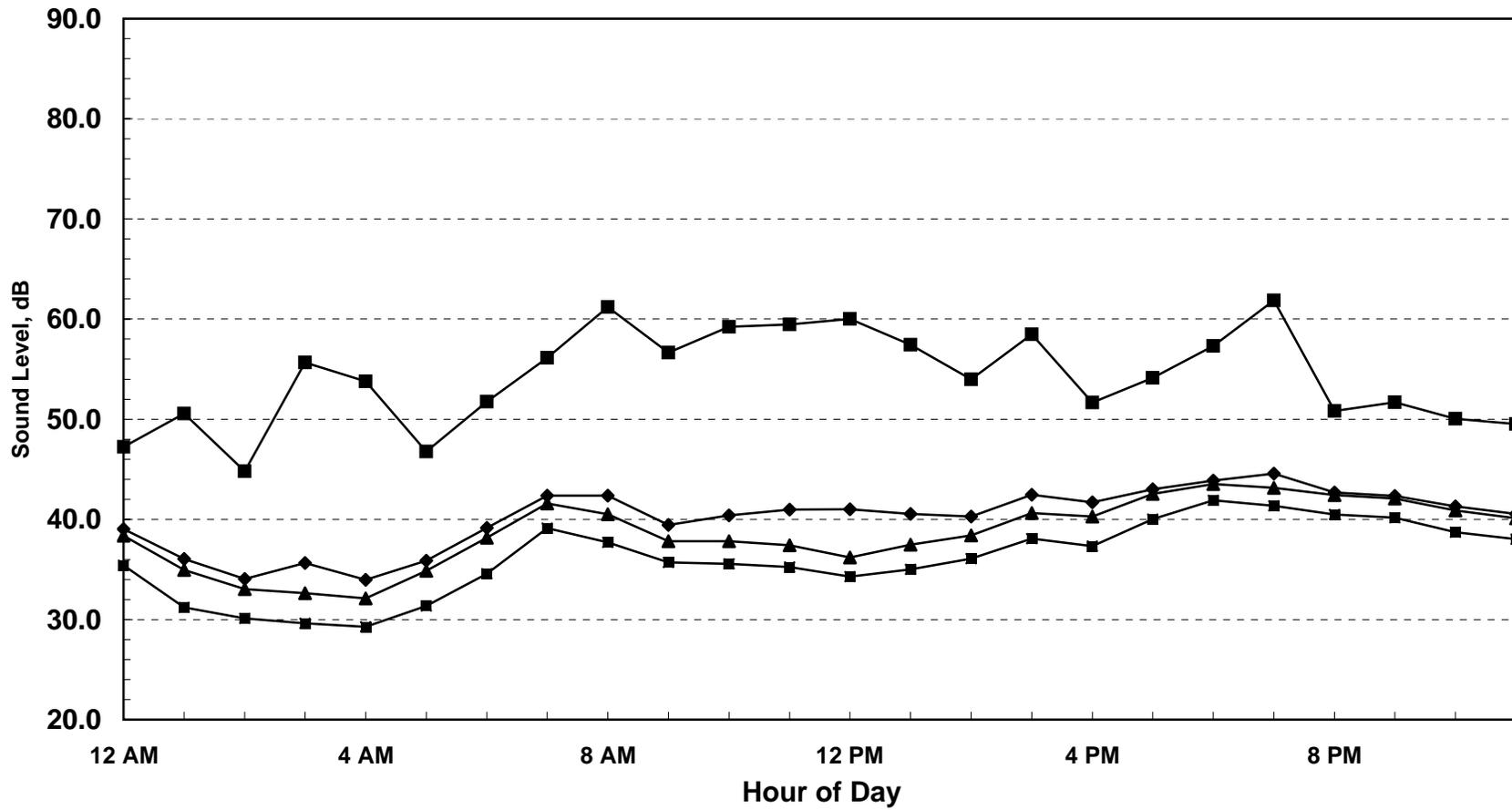
Appendix B
S.R. 28 Internal Trips (from 2007-145 Kings Beach Town Center)
Continuous 24 Hr Monitoring, Site C
Monday - Tuesday July 21-22, 2008



CNEL = 54.1 dB

Leq
 Lmax
 L50
 L90

Appendix B
S.R. 28 Internal Trips (from 2008-115 Cutthroat Ave. Shop)
Continuous 24 Hr Monitoring, Site D
Saturday, February 16, 2008

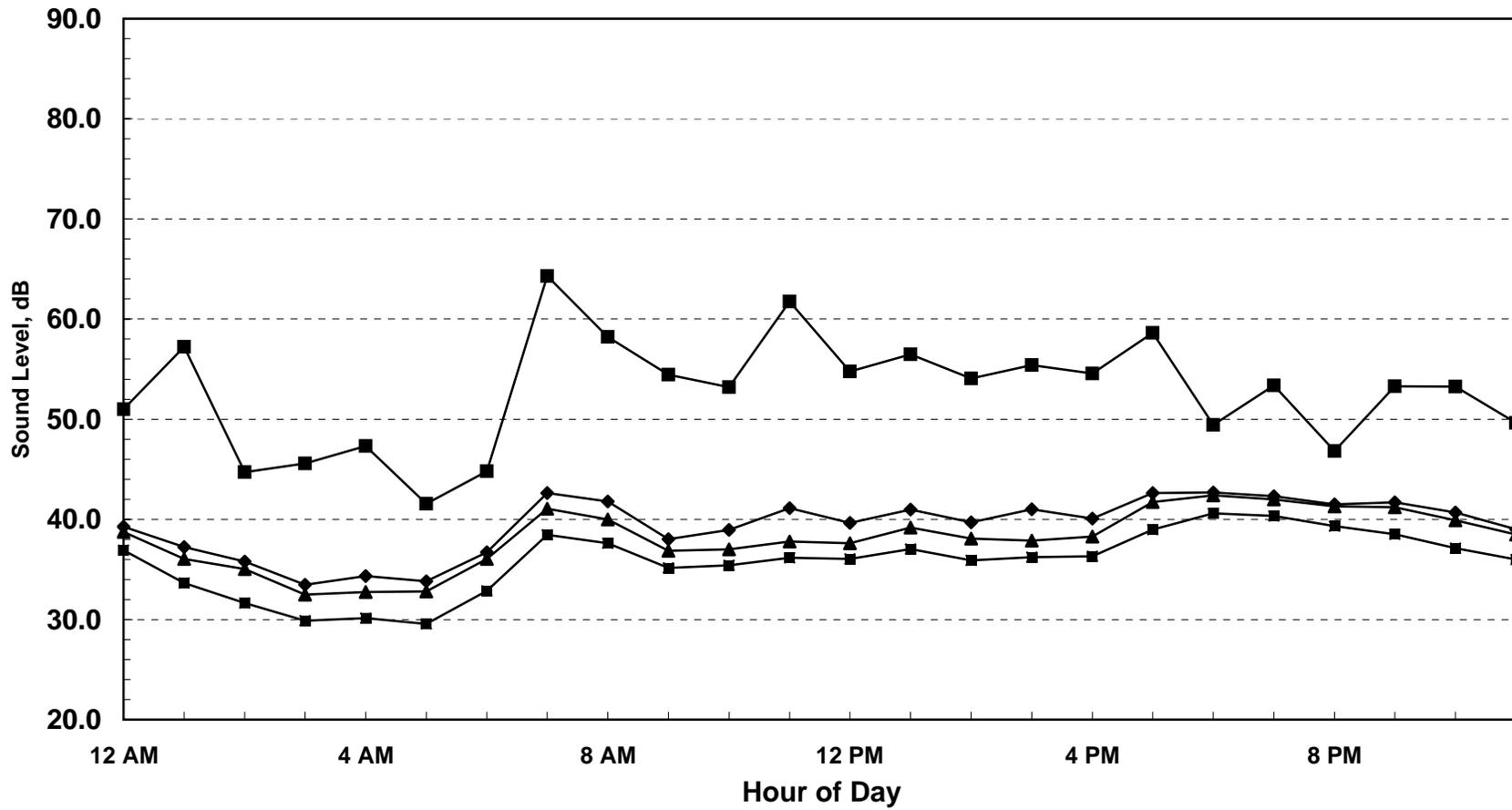


CNEL = 46.0 dB

Leq
 Lmax
 L50
 L90



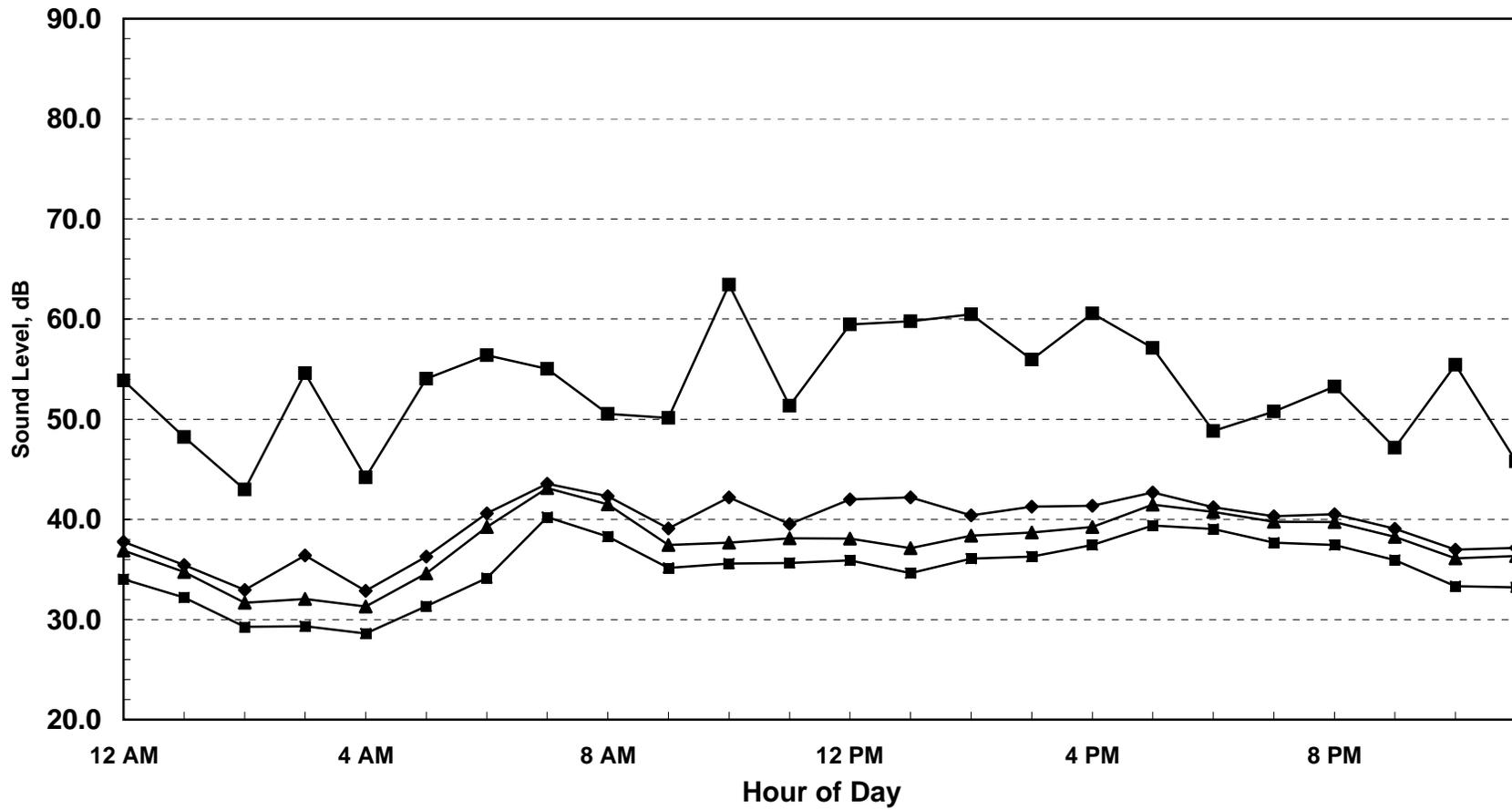
Appendix B
S.R. 28 Internal Trips (from 2008-115 Cutthroat Ave. Shop)
Continuous 24 Hr Monitoring, Site D
Sunday, February 17, 2008



CNEL = 45.1 dB



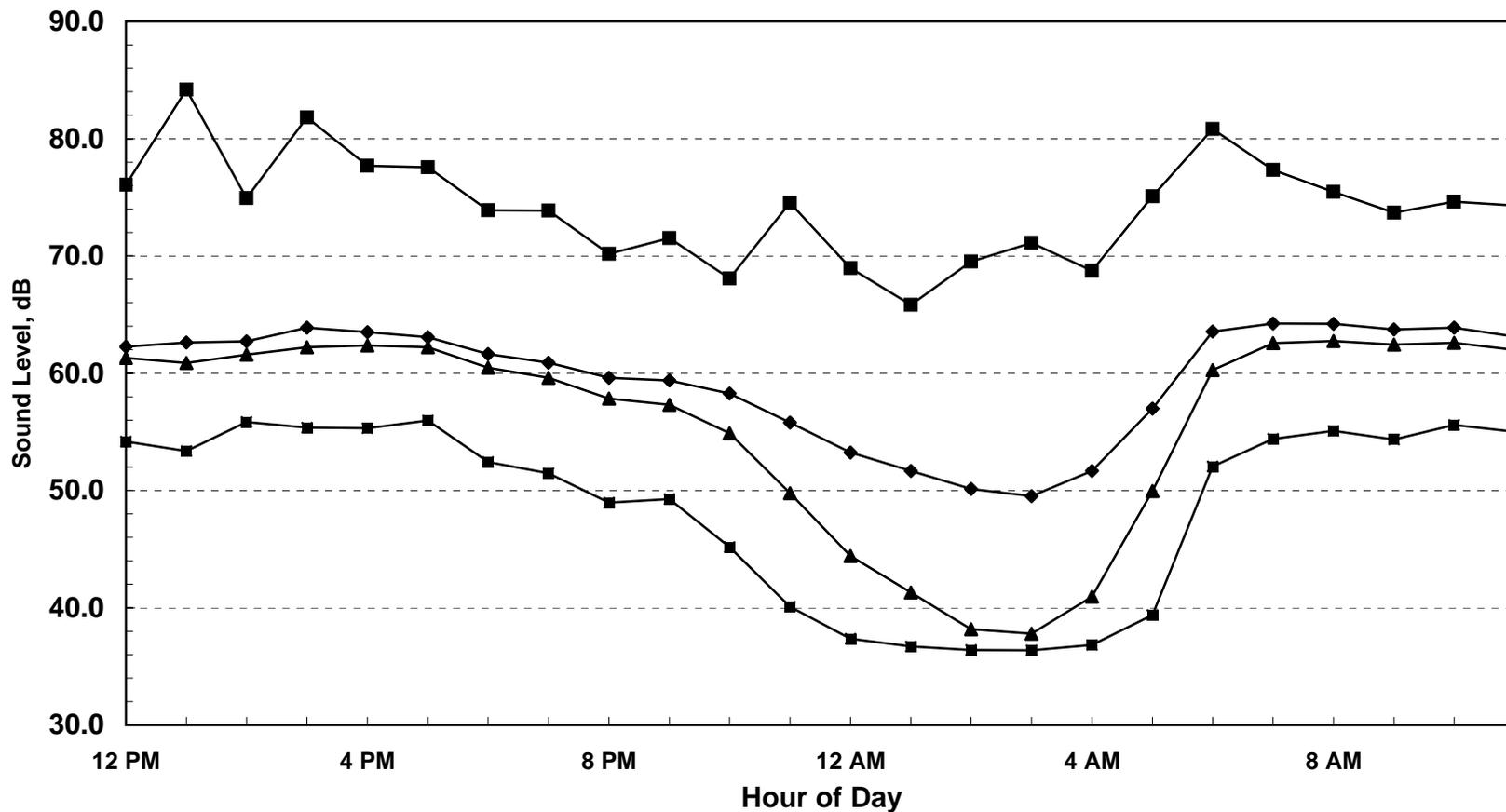
Appendix B
S.R. 28 Internal Trips (from 2008-115 Cutthroat Ave. Shop)
Continuous 24 Hr Monitoring, Site D
Monday, February 18, 2008



CNEL = 44.7 dB



Appendix B
S. R. 28 Internal Trips (from 2008-168 Kings Beach Gas Station)
Continuous 24 Hr Monitoring, Site E
June 25-26, 2008

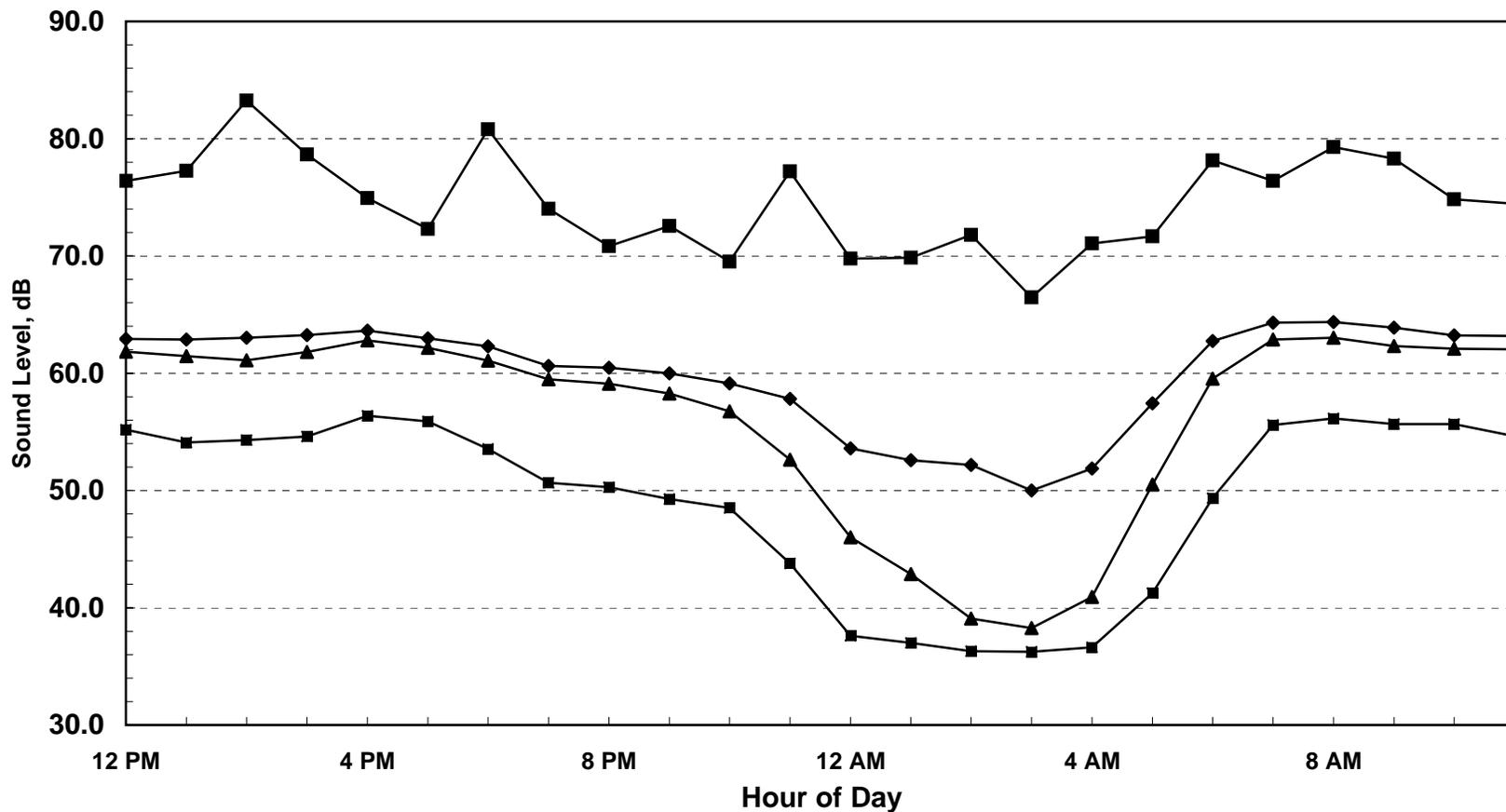


CNEL = 65 dB

◆ Leq ■ Lmax ▲ L50 ■ L90



Appendix B
S. R. 28 Internal Trips (from 2008-168 Kings Beach Gas Station)
Continous 24 Hr Monitoring, Site E
June 26-27, 2008

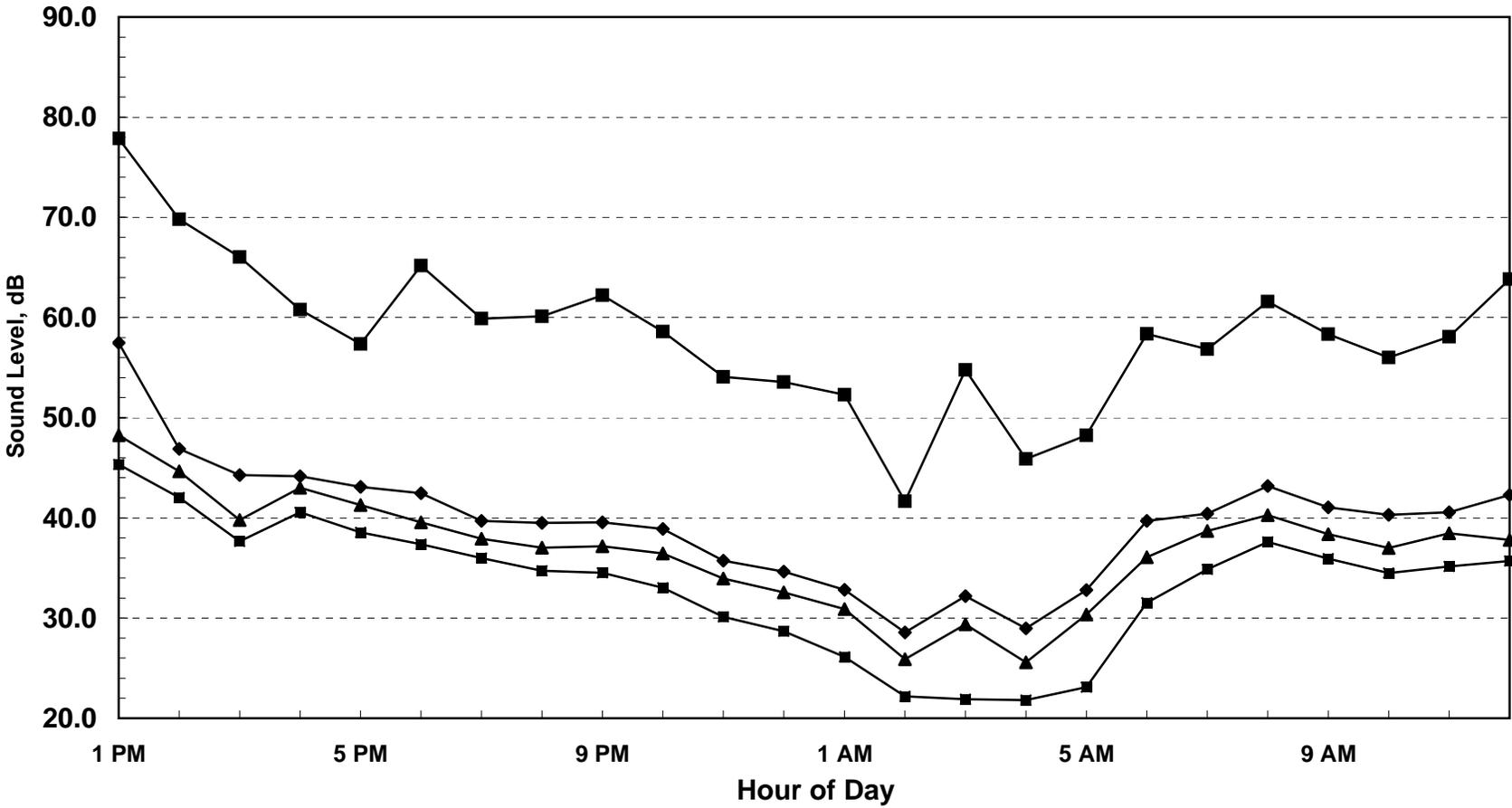


CNEL = 65 dB

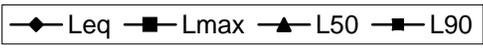
◆ Leq ■ Lmax ▲ L50 ■ L90



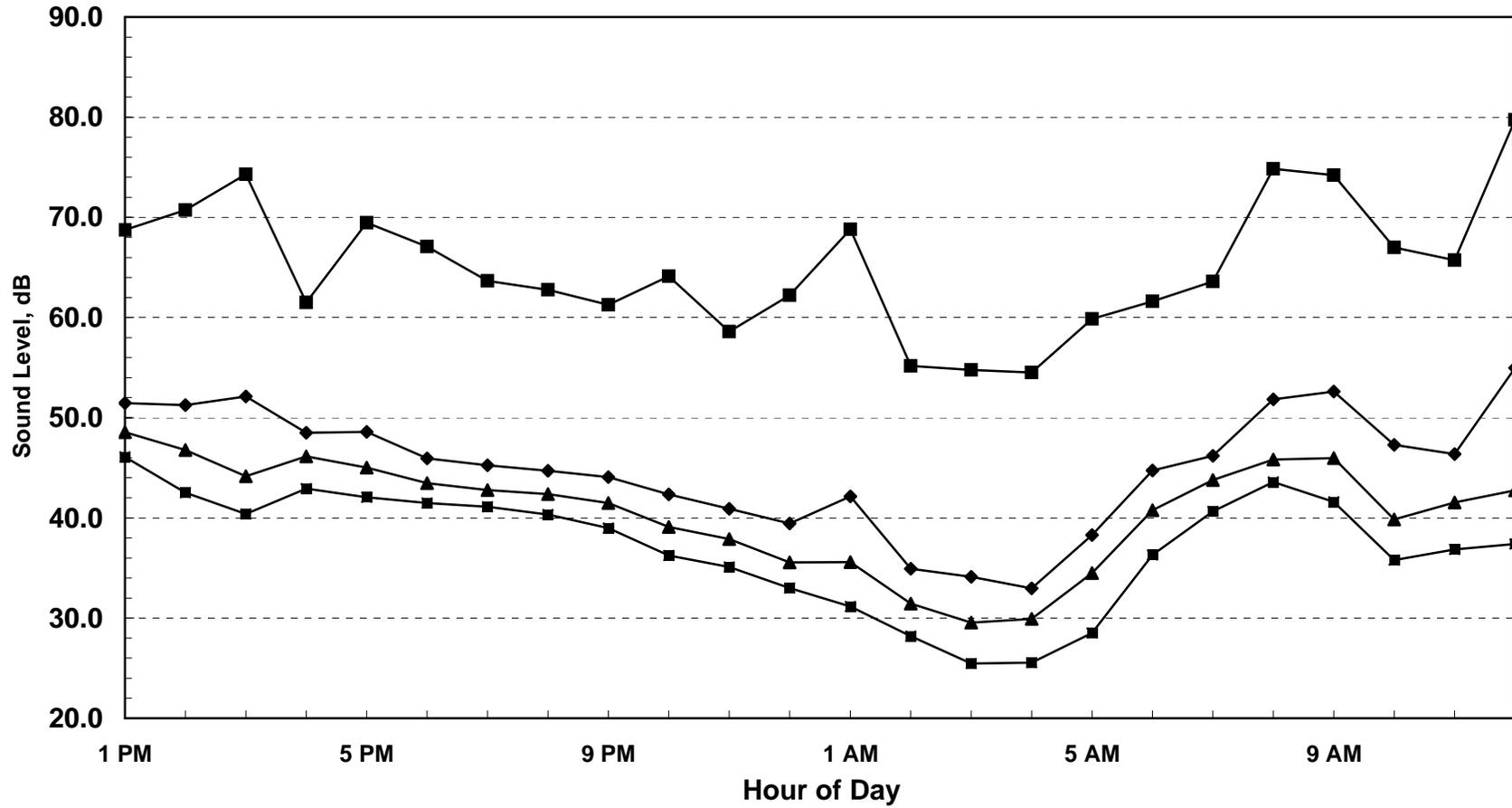
Appendix B
SR 28 Internal Trips
Continuous 24 Hr Monitoring, Site F
December 29-30, 2008



CNEL = 46.9 dB



Appendix B
SR 28 Internal Trips
Continuous 24 Hr Monitoring, Site G
December 29-30, 2008



CNEL = 50.4 dB

Leq
 Lmax
 L50
 L90



Appendix C-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 2008-235 SR 28 Internal Trips

Description: Existing

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Rainbow Ave.	Secline St. to Deer St.	600	78	12	10	1	0.5	25	50	
2	Deer St.	Trout Ave. to Rainbow Ave.	700	78	12	10	1	0.5	25	50	
3	Bear St.	Trout Ave. to Rainbow Ave.	1,300	78	12	10	1	0.5	25	50	
4	Coon St.	Trout Ave. to Rainbow Ave.	1,000	78	12	10	1	0.5	25	50	
5	Fox St.	Minnow Ave to Salmon St.	2,000	78	12	10	1	0.5	25	50	
6	Fox St.	Brook Ave. to Trout Ave.	1,100	78	12	10	1	0.5	25	50	
7	Chipmunk St.	SR 28 to Minnow Ave	800	78	12	10	1	0.5	25	50	
8	Speckeled Ave.	Secline St. to Deer St.	600	78	12	10	1	0.5	25	50	
9	Speckeled Ave.	Coon St. to Fox St.	300	78	12	10	1	0.5	25	50	
10	Dolly Varden Ave.	Secline St. to Deer St.	400	78	12	10	1	0.5	25	50	
11	Dolly Varden Ave.	Coon St. to Fox St.	200	78	12	10	1	0.5	25	50	
12	Beaver St.	SR 28 to Cutthroat Ave.	600	78	12	10	1	0.5	25	50	

Appendix C-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Predicted Levels

Project #: 2008-235 SR 28 Internal Trips
Description: Existing
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	Autos	Medium Trucks	Heavy Trucks	Total
1	Rainbow Ave.	Secline St. to Deer St.	45.6	37.3	41.9	47.5
2	Deer St.	Trout Ave. to Rainbow Ave.	46.2	37.9	42.5	48.2
3	Bear St.	Trout Ave. to Rainbow Ave.	48.9	40.6	45.2	50.9
4	Coon St.	Trout Ave. to Rainbow Ave.	47.8	39.5	44.1	49.8
5	Fox St.	Minnow Ave to Salmon St.	50.8	42.5	47.1	52.8
6	Fox St.	Brook Ave. to Trout Ave.	48.2	39.9	44.5	50.2
7	Chipmunk St.	SR 28 to Minnow Ave	46.8	38.5	43.1	48.8
8	Speckeled Ave.	Secline St. to Deer St.	45.6	37.3	41.9	47.5
9	Speckeled Ave.	Coon St. to Fox St.	42.6	34.2	38.9	44.5
10	Dolly Varden Ave.	Secline St. to Deer St.	43.8	35.5	40.1	45.8
11	Dolly Varden Ave.	Coon St. to Fox St.	40.8	32.5	37.1	42.8
12	Beaver St.	SR 28 to Cutthroat Ave.	45.6	37.3	41.9	47.5

Appendix C-3

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Noise Contour Output

Project #: 2008-235 SR 28 Internal Trips

Description: Existing

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway Name	Segment Description	----- Distances to Traffic Noise Contours -----				
			75	70	65	60	55
1	Rainbow Ave.	Secline St. to Deer St.	1	2	3	7	16
2	Deer St.	Trout Ave. to Rainbow Ave.	1	2	4	8	18
3	Bear St.	Trout Ave. to Rainbow Ave.	1	3	6	12	27
4	Coon St.	Trout Ave. to Rainbow Ave.	1	2	5	10	22
5	Fox St.	Minnow Ave to Salmon St.	2	4	8	16	36
6	Fox St.	Brook Ave. to Trout Ave.	1	2	5	11	24
7	Chipmunk St.	SR 28 to Minnow Ave	1	2	4	9	19
8	Speckeled Ave.	Secline St. to Deer St.	1	2	3	7	16
9	Speckeled Ave.	Coon St. to Fox St.	0	1	2	5	10
10	Dolly Varden Ave.	Secline St. to Deer St.	1	1	3	6	12
11	Dolly Varden Ave.	Coon St. to Fox St.	0	1	2	4	8
12	Beaver St.	SR 28 to Cutthroat Ave.	1	2	3	7	16

Appendix C-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 2008-235 SR 28 Internal Trips

Description: Existing Plus Project

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Rainbow Ave.	Secline St. to Deer St.	600	78	12	10	1	0.5	25	50	
2	Deer St.	Trout Ave. to Rainbow Ave.	700	78	12	10	1	0.5	25	50	
3	Bear St.	Trout Ave. to Rainbow Ave.	1,600	82	10	8	1	0.5	25	50	
4	Coon St.	Trout Ave. to Rainbow Ave.	900	76	13	11	1	0.5	25	50	
5	Fox St.	Minnow Ave to Salmon St.	2,000	78	12	10	1	0.5	25	50	
6	Fox St.	Brook Ave. to Trout Ave.	1,100	78	12	10	1	0.5	25	50	
7	Chipmunk St.	SR 28 to Minnow Ave	800	78	12	10	1	0.5	25	50	
8	Speckeled Ave.	Secline St. to Deer St.	600	78	12	10	1	0.5	25	50	
9	Speckeled Ave.	Coon St. to Fox St.	300	78	12	10	1	0.5	25	50	
10	Dolly Varden Ave.	Secline St. to Deer St.	400	78	12	10	1	0.5	25	50	
11	Dolly Varden Ave.	Coon St. to Fox St.	200	78	12	10	1	0.5	25	50	
12	Beaver St.	SR 28 to Cutthroat Ave.	600	78	12	10	1	0.5	25	50	

Appendix C-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Predicted Levels

Project #: 2008-235 SR 28 Internal Trips
Description: Existing Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	Autos	Medium Trucks	Heavy Trucks	Total
1	Rainbow Ave.	Secline St. to Deer St.	45.6	37.3	41.9	47.5
2	Deer St.	Trout Ave. to Rainbow Ave.	46.2	37.9	42.5	48.2
3	Bear St.	Trout Ave. to Rainbow Ave.	49.4	41.1	45.7	51.4
4	Coon St.	Trout Ave. to Rainbow Ave.	47.5	39.2	43.8	49.5
5	Fox St.	Minnow Ave to Salmon St.	50.8	42.5	47.1	52.8
6	Fox St.	Brook Ave. to Trout Ave.	48.2	39.9	44.5	50.2
7	Chipmunk St.	SR 28 to Minnow Ave	46.8	38.5	43.1	48.8
8	Speckeled Ave.	Secline St. to Deer St.	45.6	37.3	41.9	47.5
9	Speckeled Ave.	Coon St. to Fox St.	42.6	34.2	38.9	44.5
10	Dolly Varden Ave.	Secline St. to Deer St.	43.8	35.5	40.1	45.8
11	Dolly Varden Ave.	Coon St. to Fox St.	40.8	32.5	37.1	42.8
12	Beaver St.	SR 28 to Cutthroat Ave.	45.6	37.3	41.9	47.5

Appendix C-3

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Noise Contour Output

Project #: 2008-235 SR 28 Internal Trips

Description: Existing Plus Project

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway Name	Segment Description	----- Distances to Traffic Noise Contours -----				
			75	70	65	60	55
1	Rainbow Ave.	Secline St. to Deer St.	1	2	3	7	16
2	Deer St.	Trout Ave. to Rainbow Ave.	1	2	4	8	18
3	Bear St.	Trout Ave. to Rainbow Ave.	1	3	6	13	29
4	Coon St.	Trout Ave. to Rainbow Ave.	1	2	5	10	22
5	Fox St.	Minnow Ave to Salmon St.	2	4	8	16	36
6	Fox St.	Brook Ave. to Trout Ave.	1	2	5	11	24
7	Chipmunk St.	SR 28 to Minnow Ave	1	2	4	9	19
8	Speckeled Ave.	Secline St. to Deer St.	1	2	3	7	16
9	Speckeled Ave.	Coon St. to Fox St.	0	1	2	5	10
10	Dolly Varden Ave.	Secline St. to Deer St.	1	1	3	6	12
11	Dolly Varden Ave.	Coon St. to Fox St.	0	1	2	4	8
12	Beaver St.	SR 28 to Cutthroat Ave.	1	2	3	7	16

Appendix C-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 2008-235 SR 28 Internal Trips
Description: 2028 Average August Saturday Alt. 1
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Rainbow Ave.	Secline St. to Deer St.	800	78	12	10	1	0.5	25	50	
2	Deer St.	Trout Ave. to Rainbow Ave.	1,100	78	12	10	1	0.5	25	50	
3	Bear St.	Trout Ave. to Rainbow Ave.	2,100	78	12	10	1	0.5	25	50	
4	Coon St.	Trout Ave. to Rainbow Ave.	1,200	78	12	10	1	0.5	25	50	
5	Fox St.	Minnow Ave to Salmon St.	2,800	78	12	10	1	0.5	25	50	
6	Fox St.	Brook Ave. to Trout Ave.	1,500	78	12	10	1	0.5	25	50	
7	Chipmunk St.	SR 28 to Minnow Ave	1,300	78	12	10	1	0.5	25	50	
8	Speckeled Ave.	Secline St. to Deer St.	1,000	78	12	10	1	0.5	25	50	
9	Speckeled Ave.	Coon St. to Fox St.	500	78	12	10	1	0.5	25	50	
10	Dolly Varden Ave.	Secline St. to Deer St.	500	78	12	10	1	0.5	25	50	
11	Dolly Varden Ave.	Coon St. to Fox St.	200	78	12	10	1	0.5	25	50	
12	Beaver St.	SR 28 to Cutthroat Ave.	600	78	12	10	1	0.5	25	50	

Appendix C-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Predicted Levels

Project #: 2008-235 SR 28 Internal Trips
Description: 2028 Average August Saturday Alt. 1
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	Autos	Medium Trucks	Heavy Trucks	Total
1	Rainbow Ave.	Secline St. to Deer St.	46.8	38.5	43.1	48.8
2	Deer St.	Trout Ave. to Rainbow Ave.	48.2	39.9	44.5	50.2
3	Bear St.	Trout Ave. to Rainbow Ave.	51.0	42.7	47.3	53.0
4	Coon St.	Trout Ave. to Rainbow Ave.	48.6	40.3	44.9	50.6
5	Fox St.	Minnow Ave to Salmon St.	52.3	43.9	48.6	54.2
6	Fox St.	Brook Ave. to Trout Ave.	49.5	41.2	45.9	51.5
7	Chipmunk St.	SR 28 to Minnow Ave	48.9	40.6	45.2	50.9
8	Speckeled Ave.	Secline St. to Deer St.	47.8	39.5	44.1	49.8
9	Speckeled Ave.	Coon St. to Fox St.	44.8	36.5	41.1	46.7
10	Dolly Varden Ave.	Secline St. to Deer St.	44.8	36.5	41.1	46.7
11	Dolly Varden Ave.	Coon St. to Fox St.	40.8	32.5	37.1	42.8
12	Beaver St.	SR 28 to Cutthroat Ave.	45.6	37.3	41.9	47.5

Appendix C-3

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Noise Contour Output

Project #: 2008-235 SR 28 Internal Trips
 Description: 2028 Average August Saturday Alt. 1
 Ldn/CNEL: Ldn
 Hard/Soft: Soft

Segment	Roadway Name	Segment Description	----- Distances to Traffic Noise Contours -----				
			75	70	65	60	55
1	Rainbow Ave.	Secline St. to Deer St.	1	2	4	9	19
2	Deer St.	Trout Ave. to Rainbow Ave.	1	2	5	11	24
3	Bear St.	Trout Ave. to Rainbow Ave.	2	4	8	17	37
4	Coon St.	Trout Ave. to Rainbow Ave.	1	3	5	12	25
5	Fox St.	Minnow Ave to Salmon St.	2	4	10	21	44
6	Fox St.	Brook Ave. to Trout Ave.	1	3	6	14	29
7	Chipmunk St.	SR 28 to Minnow Ave	1	3	6	12	27
8	Speckeled Ave.	Secline St. to Deer St.	1	2	5	10	22
9	Speckeled Ave.	Coon St. to Fox St.	1	1	3	7	14
10	Dolly Varden Ave.	Secline St. to Deer St.	1	1	3	7	14
11	Dolly Varden Ave.	Coon St. to Fox St.	0	1	2	4	8
12	Beaver St.	SR 28 to Cutthroat Ave.	1	2	3	7	16

Appendix C-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 2008-235 SR 28 Internal Trips
Description: 2028 Average August Saturday Alt. 2
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Rainbow Ave.	Secline St. to Deer St.	2,800	94	3	3	1	0.5	25	50	
2	Deer St.	Trout Ave. to Rainbow Ave.	1,100	78	12	10	1	0.5	25	50	
3	Bear St.	Trout Ave. to Rainbow Ave.	2,100	78	12	10	1	0.5	25	50	
4	Coon St.	Trout Ave. to Rainbow Ave.	2,900	91	5	4	1	0.5	25	50	
5	Fox St.	Minnow Ave to Salmon St.	5,400	89	6	5	1	0.5	25	50	
6	Fox St.	Brook Ave. to Trout Ave.	4,700	93	4	3	1	0.5	25	50	
7	Chipmunk St.	SR 28 to Minnow Ave	4,000	93	4	3	1	0.5	25	50	
8	Speckeled Ave.	Secline St. to Deer St.	2,700	92	4	4	1	0.5	25	50	
9	Speckeled Ave.	Coon St. to Fox St.	1,300	92	5	3	1	0.5	25	50	
10	Dolly Varden Ave.	Secline St. to Deer St.	2,200	95	3	2	1	0.5	25	50	
11	Dolly Varden Ave.	Coon St. to Fox St.	800	95	3	2	1	0.5	25	50	
12	Beaver St.	SR 28 to Cutthroat Ave.	1,700	92	4	4	1	0.5	25	50	

Appendix C-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Predicted Levels

Project #: 2008-235 SR 28 Internal Trips
Description: 2028 Average August Saturday Alt. 2
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	Autos	Medium Trucks	Heavy Trucks	Total
1	Rainbow Ave.	Secline St. to Deer St.	50.5	42.2	46.8	52.5
2	Deer St.	Trout Ave. to Rainbow Ave.	48.2	39.9	44.5	50.2
3	Bear St.	Trout Ave. to Rainbow Ave.	51.0	42.7	47.3	53.0
4	Coon St.	Trout Ave. to Rainbow Ave.	51.0	42.6	47.3	52.9
5	Fox St.	Minnow Ave to Salmon St.	53.9	45.6	50.2	55.9
6	Fox St.	Brook Ave. to Trout Ave.	52.8	44.4	49.1	54.7
7	Chipmunk St.	SR 28 to Minnow Ave	52.1	43.7	48.4	54.0
8	Speckeled Ave.	Secline St. to Deer St.	50.6	42.3	47.0	52.6
9	Speckeled Ave.	Coon St. to Fox St.	47.2	38.9	43.5	49.1
10	Dolly Varden Ave.	Secline St. to Deer St.	49.1	40.8	45.4	51.1
11	Dolly Varden Ave.	Coon St. to Fox St.	44.7	36.4	41.1	46.7
12	Beaver St.	SR 28 to Cutthroat Ave.	48.6	40.3	44.9	50.6

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FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Noise Contour Output

Project #: 2008-235 SR 28 Internal Trips
 Description: 2028 Average August Saturday Alt. 2
 Ldn/CNEL: Ldn
 Hard/Soft: Soft

Segment	Roadway Name	Segment Description	----- Distances to Traffic Noise Contours -----				
			75	70	65	60	55
1	Rainbow Ave.	Secline St. to Deer St.	2	3	7	16	34
2	Deer St.	Trout Ave. to Rainbow Ave.	1	2	5	11	24
3	Bear St.	Trout Ave. to Rainbow Ave.	2	4	8	17	37
4	Coon St.	Trout Ave. to Rainbow Ave.	2	4	8	17	36
5	Fox St.	Minnow Ave to Salmon St.	3	6	12	27	57
6	Fox St.	Brook Ave. to Trout Ave.	2	5	10	22	48
7	Chipmunk St.	SR 28 to Minnow Ave	2	4	9	20	43
8	Speckeled Ave.	Secline St. to Deer St.	2	3	7	16	35
9	Speckeled Ave.	Coon St. to Fox St.	1	2	4	9	20
10	Dolly Varden Ave.	Secline St. to Deer St.	1	3	6	13	28
11	Dolly Varden Ave.	Coon St. to Fox St.	1	1	3	7	14
12	Beaver St.	SR 28 to Cutthroat Ave.	1	3	5	12	25

Appendix C-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 2008-235 SR 28 Internal Trips

Description: 2028 Average August Saturday Plus 10% Future Growth Alt. 1

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Rainbow Ave.	Secline St. to Deer St.	800	78	12	10	1	0.5	25	50	
2	Deer St.	Trout Ave. to Rainbow Ave.	1,100	78	12	10	1	0.5	25	50	
3	Bear St.	Trout Ave. to Rainbow Ave.	2,100	78	12	10	1	0.5	25	50	
4	Coon St.	Trout Ave. to Rainbow Ave.	1,200	78	12	10	1	0.5	25	50	
5	Fox St.	Minnow Ave to Salmon St.	2,800	78	12	10	1	0.5	25	50	
6	Fox St.	Brook Ave. to Trout Ave.	1,500	78	12	10	1	0.5	25	50	
7	Chipmunk St.	SR 28 to Minnow Ave	1,300	78	12	10	1	0.5	25	50	
8	Speckeled Ave.	Secline St. to Deer St.	1,000	78	12	10	1	0.5	25	50	
9	Speckeled Ave.	Coon St. to Fox St.	500	78	12	10	1	0.5	25	50	
10	Dolly Varden Ave.	Secline St. to Deer St.	500	78	12	10	1	0.5	25	50	
11	Dolly Varden Ave.	Coon St. to Fox St.	200	78	12	10	1	0.5	25	50	
12	Beaver St.	SR 28 to Cutthroat Ave.	600	78	12	10	1	0.5	25	50	

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FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Predicted Levels

Project #: 2008-235 SR 28 Internal Trips
Description: 2028 Average August Saturday Plus 10% Future Growth Alt. 1
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	Autos	Medium Trucks	Heavy Trucks	Total
1	Rainbow Ave.	Secline St. to Deer St.	46.8	38.5	43.1	48.8
2	Deer St.	Trout Ave. to Rainbow Ave.	48.2	39.9	44.5	50.2
3	Bear St.	Trout Ave. to Rainbow Ave.	51.0	42.7	47.3	53.0
4	Coon St.	Trout Ave. to Rainbow Ave.	48.6	40.3	44.9	50.6
5	Fox St.	Minnow Ave to Salmon St.	52.3	43.9	48.6	54.2
6	Fox St.	Brook Ave. to Trout Ave.	49.5	41.2	45.9	51.5
7	Chipmunk St.	SR 28 to Minnow Ave	48.9	40.6	45.2	50.9
8	Speckeled Ave.	Secline St. to Deer St.	47.8	39.5	44.1	49.8
9	Speckeled Ave.	Coon St. to Fox St.	44.8	36.5	41.1	46.7
10	Dolly Varden Ave.	Secline St. to Deer St.	44.8	36.5	41.1	46.7
11	Dolly Varden Ave.	Coon St. to Fox St.	40.8	32.5	37.1	42.8
12	Beaver St.	SR 28 to Cutthroat Ave.	45.6	37.3	41.9	47.5

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FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Noise Contour Output

Project #: 2008-235 SR 28 Internal Trips

Description: 2028 Average August Saturday Plus 10% Future Growth Alt. 1

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway Name	Segment Description	----- Distances to Traffic Noise Contours -----				
			75	70	65	60	55
1	Rainbow Ave.	Secline St. to Deer St.	1	2	4	9	19
2	Deer St.	Trout Ave. to Rainbow Ave.	1	2	5	11	24
3	Bear St.	Trout Ave. to Rainbow Ave.	2	4	8	17	37
4	Coon St.	Trout Ave. to Rainbow Ave.	1	3	5	12	25
5	Fox St.	Minnow Ave to Salmon St.	2	4	10	21	44
6	Fox St.	Brook Ave. to Trout Ave.	1	3	6	14	29
7	Chipmunk St.	SR 28 to Minnow Ave	1	3	6	12	27
8	Speckeled Ave.	Secline St. to Deer St.	1	2	5	10	22
9	Speckeled Ave.	Coon St. to Fox St.	1	1	3	7	14
10	Dolly Varden Ave.	Secline St. to Deer St.	1	1	3	7	14
11	Dolly Varden Ave.	Coon St. to Fox St.	0	1	2	4	8
12	Beaver St.	SR 28 to Cutthroat Ave.	1	2	3	7	16

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FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 2008-235 SR 28 Internal Trips

Description: 2028 Average August Saturday Plus 10% Future Growth Alt. 2

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Rainbow Ave.	Secline St. to Deer St.	1,000	82	10	8	1	0.5	25	50	
2	Deer St.	Trout Ave. to Rainbow Ave.	1,100	78	12	10	1	0.5	25	50	
3	Bear St.	Trout Ave. to Rainbow Ave.	2,100	78	12	10	1	0.5	25	50	
4	Coon St.	Trout Ave. to Rainbow Ave.	1,300	80	11	9	1	0.5	25	50	
5	Fox St.	Minnow Ave to Salmon St.	3,000	79	11	10	1	0.5	25	50	
6	Fox St.	Brook Ave. to Trout Ave.	1,700	81	11	8	1	0.5	25	50	
7	Chipmunk St.	SR 28 to Minnow Ave	1,500	81	10	9	1	0.5	25	50	
8	Speckeled Ave.	Secline St. to Deer St.	1,100	80	11	9	1	0.5	25	50	
9	Speckeled Ave.	Coon St. to Fox St.	500	78	12	10	1	0.5	25	50	
10	Dolly Varden Ave.	Secline St. to Deer St.	600	82	10	8	1	0.5	25	50	
11	Dolly Varden Ave.	Coon St. to Fox St.	200	78	12	10	1	0.5	25	50	
12	Beaver St.	SR 28 to Cutthroat Ave.	700	81	10	9	1	0.5	25	50	

Appendix C-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Predicted Levels

Project #: 2008-235 SR 28 Internal Trips
Description: 2028 Average August Saturday Plus 10% Future Growth Alt. 2
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	Autos	Medium Trucks	Heavy Trucks	Total
1	Rainbow Ave.	Secline St. to Deer St.	47.4	39.0	43.7	49.3
2	Deer St.	Trout Ave. to Rainbow Ave.	48.2	39.9	44.5	50.2
3	Bear St.	Trout Ave. to Rainbow Ave.	51.0	42.7	47.3	53.0
4	Coon St.	Trout Ave. to Rainbow Ave.	48.7	40.4	45.0	50.7
5	Fox St.	Minnow Ave to Salmon St.	52.6	44.2	48.9	54.5
6	Fox St.	Brook Ave. to Trout Ave.	49.7	41.3	46.0	51.6
7	Chipmunk St.	SR 28 to Minnow Ave	49.3	41.0	45.6	51.3
8	Speckeled Ave.	Secline St. to Deer St.	48.0	39.7	44.3	50.0
9	Speckeled Ave.	Coon St. to Fox St.	44.8	36.5	41.1	46.7
10	Dolly Varden Ave.	Secline St. to Deer St.	45.1	36.8	41.4	47.1
11	Dolly Varden Ave.	Coon St. to Fox St.	40.8	32.5	37.1	42.8
12	Beaver St.	SR 28 to Cutthroat Ave.	46.0	37.7	42.3	48.0

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FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Noise Contour Output

Project #: 2008-235 SR 28 Internal Trips

Description: 2028 Average August Saturday Plus 10% Future Growth Alt. 2

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway Name	Segment Description	----- Distances to Traffic Noise Contours -----				
			75	70	65	60	55
1	Rainbow Ave.	Secline St. to Deer St.	1	2	5	10	21
2	Deer St.	Trout Ave. to Rainbow Ave.	1	2	5	11	24
3	Bear St.	Trout Ave. to Rainbow Ave.	2	4	8	17	37
4	Coon St.	Trout Ave. to Rainbow Ave.	1	3	6	12	26
5	Fox St.	Minnow Ave to Salmon St.	2	5	10	22	47
6	Fox St.	Brook Ave. to Trout Ave.	1	3	6	14	30
7	Chipmunk St.	SR 28 to Minnow Ave	1	3	6	13	28
8	Speckeled Ave.	Secline St. to Deer St.	1	2	5	11	23
9	Speckeled Ave.	Coon St. to Fox St.	1	1	3	7	14
10	Dolly Varden Ave.	Secline St. to Deer St.	1	1	3	7	15
11	Dolly Varden Ave.	Coon St. to Fox St.	0	1	2	4	8
12	Beaver St.	SR 28 to Cutthroat Ave.	1	2	4	8	17

**Appendix C. Kings Beach Commercial
Core Improvement Project,
Climate Change Analysis**

Kings Beach Commercial Core Improvement Project, Climate Change Analysis

Introduction

This technical analysis, prepared by ICF Jones & Stokes and Placer County Department of Public Works, evaluates greenhouse gas emissions of carbon dioxide (CO₂) associated with implementation of the Kings Beach Commercial Core Improvement project. This evaluation includes an analysis of both construction and operational activities. . While Placer County agreed to prepare this study to specifically comply with TRPA requests, some of its contents may be used to inform other decision-makers.

Although the improvement project is on the State Highway System, Caltrans delegated its CEQA lead agency role to Placer County and Placer County is the CEQA lead agency for the project. In neither its role as CEQA responsible agency nor its role as NEPA lead agency, does Caltrans specifically endorse the findings and recommendations made in this report. For informational purposes, Appendix A of this study does provide a quick summary of actions Caltrans has undertaken with respect to GHG emissions.

Construction Emissions

Construction emissions of CO₂ were estimated using the Sacramento Metropolitan Air Quality Management's Road Construction Emissions Model (Version 6.3.1). The Road Construction Emissions Model is a public domain spreadsheet model formatted as a series of individual worksheets. The model enables users to estimate emissions using a minimum amount of project-specific information. The model estimates emissions for load hauling (on-road heavy-duty vehicle trips), worker commute trips, construction site fugitive PM10 dust, and off-road construction vehicles. This analysis is based on anticipated construction equipment calculated by the Road Construction Emissions Model, which estimates construction equipment based on project size, duration of construction activities, and level of daily construction activities. Although exhaust emissions are estimated for each activity, fugitive dust estimates are currently limited to

the major dust-generating activities, which include grubbing/land clearing and grading/excavation.

The amount of pollutants emitted during construction activities varies greatly depending on the level of activity, specific operations taking place, equipment being operated, soil characteristics, and weather conditions. Alternatives 2, 3, and 4 represent the build alternatives. The following discussion focuses on the build alternatives, and it was assumed construction emissions would not differ substantially, as no substantial differences in overall project lengths or area to be paved would occur between the build alternatives. It is anticipated that construction activities would begin in 2010 and would occur for 12 hours per day over a 6-month period for 3 years. The total project length was assumed to be 1.1 miles, with a total acreage of 9.0 acres and a maximum of 1 acre disturbed per day.

Operational Emissions

GHG emissions resulting from vehicular traffic were estimated using the traffic data provided by the project transportation engineer, LSC Transportation Consultants (LSC Transportation Consultants 2009), and Caltrans' CT-EMFAC emissions model (version 2.6).

Roadway and Traffic Conditions

Modeled traffic volumes and operating conditions were obtained from the traffic data prepared by the project traffic engineers, LSC Transportation Consultants (LSC Transportation Consultants 2009). Emissions of CO₂ were modeled for existing year (2002) and future year (2028) with- and without-project conditions. The future year analysis evaluated future year growth rates associated with full buildout of all general and community plans in the region, and an alternative based on recent trend (1/2%/year growth) of 10% growth over 20 years.

Traffic data used in the CT-EMFAC model include yearly VMT and roadway speeds. The traffic conditions modeled in the analysis included vehicle activity for affected

roadways in the immediate project region for a variety of traffic conditions. These conditions include free flow and congested flow conditions on SR 28, free flow conditions on SR 267, and diverted traffic through local streets. The traffic data used for emissions modeling is summarized in Table 1. This data is from the traffic analysis provided by the project transportation engineer, LSC Transportation Consultants (LSC Transportation Consultants 2009), found in Appendix B.

Vehicle Emission Rates

Vehicle emission rates were determined using Caltrans' CT-EMFAC model. Vehicle speeds were based on traffic data provided by the project traffic engineers, LSC Transportation Consultants (LSC Transportation Consultants 2009), and are presented in Table 1. The CT-EMFAC program assumed regional traffic data for the Lake Tahoe portion of Placer County, while the seasonal input assumed annual conditions. Vehicle fleet mix assumed 91.6% automobiles and 8.4% trucks, which is based on traffic count data collected by Caltrans on SR 28 (California Department of Transportation 2007). Table 2 presents a summary of CO₂ emission rates from the CT-EMFAC model used to estimate project emissions. The CT-EMFAC emission rate data presented in Table 2 corresponds with the speed data presented in Table 1: emission rate are typically highest at lower and higher speeds, with the lowest emission rate around 40-45 mph. Figure 1 summarizes CO₂ emission rate trends as a function of speed indicates that CO₂ emission rates are lowest around 45 mph.

Figure 1. Statewide Vehicle Fleet CO₂ Emissions as a Function of Speed (Year 2010)

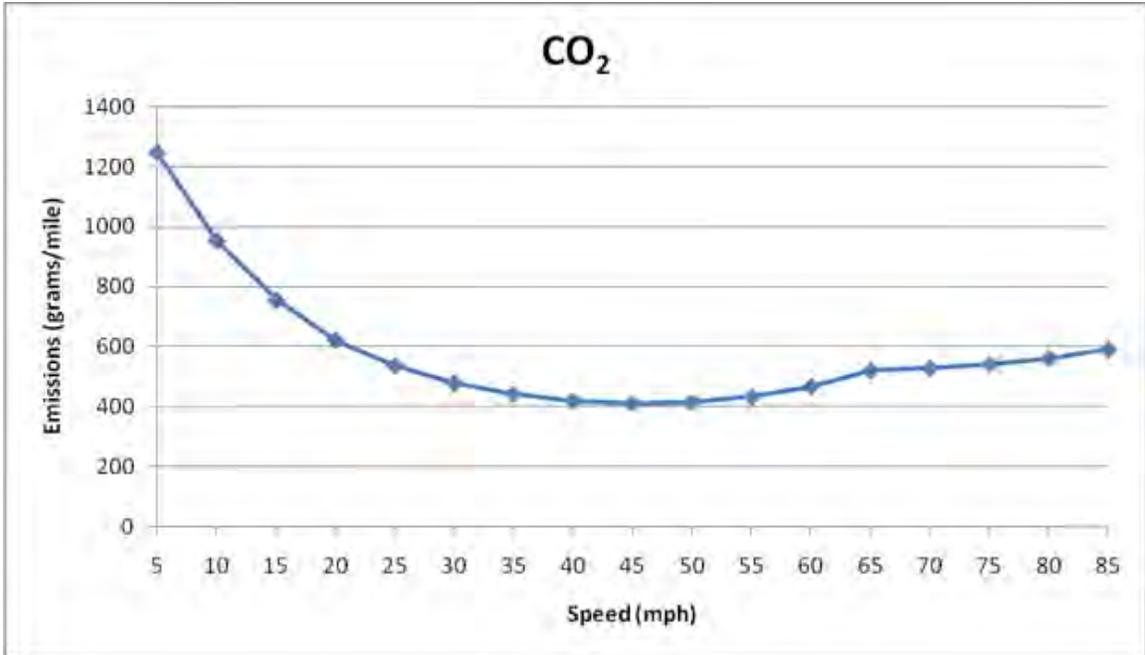


Table 1. Summary of Operational Traffic Data

Traffic Scenario	Existing	Future—Base Growth Assumption			Future—10% Growth Assumption		
		Future No Project	Alternatives 2 and 4 ¹	Alternative 3 ²	Future No Project	Alternatives 2 and 4 ¹	Alternative 3 ²
Vehicle Miles Traveled							
On SR 28: free flow	6,080,400	8,465,500	8,176,300	8,465,500	6,680,600	6,571,000	6,680,600
On SR 28: congested flow	0	958,200	661,800	958,200	7,800	87,700	7,800
On SR 267: free flow	911,700	1,413,000	1,089,600	1,413,000	1,019,300	1,002,900	1,019,300
On local streets	0	0	1,022,700	0	0	52,000	0
Total	6,992,100	10,836,700	10,950,400	10,836,700	7,707,700	7,713,600	7,707,700
Traffic Scenario	Existing	Future—Base Growth Assumption			Future—10% Growth Assumption		
		Existing	Alternatives 2 and 4 ¹	Alternative 3 ²	Existing	Alternatives 2 and 4 ¹	Alternative 3 ²
Speed (miles per hour)							
On SR 28: free flow	30	30	26	32	30	26	32
On SR 28: congested flow	16	16	4	18	16	4	18
On SR 267: free flow	30	30	30	30	30	30	30
On local streets	17	17	13	13	17	13	13

Notes:

¹ Alternatives 2 and 4 represent the 3-lane alternatives.

² Alternative 3 represents the 4-lane alternative.

Source: LSC Transportation Consultants 2009

Table 2. Summary of CT-EMFAC Emission Factor Data (grams CO₂ per mile)

Traffic Scenario	Existing	Future—Base Growth Assumption			Future—10% Growth Assumption		
		Future No Project	Alternatives 2 and 4 ¹	Alternative 3 ²	Future No Project	Alternatives 2 and 4 ¹	Alternative 3 ²
Vehicle Miles Traveled							
On SR 28: free flow	432.67	436.72	493.94	436.72	436.72	493.94	436.72
On SR 28: congested flow	0	706.92	1,180.95	706.92	706.92	1,180.95	706.92
On SR 267: free flow	432.67	436.72	436.72	436.72	436.72	436.72	436.72
On local streets	0	0	896.29	0	0	896.29	0

Notes:

¹ Alternatives 2 and 4 represent the 3-lane alternatives.

² Alternative 3 represents the 4-lane alternative.

Source: CT-EMFAC (version 2.6)

Project Emissions Calculations

Construction Emissions

Construction activities for the proposed action would result in short-term effects on ambient air quality in the area. Temporary construction emissions would result from grubbing/land clearing, grading/excavation, drainage/utilities/subgrade, and paving activities and construction worker commuting patterns. Pollutant emissions would vary daily, depending on the level of activity, specific operations, and prevailing weather.

The Road Construction Emissions Model (Version 6.3.1) was used to estimate construction-related CO₂ emissions from construction activities. Construction modeling results are presented in Table 3.

Table 3. Construction Emission Estimates (metric tonnes per year)

Construction phase	Carbon dioxide emissions
Grubbing/land clearing	26.6
Grading/excavation	136.0
Drainage/utilities/sub-grade	74.3
Paving	16.2
Total	253.2

Note: Emissions calculations based on Sacramento Metropolitan Air Quality Management District Road Construction Emissions Model (Version 6.3.1)

Construction GHG emissions include emissions produced as a result of material processing, emissions produced by onsite construction equipment (Table 3), and emissions arising from traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases. They are considered to be less than significant. In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions

produced during construction can be minimized to some degree by longer intervals between maintenance and rehabilitation events. Measures AQ-1 and Measure AQ-2 would help to minimize air quality impacts from construction activities.

Measure AQ-1: Implement Measures to Reduce Exhaust Emissions from Off-Road Diesel Powered Equipment

The construction contractor will be required to implement measures to reduce construction-related exhaust emissions. Such measures could include, but are not limited to: maintaining properly tuned engines; minimizing the idling time of diesel powered construction equipment to two minutes; using alternative powered construction equipment (i.e., compressed natural gas, biodiesel, electric); using add-on mitigation devices such as diesel oxidation catalysts or particulate filters; using equipment that meets ARB most recent certification standard for off-road heavy-duty diesel engines; phasing project construction; and limiting the operating hours of heavy duty equipment.

Measure AQ-2: Implement Greenhouse Gas Reducing Measures

The project applicant shall implement measures to reduce construction greenhouse gas emissions. Such measures include, but are not limited to:

- Implement a Caltrans approved traffic control plan during construction to minimize congestion, particularly during peak periods.
- Implement Caltrans' Standard Specification Provisions, including idling time for lane closure during construction; in addition, the contractor must comply with PCAPCD rules, ordinances, and regulations in regards to air quality restrictions.

Operation Emissions

Modeled emissions of carbon dioxide for existing year (2002) and future year (2028) with- and without-project conditions (including both sets of growth projections) are presented in Table 4. Table 4 also presents a comparison of VMT data and operational

emissions between the future with-project and existing conditions, as well as between the future with-project conditions and future no-project conditions.

As indicated in Table 4, no differences in VMT or operational emissions are anticipated to occur between Alternative 3 and the future no-project condition under either growth assumption. However, Alternatives 2 and 4 under both growth assumptions are expected to experience increases in VMT and operational emissions when compared to the future no-project conditions (113,700 VMT and 1,221 metric tonnes per year under the base growth assumption, and 5,900 VMT and 466 metric tonnes per year under the 10 percent growth assumption). The CO₂ emission increases are predominantly the result of increased VMT associated with diverted traffic through the surrounding neighborhood local streets and decreases in overall speeds along State Route 28 (Table 1). As indicated in Figure 1, an inverse relationship is typically observed between speeds and emission rates at the lower and higher speeds. As speeds increase at the lower speeds (0 to ~45 mph), emission rates tend to decrease. Table 2 presents a summary of carbon dioxide emission rates from the CT-EMFAC model used to estimate project emissions. The emission rate data presented in Table 2 corresponds with the speed data presented in Table 1: emission rates are greatest at lower speeds and lowest at high speeds up to approximately 45 mph after which rates again increase. Consequently, the increases in carbon dioxide observed under Alternatives 2 and 4 are partially attributable to the roadway speed reductions between the future no-project and future with-project conditions. The emission numbers assume no future changes in technology or other GHG improving strategies are implemented.

Table 4. Operational Carbon Dioxide (CO₂) Emissions (metric tonnes per year)

Traffic Scenario	Future—Base Growth Assumption				Future—10% Growth Assumption		
	Existing	Future No Project	Alternatives 2 and 4 ¹	Alternative 3 ²	Future No Project	Alternatives 2 and 4 ¹	Alternative 3 ²
On SR 28: free flow	2,631	3,697	4,039	3,697	2,918	3,246	2,918
On SR 28: congested flow	0	677	782	677	6	104	6
On SR 267: free flow	394	617	476	617	445	438	445
On local streets	0	0	917	0	0	47	0
Total	3,025	4,991	6,213	4,991	3,368	3,834	3,368
Comparison of Alternatives							
Base growth assumption			Increase in CO ₂ emissions		Increase in VMT		
Alternatives 2/4 minus Existing			3,187		3,958,300		
Alternative 3 minus Existing			1,966		3,844,600		
Alternatives 2/4 minus Future no project			1,221		113,700		
Alternative 3 minus Future no project			0		0		
10% Growth assumption							
Alternatives 2/4 minus Existing			809		721,500		
Alternative 3 minus Existing			343		715,600		
Alternatives 2/4 minus Future no project			466		5,900		
Alternative 3 minus Future no project			0		0		
Notes:							
Alternatives 2 and 4 represent the 3-lane alternatives.							
Alternative 3 represents the 4-lane alternative.							
Source: Emissions calculations based on CT-EMFAC Model and traffic data from LSC Transportation Consultants 2009							

Table 4 indicates that Alternatives 2 and 4 are anticipated to result in an additional 1,221 metric tonnes per year under the base growth assumption and an additional 466 metric tonnes per year under the 10 percent growth assumption. This is equivalent to an increase in approximately 235 passenger cars under the base growth assumption and 90 passenger cars under the 10 percent growth assumption, assuming the average United States passenger vehicle emits approximately 5.20 metric tonnes carbon dioxide (United States Environmental Protection Agency 2005).

Currently, no thresholds have been established by ARB, Caltrans, PCAPCD, or the Tahoe Regional Planning Agency to identify significant impacts with regards to climate change. A U.C. Davis study in 2001 estimated mobile emissions in the Lake Tahoe Air Basin at 890 tonnes per day (U.C. Davis 2001). This equates to an annual average of 324,850 tonnes per year of carbon dioxide. At buildout of all regional community plans, the model suggests the project will lead to a 1,221 tonnes per year of additional carbon dioxide and an additional 466 tonnes per year after experiencing 10 percent traffic growth. This represents a 0.3 percent increase in carbon dioxide emissions at buildout and a 0.1 percent increase in carbon dioxide emissions after experiencing a 10 percent growth in traffic. All of these scenarios assume business as usual; only consider mobile emissions and no other strategies are implemented to minimize GHG emissions.

While no thresholds current exist, based on the minor amounts of emissions associated with implementation of the build alternatives (Table 4), this impact is considered less than significant. Other facts that reduce the project's future GHG emissions include:

1. Carbon dioxide emissions from combustion of fossil fuel are a function of the carbon content of the fuel being burned. The low carbon fuel standard (LCFS) adopted by CARB on April 23, 2009 establishes performance standards for the amount of carbon in transportation fuels. The LCFS requires reduction of at least 10 percent in the carbon intensity of transportation fuels in California. With the carbon reductions achieved through the LCFS, it is anticipated that any increases in vehicle miles

traveled (VMT) would be partially offset by reductions in the carbon dioxide emission rates from vehicles due to reduced carbon content in the fuels combusted.

2. A major goal for the project as well as the Regional Plan for the Lake Tahoe Basin is to reduce dependency on the automobile by improving bicycle and pedestrian mobility through downtown Kings Beach. The project's pedestrian and bicycle features will encourage walking and bicycling within Kings Beach. The intent is that these improved transportation alternatives will reduce and shorten some vehicle trips (reduction of VMT) thereby reducing some GHG emissions.
3. The Kings Beach Community Plan (KBCP) specifically calls out VMT reduction measures that would have a direct effect on GHG emissions. Two key strategies described in the CP include constructing pedestrian improvements on SR28 and the back streets, and constructing bike/recreation trails on SR28. These two VMT reduction strategies comprise major elements of the project and should translate into future GHG emissions reductions, as well.
4. The California Air Pollution Control Officers Association (CAPCOA) produced a white paper (CAPCOA 2008) which discusses a variety of potential significance thresholds based largely on requirements of the California Global Warming Solutions Act of 2006 (Assembly Bill 32). Assembly Bill 32 is anticipated to require a 28-33 percent reduction in emissions below "business as usual" in 2020. The CAPCOA white paper discusses the merits of various non-zero thresholds that could be implemented for environmental purposes. One element of their alternatives included a "green list" of projects that would be deemed, by definition, as having an impact as less than significant. The CAPCOA initial list of green list projects includes "development of bicycle, pedestrian, or zero-emission transportation infrastructure to serve existing regions". The major project element is the installation of bicycle and pedestrian (sidewalks) facilities along State Route 28. Although not quantified, the green list recognizes the need to encourage alternative modes of transportation as a significant strategy in reducing GHG emissions.

In addition, agencies, including Placer County, will need to develop climate action plans, particularly as more guidance is provided by CARB, to comprehensively address how GHG targets will be addressed and met.

Lastly, although the impacts of the project on GHG emissions is less than significant there is still a nominal increase in GHG emissions due to the project. The County could choose to further reduce or fully offset GHG emissions by participating in one of the following:

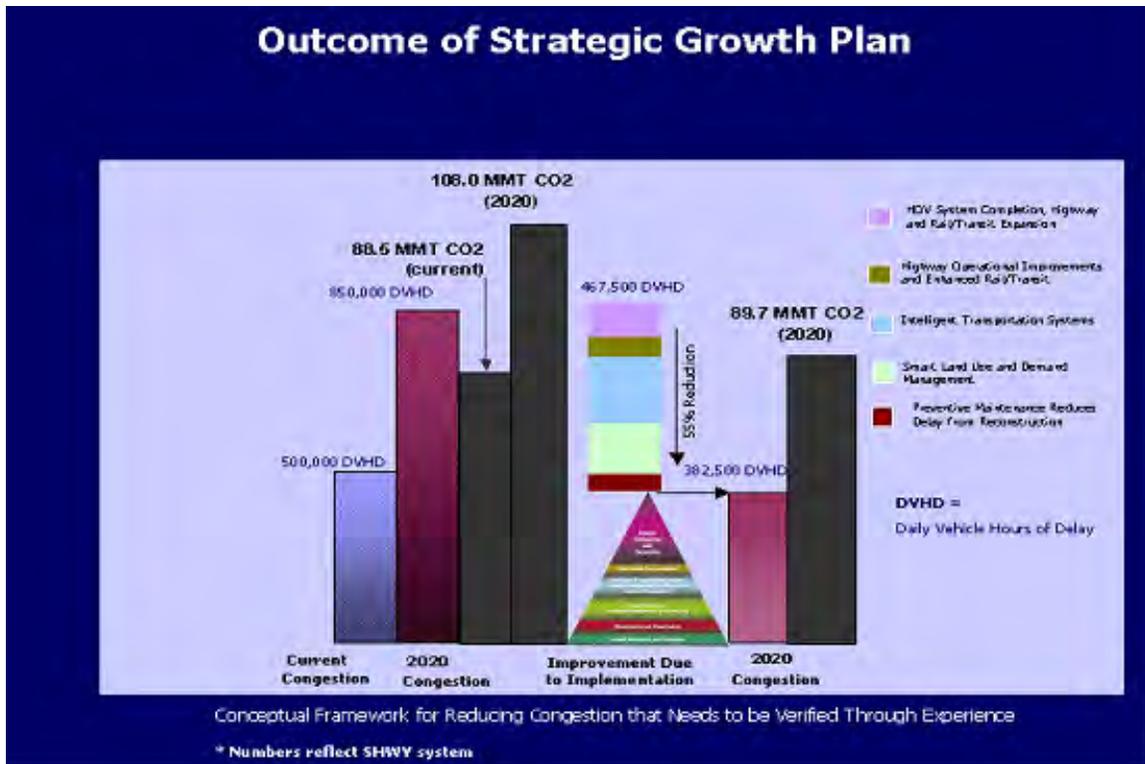
1. Participate in an off-site (but within Placer County) GHG reducing program.
2. Purchase GHG offsets/credits through an independent third party vendor (e.g., Chicago Climate Exchange, European Climate Exchange, etc.) that verifies the offsets/credit provided.

Appendix A. For Informational Purposes Only

Caltrans continues to be actively involved on the Governor’s Climate Action Team as California Air Resources Board works to implement AB 1493 and help achieve the targets set forth in Assembly Bill 32. Many of the strategies Caltrans is using to help meet the targets in Assembly Bill 32 come from the California Strategic Growth Plan, which is updated each year.

Governor Arnold Schwarzenegger’s Strategic Growth Plan calls for a \$222 billion infrastructure improvement program to fortify the state’s transportation system, education, housing, and waterways, including \$107 billion in transportation funding during the next decade. As shown in Figure 1 below, the Strategic Growth Plan targets a significant decrease in traffic congestion below today’s level and a corresponding reduction in greenhouse gas emissions. The Strategic Growth Plan proposes to do this while accommodating growth in population and the economy. A suite of investment options has been created that combined together yield the promised reduction in congestion. The Strategic Growth Plan relies on a complete systems approach of a variety of strategies: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements.

Figure 1. Outcome of Strategic Growth Plan



As part of the *Climate Action Program at Caltrans* (December 2006, <http://www.dot.ca.gov/docs/ClimateReport.pdf>), Caltrans is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high density housing along transit corridors. Caltrans is working closely with local jurisdictions on planning activities; however, Caltrans does not have local land use planning authority. Caltrans is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, light and heavy-duty trucks; Caltrans is doing this by supporting on-going research efforts at universities, by supporting legislation efforts to increase fuel economy, and by its participation on the Climate Action Team. It is important to note, however, that the control of the fuel economy standards is held by the United States Environmental Protection Agency and

California Air Resource Board. Lastly, the use of alternative fuels is also being considered; the Department is participating in funding for alternative fuel research at the University of California Davis.

Table 1 summarizes the Department and statewide efforts that Caltrans is implementing in order to reduce greenhouse gas emissions. For more detailed information about each strategy, please see *Climate Action Program at Caltrans* (December 2006); it is available at <http://www.dot.ca.gov/docs/ClimateReport.pdf>.

Table 1. Climate Change Strategies

Strategy	Program	Partnership		Method/Process	Estimated CO2 Savings (MMT)	
		Lead	Agency		2010	2020
Smart Land Use	Intergovernmental Review (IGR)	Caltrans	Local Governments	Review and seek to mitigate development proposals	Not Estimated	Not Estimated
	Planning Grants	Caltrans	Local and regional agencies & other stakeholders	Competitive selection process	Not Estimated	Not Estimated
	Regional Plans and Blueprint Planning	Regional Agencies	Caltrans	Regional plans and application process	0.975	7.8
Operational Improvements & Intelligent Trans. System (ITS) Deployment	Strategic Growth Plan	Caltrans	Regions	State ITS; Congestion Management Plan	.007	2.17
Mainstream Energy & Greenhouse Gas into Plans and Projects	Office of Policy Analysis & Research; Division of Environmental Analysis	Interdepartmental effort		Policy establishment, guidelines, technical assistance	Not Estimated	Not Estimated
Educational & Information Program	Office of Policy Analysis & Research	Interdepartmental, CalEPA, CARB, CEC		Analytical report, data collection, publication, workshops, outreach	Not Estimated	Not Estimated
Fleet Greening & Fuel Diversification	Division of Equipment	Department of General Services		Fleet Replacement	0.0045	0.0065
				B20		0.45
				B100		.0225
Non-vehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy Conservation Opportunities	0.117	.34
Portland Cement	Office of Rigid Pavement	Cement and Construction Industries		2.5 % limestone cement mix	1.2	3.6
				25% fly ash cement mix	.36	
Goods Movement	Office of Goods Movement	Cal EPA, CARB, BT&H, MPOs		Goods Movement Action Plan	Not Estimated	Not Estimated
Total					2.72	18.67

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Appendix B. Kings Beach Traffic Analysis for Greenhouse Gas Impact Analysis Memorandum



TRANSPORTATION PLANNING AND TRAFFIC ENGINEERING CONSULTANTS

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MEMORANDUM

Date: March 11, 2009

TO: Dan LaPlante, Placer County DPW
Shannon Hatcher, ICF Jones & Stokes

FROM: Gordon Shaw, PE, LSC

RE: Kings Beach Traffic Analysis for Greenhouse Gas Impact Analysis

Per Placer County's request, LSC has conducted an expanded analysis of traffic volumes and travel speeds associated with the alternatives assessed for the Kings Beach Urban Improvement Project (KBUIP). This analysis builds upon (and is consistent with) the traffic analysis presented in the KBUIP EIR/EIS/EIS. However, that analysis conducted several years ago was based upon traffic count data for approximately 90 days through the summer as well as one week of data in the winter (the only counts available at the time). To fully evaluate the year-round impacts of the roadway alternatives, it was necessary to expand the analysis to reflect every hour of every day of the year. Specifically, this analysis was developed to identify Vehicle-Miles of Travel (VMT) at various travel speeds, as requested by ICF Jones & Stokes for their air quality analysis.

This analysis was conducted in the following steps.

1. Caltrans maintains a permanent traffic count station on SR 28 at the Griff Creek bridge between SR 267 and Secline Street. This data is provided, attached. It provides hourly counts by travel and direction for every hour of calendar year 2008. On one day and a portion of another, the counter malfunctioned and counts were not available. For these hours, estimates of hourly counts were made based upon the average of the hourly count for the same previous day of the week and the same following day of the week.

2. The 2008 counts were compared against the 2002/03 counts used as the basis for the original traffic study, and were found to reflect a decrease over the intervening six years. In order for the current analysis to be consistent with the previous analysis, the 2008 count data was factored up to estimate 2002 volumes by hour and by direction for the full calendar year.
3. These volumes were then factored by the same growth rate assumed in the original traffic study to yield 2008 estimated volumes for the full year. This was done to result in a set of 2008 values that best corresponds with the 2008 volumes used in the KBUIP EIR/EIS/EIS.
4. It was next necessary to factor the 2002-03 volumes to estimate future 2028 volumes, assuming two different growth assumptions. The “base growth assumptions” were those used in the original KBUIP EIR/EIS/EIS, and were developed to reflect full buildout of all of the general and community plans in the region. These assumptions resulted in 2028 volumes 52.2 percent over 2002 volumes in the eastbound direction, and 63.2 percent over 2002 volumes in the westbound direction. The “10 percent growth assumptions” were developed at the request of TRPA staff to reflect a conservative estimate of observed growth trends, specifically 2028 traffic volumes 10 percent greater than 2008 volumes.
5. The resulting traffic count data was then evaluated by comparing them with a threshold for congested conditions, for existing conditions (four lanes without any SR 28 left turn lanes), three lane conditions (with a center two-way left turn lane and two roundabouts) and future four lane conditions (with signals and left turn lanes along SR 28 at key intersections). For each condition, volumes were separated into two categories (congested versus uncongested). This “congestion threshold” was calculated in different manners for the three lane versus four lane conditions:
 - For the three-lane alternative, the capacity values identified in the original KBUIP traffic analysis were applied. These values represent the LOS F condition threshold, at which traffic queues will start to form and traffic speeds drop very substantially to a stop-and-go “crawl.” Note that this capacity value varies substantially by season, as the prohibition of on-street parking from the beginning of the 4th of July travel period through the Labor Day Weekend (as defined in the EIR/EIS/EIS for Alternative 3) results in a higher capacity during summer than for the remainder of the year.
 - For the four-lane conditions, the Highway Capacity Software urban arterial methodology was used to identify a “break point” under which traffic speeds are relatively high and over which traffic speeds drop substantially.

This congestion threshold was found to occur at 1,450 vehicles per hour per direction. Note that this threshold does not reflect LOS F conditions, unlike that used in the three-lane alternative, but does reflect a lower average travel speeds at the highest traffic volumes that allows a more accurate estimation of overall air pollutant emissions with four travel lanes.

6. The number of hours for which the traffic volume is estimated to exceed the capacity is totaled for each day and over the entire year. In addition, the total volume in each hour of the year that exceeds the roadway capacity under the three-lane alternative is identified. As drivers will quickly choose to divert to the adjacent local streets when queues begin to form (i.e., when capacity is exceeded), these volumes over capacity are assumed to represent diverted traffic volumes. No significant diversion of traffic off of SR 28 is forecast under the four-lane alternatives. The resulting traffic volumes for the various network elements are presented for both a busy summer day (assumed to be the 5th-highest summer day of total traffic activity) and for the year as a whole, as shown in the top portion of Table A.
7. Traffic volumes were then converted to VMT by multiplying by estimated average trip lengths for the various elements of a trip through the study area. While the length of roadways will not vary, the length of travel under congested versus uncongested three-lane conditions will vary. The specific location of traffic congestion (and subsequent diversion of traffic) will vary by hour and by day depending on the location of pedestrian/bicycle activity, cross traffic and (in the non-summer months) parking activity. Traffic queues under three lane conditions are expected to grow to a maximum of roughly 2 blocks before the level of traffic diversion reaches the point where queue length will stabilize. Outside of this 2 block-long area, traffic on SR 28 will flow at non-congested speeds. The following lengths were assumed to represent overall average conditions:
 - SR 28 – 0.88 miles (SR 267 to Chipmunk)
 - Congested flow on SR 28 under 3-lane conditions – 0.14 miles
 - Uncongested travel path of non-diverting traffic on SR 28 with 3-lane congestion – 0.74 miles
 - Uncongested travel path of diverting traffic on SR 28 before or after point of congestion – 0.21 miles
 - Travel path of diverted traffic on local streets – 1.17 miles
 - Travel path on SR 267 (SR 28 to Speckled Avenue) – 0.37 miles

These lengths were applied to the various traffic volumes to result in the VMT generated for each roadway element and condition, as shown in the middle portion of Table A.

8. Traffic speeds were estimated as follows:

- Uncongested and congested travel speeds along SR 28 with four lanes were based upon the results of the *Highway Capacity Software* analysis. Travel speeds under the existing four-lane configuration are expected to be slightly lower than travel speeds under the proposed four-lane configuration, as the additional left turn lanes along SR 28 will reduce delays to through traffic.
- Uncongested travel speeds along SR 28 with three lanes were estimated based upon the free-flow travel speed and the delays associated with the roundabouts under typical low-volume conditions.
- Congested travel speeds along SR 28 with four lanes were estimated based upon observed congested “crawl” speeds when volume exceeds capacity observed along SR 28 in Tahoe City.
- Average travel speeds for diverted traffic on local streets was estimated based upon observed existing travel speeds and the delays that would be added by a neighborhood traffic control program (assumed to be in place under either future roadway alternative).

It should be noted that this analysis does not consider *all* traffic through the Kings Beach area, as this analysis is intended to identify the change in traffic volumes by speed resulting from the SR 28 alternatives. Specifically, vehicle-trips on local streets (other than the diverted traffic off of SR 28) is not included, nor are vehicle-trips between SR 267 to the north and SR 28 west of SR 267, neither of which would be substantially impacted with regards to travel speed by the KBUIP. However, this analysis does address the change in speeds and VMT associated with all traffic impacted by the proposed project.

FIGURE A: Summary of Volume and VMT in Kings Beach by Travel Speed

Excludes Local Non-Diverted Traffic on Local Streets That Does Not Vary By Alternative

Traffic Volume Scenario	Existing			Future -- Base Growth Assumption			Future -- 10 % Growth Assumption		
Roadway Scenario	Existing	3 Lane	4 Lane	Existing	3 Lane	4 Lane	Existing	3 Lane	4 Lane
Busy Summer Day Traffic Volume									
On SR 28 -- Free Flow	29,700	26,000	29,700	24,500	15,000	24,500	33,100	26,600	33,100
On SR 28 -- Congested Flow	0	3,600	0	21,600	23,600	21,600	0	5,900	0
On SR 267 -- Free Flow	9,700	9,500	9,700	12,600	5,100	12,600	10,600	10,000	10,600
On Local Streets	0	200	0	0	7,500	0	0	600	0
Total Annual Traffic Volume									
On SR 28 -- Free Flow	6,909,500	6,714,500	6,909,500	9,619,900	5,107,700	9,619,900	7,591,600	6,929,700	7,591,600
On SR 28 -- Congested Flow	0	184,500	0	1,088,900	4,727,000	1,088,900	8,900	626,300	8,900
On SR 267 -- Free Flow	2,464,100	2,453,500	2,464,100	3,819,000	2,944,900	3,819,000	2,755,000	2,710,500	2,755,000
On Local Streets	0	10,600	0	0	874,100	0	0	44,500	0
Busy Summer Day VMT									
On SR 28 -- Free Flow	26,100	25,500	26,100	21,600	32,200	21,600	29,100	27,900	29,100
On SR 28 -- Congested Flow	0	500	0	19,000	3,300	19,000	0	800	0
On SR 267 -- Free Flow	3,600	3,500	3,600	4,700	1,900	4,700	3,900	3,700	3,900
On Local Streets	0	200	0	0	8,800	0	0	700	0
Total Annual VMT									
On SR 28 -- Free Flow	6,080,400	6,047,500	6,080,400	8,465,500	8,176,300	8,465,500	6,680,600	6,571,000	6,680,600
On SR 28 -- Congested Flow	0	25,800	0	958,200	661,800	958,200	7,800	87,700	7,800
On SR 267 -- Free Flow	911,700	907,800	911,700	1,413,000	1,089,600	1,413,000	1,019,300	1,002,900	1,019,300
On Local Streets	0	12,400	0	0	1,022,700	0	0	52,000	0
Average Travel Speed									
On SR 28 -- Free Flow	30	26	32	30	26	32	30	26	32
On SR 28 -- Congested Flow	16	4	18	16	4	18	16	4	18
On SR 267 -- Free Flow	30	30	30	30	30	30	30	30	30
On Local Streets	17	13	13	17	13	13	17	13	13

Appendix Table: Caltrans 2008 Hourly Count Data -- SR 28 East of SR 267 Eastbound

	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
1/1/2008	209	144	91	62	44	35	69	128	229	361	433	534	628	615	711	713	867	843	562	415	301	236	170	75
1/2/2008	40	21	17	11	19	44	159	320	466	536	616	666	757	746	776	869	1096	1019	677	443	308	246	188	109
1/3/2008	55	30	8	10	24	31	150	336	487	471	578	618	747	766	744	879	934	690	395	377	253	308	246	188
1/4/2008	51	30	22	10	24	45	85	219	285	325	356	385	425	422	422	388	397	299	198	160	90	69	75	40
1/5/2008	19	18	9	12	10	24	49	72	133	157	196	296	285	282	270	266	347	312	223	146	152	110	85	60
1/6/2008	53	23	17	11	17	31	41	75	134	183	198	228	288	268	327	358	525	449	284	202	130	110	83	66
1/7/2008	35	26	17	8	20	26	134	296	339	316	338	386	407	482	540	621	824	737	432	236	210	138	125	54
1/8/2008	40	29	18	9	16	41	144	341	444	376	348	343	427	351	390	488	593	528	284	214	123	112	79	48
1/9/2008	29	20	20	14	19	40	150	305	413	328	320	395	445	465	532	629	817	780	447	262	199	215	123	66
1/10/2008	46	24	12	8	27	33	158	339	447	408	417	519	519	539	669	725	928	777	506	366	284	203	159	97
1/11/2008	63	52	39	19	35	42	137	381	489	463	521	532	605	665	799	1016	1016	894	470	410	364	304	265	158
1/12/2008	145	71	41	25	22	22	72	227	331	360	407	535	659	548	609	801	819	615	426	315	324	218	158	73
1/13/2008	94	56	27	30	20	31	131	266	355	448	487	588	659	488	523	615	689	428	272	229	148	148	96	73
1/14/2008	30	20	16	15	13	44	147	377	468	424	405	462	407	529	590	702	850	703	393	260	182	143	128	57
1/15/2008	44	21	9	8	22	31	175	370	471	414	400	422	546	468	573	706	842	680	383	284	221	173	119	62
1/16/2008	36	18	19	8	11	37	174	370	469	409	385	477	557	508	585	685	859	707	402	270	199	176	116	46
1/17/2008	35	22	19	11	13	37	138	395	426	468	418	468	491	511	578	693	883	806	442	318	242	241	203	97
1/18/2008	54	46	35	18	26	37	137	342	469	429	447	538	578	623	698	875	1037	880	661	480	447	458	368	327
1/19/2008	289	107	40	19	22	33	80	196	376	499	563	617	685	671	742	834	1031	1032	713	551	437	355	253	192
1/20/2008	108	68	43	29	35	30	51	155	339	497	541	588	580	578	572	707	809	605	462	414	267	213	199	128
1/21/2008	56	38	13	15	17	27	130	221	346	416	471	496	422	436	460	594	629	589	379	217	196	137	77	89
1/22/2008	27	28	17	16	21	41	149	317	439	389	335	421	454	437	497	581	765	654	326	257	191	178	108	46
1/23/2008	40	24	17	9	17	35	171	331	423	358	330	392	487	440	509	627	769	630	373	258	188	163	130	69
1/24/2008	30	24	13	9	20	24	163	330	413	392	338	391	437	463	498	585	805	662	357	248	235	217	167	116
1/25/2008	83	33	31	23	23	28	143	336	397	336	379	477	500	490	577	667	807	683	494	349	282	253	215	185
1/26/2008	103	71	56	30	28	21	98	267	322	390	397	452	531	483	555	666	782	734	549	398	290	238	200	118
1/27/2008	88	52	30	28	21	25	130	267	322	327	293	335	349	375	392	429	429	431	393	287	248	157	130	86
1/28/2008	44	17	6	15	27	38	122	230	258	350	412	357	421	443	515	576	694	637	399	234	174	131	119	71
1/29/2008	35	17	16	14	19	35	179	415	564	407	334	376	421	443	515	576	694	637	399	234	174	131	119	71
1/30/2008	42	29	25	23	18	33	128	314	471	364	345	436	538	503	577	731	872	849	510	321	243	177	129	62
1/31/2008	29	16	9	14	16	43	189	420	539	486	478	537	523	468	502	540	610	661	314	221	145	130	119	72
2/1/2008	77	47	30	18	17	51	131	274	385	359	336	467	457	549	664	717	892	871	577	426	391	329	254	202
2/2/2008	113	66	33	17	19	29	94	192	309	374	411	479	511	534	581	568	598	600	501	363	241	233	180	149
2/3/2008	79	57	35	19	27	26	58	86	154	178	257	300	369	378	422	410	330	322	187	231	175	132	89	68
2/4/2008	42	19	13	11	20	49	159	319	416	445	413	473	602	675	695	735	935	777	464	304	222	192	92	73
2/5/2008	50	23	13	15	25	61	190	440	521	554	477	599	579	564	564	673	856	856	485	356	197	152	102	73
2/6/2008	54	28	17	6	25	36	176	395	468	421	405	484	527	510	585	718	884	779	452	338	260	244	218	115
2/7/2008	43	17	9	7	16	36	169	386	468	445	406	484	527	510	585	718	884	779	452	338	260	244	218	115
2/8/2008	65	48	27	18	24	39	156	383	475	433	427	541	575	581	682	828	900	951	707	497	395	340	361	257
2/9/2008	121	60	38	31	21	40	100	327	394	453	567	567	631	638	676	838	885	885	674	446	287	264	163	115
2/10/2008	106	51	48	23	23	23	71	222	313	418	444	490	549	597	561	638	693	693	500	346	300	226	170	106
2/11/2008	32	20	10	7	14	34	155	356	451	458	375	502	522	561	599	730	885	885	674	446	287	264	163	115
2/12/2008	32	16	2	4	16	42	164	365	451	458	375	502	522	561	599	730	885	885	674	446	287	264	163	115
2/13/2008	42	17	10	9	27	34	163	360	459	467	439	496	576	506	600	704	844	731	399	266	184	176	112	57
2/14/2008	36	24	15	11	20	27	182	384	484	457	437	496	576	506	600	704	844	731	399	266	184	176	112	57
2/15/2008	95	49	47	22	25	42	155	339	468	464	427	617	595	504	631	638	691	932	780	557	367	353	346	166
2/16/2008	224	79	44	35	19	39	81	213	444	539	603	708	756	774	852	949	1106	1224	874	632	537	426	305	207
2/17/2008	111	53	38	32	27	25	75	196	395	549	642	685	720	739	738	869	1039	1165	760	549	405	279	212	137
2/18/2008	60	19	14	10	16	42	131	266	388	521	573	557	592	584	631	740	959	851	507	356	272	215	133	76
2/19/2008	36	19	14	10	16	42	133	303	450	501	466	501	552	560	576	758	882	851	536	368	230	194	140	82
2/20/2008	43	28	17	10	18	44	133	303	450	501	466	501	552	560	576	758	882	851	536	368	230	194	140	82
2/21/2008	40	26	22	6	12	31	142	312	395	444	421	494	538	565	577	630	853	648	480	319	247	190	157	75
2/22/2008	81	38	39	29	16	46	122	249	338	377	397	496	513	583	611	727	941	793	580	461	313	247	190	101
2/23/2008	105	53	43	21	20	39	81	206	380	426	419	471	496	513	583	611	727	941	793	580	461	313	247	101
2/24/2008	64	30	32	21	20	22	68	110	187	227	259	276	348	324	326	367	380	427	362	309	235	189	145	72
2/25/2008	54	23	15	27	29	55	145	307	386	429	423	517	530	546	574	669	888	724	459	323	222	189	123	55
2/26/2008	44	31	9	15	30	42	196	431	557	518	459	539	537	530	523	579	793	840	735	490	305	246	165	65
2/27/2008	33	29	20	9	21	39	165	384	534	431	413	479	513	523	579	793	840	735	490	305	246	165	150	65
2/28/2008	38	22	16	12	20	26	38	164	410	478	440	465	604	610	619	756	856	888	918	607	537			

Appendix Table: Calltrans 2008 Hourly Count Data – SR 28 East of SR 267 Eastbound

	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	
3/6/2008	37	20	20	20	20	27	454	467	467	404	467	467	583	508	566	745	940	747	460	330	240	240	240	207	111
3/7/2008	67	38	23	10	10	46	158	365	462	441	462	522	580	613	683	807	1001	890	679	436	330	240	370	261	207
3/8/2008	103	46	31	19	23	32	411	480	584	584	480	506	469	617	659	727	936	894	596	457	358	287	190	129	
3/9/2008																									
3/10/2008	44	20	11	9	17	44	338	432	374	389	422	483	483	511	563	649	837	752	420	315	203	151	104	83	
3/11/2008	41	22	17	13	13	37	142	354	425	427	387	478	525	522	521	686	807	715	518	360	237	188	188	84	
3/12/2008	38	23	10	17	14	35	149	372	444	396	443	537	537	473	560	743	782	740	497	279	246	174	124	69	
3/13/2008	37	31	10	17	19	23	143	326	445	404	411	516	531	530	543	636	697	438	305	268	176	198	133	133	
3/14/2008	60	58	33	12	20	29	150	307	413	424	371	479	537	552	629	755	878	800	496	344	228	263	202	133	
3/15/2008	110	140	115	140	44	52	78	147	136	240	331	356	425	498	553	562	767	794	578	408	300	229	223	158	
3/16/2008	91	53	31	26	22	21	64	131	243	375	372	390	462	456	432	591	638	544	436	307	288	176	174	70	
3/17/2008	54	31	15	8	17	34	138	360	430	380	493	526	484	484	464	713	847	789	508	351	288	153	142	80	
3/18/2008	66	26	22	20	12	35	144	343	485	394	378	460	545	550	564	746	865	787	451	347	245	207	116	72	
3/19/2008	45	23	14	21	23	43	150	340	457	429	432	465	614	571	588	726	871	728	518	349	229	194	147	175	
3/20/2008	43	21	18	12	24	38	329	483	398	431	473	528	528	602	684	849	991	910	755	565	413	418	222	129	
3/21/2008	60	26	28	25	19	37	151	372	414	441	449	512	602	602	684	849	991	910	755	565	413	418	222	129	
3/22/2008	114	48	27	19	23	31	170	326	408	507	555	587	608	620	684	849	991	910	755	565	413	418	222	129	
3/23/2008	89	35	31	10	16	21	132	232	359	410	490	477	544	544	545	602	729	689	585	377	312	210	144	80	
3/24/2008	36	28	15	16	16	26	156	349	457	475	510	605	605	605	669	838	945	820	588	369	300	194	142	96	
3/25/2008	51	21	9	19	14	37	158	373	493	464	472	528	588	589	671	786	950	867	573	431	288	222	149	82	
3/26/2008	47	24	13	14	21	34	152	337	476	481	461	546	677	656	672	814	958	862	582	393	298	211	161	73	
3/27/2008	49	26	13	10	20	38	168	346	465	446	446	518	567	561	626	813	913	940	582	409	359	268	202	130	
3/28/2008	77	23	23	11	18	39	152	340	456	458	493	602	664	643	740	871	972	800	576	446	319	321	262	160	
3/29/2008	98	43	32	17	20	25	204	326	346	479	548	572	562	600	600	705	741	713	554	449	408	372	225	136	
3/30/2008	97	48	35	25	26	28	143	340	391	410	458	524	479	524	479	514	545	518	363	301	237	176	122	68	
3/31/2008	40	26	11	16	16	34	167	334	428	407	406	431	456	501	562	625	780	678	392	291	237	155	89	54	
4/1/2008	34	17	13	16	16	17	39	152	351	413	373	494	471	482	524	620	737	628	448	299	197	185	101	59	
4/2/2008	39	22	13	8	16	28	159	338	433	433	374	373	494	471	482	620	737	628	448	299	197	185	101	59	
4/3/2008	34	21	13	17	13	28	172	339	491	400	434	440	512	524	595	675	764	739	444	324	263	221	146	83	
4/4/2008	40	31	16	14	25	40	141	350	449	430	397	461	483	595	588	767	808	722	618	417	296	262	196	161	
4/5/2008	81	46	26	19	15	29	167	284	329	373	373	510	571	559	560	607	758	680	482	376	308	236	180	127	
4/6/2008	60	35	24	18	15	21	155	119	218	316	375	446	459	462	497	536	579	514	389	290	210	161	110	54	
4/7/2008	34	24	14	8	19	35	147	366	421	376	381	419	534	536	537	686	728	664	426	288	200	160	101	48	
4/8/2008	30	14	8	4	18	44	166	361	417	370	462	482	546	537	526	640	751	589	407	279	218	181	80	51	
4/9/2008	22	20	13	6	13	36	175	396	449	422	401	469	546	546	503	565	648	710	478	287	244	166	137	65	
4/10/2008	42	16	9	9	13	41	160	379	491	415	420	413	565	504	594	683	758	655	465	315	256	202	161	82	
4/11/2008	36	32	15	15	25	41	143	367	422	389	396	554	549	544	643	732	778	749	584	393	348	303	215	152	
4/12/2008	96	56	21	11	20	34	78	140	297	336	377	391	440	507	569	604	643	570	476	400	294	225	200	115	
4/13/2008	47	29	33	22	15	21	112	208	273	377	377	391	440	512	472	522	542	482	387	310	215	144	106	51	
4/14/2008	28	16	4	8	11	55	144	267	378	367	378	410	520	502	494	562	620	508	357	252	191	145	102	56	
4/15/2008	31	16	10	7	17	43	145	271	344	358	322	395	524	475	490	587	630	625	345	289	212	166	107	62	
4/16/2008	33	17	9	5	11	36	157	312	371	403	375	420	512	458	453	612	701	621	373	296	207	129	113	46	
4/17/2008	35	18	4	4	12	45	141	309	359	347	415	438	521	482	507	697	678	643	363	352	254	248	185	80	
4/18/2008	60	38	20	17	18	45	124	262	370	347	425	519	521	572	618	732	802	645	470	359	290	253	197	106	
4/19/2008	67	41	22	19	16	33	70	154	271	321	437	423	506	498	573	628	546	397	342	240	225	171	101	50	
4/20/2008	54	33	19	17	21	23	56	108	197	235	341	358	418	439	459	501	488	418	330	281	271	199	142	50	
4/21/2008	35	23	9	11	16	46	167	343	403	366	374	405	505	459	486	607	604	582	351	247	182	147	90	43	
4/22/2008	30	19	11	12	10	45	164	403	413	378	414	451	495	503	486	601	644	609	339	275	207	119	84	52	
4/23/2008	29	19	14	5	11	46	158	364	409	346	359	433	466	494	488	577	607	536	387	305	257	181	100	53	
4/24/2008	23	19	14	12	10	31	159	383	444	369	397	447	474	545	563	687	720	709	489	367	320	195	124	72	
4/25/2008	38	21	18	9	14	50	161	324	426	422	396	441	523	513	628	729	770	706	487	399	260	213	198	101	
4/26/2008	62	33	21	15	13	30	89	160	268	332	397	449	563	610	610	572	621	531	457	380	284	232	172	120	
4/27/2008	59	35	16	21	14	27	57	117	195	304	359	373	484	525	480	529	525	463	381	335	217	158	116	70	
4/28/2008	16	10	5	6	17	42	173	374	459	368	374	428	509	515	559	691	694	609	396	276	210	115	81	39	
4/29/2008	31	20	10	6	15	39	155	401	457	441	415	461	559	487	487	671	713	623	401	278	224	130	85	53	
4/30/2008	22	8	11	4	13	38	179	379	490	380	368	484	528	498	555	665	728	629	407	293	252	176	104	60	
5/1/2008	24	14	10	8	22	39	175	427	483	378	418	455	560	507	541	680	753	626	434	302	262	174	97	71	
5/2/2008	38	20	13	7	20	39	169	344	464	456	400	465	568	507	625	746	772	730	452	399	305	206	144	105	
5/3/2008	76	49	34	16	31	22	208	324	371	466	537	641	624	640	609	609	609	509	411	332	290	241	176	101	
5/4/2008	86	29	22	12	16																				

Appendix Table: Caltrans 2008 Hourly Count Data – SR 28 East of SR 267 Eastbound

	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	
5/10/2008	86	25	24	12	12	15	25	104	161	263	405	454	535	582	621	589	624	616	563	330	449	308	247	186	103
5/11/2008	54	19	16	11	11	20	22	57	108	219	304	381	472	527	527	546	556	546	468	330	301	308	171	122	67
5/12/2008	29	19	8	7	7	16	32	187	423	427	384	412	444	516	489	586	687	727	632	409	259	241	178	88	59
5/13/2008	33	17	8	8	8	15	47	206	412	451	404	442	454	557	559	544	646	817	716	481	323	225	139	106	49
5/14/2008	22	15	10	13	14	10	44	192	414	479	417	396	499	571	539	597	649	746	745	462	337	246	153	120	58
5/15/2008	23	10	11	6	10	14	40	188	417	469	428	464	545	566	588	718	804	804	780	514	371	256	184	147	61
5/16/2008	29	19	8	6	16	16	45	205	388	445	421	462	569	663	663	737	767	667	667	560	432	382	308	231	144
5/17/2008	65	39	21	12	21	21	30	110	228	364	472	449	500	723	682	721	698	617	617	473	336	302	200	130	66
5/18/2008	87	26	25	15	15	27	22	59	161	232	384	538	584	649	656	607	671	672	538	445	337	302	200	130	66
5/19/2008	42	23	17	5	18	31	31	190	411	455	469	443	549	608	574	578	724	742	675	495	365	288	166	97	67
5/20/2008	37	11	14	5	15	15	55	204	426	483	453	440	523	604	549	544	750	761	709	412	369	246	155	89	59
5/21/2008	41	12	8	5	19	38	210	438	490	445	435	528	561	514	514	700	734	818	734	499	308	274	176	110	68
5/22/2008	45	18	12	6	13	45	45	186	444	441	498	441	522	557	554	592	723	763	735	470	314	234	183	132	90
5/23/2008	49	23	12	8	22	12	42	194	401	457	461	462	546	677	740	767	825	853	719	608	433	323	271	224	217
5/24/2008	83	47	23	8	23	23	32	84	185	281	355	462	582	668	664	728	720	662	657	540	389	324	273	238	116
5/25/2008	57	36	33	14	23	28	28	78	142	253	337	488	568	625	722	722	701	754	606	486	349	285	286	163	104
5/26/2008	48	32	24	18	21	32	32	81	155	230	313	425	527	552	561	548	532	526	524	352	244	238	155	116	55
5/27/2008	20	14	9	3	15	47	47	213	392	461	441	461	481	561	546	580	686	786	669	416	274	209	180	77	44
5/28/2008	38	17	8	9	9	9	47	202	490	516	436	405	503	556	540	568	768	744	696	392	295	246	190	141	61
5/29/2008	41	17	11	11	11	22	34	197	437	524	415	442	487	604	535	622	721	775	810	495	325	270	217	122	62
5/30/2008	38	22	12	3	13	46	223	434	504	460	489	564	714	652	688	828	847	847	858	564	419	377	344	217	135
5/31/2008	71	43	23	17	20	34	42	115	214	375	423	515	568	625	661	651	706	734	600	560	393	305	300	212	133
6/1/2008	63	28	28	27	20	42	108	158	253	377	497	497	565	640	649	575	644	600	518	471	362	268	185	127	66
6/2/2008	27	13	12	8	18	18	51	240	402	464	447	468	514	615	635	602	747	803	746	461	369	278	208	116	60
6/3/2008	25	17	17	12	17	59	232	458	444	443	434	434	506	589	602	558	721	787	805	493	368	289	215	115	70
6/4/2008	36	22	11	10	8	58	229	436	451	476	449	449	566	653	554	633	758	770	751	508	384	283	228	147	72
6/5/2008	51	16	16	13	13	19	57	230	455	531	432	488	566	653	554	633	758	770	751	508	384	283	228	147	72
6/6/2008	52	17	16	12	12	13	55	200	365	537	570	489	601	695	669	788	864	967	877	510	362	320	228	178	71
6/7/2008	73	39	20	17	32	43	127	221	438	531	703	752	722	766	766	735	756	756	676	643	482	347	351	224	153
6/8/2008	57	27	41	10	14	14	55	223	410	477	608	641	641	674	629	641	644	644	644	644	482	347	351	224	153
6/9/2008	29	19	10	11	14	14	55	223	390	484	429	521	543	643	634	659	830	837	768	518	371	295	232	121	69
6/10/2008	34	12	16	11	21	21	62	231	419	513	492	504	616	612	649	558	741	853	862	600	403	333	212	133	54
6/11/2008	37	20	14	10	14	14	54	205	413	539	454	480	582	637	634	651	731	882	768	563	422	314	241	163	33
6/12/2008	36	22	19	9	11	50	200	410	516	483	473	596	680	680	582	667	784	857	808	593	378	254	174	78	
6/13/2008	44	28	9	9	18	59	204	418	579	538	479	538	651	666	707	766	885	946	843	570	536	469	351	249	160
6/14/2008	77	22	23	21	18	37	123	196	384	355	491	611	693	812	781	789	774	774	719	573	475	434	380	289	152
6/15/2008	90	42	32	20	17	37	82	170	394	527	443	536	649	673	645	637	685	624	626	533	427	311	253	170	85
6/16/2008	29	17	20	9	13	52	207	394	527	443	536	649	673	645	637	685	624	626	533	427	311	253	170	85	73
6/17/2008	44	20	18	9	22	58	203	416	514	550	570	724	796	694	731	763	886	863	863	529	418	378	255	145	87
6/18/2008	41	17	14	12	16	16	59	227	416	490	530	535	618	683	719	751	795	946	851	574	497	466	349	252	104
6/19/2008	54	26	18	13	27	50	222	384	491	511	529	709	698	713	751	795	946	851	574	497	466	349	252	104	104
6/20/2008	70	35	17	15	22	51	191	456	649	573	637	705	804	784	865	960	989	840	672	566	474	352	256	201	201
6/21/2008	106	39	21	22	22	43	116	282	443	524	463	649	739	835	856	854	928	908	798	677	500	443	335	286	201
6/22/2008	87	40	32	25	25	38	85	181	321	321	463	657	721	800	823	743	795	769	735	488	445	359	274	182	81
6/23/2008	44	27	10	14	21	48	205	371	468	544	483	649	721	800	823	743	795	769	735	488	445	359	274	182	81
6/24/2008	42	16	20	8	21	68	206	380	477	484	484	549	629	662	612	719	757	906	914	601	415	390	270	161	67
6/25/2008	45	22	13	11	18	65	183	398	464	572	580	588	688	688	585	729	781	900	819	540	464	362	286	179	105
6/26/2008	54	27	21	10	13	373	373	486	518	594	626	714	700	767	807	867	867	910	910	662	477	447	305	218	116
6/27/2008	65	40	19	9	25	52	203	391	482	526	635	770	810	811	1044	986	986	900	900	717	547	494	394	269	219
6/28/2008	95	45	22	28	21	37	136	285	479	614	765	850	877	887	868	952	947	947	807	757	539	468	373	273	187
6/29/2008	82	45	27	32	19	32	118	197	331	511	665	732	814	730	765	692	733	766	628	570	503	375	300	170	94
6/30/2008	55	25	21	14	12	17	59	212	391	421	512	607	705	765	692	733	828	951	899	582	459	388	268	162	87
7/1/2008	35	21	16	15	19	75	223	421	512	512	607	705	765	692	733	828	951	899	582	459	388	268	162	87	87
7/2/2008	63	36	32	15	19	65	198	384	403	578	589	703	731	666	837	859	1006	982	934	722	498	465	362	226	111
7/3/2008	99	52	31	17	33	64	206	408	408	578	589	703	731	666	837	859	1006	982	934	722	498	465	362	226	111
7/4/2008	295	186	66	41	18	56	138	275	490	770	889	1005	1062	1046	1106	1083	1160	1096	1071	980	887	826	648	481	405
7/5/2008	148	67	42	30	24	45	125	283	517	738	912	1083	1102	1131	1078	958	983	947	903	729					

Appendix Table: Caltrans 2008 Hourly Count Data -- SR 28 East of SR 267 Eastbound

	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
7/14/2008	45	21	20	8	24	63	407	487	583	682	736	809	697	743	829	961	952	607	498	402	302	402	179	96
7/15/2008	49	23	15	14	14	56	442	521	596	645	701	749	720	731	755	829	961	952	622	470	411	295	188	101
7/16/2008	34	24	20	12	22	50	226	452	576	647	739	769	763	764	784	826	964	998	740	517	434	310	229	157
7/17/2008	58	43	26	10	20	62	248	464	558	605	673	745	803	839	912	1007	946	665	544	519	445	313	108	108
7/18/2008	71	25	19	8	21	67	211	398	524	569	719	828	940	1116	1175	1183	966	729	624	509	359	262	177	262
7/19/2008	121	73	36	24	56	77	179	254	446	597	827	958	940	977	1018	1051	981	767	658	521	472	343	277	103
7/20/2008	115	56	38	32	27	29	201	365	558	734	841	860	877	854	921	833	796	633	492	428	352	233	103	103
7/21/2008	43	21	12	11	22	64	221	387	558	697	872	722	722	766	861	977	962	672	492	443	335	203	103	103
7/22/2008	43	21	11	11	22	51	220	421	614	684	741	729	713	769	849	968	968	726	482	443	335	203	103	103
7/23/2008	51	27	14	9	10	62	178	384	541	614	684	741	821	802	809	902	1060	1006	496	406	360	240	139	92
7/24/2008	66	29	22	12	19	49	223	435	641	643	728	790	781	802	809	902	1060	1006	496	406	360	240	139	92
7/25/2008	92	59	36	12	19	69	192	434	554	664	757	896	896	1000	1076	1157	1035	806	609	511	457	303	241	118
7/26/2008	135	63	35	23	17	45	168	289	464	687	840	997	1090	1021	1063	1074	1096	997	818	599	511	457	303	241
7/27/2008	97	47	30	14	18	37	115	239	426	633	773	929	912	952	865	873	890	754	685	550	390	320	226	106
7/28/2008	70	19	14	11	14	17	55	206	383	509	618	708	793	743	772	766	817	948	865	691	487	424	306	207
7/29/2008	44	21	14	11	19	59	212	379	543	618	708	793	743	772	766	817	948	865	691	487	424	306	207	110
7/30/2008	44	19	16	11	19	55	216	355	559	674	750	839	749	832	891	1041	989	764	516	462	349	238	134	95
7/31/2008	62	37	22	15	22	55	191	375	530	668	722	779	840	846	914	976	1108	1067	692	595	498	407	375	176
8/1/2008	72	29	17	11	17	60	182	383	520	678	848	874	901	946	1082	1141	1063	824	665	539	406	409	242	108
8/2/2008	105	62	41	31	29	48	124	256	474	637	860	1009	1065	1034	1061	1072	1063	982	773	599	505	477	354	208
8/3/2008	105	62	41	31	29	48	124	256	474	637	860	1009	1065	1034	1061	1072	1063	982	773	599	505	477	354	208
8/4/2008	50	25	15	11	19	55	196	391	541	708	778	846	838	835	885	985	1037	935	712	591	438	357	238	118
8/5/2008	41	27	11	15	29	58	195	393	564	642	690	873	886	810	918	970	1040	1048	821	521	419	333	218	108
8/6/2008	60	22	15	17	21	51	218	397	568	637	788	837	873	864	903	1034	1079	1070	744	555	477	375	216	130
8/7/2008	67	37	17	14	22	42	218	366	618	651	720	837	952	919	949	1060	1200	1129	823	685	602	440	395	224
8/8/2008	105	36	27	18	29	63	186	365	592	738	836	965	1009	1014	1074	1175	1220	1112	806	667	560	468	365	234
8/9/2008	133	45	32	25	32	35	142	319	501	685	851	1031	1080	1000	1028	1076	1109	1128	841	716	587	466	365	234
8/10/2008	107	60	40	28	20	38	105	259	440	673	780	871	910	899	882	854	930	1128	841	716	587	466	365	234
8/11/2008	62	26	14	15	16	36	198	426	575	580	737	844	805	854	868	905	1002	956	737	546	413	319	244	166
8/12/2008	51	20	15	16	17	58	217	438	597	591	734	802	812	807	865	920	1092	989	697	527	487	300	208	107
8/13/2008	53	31	15	9	18	60	189	406	562	621	675	794	882	810	846	952	1094	1044	740	578	483	340	217	140
8/14/2008	61	36	22	14	21	42	185	412	546	606	720	810	924	984	968	1008	1111	1066	852	666	553	361	302	185
8/15/2008	63	31	33	11	26	56	204	396	634	661	747	942	905	870	993	1096	1153	1096	841	659	518	436	344	236
8/16/2008	115	54	29	28	28	37	120	284	453	616	907	943	1053	1034	1022	1005	1019	962	779	612	508	407	341	220
8/17/2008	125	45	35	37	27	39	39	374	637	730	864	910	867	883	849	856	702	512	508	407	341	220	107	107
8/18/2008	61	18	13	16	25	44	194	396	533	631	688	749	786	738	806	908	990	922	622	487	374	244	166	75
8/19/2008	33	15	9	9	23	49	201	378	521	609	663	731	807	691	751	860	1007	906	694	477	386	296	177	99
8/20/2008	37	15	16	10	18	56	180	415	580	566	574	752	780	746	789	831	927	1105	939	771	565	461	320	217
8/21/2008	43	31	10	10	22	55	196	376	502	596	680	723	804	776	839	896	977	1087	992	774	606	515	428	345
8/22/2008	90	36	19	15	18	62	195	376	507	607	698	776	849	839	896	963	957	1087	992	774	606	515	428	345
8/23/2008	90	43	30	19	21	30	109	246	421	534	757	800	877	849	960	963	957	1087	992	774	606	515	428	345
8/24/2008	70	57	42	30	27	42	190	342	421	516	722	780	806	772	754	759	693	850	672	583	456	397	321	166
8/25/2008	32	20	13	4	21	43	211	384	490	545	561	660	658	660	766	797	842	819	564	386	336	202	140	74
8/26/2008	36	20	14	11	19	53	221	391	525	492	600	646	704	645	726	822	835	812	581	426	314	226	149	62
8/27/2008	41	21	17	7	17	50	189	437	531	549	541	640	655	689	768	818	826	846	564	420	351	243	168	78
8/28/2008	38	26	14	13	16	48	213	421	523	571	558	630	654	719	743	841	851	868	583	445	391	303	215	134
8/29/2008	57	30	12	11	24	43	184	409	537	550	639	712	833	836	845	889	1017	1047	717	635	529	411	325	185
8/30/2008	134	68	47	20	17	43	184	409	537	550	639	712	833	836	845	889	1017	1047	717	635	529	411	325	185
8/31/2008	95	47	37	36	26	37	77	203	369	618	787	944	958	1007	982	991	1118	974	754	549	490	361	327	185
9/1/2008	78	27	14	19	24	40	188	313	468	610	736	712	729	703	702	753	853	839	521	401	259	178	134	68
9/2/2008	46	13	18	13	21	39	207	383	574	522	506	636	663	733	753	753	853	839	521	401	259	178	134	68
9/3/2008	31	23	14	14	20	47	203	394	548	517	464	575	590	672	790	845	906	906	822	480	392	331	215	155
9/4/2008	31	23	14	14	20	47	203	394	548	517	464	575	590	672	790	845	906	906	822	480	392	331	215	155
9/5/2008	34	18	14	9	22	56	185	356	526	543	592	650	719	755	821	904	921	916	676	519	406	336	230	95
9/6/2008	72	35	33	17	14	35	99	212	374	480	637	785	780	778	820	803	825	738	617	503	383	311	245	154
9/7/2008	81	53	29	19	28	74	97	169	296	458	636	698	633	631	632	647	679	615	508	495	309	194	139	78
9/8/2008	30	16	12	12	22	48	201	403	491	452	496	615	658	683	695	809	855	775	549	490	361	327	185	61
9/9/2008	30	16	12	12	22	48	201	403	491	452	496	615	658	683	695	809	855	775	549	490	361	327	185	61
9/10/2008	24	13	15	13	13																			

Appendix Table: Caltrans 2008 Hourly Count Data – SR 28 East of SR 267 Eastbound

	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
9/17/2008	29	15	15	15	203	404	477	443	443	480	530	578	578	581	677	770	807	759	511	388	276	247	109	60
9/18/2008	26	23	18	14	202	409	463	486	486	502	569	618	618	620	654	741	859	771	533	409	259	210	133	90
9/19/2008	45	21	16	11	206	364	459	514	459	551	691	663	663	708	799	933	926	785	675	495	406	297	248	127
9/20/2008	74	38	31	23	104	180	384	464	384	587	738	864	864	798	745	933	926	785	675	495	406	297	248	127
9/21/2008	60	29	24	28	72	164	263	443	263	515	598	645	645	613	642	645	618	536	562	468	333	273	178	116
9/22/2008	31	18	16	5	47	207	388	443	470	479	529	549	549	591	638	688	835	835	616	316	184	166	116	66
9/23/2008	25	21	12	11	44	196	390	455	424	420	529	549	549	591	638	688	835	835	616	316	184	166	116	66
9/24/2008	24	10	8	11	48	206	401	465	459	498	573	595	595	600	619	688	835	835	616	316	184	166	116	66
9/25/2008	22	16	6	5	33	185	396	457	471	568	622	622	622	600	619	688	835	835	616	316	184	166	116	66
9/26/2008	40	30	19	9	54	200	367	490	493	525	656	758	758	866	949	949	871	779	543	405	279	195	135	79
9/27/2008	65	53	34	20	196	378	505	505	505	622	743	787	787	744	793	787	850	717	621	466	349	282	185	152
9/28/2008	94	69	44	10	143	330	426	426	446	463	523	556	556	572	646	606	583	578	430	297	216	164	97	57
9/29/2008	18	16	14	10	180	349	441	446	446	463	523	556	556	572	646	606	583	578	430	297	216	164	97	57
9/30/2008	22	11	6	4	202	383	424	458	458	483	523	556	556	572	646	606	583	578	430	297	216	164	97	57
10/1/2008	31	21	15	9	173	390	499	461	461	483	523	556	556	572	646	606	583	578	430	297	216	164	97	57
10/2/2008	22	17	12	11	211	388	489	489	489	515	554	621	621	578	567	579	702	762	516	328	281	190	183	86
10/3/2008	32	21	15	13	200	412	537	481	481	508	554	621	621	578	567	579	702	762	516	328	281	190	183	86
10/4/2008	36	18	12	10	199	393	492	477	468	538	538	645	645	604	641	641	738	862	604	447	304	239	154	100
10/5/2008	35	31	11	17	176	340	423	443	443	481	548	621	621	618	654	693	733	810	527	382	268	206	103	47
10/6/2008	69	37	27	24	147	264	386	437	386	437	554	568	568	542	575	631	610	669	537	379	279	242	217	146
10/7/2008	71	44	44	11	184	405	492	510	470	542	556	624	624	556	628	725	841	791	501	314	227	242	217	146
10/8/2008	34	24	12	14	193	479	512	490	509	509	572	617	617	600	588	667	728	854	501	314	227	242	217	146
10/9/2008	28	21	7	14	177	412	459	462	462	487	548	600	600	567	588	667	728	854	501	314	227	242	217	146
10/10/2008	28	21	7	14	177	412	459	462	462	487	548	600	600	567	588	667	728	854	501	314	227	242	217	146
10/11/2008	36	26	9	10	205	392	541	498	440	548	600	600	600	567	588	667	728	854	501	314	227	242	217	146
10/12/2008	28	24	12	19	177	379	493	471	510	569	619	619	619	685	707	830	870	720	447	304	239	154	100	58
10/13/2008	53	34	22	14	103	207	354	459	522	562	678	678	678	685	707	830	870	720	447	304	239	154	100	58
10/14/2008	64	21	18	22	154	355	438	443	443	481	548	621	621	618	654	693	733	810	527	382	268	206	103	47
10/15/2008	20	14	9	9	205	389	450	459	441	540	601	601	601	600	581	719	791	738	436	292	182	129	66	45
10/16/2008	25	12	8	10	193	468	515	462	462	493	531	618	618	563	580	639	749	666	387	285	160	124	97	40
10/17/2008	18	13	13	15	177	412	459	462	462	487	548	600	600	567	588	667	728	854	501	314	227	242	217	146
10/18/2008	29	15	12	7	178	404	499	462	462	487	548	600	600	567	588	667	728	854	501	314	227	242	217	146
10/19/2008	30	23	16	8	154	342	451	451	451	483	531	639	639	598	584	667	728	854	501	314	227	242	217	146
10/20/2008	71	34	26	15	173	337	365	493	593	634	634	634	634	622	609	731	638	800	589	375	321	228	198	129
10/21/2008	67	34	26	15	173	337	365	493	593	634	634	634	634	622	609	731	638	800	589	375	321	228	198	129
10/22/2008	33	17	15	7	118	211	341	385	453	528	548	571	571	540	471	554	539	528	244	158	167	87	51	164
10/23/2008	32	12	15	8	187	383	470	434	477	448	602	570	567	705	623	786	676	623	339	177	177	136	89	42
10/24/2008	28	15	15	9	179	414	526	444	492	503	590	574	591	613	744	744	813	744	512	326	209	122	86	57
10/25/2008	15	22	11	10	170	402	493	442	428	470	537	574	574	540	606	677	857	774	466	270	222	161	128	47
10/26/2008	27	25	23	7	149	321	490	462	471	606	645	645	645	613	715	803	883	800	589	375	321	228	198	129
10/27/2008	60	43	29	27	199	325	385	449	449	518	584	584	584	622	609	731	638	800	589	375	321	228	198	129
10/28/2008	64	44	35	24	104	199	325	385	449	449	518	584	584	622	609	731	638	800	589	375	321	228	198	129
10/29/2008	34	15	13	10	163	395	488	424	407	485	529	542	542	540	471	554	539	528	244	158	167	87	51	164
10/30/2008	30	13	11	8	176	400	434	429	399	458	596	596	596	538	552	623	786	676	623	339	177	136	89	42
10/31/2008	23	16	8	4	151	393	441	393	393	505	564	541	541	477	647	647	811	703	446	304	234	191	126	76
11/1/2008	46	29	24	9	168	371	446	419	410	464	539	539	539	475	551	682	788	701	444	268	203	169	95	40
11/2/2008	44	18	9	11	163	369	446	385	414	517	588	579	588	579	615	776	796	784	531	373	273	229	184	137
11/3/2008	78	40	21	22	163	268	377	458	377	458	527	562	608	610	645	645	636	596	517	455	257	217	154	105
11/4/2008	64	46	35	24	104	199	325	385	417	540	471	554	554	540	471	554	539	528	244	158	167	87	51	164
11/5/2008	27	12	6	15	189	395	496	390	396	444	444	542	542	528	551	683	799	862	286	221	204	147	70	45
11/6/2008	30	18	13	3	174	416	549	430	417	456	578	578	578	526	579	701	834	738	360	237	145	136	77	41
11/7/2008	31	21	13	7	184	387	470	465	406	485	572	572	572	521	564	687	799	762	371	231	194	144	107	47
11/8/2008	29	17	9	9	174	390	421	433	440	486	564	564	564	515	564	644	733	789	708	434	306	239	193	136
11/9/2008	76	39	23	19	161	310	396	425	537	604	618	618	618	579	579	584	584	475	436	297	270	190	169	94
11/10/2008	98	33	43	11	115	213	331	361	458	470	531	531	531	452	528	648	449	449	311	208	167	122	102	70
11/11/2008	50	15	14	26	132	287	368	367	407	468	497	521	483	614	614	674	674	573	310	193	173	121	82	35
11/12/2008	25	21	17	10	183	436	451	430	403	492	520	507	507	507	521	648	772	673	310	193	173	121	82	35
11/13/2008	28	11	6	14	370	524	388	388	388	485	485	485	485	507	521	648	772	673	310	193	173	121	82	35
11/14/2008	30	12	5	6	173</																			

Appendix Table: Caltrans 2008 Hourly Count Data -- SR 28 East of SR 267 Eastbound

	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
11/21/2008	50	20	16	9	34	148	319	374	405	445	566	729	661	671	801	828	672	463	338	251	237	188	102	
11/22/2008	63	38	14	9	24	48	99	237	323	425	544	601	597	574	542	427	318	263	222	222	251	237	188	102
11/23/2008	39	22	14	9	25	74	158	247	373	486	631	748	828	823	869	901	746	516	371	283	229	197	130	87
11/24/2008	50	27	28	23	29	50	134	248	376	466	589	667	665	652	622	427	287	267	214	172	101	101	101	101
11/25/2008	41	39	21	18	15	25	62	111	208	345	435	462	405	427	488	495	419	279	195	167	122	82	55	55
11/26/2008	14	15	5	11	38	167	380	445	347	408	456	559	454	546	623	753	653	321	206	159	108	57	46	46
11/27/2008	30	12	15	16	20	25	167	416	456	380	451	486	458	539	648	764	678	302	232	180	158	80	34	34
11/28/2008	33	16	8	7	35	172	416	480	467	373	462	457	457	530	643	768	678	364	210	160	156	93	47	47
11/29/2008	41	8	16	15	10	24	161	408	427	425	422	486	505	580	694	821	676	341	213	174	143	93	51	51
11/30/2008	38	20	12	11	37	153	387	459	405	410	540	584	583	604	684	808	722	467	328	246	186	157	91	91
12/1/2008	81	42	23	17	31	60	147	264	341	410	540	584	583	604	684	808	722	467	328	246	186	157	91	91
12/2/2008	60	30	16	14	25	52	101	194	288	368	462	538	493	496	518	615	747	619	302	210	145	117	79	37
12/3/2008	23	16	9	8	16	35	166	367	473	438	428	452	443	496	612	713	633	395	257	244	196	144	102	56
12/4/2008	24	15	9	13	12	38	160	392	441	413	367	391	520	443	496	612	713	633	395	257	244	196	144	102
12/5/2008	40	18	16	10	37	145	394	430	429	382	470	508	516	529	669	764	701	356	248	189	154	102	40	40
12/6/2008	27	18	10	5	18	38	173	389	467	465	461	520	472	509	626	764	701	356	248	189	154	102	40	40
12/7/2008	26	19	19	15	32	40	123	208	254	354	357	402	381	445	553	555	543	395	273	190	195	157	97	56
12/8/2008	71	49	39	22	25	34	83	132	218	323	400	398	452	473	485	577	540	526	385	260	230	171	147	97
12/9/2008	62	44	53	39	25	66	79	193	296	312	363	426	429	386	448	507	432	287	205	185	147	99	57	57
12/10/2008	26	21	10	5	15	30	169	372	447	396	401	405	537	489	533	615	749	614	350	218	157	131	89	46
12/11/2008	29	11	12	10	14	32	165	351	439	413	391	431	494	479	538	642	776	616	354	232	171	152	102	56
12/12/2008	23	14	11	8	33	40	150	385	418	415	388	439	502	477	541	663	765	646	361	222	161	144	102	62
12/13/2008	39	8	15	19	9	32	149	360	443	402	415	428	499	545	566	615	857	628	371	261	204	228	119	80
12/14/2008	41	17	16	8	28	37	156	344	449	391	398	481	548	570	607	707	799	716	489	372	345	269	219	141
12/15/2008	100	48	20	16	30	33	76	153	246	338	424	452	555	597	597	598	659	610	386	278	240	232	164	109
12/16/2008	75	44	25	20	10	22	59	120	175	323	382	427	465	509	471	497	509	434	306	220	179	154	112	56
12/17/2008	28	17	14	15	12	39	161	329	428	403	373	464	489	477	514	621	708	652	352	248	201	142	86	58
12/18/2008	38	29	18	14	16	32	136	318	412	354	345	405	516	522	537	667	747	642	352	251	221	182	123	80
12/19/2008	36	23	19	12	29	29	143	326	387	326	363	404	516	522	537	667	747	642	352	251	221	182	123	80
12/20/2008	39	28	24	22	28	33	118	199	282	342	319	367	392	459	511	599	714	698	410	269	254	155	148	98
12/21/2008	58	27	22	13	26	36	148	378	461	427	510	546	650	693	784	800	911	829	516	383	304	244	190	160
12/22/2008	82	49	29	17	26	36	85	196	332	414	493	540	612	603	619	732	812	696	418	310	240	228	138	138
12/23/2008	72	38	29	30	19	23	83	139	269	413	477	563	585	590	614	692	796	651	528	368	310	261	189	111
12/24/2008	58	26	9	19	21	37	100	227	283	482	502	632	667	765	745	766	861	688	484	357	276	228	162	111
12/25/2008	55	39	25	18	12	16	48	93	153	265	302	403	429	576	578	613	652	558	383	258	231	245	121	85
12/26/2008	47	26	22	12	18	37	123	279	380	475	589	577	670	745	718	869	1012	880	618	391	351	275	222	106
12/27/2008	57	29	20	20	27	34	108	254	423	519	603	696	754	822	784	979	1158	1006	667	431	371	268	236	144
12/28/2008	82	39	22	22	18	40	128	287	429	532	557	642	743	739	792	892	1025	946	740	508	380	307	223	170
12/29/2008	114	68	32	30	20	35	78	174	284	425	542	675	743	812	889	974	1090	1068	789	609	439	406	267	171
12/30/2008	93	59	51	33	13	24	62	162	302	493	570	641	806	802	884	969	1078	1046	832	557	412	358	257	167
12/31/2008	105	53	28	24	26	38	129	256	474	695	740	893	862	982	1040	1153	1109	711	494	406	496	350	211	211

Appendix Table: Caltrans 2008 Hourly Count Data -- SR 28 East of SR 267 Westbound

	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	
1/1/2008	229	146	127	127	79	82	102	256	399	613	786	842	926	750	689	674	692	613	613	497	336	295	220	137	108
1/2/2008	61	36	23	23	42	105	235	519	675	780	881	885	811	799	823	838	877	692	613	497	336	295	220	137	108
1/3/2008	59	31	24	19	36	87	280	494	660	730	784	750	792	731	742	778	773	704	704	411	317	210	131	127	77
1/4/2008	64	42	24	34	21	68	149	311	367	368	443	392	414	376	367	373	313	272	272	438	271	210	131	127	77
1/5/2008	33	24	15	12	18	39	83	136	222	270	328	290	298	248	227	208	224	208	208	173	149	132	80	83	40
1/6/2008	35	46	26	17	23	52	64	165	330	313	328	288	296	286	299	320	338	268	268	159	144	144	87	78	58
1/7/2008	40	26	21	28	27	76	205	380	527	469	367	432	433	366	390	495	502	505	505	325	217	151	134	89	64
1/8/2008	50	31	29	25	27	88	208	422	463	425	367	343	375	344	316	465	466	466	366	164	140	140	95	94	52
1/9/2008	40	26	23	23	28	90	212	495	569	457	364	383	428	439	433	559	607	560	560	255	164	140	95	94	52
1/10/2008	44	31	22	14	31	78	223	465	538	477	431	436	468	439	433	607	607	560	560	255	164	140	95	94	52
1/11/2008	70	65	69	69	37	75	252	504	625	533	530	526	552	514	538	689	689	584	584	340	258	187	153	118	76
1/12/2008	106	60	38	42	35	69	123	395	494	511	469	453	487	421	477	689	689	607	607	455	340	258	187	153	118
1/13/2008	102	111	72	41	35	59	97	375	514	610	605	589	546	561	581	563	504	505	505	400	278	230	171	154	149
1/14/2008	37	20	16	18	36	92	263	475	543	566	514	508	433	501	490	546	644	644	569	403	250	168	148	95	56
1/15/2008	40	21	21	15	28	77	274	485	531	477	441	438	441	504	478	628	643	643	527	278	183	167	124	70	70
1/16/2008	37	21	37	18	27	79	262	484	531	551	528	456	505	502	506	610	610	610	594	381	254	188	182	108	59
1/17/2008	50	17	18	14	38	77	259	491	517	499	516	475	571	480	506	586	591	594	594	392	254	188	182	108	59
1/18/2008	90	78	46	28	32	96	268	479	571	583	546	500	556	509	530	674	688	731	639	392	254	188	182	108	59
1/19/2008	107	114	76	41	36	83	108	361	564	583	609	585	500	509	530	674	688	731	639	392	254	188	182	108	59
1/20/2008	156	105	109	71	46	72	107	303	547	703	783	750	687	561	614	683	709	645	645	486	351	289	234	172	131
1/21/2008	69	45	31	17	31	71	191	397	546	681	699	684	627	554	617	638	573	438	438	371	290	234	172	131	108
1/22/2008	23	20	26	22	41	86	270	440	516	506	470	405	448	426	426	554	566	528	528	209	169	116	82	60	60
1/23/2008	31	36	17	20	24	82	260	441	507	457	416	393	448	417	440	542	590	522	522	226	185	146	95	60	60
1/24/2008	33	25	13	21	39	70	238	460	500	429	433	392	422	462	429	487	591	591	507	331	249	165	152	113	71
1/25/2008	42	43	37	38	31	76	240	504	533	459	473	444	515	445	465	563	585	525	525	291	242	217	172	118	95
1/26/2008	81	59	45	20	30	72	120	375	483	499	502	461	465	480	441	528	555	497	497	370	257	229	224	187	179
1/27/2008	102	64	54	55	44	55	103	342	482	480	560	511	480	410	339	351	342	299	299	228	195	138	96	71	48
1/28/2008	27	18	15	22	41	80	209	381	459	464	436	441	428	433	410	496	479	449	449	287	177	134	91	68	68
1/29/2008	34	30	20	20	39	73	270	493	547	423	463	411	408	434	438	485	532	407	407	308	188	137	103	86	61
1/30/2008	41	41	49	28	33	85	259	481	679	502	405	372	412	429	432	564	637	556	556	247	168	116	65	65	65
1/31/2008	30	17	22	22	38	69	263	510	549	540	481	474	491	464	469	515	542	492	492	303	197	135	87	65	56
2/1/2008	44	49	50	29	40	78	266	534	687	529	462	475	466	537	461	673	636	593	593	320	261	202	145	128	128
2/2/2008	74	75	46	34	37	72	139	400	579	619	574	536	469	479	417	447	442	420	420	314	246	183	174	117	88
2/3/2008	66	96	49	36	40	53	88	158	246	333	446	449	506	417	426	323	288	233	233	184	264	210	145	82	64
2/4/2008	31	23	26	20	41	85	237	452	576	590	538	493	457	467	457	518	562	544	544	353	255	208	127	82	74
2/5/2008	32	26	24	16	30	80	285	487	608	630	564	495	498	456	575	566	684	672	672	475	317	210	150	109	66
2/6/2008	43	29	34	20	46	77	276	494	565	587	481	478	478	472	469	582	580	580	580	367	296	209	133	117	59
2/7/2008	40	18	25	21	26	70	272	473	626	563	463	477	534	465	477	598	646	646	646	397	306	204	190	106	88
2/8/2008	68	95	46	22	36	61	298	514	657	628	502	525	556	553	598	635	702	642	642	476	343	273	305	244	141
2/9/2008	106	58	60	40	34	57	103	313	608	682	719	686	733	644	609	671	660	643	643	387	315	262	246	167	167
2/10/2008	35	18	19	16	16	78	271	503	604	622	578	516	569	493	570	572	521	585	585	434	338	217	138	97	77
2/11/2008	32	16	18	10	24	88	238	492	591	565	511	490	498	461	498	605	643	643	596	376	298	190	140	104	70
2/12/2008	49	23	21	22	28	71	268	505	518	520	474	466	477	535	506	622	637	639	639	422	289	212	192	131	79
2/13/2008	34	20	19	20	29	61	268	495	592	477	499	477	556	543	597	578	709	607	607	518	334	243	194	104	70
2/14/2008	81	102	85	52	39	73	254	503	634	568	502	631	621	565	583	724	694	676	676	475	317	210	150	109	66
2/15/2008	94	64	38	34	34	65	149	345	620	675	703	696	727	603	650	703	735	638	638	530	343	267	253	223	223
2/16/2008	195	108	78	42	31	67	103	373	707	783	834	798	850	759	688	753	761	784	784	566	411	315	231	174	125
2/17/2008	105	91	47	41	35	62	113	499	737	894	997	865	744	661	619	619	655	729	648	457	333	225	201	102	82
2/18/2008	40	22	23	18	24	35	238	433	543	618	585	558	575	532	542	601	676	582	582	409	319	197	167	119	76
2/19/2008	49	32	31	14	35	75	250	529	628	618	618	618	618	486	458	521	521	521	521	416	348	215	111	130	76
2/20/2008	51	26	16	16	16	43	67	234	464	599	566	555	525	486	489	502	510	505	505	266	211	169	116	71	71
2/21/2008	62	65	64	40	37	70	242	471	616	560	520	502	525	482	515	528	607	568	568	427	295	242	215	115	115
2/22/2008	95	59	56	45	32	66	103	359	626	649	627	571	506	515	403	424	386	329	329	210	182	154	126	81	81
2/23/2008	77	46	45	42	30	66	85	286	404	425	424	361	390	373	343	343	350	311	311	198	189	164	121	79	65
2/24/2008	56	28	24	26	50	73	205	401	513	489	502	432	424	423	426	504	535	490	490	393	282	201	130	95	53
2/25/2008	31	23	19	22	36	53	284	533	646	604	604	461	473	488	488	559	589	589	589	426	313	193	149	115	80
2/26/2008	43	32	26	26	31	65	288	533	596	613	496	461	469	520	532	606	680								

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	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
3/6/2008	33	32	17	15	30	56	308	509	578	518	491	461	524	486	480	610	654	649	443	305	207	180	114	97
3/7/2008	64	53	43	14	29	67	286	514	568	577	542	560	566	561	556	588	717	643	514	363	232	232	166	126
3/8/2008	96	101	62	38	31	53	159	423	548	551	595	433	586	514	567	574	614	521	430	357	251	236	217	176
3/9/2008	26	30	24	13	28	78	239	476	567	503	475	510	483	511	497	550	616	572	392	297	222	163	88	72
3/10/2008	34	22	25	17	19	71	250	492	489	431	484	413	545	514	499	573	637	579	409	322	247	196	152	78
3/11/2008	36	33	33	16	26	69	252	498	539	512	437	470	486	468	496	601	600	527	439	306	208	216	131	70
3/12/2008	40	27	17	11	31	68	242	451	479	486	421	464	514	525	561	589	608	541	390	318	274	164	113	99
3/13/2008	50	48	49	25	36	69	214	425	498	513	507	481	537	484	546	567	595	605	446	251	228	166	129	100
3/14/2008	91	49	51	33	40	65	103	283	376	492	488	490	463	492	424	428	496	513	307	331	245	255	192	130
3/15/2008	92	70	47	30	42	51	84	281	429	527	577	548	562	516	482	513	523	436	470	330	216	179	115	71
3/16/2008	45	28	23	21	25	82	229	467	605	575	557	532	524	516	516	598	611	576	454	298	242	184	124	72
3/17/2008	51	29	34	23	20	65	252	487	555	506	506	484	523	464	540	597	661	555	436	366	219	184	127	57
3/18/2008	30	31	21	14	28	71	249	486	542	570	532	491	576	502	561	614	656	595	450	326	227	185	135	75
3/19/2008	45	24	33	22	23	67	236	484	610	516	516	530	542	515	509	583	667	680	438	351	268	200	118	92
3/20/2008	65	68	29	41	29	66	245	492	562	565	509	534	624	558	550	675	717	645	519	431	305	295	179	149
3/21/2008	121	107	40	44	31	68	111	287	489	572	592	556	613	566	550	675	717	645	431	305	295	179	149	149
3/22/2008	111	127	67	43	24	67	94	247	489	572	592	556	613	566	550	675	717	645	431	305	295	179	149	149
3/23/2008	41	23	26	22	21	86	237	492	631	631	586	622	597	565	545	576	622	593	482	423	315	232	186	143
3/24/2008	35	27	24	13	14	71	263	515	561	573	577	593	623	586	545	633	680	581	491	407	361	273	193	114
3/25/2008	65	48	25	15	22	77	261	499	535	560	558	612	626	591	630	723	708	660	531	372	269	188	147	81
3/26/2008	55	28	21	21	21	60	303	525	589	601	557	542	610	520	564	648	663	650	489	348	306	192	132	72
3/27/2008	68	57	45	32	26	77	250	526	576	559	610	651	634	634	627	702	702	662	551	384	285	209	174	111
3/28/2008	79	51	32	36	33	71	130	296	457	489	610	575	572	521	523	518	607	537	437	348	297	218	201	169
3/29/2008	127	96	73	56	42	70	87	250	373	503	629	683	617	492	479	452	446	407	371	281	241	164	102	70
3/30/2008	38	34	22	21	19	67	240	470	483	516	479	512	517	484	506	559	591	525	406	306	223	161	105	58
4/1/2008	45	28	21	15	17	64	249	454	504	452	398	478	484	463	463	547	600	539	408	291	208	150	110	67
4/2/2008	25	32	21	12	14	67	266	488	428	469	467	420	510	423	471	519	563	599	382	276	227	185	96	64
4/3/2008	63	13	16	19	19	68	249	488	468	481	496	541	517	468	497	585	617	597	411	411	241	167	121	83
4/4/2008	80	62	42	22	27	80	254	528	488	487	454	461	517	531	546	605	666	590	436	359	286	226	170	96
4/5/2008	90	50	41	33	38	61	106	280	401	434	469	485	504	471	508	497	483	460	396	304	316	254	154	127
4/6/2008	47	33	15	14	27	87	246	418	463	475	488	475	486	482	460	566	583	552	387	280	211	188	96	68
4/7/2008	28	22	24	11	21	71	249	457	470	393	414	488	456	476	476	582	598	515	391	296	218	176	108	47
4/8/2008	63	36	16	19	12	64	266	470	508	458	438	448	528	520	473	571	637	544	358	304	234	174	120	59
4/9/2008	42	27	21	18	19	70	271	481	469	434	464	460	460	469	469	555	560	599	424	327	260	188	94	83
4/10/2008	62	59	34	27	17	82	285	474	502	498	467	533	511	478	568	666	643	642	426	374	273	265	170	134
4/11/2008	88	58	32	25	25	58	119	247	389	410	484	509	490	504	484	511	490	450	401	347	288	213	175	104
4/12/2008	81	47	14	13	20	43	81	189	312	441	471	544	550	518	465	457	426	381	312	273	218	160	99	60
4/13/2008	37	12	14	13	28	60	239	369	410	373	456	461	504	485	410	526	526	487	351	265	194	130	69	68
4/14/2008	39	23	15	17	14	70	256	389	422	410	431	439	456	467	440	499	502	476	372	267	176	168	109	47
4/15/2008	47	26	21	14	16	67	266	440	423	398	425	468	521	445	446	484	531	541	337	274	214	164	108	47
4/16/2008	27	14	12	9	18	68	265	409	407	385	432	497	495	429	451	507	551	511	417	302	207	171	103	98
4/17/2008	73	69	66	26	24	75	233	389	388	449	504	464	527	511	540	540	575	526	419	302	289	193	158	96
4/18/2008	76	55	39	17	19	44	206	322	322	388	449	504	527	511	540	540	575	526	419	302	289	193	158	96
4/19/2008	64	54	34	34	29	52	265	162	240	359	520	522	527	489	489	498	458	447	352	303	239	220	147	94
4/20/2008	32	57	28	27	25	74	261	414	449	433	443	483	488	444	490	542	498	532	282	285	209	149	100	58
4/21/2008	35	19	21	17	16	78	292	444	440	370	353	448	453	477	474	484	498	529	384	297	175	121	96	53
4/22/2008	30	28	17	13	15	83	262	417	414	351	396	403	458	454	443	518	543	545	374	249	176	147	88	43
4/23/2008	64	57	29	20	18	73	292	423	424	424	466	466	535	503	502	609	616	544	390	289	281	200	110	83
4/24/2008	68	59	49	27	23	23	273	455	489	448	475	466	535	503	502	609	616	544	390	289	281	200	110	83
4/25/2008	70	44	23	23	23	48	110	258	326	417	493	481	465	491	487	479	475	398	409	324	240	216	166	102
4/26/2008	86	66	34	29	19	46	74	150	300	436	477	512	603	540	497	476	470	379	310	222	240	216	166	102
4/27/2008	28	16	17	9	18	85	265	454	464	460	460	470	544	429	502	568	562	561	402	254	222	149	102	53
4/28/2008	21	16	21	13	18	69	296	495	477	497	433	447	503	473	482	561	568	561	402	254	222	149	102	53
4/29/2008	30	16	14	12	13	72	292	510	536	418	405	413	542	487	466	586	582	504	394	310	209	162	117	46
4/30/2008	51	24	18	11	14	65	321	519	496	392	453	501	547	485	466	586	582	504	394	310	209	162	117	46
5/1/2008	34	23	13	16	15	70	318	486	465	488	415	519	531	529	541	602	607	584	427	319	215	169	112	52
5/2/2008	79	46	46	29	32	56	118	265	383	434	534	554	521	549	543	504	501	470	396	317	231	209	183	123
5/3/2008	107	75	32	27	27	38	79	169	329	397	519	527	571	575	530	440	504	470	396	317	231	209	183	123
5/4/2008	32	15	14	16	20	85	293	505	463	491	451	486	545	518	503	564	621	591	421	26				

Appendix Table: Caltrans 2008 Hourly Count Data -- SR 28 East of SR 267 Westbound

	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
5/10/2008	94	51	38	19	27	69	126	277	379	460	469	551	510	521	477	520	522	495	371	289	286	212	169	169
5/11/2008	88	56	47	20	34	62	85	165	288	461	529	611	578	528	517	502	433	495	328	288	235	157	159	169
5/12/2008	44	16	13	8	24	78	319	513	483	498	454	472	519	479	483	577	543	556	463	259	184	159	72	53
5/13/2008	30	19	13	8	20	80	330	548	483	398	450	439	461	525	502	626	593	593	467	358	268	199	101	55
5/14/2008	32	15	13	12	17	89	370	516	482	424	467	475	533	511	523	572	666	617	475	338	267	189	115	48
5/15/2008	39	19	21	8	12	87	352	538	468	470	448	487	555	529	486	594	675	618	477	321	269	262	142	69
5/16/2008	43	32	19	14	27	101	338	503	481	505	512	495	593	590	582	668	680	614	509	376	329	296	185	121
5/17/2008	82	55	39	27	38	84	175	296	363	482	598	590	625	631	576	646	610	559	473	360	303	246	206	145
5/18/2008	173	59	46	40	45	49	103	187	318	491	610	642	641	689	666	587	558	484	382	373	268	216	108	67
5/19/2008	33	28	18	12	27	96	349	528	487	488	484	494	557	515	553	647	644	643	486	305	259	184	90	59
5/20/2008	29	17	11	11	21	95	390	536	508	434	454	530	559	500	508	630	643	610	461	346	229	157	96	62
5/21/2008	35	15	11	13	21	99	386	535	501	473	451	476	567	515	538	646	644	643	486	307	248	185	104	58
5/22/2008	41	27	19	13	15	95	380	533	474	418	473	511	507	515	499	607	647	629	410	312	205	172	81	63
5/23/2008	50	30	18	14	26	72	343	513	510	493	464	553	668	616	629	683	714	651	467	315	277	254	171	146
5/24/2008	79	43	31	31	63	137	249	341	390	480	573	668	613	585	568	543	510	420	313	303	263	201	152	152
5/25/2008	98	81	51	40	43	98	188	272	440	569	580	653	678	682	642	642	636	520	386	334	335	216	154	145
5/26/2008	82	77	48	48	30	53	134	223	328	433	612	627	650	627	534	513	511	452	380	244	219	158	107	54
5/27/2008	27	14	11	11	22	100	344	513	504	461	544	487	555	497	502	671	641	555	411	301	185	160	115	51
5/28/2008	43	14	13	14	14	88	377	541	486	419	426	476	571	531	568	646	644	643	484	291	248	195	104	58
5/29/2008	64	42	25	27	12	97	398	496	532	455	493	513	568	540	547	646	644	643	484	291	248	195	104	58
5/30/2008	46	29	24	14	14	99	351	535	534	529	503	554	631	610	598	678	702	699	454	307	239	207	110	68
5/31/2008	101	64	35	25	36	85	170	308	408	472	534	576	555	573	576	563	559	541	459	376	284	296	222	128
6/1/2008	90	47	37	38	29	64	97	268	355	466	555	627	646	614	614	565	514	474	375	294	285	235	135	70
6/2/2008	42	20	25	11	7	22	114	392	523	519	523	518	602	560	562	677	650	670	503	323	242	169	119	63
6/3/2008	39	25	25	18	22	114	392	523	519	523	518	602	560	560	562	677	650	670	503	323	242	169	119	63
6/4/2008	55	22	18	17	15	95	413	562	539	482	516	538	578	571	602	622	666	631	529	305	274	239	126	64
6/5/2008	44	29	30	20	26	105	393	586	532	548	588	588	561	514	614	687	727	638	485	400	327	245	131	82
6/6/2008	59	28	28	16	25	108	372	550	539	535	489	554	750	636	611	761	759	694	528	422	313	290	200	125
6/7/2008	71	48	39	33	36	90	153	315	408	501	641	624	641	645	660	661	570	521	445	336	309	217	124	124
6/8/2008	123	67	36	43	37	56	109	213	363	542	593	658	701	628	629	606	566	493	406	377	310	244	134	70
6/9/2008	47	22	13	14	31	88	367	544	499	488	533	579	627	596	615	699	751	719	475	354	240	214	94	61
6/10/2008	33	29	21	11	21	101	408	572	541	505	490	547	601	617	580	747	682	696	522	346	296	254	138	87
6/11/2008	47	18	17	24	23	98	441	566	539	485	488	559	600	647	574	691	728	714	527	394	312	260	137	69
6/12/2008	46	25	25	14	18	93	427	551	466	484	566	564	592	578	580	645	632	726	535	391	271	290	162	108
6/13/2008	71	50	22	21	36	107	415	560	547	564	571	635	685	626	679	804	730	764	594	434	316	296	189	168
6/14/2008	88	55	39	33	23	74	159	298	428	563	693	808	850	703	655	673	688	608	477	398	401	316	230	164
6/15/2008	135	88	60	39	35	78	137	234	373	542	743	885	779	670	638	670	589	549	516	385	293	225	142	88
6/16/2008	33	23	20	16	16	102	362	554	542	554	567	653	610	608	645	718	789	750	545	388	300	295	212	93
6/17/2008	67	20	21	16	35	95	376	591	567	493	603	616	668	674	700	704	792	750	545	388	300	295	212	93
6/18/2008	65	32	20	18	38	91	422	589	513	524	563	566	674	710	678	734	800	806	764	562	388	322	288	183
6/19/2008	50	41	33	19	26	112	424	567	497	539	557	577	674	710	678	734	800	806	764	562	388	322	288	183
6/20/2008	86	55	30	22	27	106	403	584	524	599	658	685	780	669	678	781	800	815	601	402	406	330	292	183
6/21/2008	96	63	50	30	31	90	186	365	488	627	697	792	794	732	735	825	894	894	786	620	406	417	337	218
6/22/2008	111	108	63	51	40	58	144	252	416	594	753	813	859	843	752	686	753	705	613	441	395	343	275	189
6/23/2008	68	34	11	15	32	101	382	539	513	585	598	631	652	659	653	677	712	703	543	385	307	236	154	86
6/24/2008	47	26	21	16	25	118	463	530	503	521	565	633	649	606	644	746	700	695	611	421	344	289	205	111
6/25/2008	66	32	20	16	25	111	429	538	517	527	549	629	676	685	653	727	710	737	523	436	357	283	185	87
6/26/2008	55	35	23	14	25	111	425	519	573	557	579	644	644	644	636	666	740	712	579	452	387	277	231	123
6/27/2008	49	39	32	20	26	113	444	517	582	586	649	682	760	766	717	717	818	800	798	678	451	415	364	303
6/28/2008	105	67	48	28	35	99	221	380	494	620	776	838	806	721	776	800	789	714	634	607	450	369	279	180
6/29/2008	169	84	65	48	29	70	152	296	430	630	863	860	811	818	778	789	714	634	607	450	369	279	180	102
6/30/2008	59	26	20	14	20	110	402	523	557	621	652	671	727	706	656	742	796	802	802	435	353	275	160	86
7/1/2008	44	34	20	14	23	121	417	554	540	578	600	713	746	767	680	786	815	851	851	463	396	325	176	148
7/2/2008	76	36	31	18	30	121	390	583	634	605	667	732	821	743	782	878	906	882	705	485	424	360	230	145
7/3/2008	88	56	34	23	44	124	423	583	631	670	849	815	867	835	853	853	906	882	705	485	424	360	230	145
7/4/2008	184	124	78	58	35	95	194	351	573	717	817	797	824	831	888	797	1014	931	678	542	411	452	283	336
7/5/2008	232	123	69	52	47	98	166	325	544	810	1003	1013	1077	1028	1038	1107	1059	1069	891	615	452	283	336	424
7/6/2008	196	130	105	70	44	99	150	389	589	807	1068	1129	1039	958	903	900	900	787	646	511	452	283	336	424
7/7/2008	82	51	32	30	41	132	420	600	654	716	795	835												

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	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
7/14/2008	73	48	23	20	41	118	419	571	582	621	738	755	764	674	703	716	860	785	603	423	374	274	216	101
7/15/2008	58	33	26	18	29	109	459	609	595	583	645	666	769	704	702	792	908	833	631	418	383	299	217	138
7/16/2008	55	36	26	13	29	127	452	569	563	583	641	666	741	721	737	776	905	814	638	501	466	326	256	158
7/17/2008	85	37	31	27	30	125	440	566	607	605	639	747	796	773	743	797	934	862	703	513	460	369	209	240
7/18/2008	71	59	34	30	28	125	469	789	888	810	848	829	861	922	912	1022	1036	972	729	700	574	585	451	321
7/19/2008	165	73	73	42	56	156	207	386	517	675	812	866	933	834	909	853	886	765	729	607	607	483	373	240
7/20/2008	160	61	55	44	34	65	138	311	430	703	917	898	987	1006	920	918	818	749	534	467	422	320	212	149
7/21/2008	94	33	28	25	31	120	413	545	563	647	717	735	849	771	848	821	941	865	662	480	370	223	110	141
7/22/2008	115	51	23	25	20	111	464	581	602	614	662	837	827	777	825	888	938	858	666	493	430	373	274	141
7/23/2008	106	42	26	30	39	115	439	600	595	620	717	768	731	764	767	810	970	926	691	489	453	355	271	207
7/24/2008	98	37	46	38	36	136	412	586	620	639	747	796	863	796	935	949	972	918	781	561	462	431	323	269
7/25/2008	140	92	66	55	31	95	197	385	512	709	883	901	952	904	910	879	933	900	778	593	488	371	306	341
7/26/2008	169	103	53	39	47	64	135	267	486	700	954	968	1045	951	971	916	916	900	774	697	495	424	303	242
7/28/2008	95	59	16	23	27	113	391	622	557	631	734	765	792	783	816	823	868	810	610	519	415	314	198	104
7/29/2008	66	40	23	21	40	114	416	543	554	622	688	779	815	770	707	779	856	833	665	495	442	310	227	153
7/30/2008	64	35	21	14	32	109	430	552	590	601	692	754	839	750	796	861	922	966	704	512	456	305	266	184
7/31/2008	78	45	44	24	31	118	409	576	590	653	686	815	916	862	855	956	966	1009	701	515	471	398	312	206
8/1/2008	98	55	36	32	29	115	400	591	582	705	797	827	839	850	897	956	1009	876	705	515	471	398	312	206
8/2/2008	118	81	68	48	42	87	185	321	509	661	880	871	893	904	943	880	1020	888	706	547	487	390	323	265
8/3/2008	159	102	67	48	39	127	408	563	607	673	793	835	882	824	775	877	949	850	668	534	471	343	221	127
8/4/2008	81	37	28	18	37	127	408	563	607	673	793	835	882	824	775	877	949	850	668	534	471	343	221	127
8/5/2008	70	47	25	18	38	112	421	645	585	628	751	769	842	865	855	838	874	922	754	517	458	299	270	197
8/6/2008	109	50	23	22	33	115	435	621	617	673	767	794	858	819	824	880	989	935	715	498	470	350	239	215
8/7/2008	114	50	26	19	38	110	428	628	647	701	771	876	921	784	852	921	966	949	759	585	526	461	293	232
8/8/2008	116	75	49	38	38	145	383	595	666	731	859	992	982	925	937	963	1031	959	713	533	435	369	297	259
8/9/2008	147	78	47	53	41	104	198	419	623	832	942	1002	942	903	977	984	903	863	778	571	422	320	243	187
8/10/2008	204	110	67	50	39	67	142	343	533	860	989	1004	1010	1042	962	904	949	871	762	545	457	438	401	370
8/11/2008	77	25	24	20	32	113	381	564	651	689	761	790	872	793	779	826	904	868	705	475	427	299	235	133
8/12/2008	72	38	31	22	23	104	406	603	584	611	680	722	800	793	793	880	859	887	737	547	424	323	200	191
8/13/2008	80	45	35	23	32	119	421	567	592	639	767	747	819	721	812	824	937	930	686	534	471	343	221	127
8/14/2008	84	43	35	33	33	126	398	547	635	668	771	769	832	818	820	874	950	966	765	596	503	418	286	206
8/15/2008	92	61	40	31	30	127	426	532	639	701	767	817	875	755	840	840	915	1017	957	743	568	517	357	291
8/16/2008	129	70	51	34	50	105	213	394	484	716	849	953	863	968	1001	895	917	863	694	570	444	384	334	259
8/17/2008	156	86	57	46	41	64	138	299	461	688	962	996	1016	892	921	912	795	824	604	421	299	258	138	138
8/18/2008	72	44	27	21	50	103	415	574	654	897	772	799	807	744	742	818	863	778	571	422	320	243	187	96
8/19/2008	52	36	19	20	31	112	415	574	554	594	684	714	750	802	713	747	748	730	653	489	363	306	218	95
8/20/2008	73	50	15	26	22	118	428	541	574	592	666	730	773	745	677	773	861	876	598	398	368	281	212	122
8/21/2008	91	41	25	32	25	107	435	567	571	656	656	735	752	731	721	792	788	849	602	490	444	341	286	130
8/22/2008	89	57	49	28	41	134	410	578	552	648	694	773	785	748	808	881	948	843	708	550	450	306	284	173
8/23/2008	133	81	49	41	42	113	193	394	479	647	736	803	788	814	838	755	777	806	673	538	495	336	304	243
8/24/2008	158	85	54	65	34	61	107	264	458	609	801	864	832	822	767	759	721	625	603	414	393	259	172	106
8/25/2008	54	21	26	18	49	94	106	377	561	541	585	588	654	708	642	630	738	723	648	318	214	122	106	72
8/26/2008	62	28	25	17	37	106	411	569	529	546	610	651	654	631	620	696	713	709	568	424	288	231	134	87
8/27/2008	58	28	21	23	27	97	443	574	535	586	555	635	637	642	627	745	752	725	528	411	309	218	133	88
8/28/2008	64	41	20	22	33	93	438	561	527	597	659	681	722	758	735	792	857	772	711	557	410	330	280	170
8/29/2008	75	37	24	21	29	102	395	567	527	629	629	681	873	819	852	888	916	812	639	495	399	327	286	184
8/30/2008	108	75	57	49	49	83	172	369	463	629	697	769	819	758	758	824	888	849	602	545	428	371	317	227
8/31/2008	169	83	64	40	32	72	124	274	408	601	907	979	986	1003	980	954	872	780	661	535	437	329	280	165
9/1/2008	91	74	58	45	35	65	149	356	471	779	908	932	863	860	767	757	724	650	354	318	236	106	73	72
9/2/2008	37	29	20	19	36	113	393	572	552	580	622	689	663	663	663	678	718	691	487	394	301	205	141	72
9/3/2008	36	20	18	22	22	93	428	599	543	528	532	552	697	561	598	678	733	690	522	371	264	190	150	70
9/4/2008	48	32	11	22	33	103	409	556	501	532	555	576	576	596	607	662	739	673	516	419	320	194	130	87
9/5/2008	59	27	16	16	16	118	386	573	534	589	617	586	677	712	683	774	821	740	541	441	333	293	211	170
9/6/2008	93	58	40	34	36	87	176	333	432	580	714	732	798	755	644	666	650	546	503	471	378	278	251	179
9/7/2008	109	75	59	43	44	106	379	558	529	489	640	600	656	630	592	643	667	720	448	440	276	195	132	74
9/8/2008	37	32	13	20	29	115	402	578	517	517	434	513	513	649	616	681	622	662	482	353	273	177	123	71
9/9/2008	38	30	16	25	35	110	383	602	578	517	434	513	513	649	616	681	622	662	482	353	273	177	123	71
9/10/2008	60	31	14	28	34	112	388	560	546	529	513	498	568	641	561	628	684	710	502	502	355	248	183	122
9/11/2008	53	26	20	26	34</																			

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	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
9/17/2008	28	19	29	34	124	409	538	506	498	509	545	546	559	559	569	641	674	622	471	344	258	205	97	69
9/18/2008	97	38	27	103	418	567	577	524	508	534	565	616	533	533	533	659	714	668	490	388	243	206	118	77
9/19/2008	58	31	24	9	113	405	570	492	535	553	583	724	714	713	719	659	745	673	518	419	275	232	177	186
9/20/2008	125	66	36	35	41	76	305	454	545	732	679	721	750	662	643	622	638	612	459	402	256	262	219	166
9/21/2008	94	74	34	33	23	67	113	224	376	645	703	693	672	643	599	585	585	474	376	317	214	183	120	59
9/22/2008	47	10	19	12	29	94	365	513	515	529	521	580	584	535	558	673	671	618	401	295	239	160	97	58
9/23/2008	29	26	23	14	26	106	352	553	466	450	473	522	556	530	580	632	672	645	451	343	189	154	114	40
9/24/2008	41	13	14	13	37	107	379	556	481	469	498	525	577	544	582	611	723	589	479	339	230	208	112	91
9/25/2008	31	15	18	16	16	101	382	556	551	489	577	584	539	539	577	677	750	664	426	354	238	208	112	91
9/26/2008	36	28	24	22	34	108	349	527	588	581	674	652	669	668	688	793	761	696	513	368	258	208	112	91
9/28/2008	108	84	50	37	37	88	124	256	470	548	685	753	753	743	678	727	726	574	527	418	325	296	179	164
9/29/2008	114	75	37	38	39	56	116	258	354	563	664	717	712	750	732	620	583	565	446	334	219	175	110	74
9/30/2008	26	16	13	15	26	89	377	511	511	527	487	535	544	508	561	637	633	599	379	325	184	142	83	48
10/1/2008	29	16	14	17	17	94	374	548	497	484	475	481	496	538	579	641	653	612	515	321	203	148	81	54
10/2/2008	36	25	23	14	17	101	320	530	520	511	509	531	613	553	527	614	611	597	438	317	226	165	104	58
10/3/2008	33	23	24	16	23	77	400	618	509	482	478	494	605	554	578	627	710	672	504	338	234	179	92	73
10/4/2008	75	56	23	25	28	81	403	649	519	502	475	532	579	652	589	654	680	674	447	349	258	187	99	57
10/5/2008	43	25	22	15	26	84	401	597	537	463	489	559	585	594	605	648	648	674	447	349	258	187	99	57
10/6/2008	41	42	23	17	26	69	296	480	448	467	473	592	518	584	584	613	639	582	477	313	249	185	140	105
10/6/2008	102	35	48	28	30	54	140	274	362	475	562	632	689	641	580	639	575	565	533	361	261	252	197	133
10/7/2008	79	51	34	31	25	47	101	175	311	449	628	596	680	639	534	543	584	584	469	404	365	242	175	117
10/8/2008	42	19	13	14	18	74	369	578	535	518	558	551	590	557	576	646	684	611	460	338	177	187	97	55
10/9/2008	38	25	23	22	18	69	402	649	521	519	476	594	581	577	550	680	713	629	475	311	218	168	132	59
10/10/2008	40	13	19	19	19	59	328	458	453	439	449	502	553	611	569	616	682	622	462	341	201	183	102	47
10/11/2008	42	25	18	19	28	73	390	598	553	438	486	530	595	568	600	679	698	706	520	334	248	199	107	70
10/12/2008	50	35	21	19	32	72	385	608	538	501	451	550	634	611	613	682	743	619	508	309	253	214	160	83
10/13/2008	98	54	32	36	39	73	173	313	423	506	541	645	603	680	641	608	589	582	469	371	315	233	166	138
10/14/2008	103	59	75	33	26	57	98	190	289	423	555	589	592	563	541	608	589	582	469	371	315	233	166	138
10/15/2008	42	26	18	11	28	63	389	615	493	417	514	540	592	585	528	518	549	449	352	279	202	160	80	75
10/16/2008	34	14	17	17	13	60	375	589	454	464	441	553	656	566	520	542	612	633	583	422	297	204	154	84
10/17/2008	39	11	22	13	21	67	339	588	500	486	448	562	520	520	520	557	701	594	442	275	197	141	102	42
10/18/2008	42	24	12	16	19	59	328	458	453	439	449	502	553	597	576	676	636	621	420	283	196	140	95	41
10/19/2008	35	29	24	23	23	53	334	542	460	463	451	513	613	576	602	655	675	619	520	349	231	185	119	55
10/20/2008	76	33	34	24	24	44	118	245	329	491	537	596	623	559	558	600	679	698	496	419	292	239	291	150
10/21/2008	86	66	42	36	29	38	72	150	246	453	512	532	539	591	615	615	487	446	389	253	206	132	94	55
10/22/2008	58	26	13	12	21	82	334	553	488	452	472	489	548	515	569	614	642	598	408	309	230	151	95	58
10/23/2008	40	30	26	10	11	77	358	563	501	400	449	526	586	622	581	626	676	619	543	347	233	166	124	55
10/24/2008	24	24	19	11	26	77	360	577	491	468	478	517	564	547	504	652	670	613	504	318	217	159	100	54
10/25/2008	29	20	22	14	24	84	338	551	480	482	464	498	554	494	524	630	670	604	450	303	262	167	145	56
10/26/2008	41	33	22	22	19	62	316	545	503	508	555	577	674	626	633	680	729	597	468	285	267	175	99	99
10/27/2008	91	38	48	34	34	46	141	244	448	469	482	569	563	561	505	536	537	424	447	277	231	185	159	116
10/28/2008	122	86	53	44	38	46	85	152	244	467	549	541	589	611	540	472	476	455	385	269	216	149	83	48
10/29/2008	31	16	21	15	21	63	317	531	495	406	421	467	549	541	540	472	476	455	385	269	216	149	83	48
10/30/2008	34	25	18	16	18	70	333	530	479	434	466	444	535	474	495	588	638	623	466	296	181	135	122	71
10/31/2008	31	10	12	16	23	69	331	557	495	440	397	482	528	508	485	589	638	623	466	296	181	135	122	71
11/1/2008	67	55	53	31	23	76	302	542	502	399	434	422	505	484	518	628	637	574	430	249	196	156	108	42
11/2/2008	47	15	20	11	28	81	306	521	456	462	440	510	568	543	550	657	652	619	443	326	222	192	153	105
11/3/2008	78	58	30	47	25	58	117	255	320	424	482	477	568	517	484	528	505	448	437	310	259	258	211	147
11/4/2008	97	77	53	44	38	46	85	152	267	407	549	541	589	611	540	472	476	455	385	269	216	149	83	48
11/5/2008	50	19	19	20	28	79	351	547	476	421	445	458	514	502	542	526	560	534	325	226	182	130	68	50
11/6/2008	27	15	9	21	80	378	536	457	424	463	494	533	531	491	491	561	630	585	348	209	174	123	89	57
11/7/2008	48	32	21	15	26	76	335	604	482	433	449	492	507	502	536	584	609	604	393	248	187	164	168	117
11/8/2008	29	20	20	14	27	81	360	528	463	487	430	472	561	549	583	608	640	542	371	239	202	162	158	85
11/9/2008	76	51	25	30	21	56	131	247	347	431	439	461	499	528	578	500	497	420	328	251	189	165	176	113
11/10/2008	96	71	55	33	26	51	74	136	264	421	488	454	445	559	478	500	494	464	364	223	176	124	115	68
11/12/2008	50	21	14	17	33	77	269	435	398	409	469	505	530	540	467	514	593	414	324	227	173	115	83	45
11/13/2008	25	16	20	17	30	85	339	517	473	427	438	458	503	503	466	561	581	565	361	222	166	155	95	50
11/14/2008	44	23	15	17	24	79	347	495	484	434	418	448	490	456	478	578	668	549	370	257	168	131	102	67
11/15/2008	46	24	15	17	24	88	333	511	483	445	419	456	532	506	5									

Appendix Table: Caltrans 2008 Hourly Count Data -- SR 28 East of SR 267 Westbound

	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	
11/21/2008	32	32	32	12	22	25	82	264	447	409	432	507	515	633	611	679	700	673	576	374	273	221	172	136	64
11/22/2008	63	39	24	24	9	16	37	74	164	255	372	439	540	517	502	426	361	326	261	189	188	202	172	136	88
11/23/2008	62	28	25	24	21	54	54	143	282	288	424	577	667	708	738	652	623	680	680	395	283	210	172	136	146
11/24/2008	110	72	65	44	30	50	50	98	198	301	484	667	741	691	732	651	627	593	508	364	266	215	231	159	146
11/25/2008	67	50	50	50	42	38	51	103	166	295	508	611	558	554	458	474	427	369	376	278	200	163	135	65	51
11/26/2008	27	20	20	16	11	22	84	273	515	458	428	485	494	489	472	491	548	599	509	324	220	175	124	62	54
11/27/2008	37	11	27	22	25	24	30	300	488	484	412	396	467	482	462	487	587	619	556	351	236	190	122	106	61
11/28/2008	38	13	14	14	18	30	74	288	506	451	448	386	456	480	414	488	643	595	638	380	251	164	125	84	61
11/29/2008	33	16	20	20	22	24	59	284	501	461	453	442	463	489	492	519	627	631	568	357	249	207	182	111	75
11/30/2008	45	20	20	6	16	28	73	264	496	484	469	418	476	555	508	569	582	583	628	382	303	245	214	154	99
12/1/2008	96	49	38	26	22	20	36	97	234	334	414	500	516	496	502	422	492	459	335	264	220	229	199	165	108
12/2/2008	75	51	35	34	20	20	20	63	142	230	400	405	444	500	440	396	401	384	325	250	191	162	116	75	46
12/3/2008	44	19	12	10	12	25	72	273	469	466	432	443	454	454	462	480	562	643	500	308	215	177	162	73	57
12/4/2008	28	19	22	15	24	24	72	287	502	455	389	367	480	459	426	444	595	594	531	371	235	178	179	86	74
12/5/2008	111	63	27	30	29	86	27	273	500	490	414	428	428	532	465	502	621	611	615	339	297	193	160	111	49
12/6/2008	38	27	15	13	21	71	74	294	491	491	500	450	436	469	468	474	549	528	483	302	199	144	144	56	60
12/7/2008	28	23	19	20	57	74	47	187	318	315	374	363	329	396	418	431	459	468	444	273	197	183	208	122	81
12/8/2008	56	47	47	48	48	33	46	112	223	324	375	433	443	431	413	388	408	375	353	259	182	184	161	134	76
12/9/2008	51	53	68	41	40	52	62	79	156	276	400	430	488	485	450	400	410	433	363	228	182	174	122	73	60
12/10/2008	32	22	9	17	24	24	69	260	465	459	479	464	473	484	487	501	562	569	511	330	226	172	137	82	65
12/11/2008	36	12	17	18	18	26	69	265	484	480	441	408	465	476	460	453	609	607	647	583	333	266	144	136	86
12/12/2008	29	21	10	10	17	29	76	285	524	489	443	394	450	474	460	524	537	647	583	333	266	159	143	102	65
12/13/2008	35	16	23	19	20	20	74	270	469	449	429	428	463	488	476	511	617	656	587	365	276	173	169	113	77
12/14/2008	45	28	23	12	36	36	83	271	436	494	457	399	525	531	520	520	662	636	609	395	268	251	199	197	151
12/15/2008	122	69	49	36	27	58	37	58	151	261	391	450	484	532	520	482	462	443	465	316	268	228	186	156	119
12/16/2008	88	54	39	24	20	37	20	89	210	316	426	520	501	568	508	424	428	454	334	303	232	169	129	93	59
12/17/2008	26	16	20	21	21	31	93	247	446	497	425	478	460	464	472	522	600	573	510	326	260	142	131	90	54
12/18/2008	36	24	17	20	20	27	72	217	430	413	395	395	384	423	408	375	532	509	418	284	187	139	119	95	66
12/19/2008	47	18	21	27	30	30	70	239	462	474	444	410	417	489	430	480	595	579	535	293	217	188	162	101	78
12/20/2008	56	25	26	27	38	38	50	165	259	355	328	361	370	400	394	416	432	492	459	333	206	190	146	110	62
12/21/2008	53	37	19	15	15	36	68	178	448	493	440	392	441	419	439	503	669	733	600	405	289	206	188	140	113
12/22/2008	75	51	39	41	41	31	70	123	281	390	506	583	617	627	502	532	502	535	474	347	304	237	188	140	113
12/23/2008	93	69	45	26	27	58	58	94	231	384	568	625	614	623	575	558	596	593	521	395	302	292	188	137	100
12/24/2008	66	42	16	16	19	18	55	136	287	447	531	621	728	717	698	706	657	711	573	384	297	244	205	133	100
12/25/2008	65	41	31	19	22	40	40	68	170	269	335	385	470	491	582	513	493	551	363	259	208	203	145	100	100
12/26/2008	47	25	30	21	28	28	87	209	364	513	526	638	605	655	660	638	647	688	602	434	305	249	215	172	116
12/27/2008	58	42	35	22	46	46	91	199	436	565	627	775	725	797	719	673	742	766	659	483	354	269	205	149	113
12/28/2008	110	61	49	20	32	32	97	194	439	579	658	684	725	728	719	694	657	659	644	485	323	318	222	149	131
12/29/2008	110	61	59	30	29	57	57	125	332	496	703	766	808	725	698	720	711	685	656	481	402	350	282	244	217
12/30/2008	143	96	63	50	38	53	86	269	551	701	838	905	851	848	732	723	801	801	756	544	418	366	303	260	194
12/31/2008	126	64	55	37	43	80	80	193	416	623	738	849	924	856	848	862	866	897	782	578	400	363	299	217	160

